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Laboratory Catalogue 2016/2017

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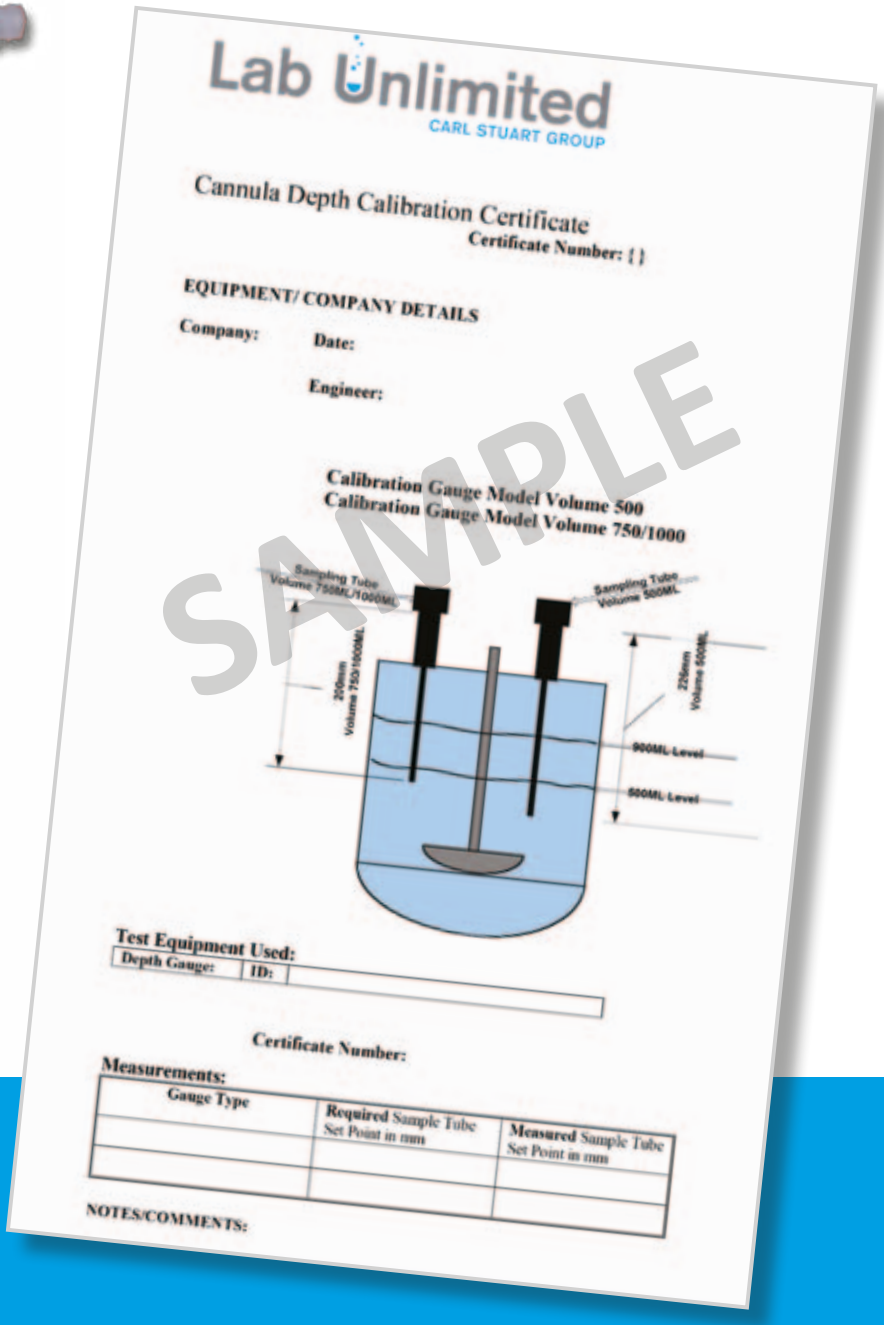
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magic of precision

1 Beakers, Borosilicate glass 3.3, low form

DIN 12 331. ISO 3819. With approximate graduations and spout.

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
5	22	30	10	**9.013 905**
10	26	35	10	**9.013 906**
25	34	50	10	**9.013 900**
50	42	60	10	**9.013 901**
100	50	70	10	**9.013 902**
150	60	80	10	**9.013 903**
250	70	95	10	**9.013 904**
400	80	110	10	**9.013 910**
600	90	125	10	**9.013 911**
800	100	135	10	**9.013 912**
1000	105	145	10	**9.013 913**
2000	130	185	4	**9.013 914**
3000	150	210	4	**9.013 915**
5000	170	270	2	**9.013 916**

1



2 Beakers, Borosilicate glass 3.3, tall form

DIN 12 331. ISO 3819. With approximate graduations and spout.

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
25	30	55	10	**9.013 924**
50	38	70	10	**9.013 925**
100	48	80	10	**9.013 920**
150	54	95	10	**9.013 921**
250	60	120	10	**9.013 922**
400	70	130	10	**9.013 923**
600	80	150	10	**9.013 930**
800	90	175	10	**9.013 931**
1000	95	180	10	**9.013 932**
2000	120	240	6	**9.013 933**
3000	135	280	6	**9.013 934**

2



3 Beakers, DURAN®, low form

With approximate graduations and spout. DIN 12331. ISO 3819. With easy-to-read scale and large labelling field for easy marking. In fired-on, highly durable white ceramic. Due to the uniformly wall thickness, it is suitable for use as a heating vessel. Glass Type I/neutral as per USP, EP and JP. With retrace code (Batch Identification, for all) except 5ml, 10ml and 25ml. Certificate available via the Internet. Autoclavable. *DURAN Group*

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
5*	22	30	1	**9.013 007**
10*	26	35	1	**9.013 008**
25	34	50	1	**9.013 014**
50	42	60	1	**9.013 017**
100	50	70	1	**9.013 024**
150	60	80	1	**9.013 029**
250	70	95	1	**9.013 036**
400	80	110	1	**9.013 041**
600	90	125	1	**9.013 048**
800	100	135	1	**9.013 053**
1000	105	145	1	**9.013 054**
2000	132	185	1	**9.013 063**
3000	152	210	1	**9.013 068**
5000	170	270	1	**9.013 073**
10000*/**	217	350	1	**9.013 086**

* Without graduations.
** Not to DIN and ISO.

3



4 Beakers Super Duty, DURAN®, low form

With approximate graduations and spout. Reinforced, sturdy rim and increased mechanical strength for heavy duty. Glass Type I/neutral glass as per USP, EP and JP. With retrace code (Batch Identification). Certificate available via the Internet. Autoclavable. *DURAN Group*

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
150	60	80	1	**9.051 150**
250	70	95	1	**9.051 151**
400	80	110	1	**9.051 152**
600	90	125	1	**9.051 153**
1000	105	145	1	**9.051 154**
2000	132	185	1	**9.051 155**
5000	170	270	1	**9.051 156**

4



1



1 Beakers, DURAN®, tall form

DIN 12331. ISO 3819. With approximate graduations and spout. With easy-to-read scale and large labelling field for easy marking, in fired-on, highly durable white ceramic.
Due to the uniformly wall thickness, it is suitable for use as a heating vessel.
Glass Type I/neutral glass as per USP, EP and JP. With retrace code (Batch Identification).
Certificate available via the Internet. Autoclavable.

DURAN Group

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
50	38	70	1	**9.013 117**
100	48	80	1	**9.013 124**
150	54	95	1	**9.013 129**
250	60	120	1	**9.013 136**
400	70	130	1	**9.013 141**
600	80	150	1	**9.013 148**
800	90	175	1	**9.013 153**
1000	95	180	1	**9.013 154**
2000	120	240	1	**9.013 163**
3000	135	280	1	**9.013 168**

2



2 Filter beaker, DURAN®

Heavy wall. With spout. Glass type I/neutral glass as per USP, EP and JP. Autoclavable.

DURAN Group

Capacity ml	Diam. mm	Height mm	Description	PK	Cat. No.
250	70	94	with graduations	1	**9.051 036**
500	89	124	with graduations	1	**9.051 044**
1000	105	160	with graduations	1	**9.051 054**
2000	135	195	with graduations	1	**9.051 063**
3000	157	205	with graduations	1	**9.051 068**
5000	182	256	with graduations	1	**9.051 073**
10000	225	340	without graduations	1	**9.051 086**
15000	260	390	without graduations	1	**9.051 088**
20000	285	430	without graduations	1	**9.051 091**

3



3 Beakers, Pyrex®, low form

NEW!

Scilabware

- Complies with ISO 3819 and DIN 12331
- Manufactured from Pyrex® borosilicate glass
- Excellent thermal performance
- High resistance to chemical attack
- White graduations and marking spot

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
25	34	50	10	**9.014 003**
50	42	60	10	**9.014 001**
100	50	70	10	**6.238 860**
150	60	80	10	**9.014 002**
250	70	95	10	**6.254 004**
400	80	110	10	**9.014 004**
600	90	125	10	**6.258 182**
1000	105	145	10	**9.014 005**

4



4 Beakers, low form, heavy duty, Pyrex®

NEW!

Scilabware

- Mechanically stronger than standard beakers
- Designed for longer life and increased user safety
- Reinforced rims and spout, less prone to breakage during washing etc.
- Thicker walls and heavier bases
- Manufactured from Pyrex® borosilicate glass
- White graduations and marking spot

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
250	68	90	12	**6.230 404**
400	77	110	12	**6.230 405**
600	90	124	6	**6.235 736**
1000	108	156	6	**6.252 670**

E & OE.

1 Beakers, tall form, Pyrex®

NEW!

Scilabware

- Complies with ISO 3819 and DIN 12331
- Manufactured from Pyrex® borosilicate glass
- Tall form with spout
- White graduations and marking spot

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
100	48	80	10	**6.254 003**
150	54	95	10	**6.254 389**
250	60	120	10	**9.014 006**
400	70	130	10	**6.251 689**
600	80	150	10	**6.205 753**

1



2 Beakers, 18/10 steel

With rim and spout. Flat bottom for good contact with hotplates and magnetic stirrers.

Bochem

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
100	50	60	1	**9.013 610**
250	65	85	1	**9.013 611**
500	80	110	1	**9.013 612**
1000	100	130	1	**9.013 613**
2000	120	180	1	**9.013 614**
3000	150	180	1	**9.013 615**
5000	180	210	1	**9.013 616**

2



3 Measuring jugs with handle, 18/10 steel

Graduated 200 ml.
Heavy duty. With spout and handle.

Bochem

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
1000	100	140	1	**9.275 850**
2000	130	170	1	**9.275 852**

3



4 LLG-Griffin beakers, PP

According to ISO 7056. Printed blue graduations.

Capacity ml	Grad. ml	Diam. mm	Height mm	PK	Cat. No.
25	5	32	47	2	**9.013 670**
50	10	39	60	2	**9.013 671**
100	10	50	70	2	**9.013 672**
250	25	67	93	2	**9.013 673**
500	50	88	119	2	**9.013 674**
1000	50	109	147	2	**9.013 675**
2000	100	133	184	1	**9.013 676**

4



5 Griffin beakers, PP

Highly transparent. With easily readable, blue printed scale.
To preserve markings, cleaning at no higher than 60°C is recommended.
Food-safe product according to EC Directive No. 10/2011.

VITLAB

Material	Capacity ml	Grad. ml	Diam. mm	Height mm	PK	Cat. No.
PP*	10**	2	30	36	1	**9.013 208**
PP	25**	5	38	50	1	**9.013 220**
PP	50**	10	47	60	1	**9.013 228**
PP	100	10	55	70	1	**9.013 238**
PP*	150	20	66	80	1	**9.013 244**
PP	250	25	77	95	1	**9.013 248**
PP*	400	50	87	112	1	**9.013 209**
PP	500	50	94	118	1	**9.013 254**
PP*	600	50	100	127	1	**9.013 256**
PP	1000	100	120	147	1	**9.013 262**
PP	2000	200	149	187	1	**9.013 264**
PP	3000	250	170	212	1	**9.013 266**
PP	5000	500	203	247	1	**9.013 270**

* Supplementary to ISO 7056
**blue printed scale, not raised

5



Beaker made of PTFE - please see page 1110.



1 Griffin beakers PMP

Crystal clear. With easily readable, printed red scale. *VITLAB*
To preserve markings, cleaning at no higher than 60°C is recommended.

Material	Capacity	Grad.	Diam.	Height	PK	Cat. No.
	ml	ml	mm	mm		
PMP*	10	2	30	36	1	**9.013 315**
PMP	25	5	38	50	1	**9.013 320**
PMP	50	10	47	60	1	**9.013 328**
PMP	100	10	55	70	1	**9.013 338**
PMP*	150	20	66	80	1	**9.013 344**
PMP	250	25	77	95	1	**9.013 348**
PMP*	400	50	87	112	1	**9.013 350**
PMP	500	50	94	118	1	**9.013 354**
PMP*	600	50	100	127	1	**9.013 356**
PMP	1000	100	120	147	1	**9.013 362**
PMP	2000	200	149	187	1	**9.013 364**
PMP	3000	250	170	212	1	**9.013 366**
PMP	5000	500	203	247	1	**9.013 370**

* Supplementary to ISO 7056



2 LLG-measuring jugs, PP

According to ISO 7056. Printed blue graduations. Stackable.

Capacity	Grad.	Diam.	Height	PK	Cat. No.
ml	ml	mm	mm		
250	5	75	115	2	**9.013 680**
500	10	100	137	2	**9.013 681**
1000	10	125	167	2	**9.013 682**
2000	20	148	217	1	**9.013 683**
3000	25	170	244	1	**9.013 684**





3 4 Graduated jugs, PP, moulded graduations

Highly transparent. *VITLAB*
With a raised scale and stable, easy-grip handle.
Autoclavable at 121°C (2 bar) according to DIN EN 285.
Food-safe (suitable for contact with foodstuff in accordance with Regulation (EC) No. 10/2011).
To preserve markings, do not clean at temperatures exceeding 60ºC. Conditionally autoclavable at 121°C (2 bar) according to DIN EN 285. For autoclaving, we recommend the design with raised graduations.

Capacity	Grad.	Diam.	Height	Graduations	PK	Cat. No.
ml	ml	mm	mm			
50	2	40	70	transparent	1	**7.008 977**
100	2	50	80	transparent	1	**7.008 978**
250	5	70	120	transparent	1	**7.008 967**
500	10	91	133	transparent	1	**7.008 969**
1000	20	116	170	transparent	1	**7.008 971**
2000	50	150	215	transparent	1	**7.008 973**
3000	50	170	242	transparent	1	**7.008 975**
5000	100	210	270	transparent	1	**7.008 976**
50	2	40	70	blue	1	**9.275 772**
100	2	50	80	blue	1	**9.275 773**
250	5	70	120	blue	1	**9.275 748**
500	10	91	133	blue	1	**9.275 775**
1000	10	116	170	blue	1	**9.275 776**
2000	20	150	215	blue	1	**9.275 777**
3000	50	170	242	blue	1	**9.275 778**
5000	100	210	270	blue	1	**9.275 779**



5 Graduated jugs, PP, black graduations

Stackable. Highly transparent. *VITLAB*
With easily readable, printed black scale on both sides and stable handle.
The volume is thus easy to read for either hand. To preserve markings, do not clean at temperatures exceeding 60ºC.
For autoclaving we recommend the design with raised graduations (cat. nos. 7.008 967 and 7.008 978).
Food-safe (suitable for contact with foodstuff in accordance with Regulation EC No. 10/2011).

Capacity	Grad.	Diam.	Height	PK	Cat. No.
ml	ml	mm	mm		
250	5	75	115	1	**9.275 738**
500	10	100	140	1	**9.275 740**
1000	10	125	167	1	**9.275 742**
2000	20	148	212	1	**9.275 744**
3000	50	170	242	1	**9.275 746**

E & OE.

1 Graduated jugs, SAN, moulded graduations

Crystal clear. *VITLAB*
With a raised scale and stable, easy-grip handle.
Food-safe (suitable for contact with foodstuff in accordance with Regulation (EC) No. 10/2011).



Capacity	Grad.	Diam.	Height	PK	Cat. No.
ml	ml	mm	mm		
250	5	70	120	1	**7.008 966**
500	10	91	133	1	**7.008 968**
1000	10	116	170	1	**7.008 970**
2000	20	150	215	1	**7.008 972**
3000	50	170	242	1	**7.008 974**

2 Conical measures, PP, graduated

Graduated. Can withstand temperatures up to 120°C. With wide base for stability. *Kartell*



Capacity	Grad.	Height	PK	Cat. No.
ml	ml	mm		
100	2	118	1	**9.013 773**
250	5	164	1	**9.013 774**
500	10	183	1	**9.013 775**
1000	20	263	1	**9.013 776**





1 Erlenmeyer flasks, Borosilicate glass 3.3, narrow neck

DIN ISO 1773. With graduations and beaded rim.

Capacity ml	Neck diam. mm	External flask diam. mm	Height mm	PK	Cat. No.
25	22	42	70	10	**9.141 079**
50	22	51	85	10	**9.141 080**
100	22	64	105	10	**9.141 081**
200	34	79	131	10	**9.141 085**
250	34	85	140	10	**9.141 082**
300	34	87	156	10	**9.141 086**
500	34	105	175	10	**9.141 083**
1000	42	131	220	10	**9.141 084**
2000	50	166	280	6	**9.141 087**
3000	50	187	310	6	**9.141 088**
5000	50	220	365	2	**9.141 089**



2 Erlenmeyer flasks, narrow neck, DURAN®

DURAN®. DIN ISO 1773. Narrow neck. With approximate graduations and beaded rim. *DURAN Group*
Uniform wall thickness distribution makes these beakers ideal for heating applications.
Erlenmeyer flasks are well suited for mixing, because of their conical shape.
Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. With Retrace Code (Batch Identification), certificate available via the Internet.

Capacity ml	Bottom diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
25	42	22	75	1	**9.141 014**
50	51	22	90	1	**9.141 017**
100	64	22	105	1	**9.141 024**
125	67	28	112	1	**9.141 028**
150*	74	28	118	1	**6.234 510**
200*	79	34	131	1	**9.141 032**
250	85	34	145	1	**9.141 036**
300*	87	34	156	1	**9.141 039**
500	105	34	180	1	**9.141 044**
800	120	42	200	1	**9.141 053**
1000	131	42	220	1	**9.141 054**
2000	166	50	280	1	**9.141 063**
3000	187	52	310	1	**9.141 068**
5000	220	52	365	1	**9.141 073**

* Not to DIN.



3 Erlenmeyer flasks DURAN® Super Duty, narrow neck

With approximate graduations. Reinforced sturdy rim, and increased mechanical strength for heavy duty. Glass type I/neutral glass as per USP, EP and JP. *DURAN Group*
With Retrace Code (Batch Identification) certificate available via the Internet. Autoclavable.

Capacity ml	Bottom diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
25	42	22	75	1	**9.141 270**
50	51	22	90	1	**9.141 271**
100	64	22	105	1	**9.141 272**
250	85	34	145	1	**9.141 273**
500	105	34	180	1	**9.141 274**
1000	131	42	220	1	**9.141 275**
2000	166	50	280	1	**9.141 276**
5000	220	52	365	1	**9.141 277**



4 Narrow neck-Flasks, conical, Pyrex®

NEW!

- Complies with ISO 1773 and DIN 12353 *Scilabware*
- Erlenmeyer pattern
- Manufactured from Pyrex® borosilicate glass for highest resistance to thermal shock and chemical corrosion

Capacity ml	Neck diam. mm	External flask diam. mm	Height mm	PK	Cat. No.
50	18	51	85	10	**9.014 030**
100	18	64	105	10	**6.253 785**
250	34	85	145	10	**6.253 751**
500	34	105	180	10	**9.014 031**
1000	42	131	220	10	**7.656 279**
2000	50	166	280	10	**9.014 032**

E & OE.

1 Erlenmeyer flasks, Borosilicate glass 3.3, wide neck

DIN ISO 24450. With graduations and beaded rim.

Capacity ml	Neck diam. mm	External flask diam. mm	Height mm	PK	Cat. No.
25	32	42	70	10	**9.141 186**
50	34	51	85	10	**9.141 180**
100	34	64	105	10	**9.141 181**
200	50	79	131	10	**9.141 187**
250	50	85	135	10	**9.141 182**
300	50	87	156	10	**9.141 183**
500	50	105	170	10	**9.141 184**
1000	50	131	215	10	**9.141 185**
2000	72	153	280	6	**9.141 188**



2 Erlenmeyer flasks, DURAN®, wide neck

DIN EN ISO 24450. Wide neck. With approximate graduations and beaded rim. *DURAN Group*
With Retrace Code (Batch Identification), certificate available via the Internet.
Uniformly wall thickness. Glass type I/neutral glass as per USP, EP and JP. Autoclavable.

Capacity ml	Bottom diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
25*	43	31	70	1	**9.141 114**
50	51	34	85	1	**9.141 117**
100	64	34	105	1	**9.141 124**
200	79	50	131	1	**9.141 132**
250	85	50	140	1	**9.141 136**
300	87	50	156	1	**9.141 139**
500	105	50	175	1	**9.141 144**
1000	131	50	220	1	**9.141 154**
2000*	153	72	276	1	**9.141 163**

* Not to DIN.



3 Erlenmeyer flasks DURAN® Super Duty, wide neck

With approximate graduations. Reinforced, sturdy rim and increased mechanical strength for heavy duty. Glass Type I/neutral glass as per USP, EP and JP. With retrace code (Batch Identification). Certificate available via the Internet. Autoclavable. *DURAN Group*

Capacity ml	Bottom diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
100	64	34	105	1	**9.141 280**
250	85	50	140	1	**9.141 281**
500	105	50	175	1	**9.141 282**
1000	131	50	220	1	**9.141 283**



4 Flasks, conical, wide neck, Pyrex®

NEW!

Scilabware

- Complies with ISO 24450
- Erlenmeyer pattern
- Manufactured from Pyrex® borosilicate glass
- Excellent thermal performance
- High resistance to chemical attack
- White enamel graduations and marking spot

Capacity ml	Neck diam. mm	External flask diam. mm	Height mm	PK	Cat. No.
100	30	64	110	10	**9.014 033**
250	46	85	140	10	**6.252 200**
500	46	105	175	10	**9.014 034**





1 Flasks, conical, wide neck, heavy duty, graduated, Pyrex®

NEW!

Scilabware

- Mechanically stronger than conventional Erlenmeyers
- Reinforced rims for extra strength and resistance to impact fracture
- Manufactured from high quality Pyrex® borosilicate glass
- White graduations and marking spot

Capacity ml	Height mm	Ext. diam. mm	Neck diam. mm	NS	PK	Cat. No.
125	109	66	27	27	12	**6.254 447**
250	134	81	33	33	12	**6.253 743**
500	170	97	43	43	6	**6.902 292**



2 Erlenmeyer flasks, borosilicate glass 3.3, with screw neck

Isolab

Borosilicate glass 3.3. Resistant to heat and almost all chemicals.
Ideal for contamination free storage of culture specimen and media. Inscriptions are in white enamel which is specially designed for glass use. Autoclavable flasks and PP screw caps are resistant up to 121°C.

Capacity ml	Height mm	Neck thread GL	PK	Cat. No.
100	110	32	1	**9.141 100**
250	145	32	1	**9.141 101**
500	180	32	1	**6.242 393**
1000	225	32	1	**9.141 102**



3 Erlenmeyer flasks, DURAN®, with screw neck

DURAN Group

DURAN®. With DIN screw neck, PBT-screwthread cap (autoclavable up to 180°C), and approximate graduations. The flask is suitable for storage and cultivation.
Glass Type I/neutral glass as per USP, EP and JP. Autoclavable; undo cap before autoclaving.
With retrace code (Batch Identification). Certificate via internet.

Capacity ml	Diam. mm	Height mm	Neck thread GL	PK	Cat. No.
100	64	109	25	1	**9.141 224**
250	85	149	32	1	**9.141 236**
500	105	180	32	1	**9.141 244**
1000	131	225	32	1	**9.141 254**



4 Erlenmeyer flasks, PP

VITLAB

Highly transparent, wide-mouth, can also be used with NS stoppers (not included).
Suitable for storage and cultivation of cell cultures.
Safer than glass flasks for use in incubator shakers due to the break resistance of plastic.
Suitable for microwaves. To preserve markings, do not clean at temperatures exceeding 60ºC
Food-safe product according to EC Directive No. 10/2011.

Capacity ml	Grad. ml	Neck thread GL	Stopper NS	PK	Cat. No.
50	10	40	34/35	1	**9.141 381**
100	20	40	34/35	1	**9.141 382**
250	50	52	45/40	1	**9.141 383**
500	100	52	45/40	1	**9.141 384**
1000	200	52	45/40	1	**9.141 385**

Buffle flasks - please see page 1252.

E & OE.

1 Boiling flasks, flat bottom, narrow neck, Pyrex®

NEW!

Scilabware

- Complies with ISO 1773
- Flat base for standing on benches and hotplates etc.
- Manufactured from Pyrex® glass for high resistance to thermal shock
- Excellent chemical durability for contamination-free performance
- With white enamel marking spot

Capacity ml	Neck diam. mm	External flask diam. mm	Height mm	PK	Cat. No.
100	18	64	110	10	**9.014 020**
250	30	85	140	10	**9.014 021**
1000	36	131	200	10	**9.014 022**



2 Flat bottom flasks, DURAN®, wide neck

DURAN Group

DIN ISO 24450 (wide mouth), DIN ISO 1773 (narrow mouth). With beaded rim.
Glass Type I/neutral glass as per USP, EP and JP. Uniform wall thickness distribution makes these beakers ideal for heating applications. Flat base means flasks can be set down without a supporting ring.
Autoclavable.

Capacity ml	Diam. mm	Neck diam. mm	Height mm	Description	PK	Cat. No.
50	51	34	90	wide mouth	1	**9.141 717**
100	64	34	105	wide mouth	1	**9.141 724**
250	85	50	138	wide mouth	1	**9.141 736**
500	105	50	163	wide mouth	1	**9.141 744**
1000	131	50	190	wide mouth	1	**9.141 754**
2000*	166	76	230	wide mouth	1	**9.141 763**
2000	166	50	230	wide mouth	1	**9.141 764**
250	85	34	138	narrow mouth	1	**9.141 636**
500	105	34	136	narrow mouth	1	**9.141 644**
1000	131	42	190	narrow mouth	1	**9.141 654**
2000**	166	42	250	narrow mouth	1	**9.141 664**
4000	207	50	275	narrow mouth	1	**9.141 671**
5000	223	50	290	narrow mouth	1	**9.141 673**
6000	237	65	315	narrow mouth	1	**9.141 676**
10000	280	65	360	narrow mouth	1	**9.141 686**

* Non to DIN, with reinforced rim.
**Not to ISO.



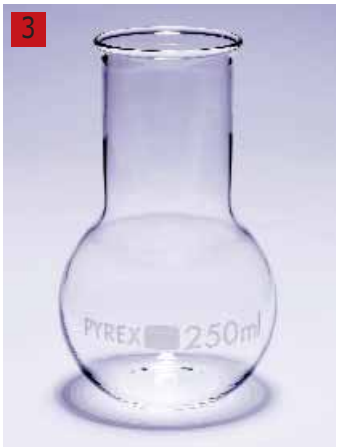
3 Flasks, boiling, flat bottom, wide neck, Pyrex®

NEW!

Scilabware

- Complies with ISO 24450
- With wide neck to facilitate easy addition of solid samples etc.
- Flat base for standing on benches and hotplates etc.
- Manufactured from Pyrex® glass for high resistance to thermal shock
- Excellent chemical durability for contamination-free performance

Capacity ml	Neck diam. mm	External flask diam. mm	Height mm	PK	Cat. No.
250	47	84	140	10	**9.014 023**
500	47	103	170	10	**9.014 024**
1000	47	131	200	10	**9.014 025**



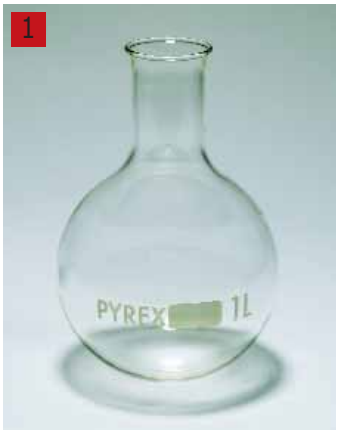
4 Round bottom flasks, DURAN®, narrow neck

DURAN Group

To DIN ISO 1773. Narrow neck. With beaded rim.
Glass Type I/neutral glass as per USP, EP and JP. Autoclavable.

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
50	51	26	95	1	**9.141 417**
100	64	26	110	1	**9.141 424**
250	85	34	144	1	**9.141 436**
500	105	34	168	1	**9.141 444**
1000	131	42	200	1	**9.141 454**
2000	166	42	260	1	**9.141 464**
3000	185	50	260	1	**9.141 468**
4000	207	52	290	1	**9.141 471**





1 Flasks, boiling, round bottom, narrow neck, Pyrex®

NEW!

Scilabware

- Complies with ISO 1773
- Manufactured from Pyrex® borosilicate glass which offers excellent resistance to chemical corrosion and thermal shock

Capacity ml	Neck diam. mm	External flask diam. mm	Height mm	PK	Cat. No.
100	18	65	115	10	**9.014 026**
250	30	85	144	10	**9.014 027**
500	30	105	175	10	**9.014 028**
1000	36	131	200	10	**9.014 029**



2 Kjeldahl flasks, DURAN®

To DIN 12360. With beaded rim.

DURAN Group

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
100	60	22	200	1	**9.141 824**
250	81	34	270	1	**9.141 836**
500	101	34	300	1	**9.141 844**
750	115	34	340	1	**9.141 851**
1000	126	34	350	1	**9.141 854**

Note: special sizes available on request.



3 Flask rings, pressed cork

Height 30mm.

For flasks ml	Ext. diam. mm	Int. diam. mm	PK	Cat. No.
10 / 100	80	30	1	**9.143 003**
250 / 500	110	60	1	**9.143 006**
1000 / 2000	140	90	1	**9.143 009**
3000	170	120	1	**9.143 012**
4000	210	150	1	**9.143 015**



4 Flask ring, PP.

Provides a secure base for round bottom flasks from 10ml to 10000ml capacity.

Kartell

Diam. mm	Height mm	PK	Cat. No.
170	50	1	**9.143 040**

E & OE.

1 Flask support rings, "BiBase".



Double sided. Sits firmly on the bench to support round-bottomed flasks.
- Very soft and easy to clean
- Resistant to chemicals
- Good thermal and electric insulation
- Excellent adhesion with glass
- Non-slip

Available in two qualities:
Black rubber, good adhesion to glass.
Blue silicone elastomer, resistant to oxidation and temperatures from -60 to +200°C.

For flasks:	Narrow dia./Wide dia. /Height:
50 to 500ml:	46mm/80mm/30mm
500 to 2000ml:	80mm/120mm/40mm
2000 to 6000ml:	120mm/162mm/45mm

Material	For flasks ml	Max. kg	PK	Cat. No.
Rubber	50 to 500	13	1	**9.143 031**
Rubber	500 to 2000	18	1	**9.143 032**
Rubber	2000 to 6000	30	1	**9.143 033**
Silicone elastomer	50 to 500	13	1	**9.143 035**
Silicone elastomer	500 to 2000	18	1	**9.143 036**
Silicone elastomer	2000 to 6000	30	1	**9.143 037**

2 Stabilizing rings/Weighting rings



LAB-Rings to stabilise glassware and plasticware on shakers or to immerse in water baths.
Vinyl-coated lead rings will not mark or scratch benchtops and labware.

Type	For flasks ml	Int. diam. mm	PK	Cat. No.
O-Shape	5 to 10	18	1	**7.072 085**
O-Shape	125 to 500	48	1	**6.243 010**
O-Shape	250 to 1000	51	1	**6.242 742**
O-Shape	500 to 2000	57	1	**6.243 011**
O-Shape	1000 to 4000	70	1	**7.054 161**
C-Shape	125 to 500	42	1	**9.149 902**
C-Shape	250 to 1000	51	1	**9.149 905**
C-Shape	500 to 2000	54	1	**9.149 906**
C-Shape	1000 to 4000	66	1	**9.149 907**

3 Lab sleeves



Lead. Cylindrical, with opening. Provides a stable bench support for a variety of vessels, or used to sink flasks in waterbaths. Sealed in strong PVC. Flexible. Can be opened, closed or adapted to the diameter of the laboratory flask.

For diam. mm	Int. diam. mm	Weight g	PK	Cat. No.
48 to 59	53	240	1	**9.149 916**
59 to 73	66	460	1	**9.149 917**
73 to 90	80	600	1	**9.149 918**
90 to 110	100	750	1	**9.149 919**

Water baths - please see page 760.





1 Test tubes, round bottom, AR-Glas®

NEW!

Heavy wall. Rimless, with round bottom.

Ext. diam. mm	Length mm	Wall thickness mm	PK	Cat. No.
8	40	0.8	200	**9.400 004**
10	70	0.8	100	**9.400 007**
12	75	0.8	100	**9.400 009**
15	85	0.8	100	**9.400 011**
10	100	0.8	100	**9.400 015**
12	100	0.8	100	**9.400 017**
14	100	0.8	100	**9.400 020**
16	100	1.0	100	**9.400 022**
14	130	0.8	100	**9.400 030**
16	160	1.0	100	**9.400 040**
18	180	1.0	100	**9.400 050**



2 LLG-Test tubes, Fiolax® glass

Round bottom test tubes made of high quality Fiolax® glass with beaded rim.

Diam. mm	Height mm	Wall thickness mm	PK	Cat. No.
8	70	0.5	100	**7.190 001**
10	100	0.5	100	**6.234 026**
12	75	0.5	100	**7.613 795**
12	100	0.5	100	**7.190 011**
14	130	0.5	100	**7.606 374**
16	130	0.6	100	**7.606 375**
16	160	0.6	100	**7.190 021**
18	180	0.6	100	**7.190 023**
20	180	0.6	100	**7.190 028**



3 Test tubes, Fiolax® glass, with rim

Fiolax®. Round bottom with rim. Light-walled and resistant to rapid temperature changes and localised heating. *DURAN Group*

Diam. mm	Height mm	Wall thickness mm	PK	Cat. No.
8	70	0.4-0.5	100	**9.190 001**
10	75	0.4-0.5	100	**9.190 003**
10	100	0.4-0.5	100	**9.190 006**
12*	75	0.4-0.5	100	**9.190 008**
12	100	0.4-0.5	100	**9.190 011**
14	130	0.4-0.5	100	**9.190 013**
16*	130	0.5-0.6	100	**9.190 016**
16	160	0.5-0.6	100	**9.190 021**
18	180	0.5-0.6	100	**9.190 023**
20	150	0.5-0.6	100	**9.190 026**
20	180	0.5-0.6	100	**9.190 028**
25	150	0.6-0.7	50	**9.190 033**
25	200	0.6-0.7	50	**9.190 036**
30	200	0.7-0.8	50	**9.190 038**

* Non DIN size.



4 LLG-Test tubes, AR® soda-lime glass

Test tubes with round bottom made out of AR®-Glass.
Hydrolytic resistance: Class HGB 3 acc. to ISO 719, Type III acc. to C - USP.

Diam. mm	Height mm	Wall thickness mm	Description	PK	Cat. No.
8	70	0.5	with beaded rim	100	**6.201 034**
10	100	0.5	with beaded rim	100	**6.801 073**
12	100	0.5	with beaded rim	100	**7.607 198**
14	130	0.5	with beaded rim	100	**6.800 620**
16	130	0.6	with beaded rim	100	**6.800 382**
16	160	0.6	with beaded rim	100	**7.600 405**
20	180	0.6	with beaded rim	100	**7.607 778**
25	150	0.9	with beaded rim	50	**6.800 621**
30	200	0.9	with beaded rim	50	**7.600 324**
30	100	1.0	without rim	100	**6.267 806**
15	100	1.0	without rim	100	**7.651 872**
16	120	1.0	without rim	100	**7.651 871**
18	130	1.0	without rim	100	**7.652 552**

1 Test tubes, AR® soda-lime glass, heavy wall

Rimless, with round bottom (0.7 to 1.0 mm wall thickness).

Diam. mm	Height mm	Wall thickness mm	PK	Cat. No.
8	40	0.7 ± 0.03	100	**9.190 200**
10	70	0.9 ± 0.04	100	**9.190 202**
10	100	0.9 ± 0.03	100	**9.190 205**
12	75	0.7 ± 0.04	250	**6.258 821**
12	100	0.7 ± 0.04	250	**6.258 822**
14	100	0.9 ± 0.04	250	**6.258 823**
14	130	0.9 ± 0.04	250	**6.258 824**
16*	100	0.8 ± 0.04	250	**6.258 825**
16*	160	0.8 ± 0.04	250	**6.258 826**
18*	180	1.0 ± 0.05	250	**6.258 827**

* Suitable for Kapsenberg caps.



2 Test tubes with spout, AR® soda glass

With spout and round bottom. 0.1ml graduations.

Diam. mm	Height mm	Wall thickness mm	PK	Cat. No.
12	110	0.70	1	**9.190 305**
13	160	1.00	1	**9.190 310**
15	200	0.90	1	**9.190 320**



3 Test tubes, DURAN®, with or without rim

Available rimmed or rimless. DURAN® test tubes have a heavier wall and considerable mechanical strength and excellent resistance to temperature changes.
Glass Type I/neutral glass as per USP, EP and JP. Autoclavable.

DURAN Group

Diam. mm	Height mm	Wall thickness mm	With rim	PK	Cat. No.
8	70	0.8 - 1.0	with	100	**9.190 101**
10	75	0.8 - 1.0	with	100	**9.190 103**
10	100	0.8 - 1.0	with	100	**9.190 106**
12	75	0.8 - 1.0	with	100	**9.190 108**
12	100	0.8 - 1.0	with	100	**9.190 111**
13	100	0.8 - 1.0	with	100	**9.190 112**
14	130	0.8 - 1.0	with	100	**9.190 113**
16	130	1.0 - 1.2	with	100	**9.190 116**
16	160	1.0 - 1.2	with	100	**9.190 121**
18	180	1.0 - 1.2	with	100	**9.190 123**
20	150	1.0 - 1.2	with	100	**9.190 126**
20	180	1.0 - 1.2	with	100	**9.190 128**
25	150	1.0 - 1.2	with	50	**9.190 133**
25	200	1.0 - 1.2	with	50	**9.190 136**
30	200	1.0 - 1.4	with	50	**9.190 138**
8	70	0.8 - 1.0	without	100	**9.190 151**
10	75	0.8 - 1.0	without	100	**9.190 153**
10	100	0.8 - 1.0	without	100	**9.190 156**
12	75	0.8 . 1.0	without	100	**9.190 158**
12	100	0.8 - 1.0	without	100	**9.190 161**
13	100	0.8 - 1.0	without	100	**9.190 162**
14	130	0.8 - 1.0	without	100	**9.190 163**
16	130	1.0 - 1.2	without	100	**9.190 166**
16	160	1.0 - 1.2	without	100	**9.190 171**
18	180	1.0 - 1.2	without	100	**9.190 173**
20	150	1.0 - 1.2	without	100	**9.190 176**
20	180	1.0 - 1.2	without	100	**9.190 178**
25	150	1.0 - 1.2	without	50	**9.190 183**
25	200	1.0 - 1.2	without	50	**9.190 186**
30	200	1.0 - 1.4	without	50	**9.190 188**



Test tube stands - please see page 40.



1 Test tubes with ground glass joint, without graduation, with stopper, DURAN® tubing

Made of DURAN® tubing. Round bottom test tubes with NS socket whit PE stopper. *Lenz*

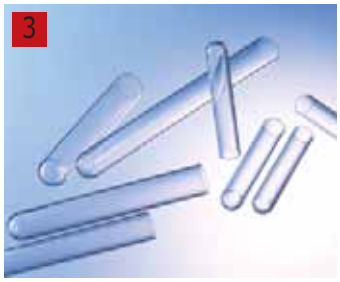
Length mm	Ext. diam. mm	NS	PK	Cat. No.
100	16	14/23	1	**9.190 410**
160	16	14/23	1	**9.190 416**
180	18	14/23	1	**9.190 418**



2 Test tubes, borosilicate glass 3.3, graduated, NS, with stopper

Wall thickness approx. 1.2mm. With NS ground socket and PP stopper. *BRAND*
Graduations of approx. volume and markings are in high contrast white enamel.
Supplied singly.

Capacity ml	Grad. ml	NS	Diam. mm	Height mm	PK	Cat. No.
10	0.10	12/21	15	165	1	**9.190 508**
20	0.20	14/23	17	200	1	**9.190 516**
25	0.20	14/23	17	220	1	**9.190 521**
30	0.50	14/23	19	220	1	**9.190 524**



3 Test tubes and centrifuge tubes, PS

Round or conical bottom.

Capacity ml	Diam. mm	Height mm	Description	PK	Cat. No.
2.0	10.5	40	round bottom	3000	**9.400 505**
3.5	11.0	63	round bottom	3000	**9.400 520**
4.0	11.0	70	round bottom	2880	**9.400 530**
4.0	12.0	55	round bottom	3600	**6.510 405**
5.0	12.0	75	round bottom	2000	**9.400 532**
10.0	14.0	100	round bottom	1400	**9.400 562**
12.0	16.0	100	round bottom	1600	**9.400 564**
14.0	17.0	100	round bottom	1500	**9.400 565**
20.0	16.0	152	round bottom	1500	**9.400 590**
4.5	12.0	75	conical bottom	3600	**9.400 901**
13.0	16.5	103	conical bottom	1500	**9.400 908**



4 Culture tubes, Borosilicate glass, screw cap

For culture growth, transport and storage. Heavy walled, thickness 1.1mm. *schuett-biotec*
Wide neck for easy inoculation and cleaning. Complete with aluminium or plastic screw cap
and rubber sealing gasket. The 15ml size is specifically designed for use in centrifuges. Autoclavable.

Capacity ml	Diam. mm	Height mm	Screw cap	PK	Cat. No.
15	16	98	Aluminium	100	**9.010 612**
20	16	150	Aluminium	100	**9.190 600**
15	16	98	Plastic	100	**9.010 613**
20	16	150	Plastic	100	**9.190 605**
50	25	150	Plastic	100	**9.010 620**

E & OE.

1 Tubes, glass, culture, screw cap, Soda-lime glass

NEW!

Autoclavable. For culture growth, transport and storage. Complete with aluminium or plastic screw cap and rubber sealing gasket. The 5ml size has a frosted marking area.

schuett-biotec

Further sizes available on request.



Capacity ml	Diam. mm	Height mm	Screw cap	PK	Cat. No.
3	12	35	Aluminium	100	**9.010 608**
5	14	50	Aluminium	100	**9.010 602**
15	27	45	Aluminium	100	**6.266 815**
20	27	50	Aluminium	100	**6.264 629**
30	27	75	Aluminium	100	**6.266 816**
5	14	50	Plastic	100	**9.010 603**
15	27	45	Plastic	100	**9.010 610**
20	27	50	Plastic	100	**9.010 611**
30	27	75	Plastic	100	**9.010 601**

Storage cases for culture tubes

For the protective storage and transportation of culture tubes.

schuett-biotec

Material	For	PK	Cat. No.
Polystyrene	50 jars, 35x12mm	1	**9.010 609** 2
Polypropylene, autoclavable	50 jars, 35x12mm	1	**9.010 614**
Polypropylene, box black, autoclavable	49 jars, 50x14mm	1	**9.010 606**
Wood	100 jars, 50x14mm	1	**9.010 605** 3



9.010 609

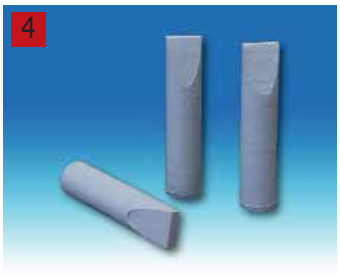


9.010 605

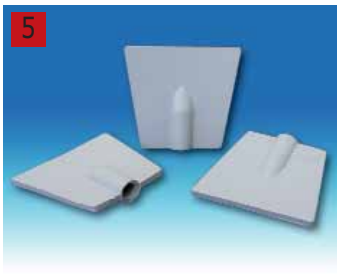
Test tube cleaners

Rubber. For removing heavy soiling from test tubes by scraping. With 5mm boring for rod. In various styles as indicated below.

Type	Form	Width mm	PK	Cat. No.
Rubber wiper	Rod-shaped	8	1	**9.190 901** 4
Rubber wiper	Spade-shaped	35	1	**9.190 902** 5
Test tube cleaner	4 blades	30	1	**9.190 903** 6



9.190 901



9.190 902



9.190 903

Glass bars - please see page 116.



1 LLG-Rubber stopper with turn over flange

NEW!

Manufactured from rubber or silicone. These stoppers guarantee perfect sealing even with poorly finished rims on glass or plastic bottles. The top of the stopper has a septum which can be punctured by a hypodermic needle. Very secure fit prevents accidental opening of the flask.

Diam. mm	PK	Cat. No.
7.1	10	**6.267 396**
10.2	10	**6.267 397**
12.7	10	**6.267 398**
14.9	10	**6.267 399**
15.9	10	**6.267 400**
19.4	10	**6.267 401**
23.7	10	**6.267 402**
30.7	10	**6.267 403**



2 LLG-Stoppers for test tubes, PE

For tubes diam. mm	Colour	PK	Cat. No.
12 to 13	neutral	100	**9.231 270**
12 to 13	blue	100	**9.231 271**
12 to 13	yellow	100	**9.231 272**
12 to 13	red	100	**9.231 273**
12 to 13	green	100	**9.231 274**
15 to 16	neutral	100	**9.231 275**
15 to 16	blue	100	**9.231 276**
15 to 16	yellow	100	**9.231 277**
15 to 16	red	100	**9.231 278**
15 to 16	green	100	**9.231 279**



3 Sealing caps for test tubes, versilic silicone

Transparent. Made of versilic silicone. Type number corresponds to outside diameter of the vessel to be sealed (glass, plastic or metal). Sealing caps have a slight taper and offer a very secure hold and are comfortable to use.

Saint Gobain

Ext. diam. mm	PK	Cat. No.
10	1	**9.231 510**
12	1	**9.231 512**
14	1	**9.231 514**
16	1	**9.231 516**
18	1	**9.231 518**
20	1	**9.231 520**
22	1	**9.231 522**
25	1	**9.231 541**
30	1	**9.231 530**
35	1	**9.231 532**
42	1	**9.231 534**
45	1	**9.231 535**
50	1	**9.231 536**



1 Rubber stoppers

DIN 12871. Solid. *Deutsch & Neumann*



Bottom diam. mm	Top diam. mm	Height mm	PK	Cat. No.
3.5	6.5	15	1	**9.230 203**
5.0	9.0	20	1	**9.230 205**
8.0	12.0	20	1	**9.230 208**
10.5	14.5	20	1	**9.230 210**
12.5	16.5	20	1	**9.230 212**
14.0	18.0	20	1	**9.230 214**
17.0	22.0	25	1	**9.230 217**
18.0	24.0	30	1	**9.230 218**
21.0	27.0	30	1	**9.230 221**
23.0	29.0	30	1	**9.230 223**
26.0	32.0	30	1	**9.230 226**
29.0	35.0	30	1	**9.230 229**
31.0	38.0	35	1	**9.230 231**
36.0	44.0	40	1	**9.230 236**
41.0	49.0	40	1	**9.230 241**
47.0	55.0	40	1	**9.230 247**
50.5	59.5	45	1	**9.230 250**
56.0	65.0	45	1	**9.230 256**
60.0	70.0	50	1	**9.230 260**
64.5	75.5	55	1	**9.230 264**
71.0	83.0	60	1	**9.230 271**
79.0	92.0	65	1	**9.230 279**
87.0	100.0	65	1	**9.230 287**
94.0	107.0	65	1	**9.230 294**

2 Silicone rubber stoppers

Transparent. To DIN 12871. Solid. Operating temperature up to 225°C. Supplied singly. *Deutsch & Neumann*



Bottom diam. mm	Top diam. mm	Height mm	PK	Cat. No.
3.5	6.5	15	1	**9.230 503**
5.0	9.0	20	1	**9.230 505**
8.0	12.0	20	1	**9.230 508**
10.5	14.5	20	1	**9.230 510**
12.5	16.5	20	1	**9.230 512**
14.0	18.0	20	1	**9.230 514**
17.0	22.0	25	1	**9.230 517**
18.0	24.0	30	1	**9.230 518**
21.0	27.0	30	1	**9.230 521**
23.0	29.0	30	1	**9.230 523**
26.0	32.0	30	1	**9.230 526**
29.0	35.0	30	1	**9.230 529**
31.0	38.0	35	1	**9.230 531**
36.0	44.0	40	1	**9.230 536**
41.0	49.0	40	1	**9.230 541**
47.0	55.0	40	1	**9.230 547**
50.5	59.5	45	1	**9.230 550**
56.0	65.0	45	1	**9.230 556**
60.0	70.0	50	1	**9.230 560**
64.5	75.5	55	1	**9.230 564**
71.0	83.0	60	1	**9.230 571**
79.0	92.0	65	1	**9.230 579**

3 4 Stoppers with turn-over flange

Silicone or natural rubber. These stoppers guarantee perfect sealing even with poorly finished rims on glass or plastic bottles. The top of the stopper has a septum which can be punctured by a hypodermic needle. Very secure fit prevents accidental opening.





Material	Diam. mm	PK	Cat. No.
Silicone	7.1	1	**9.230 481**
Silicone	10.2	1	**9.230 482**
Silicone	12.7	1	**9.230 483**
Silicone	14.9	1	**9.230 484**
Silicone	15.9	1	**9.230 485**
Silicone	19.4	1	**9.230 486**
Silicone	23.7	1	**9.230 487**
Silicone	30.7	1	**9.230 488**
Rubber	7.1	1	**9.230 650**
Rubber	10.2	1	**9.230 651**
Rubber	12.7	1	**9.230 652**
Rubber	14.9	1	**9.230 653**
Rubber	15.9	1	**9.230 654**
Rubber	19.4	1	**9.230 655**
Rubber	23.7	1	**9.230 656**
Rubber	30.7	1	**9.230 657**

1



1 Cork stoppers

A1 superb quality. Non-porous.

Bottom diam. mm	Top diam. mm	Height mm	PK	Cat. No.
3	6	16	1	**9.230 703**
6	9	17	1	**9.230 706**
7	10	18	1	**9.230 707**
8	11	20	1	**9.230 708**
9	12	20	1	**9.230 709**
10	13	22	1	**9.230 710**
12	15	22	1	**9.230 712**
14	17	22	1	**9.230 714**
15	18	22	1	**9.230 715**
16	19	23	1	**9.230 716**
18	22	26	1	**9.230 718**
20	24	27	1	**9.230 720**
22	26	27	1	**9.230 722**
24	28	27	1	**9.230 724**
26	30	27	1	**9.230 726**
28	32	27	1	**9.230 728**
30	34	27	1	**9.230 730**
32	36	27	1	**9.230 732**
34	38	27	1	**9.230 734**
36	40	27	1	**9.230 736**
38	42	27	1	**9.230 738**
41	45	27	1	**9.230 741**
45	50	30	1	**9.230 745**
50	55	30	1	**9.230 750**
55	60	30	1	**9.230 755**
60	65	30	1	**9.230 760**
65	70	30	1	**9.230 765**

2



2 Cork borers

Brass, with handles. *Juchheim Laborgeräte*

Diam. mm	PK	Cat. No.
5 - 11	1	**9.143 471**
5 - 15	1	**9.143 473**
5 - 19	1	**9.143 475**
5 - 26	1	**9.143 477**

Cellulose stoppers, Steristoppers® - please see page 1253.

3



3 Microtube Rack, PP

Grey. Numbered positions for 20 x 1.5ml microcentrifuge tubes. Autoclavable (121°C). *BRAND*
Accessories: Adapter (PP) for 0.5ml microtubes.

Array	Internal dimensions (W x L x H) mm	PK	Cat. No.
2 x 10	70 x 210 x 37	1	**9.409 380**
Adapter (20 Units)		20	**7.020 330**

E & OE.

1 Tube Rack, PP

Stackable racks with alphanumerical positions. Operating temperature -20°C to +90°C. *BRAND*
Autoclavable at 121°C (2 bar), acc. DIN EN 285. Density 1.2 g/cm³.
Will not float in water bath. Racks are supplied in two-pieces (Ø 11 mm, for micro tubes) or three-pieces (Ø 13 mm for cryogenic tubes) for convenient and permanent assembly. L x W x H in mm: 265 x 126 x 38.

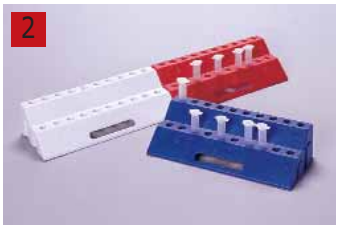


Array	Colour	For tubes diam. mm	Length mm	Width mm	Height mm	PK	Cat. No.
8 x 16	White	11	265	126	38	1	**9.409 308**
8 x 16	Blue	11	265	126	38	1	**9.409 309**
8 x 16	Red	11	265	126	38	1	**9.409 312**
8 x 16	Yellow	11	265	126	38	1	**9.409 313**
6 x 14	White	13	265	126	38	1	**9.409 314**
6 x 14	Blue	13	265	126	38	1	**9.409 316**
6 x 14	Red	13	265	126	38	1	**9.409 321**
6 x 14	Yellow	13	265	126	38	1	**9.409 323**

2 Microtube Rack, 20-Well, PP

Interlocking racks with 2 x 10 array hold 0.5/1.0/1.5/2.0ml tubes.

Polypropylene racks lock together on each side, permitting the user to attach several together to increase capacity. Features an innovative "hold-it" finger slot on the front, and internal ribbing for stability. Autoclavable.
Dimensions: 210mm x 90mm x 46mm.



Colour	PK	Cat. No.
blue	1	**9.409 088**

3 Microtube Rack 3-Way, PP

Polypropylene racks connect to one another on each end. Snap together for more tube storage. Convenient finger slots are moulded into the rack making them easy to pick up and move. Lowest level has 24 wells to hold individual 0.2ml tubes or strips of 8 or 12 tubes. Middle tier has 14 wells to hold 0.5ml tubes. Top tier has 12 wells to hold 1.5/2.0ml tubes. Autoclavable. Dimensions: 164mm x 123mm x 62mm
Package: 6 racks, colour assorted *Heathrow Scientific*



Colour	PK	Cat. No.
natural, blue, green, purple, yellow, orange	6	**9.193 990**

4 Microtube Racks, 80-Well, PP

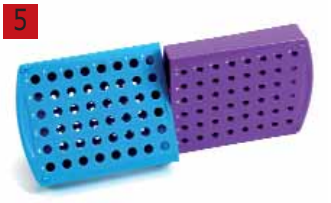
Autoclavable. Popular fraction collector plate-style rack. Easily load and transfer 80 tubes with 1.5ml or 2.0ml in a compact format (5 x 16 array). Polypropylene rack has moulded-in coordinates to aid organisation. Assorted colours.
Dimensions (L x W x H): 225mm x 67mm x 28mm.



Colour	PK	Cat. No.
Blue, green, pink, yellow and orange	5	**6.237 973**
Blue	1	**6.243 204**
Yellow	1	**6.243 205**
Natural	1	**6.243 206**
Orange	1	**6.243 207**
Pink	1	**6.243 208**
Green	1	**6.243 209**

5 Microtube Rack Rota-Rack® Duo

Works with PCR® tubes right next to centrifuge tubes. The 0.2ml tube wells oriented in standard 96-well format. Use with PCR® transfer trays. Rotate the rack to work either with 0.2ml tubes and 0.5ml tubes, with 0.2ml tubes and 1.5ml tubes or with 0.5ml tubes and 1.5ml tubes.
Or turn a module and work with a total of 96 x 1.5ml tubes. Quickly identify tubes with imprinted alphanumeric system.
Autoclavable. Dimensions (L x W x H): 296 x 118 x 34mm *Heathrow Scientific*



Type	PK	Cat. No.
Tube Rack Rota-Rack® Duo	1	**9.194 000**

1



1 Mircotube Rack (1.5ml), PP

Kartell

Two-tier, available in four different colours. These versatile racks are autoclavable and can be used dry, in water baths or in freezers. Each rack has an alpha-numeric reference for easy sample identification. Can accomodate 100x1.5ml tubes with closed caps or without caps, and 50x1.5ml tubes with open caps.
Racks are stackable even when loaded and have (purpose) designed label spaces on each side (for bar coding, etc.).

Array	Length mm	Width mm	Height mm	Colour	PK	Cat. No.
100	263	112	85	blue	1	**6.225 714**
100	263	112	85	yellow	1	**6.238 141**
100	263	112	85	grey	1	**6.226 179**
100	263	112	85	red	1	**6.401 579**

2



2 LLG-Microtube rack, stainless steel 18/10

This sloping, combination rack holds 48 x 0.2ml PCR tubes (suitable also for 8 and 12 strips), 30 x 0.5ml tubes and 12 x 1.5ml or 12 x 2.0ml tubes. Resistant against UV sterilisation, ideal for PCR workstations. Autoclavable and heat resistant (200°C).
Dimensions (L x W): 220 x 95mm. Height: front 20mm, back 45mm.

Type	PK	Cat. No.
LLG-Microtube Rack	1	**9.409 000**

3



9.409 015

4



9.409 017

LLG-Temperature block *exact*, aluminium

NEW!

Suitable for both cooling and heating, universally usable, uniform temperature distribution within the block, ideal for all temperature-sensitive applications.

Aluminum blocks with conical compartments and closed bottom for easy and precise tempering of reaction tubes and PCR tubes. The precisely adapted shape of the borings and the closed bottom offer advantages compared with cylindrical drilled blocks with open bottom, such as much better heat transfer and temperature accuracy.
Made of a special aluminum alloy with high thermal conductivity. Identical temperature conditions for all samples.
Compact size, requiring little space. Suitable for 96-well plates, 8 or 12 strips and single tubes.
Ideal for working with 8- or 12-channel pipettes. Blocks for different tube sizes and combinations of tube sizes as indicated, all working steps in one block, holes closed at the bottom and tapered to fit perfectly the respective tube sizes and offer an optimum heat exchange.

Description	PK	Cat. No.
LLG-aluminum block, 96 x 0.2 ml PCR tubes + 6 x 1.5 ml tubes	1	**9.409 015** 3
LLG-aluminum block, 36 x 0.5 ml tubes + 11 x 1.5 ml tubes	1	**9.409 016**
LLG-aluminum block, 24 x 1.5 ml tubes	1	**9.409 017** 4
LLG-aluminum block, 24 x 2.0 ml tubes	1	**9.409 018**
LLG-aluminum block, 25 x 2.0ml Cryogenic tubes with round bottom	1	**9.409 006**
LLG-aluminum block, 12 x 15.0ml Centrifuge tubes	1	**9.409 008**

5



5 Microtube racks, 96-Well, PP

Heathrow Scientific

Autoclavable. Polypropylene rack has 96 wells for 0.5ml microcentrifuge tubes on one side and 96 wells for 1.5ml to 2.0ml microcentrifuge tubes on the other side.
Wells are arranged in standard 8 x 12 array. Handy lid snaps into place via tabs on each end of rack.
Dimensions (L x W x H): 246mm x 121mm x 50mm.

Colour	PK	Cat. No.
Blue, green, pink, yellow and orange	5	**9.193 982**
Natural	1	**6.237 620**
Blue	1	**6.237 267**
Green	1	**6.237 268**
Pink	1	**6.237 621**
Yellow	1	**6.237 622**
Orange	1	**6.237 623**

1 Microtube racks 4-Way, PP

Heathrow Scientific

Build as large a rack as you need by linking together multiple rack units.
Racks feature a unique system of tabs and slots, which facilitate easy assembly and sturdy fit.
Heavy-duty polypropylene racks can hold 4 x 50ml or 12 x 15ml conical tubes,
32 x 1.5ml or 32 x 0.5ml microtubes. Autoclavable. Dimensions (L x W x H): 175 x 95 x 51mm.



Colour	PK	Cat. No.
Natural	1	**9.409 131**
Blue	1	**9.409 132**
Green	1	**9.409 133**
Pink	1	**9.409 134**
Yellow	1	**9.409 135**
Orange	1	**9.409 136**
Blue, green, pink, yellow, orange	5	**9.409 137**

2 Microtube Storage Boxes, 50-/100-Well, PP

Heathrow Scientific

Autoclavable. Compact storage box has angled front slot for easy access to tubes.
Rugged, polypropylene box has durable three-point hinges, snapping clasp for secure closure, moulded grid lines on lid, imprinted coordinates on bottom of base and imprinted and raised coordinates on tube wells. Ideal for sample or case study storage.Holds 1.5ml to 2.0ml microtubes.
Resist storage temperatures from -80°C up to +121°C.



no. of wells	Dimensions (l x w x h) mm	Colour	PK	Cat. No.
50	141 x 92 x 56	blue, green, purple, yellow, orange	5	**9.193 985**
50	141 x 92 x 56	natural	1	**6.243 162**
100	141 x 151 x 57	blue, green, purple, yellow, orange	5	**9.193 981**
100	141 x 151 x 57	natural	1	**6.206 710**

3 Tube Rack for 5ml microcentrifuge tubes, PP

NEW!

Bel-Art Products

Designed specifically for 40 x 5ml microcentrifuge tubes this rack will also accommodate other tubes with a diameter of 13 to 16mm. Made of durable and corrosion resistant white polypropylene. End plates have handles for easy transport and stacking
Steam autoclavable at 121°C
Dimensions (L x W x H): 260 x 113 x 105mm
Rows: 4 x 10



No. of tubes	For tubes diam. mm	PK	Cat. No.
40	13 - 16mm	1	**9.194 026**

4 Tube Rack Origami, PP

Tenak

The Origami Tube Rack is designed to be height adjustable which makes it very flexible and usable for almost any test tube on the market. Depending on the hole diameter the racks can be used for microcentrifuge tubes, cryovials, vacutainers, and 15ml and 50ml falcon tubes.
The Origami Tube Rack has a printed alphanumeric grid for easy location of the samples.
It is made of polypropylene and can be used in temperatures from -45°C to 60°C.
Dimensions (WxDxH): 240 x 120 x 140mm.



No. of tubes	For tubes diam. mm	PK	Cat. No.
45	12.5	5	**9.194 015**
28	18	5	**9.194 016**
15	30	5	**9.194 017**

5 Tube-Rack, PP, white, for 5ml tubes

NEW!

Eppendorf

- Numbered positions
- variable: 16 places for 5ml tubes or conical screw-cap tubes, 15ml
- Autoclavable (121°C, 20min)



No. of tubes	For tubes	PK	Cat. No.
16	5.0ml or 15.0ml	2	**9.409 292**

1



1 Tube Rack Adapt-a-Rack™, POM

NEW!

Heathrow Scientific

Capable of holding different size tubes in each available slot as the well literally adapts to your tube size to hold firming in an upright position. The design enables you to hold 12 to 30mm (5 to 50ml) tubes simultaneously and still allow full viewing of the tube label. Racks can be linked together for additional holding capacity. Autoclavable.
Dimensions (WxDxH): 181 x 56 x 76mm

Colour	PK	Cat. No.
Blue	2	**9.194 027**
Green	2	**9.194 028**
White	2	**9.194 029**

2



2 Rack for centrifuge tubes, PP

NEW!

Isolab

Suitable to hold 15 ml and 50 ml centrifuge tubes with conical bottom.
Just push the tubes into the cavities and leave them. Unique design has an angular end to provide easy stacking for space saving purpose. Moulded in alpha numeric grid reference on the rack allows easy sample identification.

Array	For tubes diam. mm	PK	Cat. No.
5 x 5	15	1	**6.267 412**
5 x 5	50	1	**6.267 413**

3



3 Tube rack, ABS

NEW!

Isolab

Made of "modified" high density ABS which enables the rack to be used in water baths.
Racks can be linked together to form a multiple rack system. Rod type spacious tube compartments are ideal for screw cap tubes of 15 ml and 50 ml. Unique rack design enables perfect adaptance of the tubes and allows easy viewing of the tube contents. Pegs hold the tubes firmly in place and remain straight even after repeated autoclaving. Interlocking system for linking the racks in multiple rows.

Array	For tubes ml	PK	Cat. No.
5 x 10	15	1	**6.267 416**
5 x 5	50	1	**6.267 417**

4



4 Storage box for centrifuge tubes with lid, PP

NEW!

Isolab

For storage of 15 ml and 50 ml screw cap centrifuge tubes. Chemically resistant to alcohols and mild organic solvents can resist temperature from -196°C to 121°C.
Printed alpha numeric grid reference on the top tier of the rack allows easy sample identification.
Transparent lid guarantees secure closure of the box while providing easy view to the interior.

Array	For tubes ml	PK	Cat. No.
6 x 6	15	1	**6.267 414**
4 x 4	50	1	**6.267 415**

5



5 Tube Rack with lid, 2 divided, PP

NEW!

Isolab

For storage of micro tubes. Stand has two sides and each side accomodates different size and combination of microcentrifuge tubes. First side can hold 96 pieces of 1.5ml tubes, and the other side holds 48 pieces of 0.5 ml tubes and also 96 pieces of 0.2 ml tubes.
Supplied with a clear polypropylene lid which covers the rack and protects the tubes from dust and other effects.
Alphanumerical index on tube rows enables easy identification of tubes.

Description	PK	Cat. No.
for 6x16 tubes of 1,5ml, 6x8 tubes of 0,5ml and 8x12 tubes of 0,2ml	1	**6.267 418**

E & OE.

1 PCR Multirack, PP

NEW!

Isolab

Fully autoclavable. This storage/working rack, with lid, is designed to work with different PCR volumes at the same time. It can accommodate up to 32 individual 0.2 ml PCR tubes, 24 pieces of 1.5/2.0 ml and 16 pieces of 0.5 ml microtubes. Tube wells are alpha-numerically matrixed with raised bold type for accurate sample identification. The rack also has a transparent lid for easy viewing of samples. Frosted writing panels on four sides allow labelling or writing. rack dimensions 215 x 118 x 50 mm

Description	PK	Cat. No.
Rack dimensions 215 x 118 x 50mm	1	**6.255 805**

1



2 Tube Rack pop-up™, foldable, PP

Heathrow Scientific

Robust polypropylene construction. Simple, easy to open and close. Flatten for compact storage. Pops up for instant use. Expand and collapse when racks are needed. Printed grid aids rapid retrieval. Stack racks in open or closed position. Saves space when racks are not in use. Not recommended for steam sterilisation. Dimensions (L x W x H): 255mm x 137mm x 72mm when expanded, 21mm high when collapsed.

Colour	For	PK	Cat. No.
Pink	21 x 15ml and 12 x 50ml tubes	2	**9.193 997**
Blue	21 x 15ml and 12 x 50ml tubes	2	**9.193 998**
Purple	45 x 15 ml tubes	2	**6.254 577**
Green	18 x 50 ml tubes	2	**6.254 578**

2



3 Tube Rack Rota-Rack®, PP

Heathrow Scientific

Interlocked racks. Rotate each of the four modules independently. Use several sizes of test tubes, culture tubes, centrifuge tubes or microcentrifuge tubes at the same time. Autoclavable.
Each module of the Rota-Rack® for large tubes holds 2 x 50ml tubes, 8 x 15ml tubes, 6 x 20mm tubes or 10 x 10/13mm tubes. Each module of the Rota-Rack® for microtubes holds 6 x 15ml tubes, 9 x 1.5/2.0ml tubes, 12 x 0.5ml tubes or 32 x 0.2ml PCR tubes or 4 x 8-tube strips.

Description	Length mm	Width mm	Height mm	PK	Cat. No.
Rota-Rack® for large tubes	224	110	110	1	**9.193 988**
Rota-Rack® for micro tubes	210	100	100	1	**9.193 989**

3



Tube Rack, epoxy-coated steel

Heathrow Scientific

Chemically resistant racks for transport or sample handling.

Typ A: Rack suitable for low profile tubes up to a diameter of 25mm or a diameter of 33mm. Mesh bottom support.

Typ B: Support capped tubes 15ml up to 20mm diameter 3x5 format or 50ml tubes up to 30mm diameter 2x4 format. Slotted bottom.

Typ C: Holds bottles 250ml up to 60mm diameter. Slotted bottom

Type	Array	For tubes diam. mm	Length mm	Width mm	Height mm	PK	Cat. No.
A	2 x 6	25	164	64	32	1	**9.194 021**
A	5 x 10	25	271	145	32	1	**9.194 022**
A	2 x 6	33	212	80	60	1	**9.194 023**
A	5 x 10	33	355	189	60	1	**9.194 024** 4
B	3 x 5	20	127	76	76	1	**6.243 203**
B	2 x 4	30	147	80	89	1	**6.239 754**
C	2 x 3	60	205	135	104	1	**9.194 025** 5

4



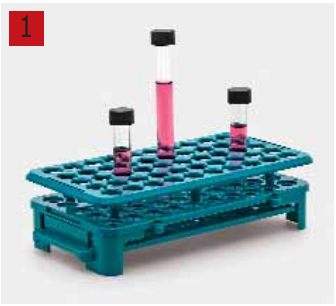
9.194 024

5



9.194 025

1



1 Rack for centrifuge tubes, ABS

NEW!

Isolab

Rack comes as "ready" unit and no assembly required.
Suitable to be used up to 16mm diameter tubes. Bottom of each tube compartment has a silicone gripping finger that holds the tube at centralised position not recommended for autoclaving.
For tube diameter 15 - 16 mm.
Tube quantity 50.
Tube array 5 x 10.

Array	For tubes diam. mm	PK	Cat. No.
5 x 10	15 - 16	1	**6.255 802**

2



2 Tube rack, PP

Isolab

Manufactured from high density polypropylene. Moulded-in alpha numeric grid reference on the top tier of the rack allows easy sample identification.
Due to their weights, they do not float in the water baths.
Rack dimensions 140mm x 275mm x 72mm

Array	For tubes diam. mm	PK	Cat. No.
50	12 - 13	1	**9.193 141**
50	15 - 16	1	**9.193 142**
50	17 - 18	1	**9.193 143**
45	18 - 20	1	**9.193 144**
26	28 - 30	1	**9.193 145**

3



3 Tube rack PP

Isolab

Manufactured from high density polypropylene. Due to their weights, they do not float in the water baths, not even in agitated water. These racks are supplied dismantled and can be easily assembled. A moulded-in alpha-numeric grid reference on the top tier of the rack allows easy sample identification.
Rack dimensions : 250mm x 110mm x 70mm

Array	For tubes diam. mm	PK	Cat. No.
6 x 15	13	1	**9.193 146**
5 x 12	16	1	**6.238 007**
4 x 10	20	1	**7.970 029**
3 x 8	25	1	**9.193 147**
3 x 7	30	1	**6.237 160**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

ISOLAB Laborgeräte GmbH

1 2 Test tube rack, PP

BRAND

PP. For all common test tube diameters. Very sturdy design. All openings are widely spaced apart to accommodate screw cap tubes. All racks have the same footprint and can be stacked easily when empty. Modified PP with greater density than water makes them ideal for use in water baths. Large marking area (60 x 12mm) for barcode labels and alphanumeric references for clear sample identification. Racks are supplied in three parts for quick and permanent assembly. Continuous use temperature -20 to +90°C. Autoclavable at 121°C (2 bar), according to DIN EN 285. Choice of colours as outlined below.





Array	For tubes diam. mm	Dimensions (l x w x h) mm	Colour	PK	Cat. No.
6 x 14	13	265 x 126 x 75	White	1	**9.193 240**
6 x 14	13	265 x 126 x 75	Blue	1	**9.193 241**
6 x 14	13	265 x 126 x 75	Red	1	**9.193 242**
6 x 14	13	265 x 126 x 75	Yellow	1	**9.193 243**
5 x 11	16	265 x 126 x 75	White	1	**9.193 230**
5 x 11	16	265 x 126 x 75	Blue	1	**9.193 231**
5 x 11	16	265 x 126 x 75	Red	1	**9.193 232**
5 x 11	16	265 x 126 x 75	Yellow	1	**9.193 233**
5 x 11	18	265 x 126 x 75	White	1	**9.193 245**
5 x 11	18	265 x 126 x 75	Blue	1	**9.193 246**
5 x 11	18	265 x 126 x 75	Red	1	**9.193 247**
5 x 11	18	265 x 126 x 75	Yellow	1	**9.193 248**
4 x 10	20	265 x 126 x 75	White	1	**9.193 250**
4 x 10	20	265 x 126 x 75	Blue	1	**9.193 251**
4 x 10	20	265 x 126 x 75	Red	1	**9.193 252**
4 x 10	20	265 x 126 x 75	Yellow	1	**9.193 253**
4 x 8	25	265 x 126 x 88	White	1	**9.193 255**
4 x 8	25	265 x 126 x 88	Blue	1	**9.193 256**
4 x 8	25	265 x 126 x 88	Red	1	**9.193 257**
4 x 8	25	265 x 126 x 88	Yellow	1	**9.193 258**
3 x 7	30	265 x 126 x 88	White	1	**9.193 260**
3 x 7	30	265 x 126 x 88	Blue	1	**9.193 261**
3 x 7	30	265 x 126 x 88	Red	1	**9.193 262**
3 x 7	30	265 x 126 x 88	Yellow	1	**9.193 263**

3 Tube standing and drying racks, PP

Heathrow Scientific

Autoclavable, fiberglass-reinforced polypropylene racks are ideal for bench work or storage of test tubes. Allows easy viewing of tube contents. Does not float in water baths. User can also turn tubes as well as electrophoresis and chromatography plates upside-down and use as a drying rack. The flexible peg design is suitable for tubes with a diameter of 10mm to 13mm and 14mm to 17mm. Includes embossed indexing and drainage holes.

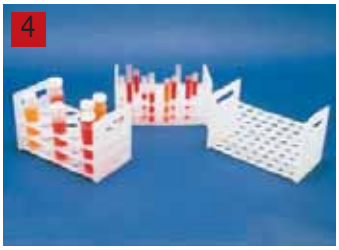


Colour	For tubes	No. of pegs	Length mm	Width mm	Height mm	PK	Cat. No.
White	14 to 17mm	50	188	104	69	1	**6.243 212**
Blue	14 to 17mm	50	188	104	69	1	**6.243 213**
White	10 to 13mm	96	182	126	69	1	**6.243 210**
Blue	10 to 13mm	96	182	126	69	1	**6.243 211**

4 Test tube racks, PP

NEW!

Natural PP. Sturdy construction. Autoclavable in steam up to 121°C. With alpha-numeric row indicators. Dimensions: (L x W): 213 x 110mm.



Height mm	For diam. mm	Array	PK	Cat. No.
111	10-13	6 x 12	1	**9.193 071**
111	13-16	5 x 10	1	**9.193 072**
127	16-20	4 x 8	1	**9.193 073**
127	21-25	3 x 6	1	**9.193 074**
127	27-30	3 x 5	1	**9.193 075**

1



1 Tube racks, PP

Will not float. Alphanumeric grid referenced on top tier for easy identification of samples. *Kartell*
Stackable when empty. Can be used in freezers or water baths.
Autoclavable at 121°C for 20 min.

Array	For tubes diam. mm	Dimensions (l x w x h) mm	Colour	PK	Cat. No.
90	13	246 x 105 x 64	white	1	**6.205 483**
90	13	246 x 105 x 64	blue	1	**6.224 460**
90	13	246 x 105 x 64	yellow	1	**6.206 439**
90	13	246 x 105 x 64	red	1	**9.193 200**
60	16	246 x 105 x 72	white	1	**6.205 109**
60	16	246 x 105 x 72	blue	1	**6.206 347**
60	16	246 x 105 x 72	yellow	1	**6.206 305**
60	16	246 x 105 x 72	red	1	**6.204 936**
40	20	246 x 105 x 72	white	1	**6.205 110**
40	20	246 x 105 x 72	blue	1	**6.206 206**
40	20	246 x 105 x 72	yellow	1	**6.224 461**
40	20	246 x 105 x 72	red	1	**9.193 201**
40	25	295 x 125 x 85	white	1	**6.236 328**
40	25	295 x 125 x 85	blue	1	**6.236 329**
40	25	295 x 125 x 85	yellow	1	**6.236 330**
40	25	295 x 125 x 85	red	1	**9.193 202**
24	30	300 x 112 x 85	white	1	**6.207 191**
24	30	300 x 112 x 85	blue	1	**7.632 543**
24	30	300 x 112 x 85	red	1	**6.401 582**
24	30	300 x 112 x 85	yellow	1	**6.204 134**

2



2 Test tube racks, Type 5970, polyketone

3-tier grid design. Will not float. Single moulding, with no sharp edges or corners. *Thermo Scientific*
Alphanumeric grid referenced on top tier for easy identification of samples.
End plates can be labelled or written on. Autoclavable.

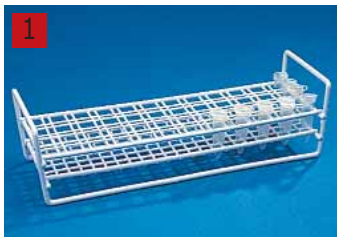
Note: Do not autoclave when loaded with filled test tubes. Do not expose to strong concentrated acids.

Type	Array	For tubes diam. mm	Colour	Length mm	Width mm	Height mm	PK	Cat. No.
5970	6 x 12	13	White	200	102	57	1	**9.194 513**
5970	6 x 12	13	Orange	200	102	57	1	**9.194 523**
5970	6 x 12	13	Yellow	200	102	57	1	**9.194 533**
5970	6 x 12	13	Blue	200	102	57	1	**9.194 543**
5970	6 x 12	13	Green	200	102	57	1	**9.194 553**
5970	6 x 12	13	Red	200	102	57	1	**9.194 563**
5970	6 x 12	16	White	248	127	70	1	**9.194 514**
5970	6 x 12	16	Orange	248	127	70	1	**9.194 524**
5970	6 x 12	16	Yellow	248	127	70	1	**9.194 534**
5970	6 x 12	16	Blue	248	127	70	1	**9.194 544**
5970	6 x 12	16	Green	248	127	70	1	**9.194 554**
5970	6 x 12	16	Red	248	127	70	1	**9.194 564**
5970	4 x 10	20	White	250	102	83	1	**9.194 515**
5970	4 x 10	20	Orange	250	102	83	1	**9.194 525**
5970	4 x 10	20	Yellow	250	102	83	1	**9.194 535**
5970	4 x 10	20	Blue	250	102	83	1	**9.194 545**
5970	4 x 10	20	Green	250	102	83	1	**9.194 555**
5970	4 x 10	20	Red	250	102	83	1	**9.194 565**
5970	4 x 10	25	White	300	121	92	1	**9.194 516**
5970	4 x 10	25	Orange	300	121	92	1	**9.194 526**
5970	4 x 10	25	Yellow	300	121	92	1	**9.194 536**
5970	4 x 10	25	Blue	300	121	92	1	**9.194 546**
5970	4 x 10	25	Green	300	121	92	1	**9.194 556**
5970	4 x 10	25	Red	300	121	92	1	**9.194 566**
5970	3 x 8	30	White	283	108	83	1	**9.194 517**
5970	3 x 8	30	Orange	283	108	83	1	**9.194 527**
5970	3 x 8	30	Yellow	283	108	83	1	**9.194 537**
5970	3 x 8	30	Blue	283	108	83	1	**9.194 547**
5970	3 x 8	30	Green	283	108	83	1	**9.194 557**
5970	3 x 8	30	Red	283	108	83	1	**9.194 567**

Also available in half sizes (Type 5972).

1 Reaction tubes stand, PE-coated wire

PE-coated wire. For 4 x 12 reaction vessels 1.5ml, distance between compartments is 5mm.
With two handles.



Array	Length mm	Width mm	Height mm	PK	Cat. No.
4 x 12	250	90	40	1	**9.409 390**

2 Test tube racks, wire/nylon

White nylon coated or stainless steel wire, electrochemically polished. 3-tier design,
second tier approximately 30mm high. For 50ml test tubes.

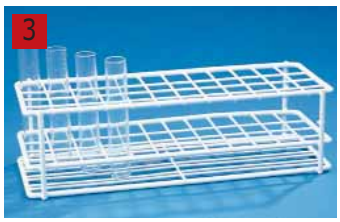


Hole size: approx. 30 x 30mm
Distance between each compartment: approx. 5mm

Type	Array	Dimensions (l x w x h) mm	PK	Cat. No.
Nylon coated wire	4 x 2	150 x 80 x 80	1	**9.193 970**
Nylon coated wire	5 x 2	190 x 80 x 80	1	**9.193 972**
Nylon coated wire	6 x 2	230 x 80 x 80	1	**9.193 974**
Stainless steel wire	4 x 2	150 x 80 x 80	1	**9.193 971**
Stainless steel wire	5 x 2	190 x 80 x 80	1	**9.193 973**
Stainless steel wire	6 x 2	230 x 80 x 80	1	**9.193 975**

3 Test tube racks, wire/nylon

Wire with white nylon coating. 3-tier design , second tier approximately 30mm high.
Opening size 18 x 18mm. Temperature resistant up to 80°C max.



Array	Height mm	PK	Cat. No.
2 x 6	70	1	**9.193 762**
2 x 10	70	1	**9.193 764**
2 x 12	70	1	**9.193 766**
3 x 12	70	1	**9.193 768**
4 x 6	70	1	**9.193 772**
4 x 12	70	1	**9.193 774**
10 x 10	70	1	**9.193 776**
2 x 12	100	1	**9.193 784**
4 x 12	100	1	**9.193 788**

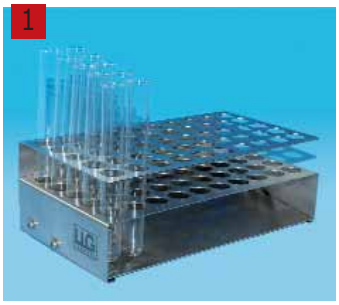
4 Test tube racks, stainless steel

Corrosion resistant, stainless steel wire. Electrochemically polished.
Opening size 18 x 18mm. Mesh grid levels are positioned at the top and 30mm above the base.



Array	Height mm	PK	Cat. No.
2 x 12	70	1	**9.193 824**
3 x 12	70	1	**9.193 836**
4 x 12	70	1	**9.193 848**
4 x 12	100	1	**9.193 948**

1



9.409 014

LLG-Test tube racks, self-aligning, stainless steel

Robust stainless steel (brushed) test tube racks. Due to the special construction the racks align the test tubes automatically so that the tubes are more comfortable to use. Contamination from vessel to vessel is also reduced as the tops of the tubes do not touch. Dishwasher safe, steam autoclavable, suitable for dry heat (200°C) and water bath. Each rack holds up to 50 test tubes.

For neck diam. mm	Bore diam. mm	Dimensions (l x w x h) mm	PK	Cat. No.
14	15.5	202 x 110 x 75	1	**9.409 013**
16	17.5	224 x 120 x 75	1	**9.409 014**

2



2 Test tube stands, wood

Two tier with rods. For tubes up to 18mm diameter.

Array	For tubes diam. mm	PK	Cat. No.
2 x 6	18	1	**9.193 012**
2 x 9	18	1	**9.193 018**
2 x 12	18	1	**9.193 024**

3



3 Test tube racks, PP

Blue. For tubes up to 18mm in diameter. Autoclavable and unbreakable. Can be dismantled. Can be recycled.

Array	For tubes diam. mm	PK	Cat. No.
12	18	1	**9.193 112**
24	18	1	**9.193 124**

4



4 Tube clamp, stainless steel

NEW!

Ideal for handling hot tubes or to heat test tubes up to 30 mm diameter. Manufactured from stainless steel with a finger grip. With a long arm for better handling and to avoid close contact between fingers and the flame. High resistance to heat up to 100°C.

Length mm	PK	Cat. No.
130	1	**6.202 530**

5



5 Test tube holders, wood

Wood with metal spring.

For neck diam. mm	PK	Cat. No.
Up to 20	1	**9.193 992**
Up to 30	1	**9.193 993**

1 LLG-Sample containers, PP, with screw cap, HDPE



Ideal for liquid specimen collection, transportation and storage.
- Container made of non-cytotoxic polypropylene
- Very solid quality
- Top and bottom gripping assures easy opening and closing when wearing gloves
- Half-transparency containers
- With graduation
- With label

Capacity ml	Height mm	Outer diam. mm	Ø Cover mm	PK	Cat. No.
20	42	32	37	1000	**6.265 649**
40	40	45	50	500	**6.265 650**
60	58	45	50	500	**6.265 651**
90	77	45	50	300	**6.265 652**
120	77	53	58	300	**6.265 653**
250	52	89	97	154	**6.265 654**
500	110	89	97	132	**6.265 655**
1000	138	111	120	64	**6.265 656**

2 LLG-Sample containers, PS, with screw cap, PE/PP



Ideal for many applications as sample collection, transportation or storage
- Container made from virgin polystyrene. All materials are non-cytotoxic
- 30ml container with conical skirted bottom
- Ideal for small volume samples
- Leakproof-tested
- Unique leak tight cap ensures exceptional leak proof seal
- With plain label

Capacity ml	Height mm	Outer diam. mm	Ø Cover mm	Material container	Material Lid	PK	Cat. No.
7	48	17	22	PS	PP	700	**6.265 646**
30	90	24	30	PS	PP	50	**6.265 647**
60	58	39	43	PS	PE	60	**6.265 648**

3 LLG-Sample containers with tamper-evident cap, PS and PP



White with tamper-evident cap. Multi-purpose containers e.g. for storage or transport of samples.

Capacity ml	Diam. with cap mm	Height with cap mm	Material container	Material Lid	PK	Cat. No.
40	36	52	PS	PE-LD	10	**9.402 350**
100	58	58	PP	PP	10	**9.402 353**
250	64	95	PS	PE-LD	10	**9.402 356**
1000	116	116	PP	PP	5	**9.402 359**

More containers - please see page 513.

1



1 LLG-Round sample containers, PP

White with screwed on lid.

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
30	58	19	10	**9.402 310**
75	58	47	10	**9.402 313**
310	81	81	10	**9.402 318**
600	119	67	10	**9.402 321**
1250	119	130	5	**9.402 324**

2



2 Jars, PP with PP screw cap

White, complete with red PP screw cap, in safe pack with certificate of analysis.

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
25	34	40	25	**7.077 661**
90	56	52	25	**7.077 852**
125	56	68	25	**7.085 372**
250	73	79	20	**7.053 933**
500	96	90	9	**7.052 896**
625	96	113	6	**7.051 092**
1000	112	129	3	**7.052 895**
1250	112	159	3	**7.053 930**

3



3 LLG-Sample containers, PS, with metal cap, sterile

NEW!

Ideal for sample collection and storage. Made of virgin polystyrene. All materials are non-cytotoxic.
The metal cap with inert PVC-Liner ensures leak proof seal.

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
60	43	60	60	**6.261 958**
100	49	75	40	**6.261 959**
250	63	121	25	**6.261 960**

4



4 Containers, PP with lids

BRAND

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
ca. 50	56	25	1	**9.402 415**
ca. 115	75	30	1	**9.402 420**

5



5 Jars with snap cap, PE

Slightly tapered with snap cap attached which snaps tightly closed when pressed. *Kartell*

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
1	8	32	100	**9.401 805**
3	14	32	1	**9.401 820**
5	15	49	1	**9.401 822**
7	23	33	1	**9.401 830**
8	17	58	1	**9.401 825**
20	25	75	1	**9.401 835**
25	31	53	1	**9.401 838**
35	31	75	1	**9.401 840**

1 Sample containers, PP with snap on caps, PE-LD

Transparent. *VITLAB*
With PE-LD snap-on lid. Conical shape.
Food-safe product according to EC Directive No. 10/2011.

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
5	20	25	1	**9.402 770**
18	22	57	1	**9.402 776**
50	30	97	1	**9.402 782**
160	50	110	1	**9.402 784**



2 Rolled rim bottles, AR glass with PE snap-on lid

With PE snap-on lid. Tight closing.

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
3	19	31	200	**9.400 211**
5	19	41	200	**9.400 215**
10	21	51	200	**9.400 220**
10	22	46	200	**9.400 225**
15	24	53	200	**9.400 235**
20	27	56	200	**9.400 240**
20	25	71	200	**9.400 250**
25	30	51	250	**9.400 230**
30	28	76	200	**9.400 260**
40	30	81	200	**9.400 270**
50	30	101	200	**9.400 280**
100	34	146	100	**9.400 290**



3 Multi-purpose jars, PS

Multi-purpose, Polystyrene jar without cap. *Thermo Scientific*
Please order cap separately.

Capacity ml	Diam. Jar mm	Height jar mm	PK	Cat. No.
12.5	27	29	1000	**4.008 637**
20.0	27	41	2400	**4.008 944**
30.0	27	60	1200	**4.009 104**
50.0	41	49	800	**4.008 750**



4 Lids, PE for multi-purpose jars, PS

Thermo Scientific

For jars ml	PK	Cat. No.
12.5 / 20 / 30	4000	**4.008 824**
50	2400	**4.008 825**



Multi-purpose beakers with screw cap, PP

NEW!

Transparent, with red screw cap. Non-sterile or sterile. Sterile beakers are single packed. *Ratiolab*
Ideal beaker for sampling and storing of solid, muddy and liquid samples.

Capacity ml	Description	Diam. with cap mm	Height with cap mm	PK	Cat. No.
30	non-sterile	43	48	1000	**9.401 860** 5
30	sterile	43	48	1000	**6.258 713**
60	non-sterile*	43	67	600	**6.260 493** 6
60	sterile*	43	67	500	**6.258 714**
120	non-sterile*	62	72	500	**6.803 183** 7
120	sterile*	62	72	250	**6.093 728**
200	sterile	64	81	150	**6.262 099** 8
200	non-sterile	64	81	200	**6.261 429**

*with graduation and labelling area



9.401 860



6.260 493



6.803 183



6.262 099

1



1 Universal -jars, PE-HD with cap, PE-LD

PE-HD with PE-LD cap. Resistant to acids and chemicals. Suitable for cold storage rooms, refrigerators and freezers. Stackable. Food safe. Color: natural.

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
200	98	42	1	**9.033 201**
400	114	55	1	**9.033 202**
700	114	88	1	**9.033 211**
1000	136	110	1	**9.033 212**
2000	169	143	1	**9.033 213**

2



2 Jars with screw cap, PP

Transparent. Excellent chemical resistance. Autoclavable - undo cap before autoclaving. *Thermo Scientific*

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
15	38	46	12	**9.033 230**
30	43	48	12	**9.033 231**
60	53	45	12	**9.033 232**
125	70	74	12	**9.033 233**
250	70	119	6	**9.033 234**
500	120	88	6	**9.033 235**
1000	120	151	6	**9.033 236**

3



3 Jars with screw cap, PE-HD

Heavy walled jar and screw cap with cone liner. *Kartell*

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
5	21	36	1	**9.401 850**
10	21	58	1	**9.401 851**
30	35	53	1	**9.401 852**
60	35	94	1	**9.401 853**
90	55	63	1	**9.401 854**
180	55	110	1	**9.401 855**

4



4 Jars with screw cap, PC

Cylindrical. Very durable. Stackable. Non-toxic. Suitable for cold storage rooms and refrigerators. Autoclavable - remove cap before autoclaving. *Thermo Scientific*

- Excellent for cold room and refrigerated use, easy to see contents
- Wide-mouth and straight sides provide full-access and complete sample retrieval ease
- 15, 30 and 60mL jars have natural polypropylene closures
- 125mL to 1L jars have white polypropylene closures with recessed tops for stacking
- 125 and 250mL sizes fit Osterizer™ and other blenders that have Mason Jar threads, recommended for use with Fluid Transfer Closure 7.048 079
- Not liquid leakproof, not recommended for liquid transport
- Autoclavable/Transparent

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
15	38	46	4	**9.033 237**
30	43	48	4	**9.033 238**
60	53	45	4	**9.033 239**
125	70	74	4	**9.033 240**
250	70	119	4	**9.033 241**
500	120	88	4	**9.033 242**

E & OE.

1 Cylindrical jars with ribbed cap, PE-HD

Kartell

The cylindrical jars are supplied with insert and cap. Thanks to the large neck they are suitable for powders, solid specimen, creamy or semisolid substances, crystals and hygroscopic substances.
Suitable for foodstuff according to EC Regulation 1935/2004 and EC Regulation 10/2011.



Capacity ml	Diam. with cap mm	Height with cap mm	Neck i. d. mm	PK	Cat. No.
70	50	60	36	1	**6.205 920**
120	56	71	36	1	**6.206 304**
250	69	94	50	1	**6.205 857**
500	86	107	70	1	**6.205 921**
1000	111	128	85	1	**6.205 922**
1500	111	182	87	1	**6.226 130**
2000	111	235	87	1	**6.223 901**

2 Storage jars, series 376, PE-HD

Kautex

Natural round jars without lid. The wide mouth allows for easy filling and cleaning.
Black caps available with PE foam leakproof wad - please order separately.



Capacity ml	Thread external diam. mm	Height jar mm	PK	Cat. No.
100	40	77	1	**9.073 388**
250	50	98	1	**9.073 389**
500	65	122	1	**9.073 390**
750	65	130	1	**9.073 391**
1000	80	153	1	**9.073 392**
1500	80	173	1	**9.073 393**
2000	80	192	1	**9.073 394**

Height in mm without lid.

3 Caps for storage jars, series 376, PP

Kautex

Black, screw cap with PE-foam insert.



For jars ml	Thread external diam. mm	PK	Cat. No.
100	40	1	**9.073 071**
250	50	1	**9.073 072**
500 and 750	65	1	**9.073 073**
1000, 1500 and 2000	80	1	**9.073 074**

4 Wide mouth jars, PET

NEW!

Behr

Transparent with white polypropylene cap. Food-safe.
Round, except 2000ml which is square.



Capacity ml	Ø Cover mm	Diam. Jar mm	Height with cap mm	PK	Cat. No.
100	70	74	38	10	**9.103 136**
250	70	85	75	10	**9.103 137**
500	82	88	108	10	**9.103 138**
1000	110	125	130	10	**6.242 746**
2000	100	133	181	10	**9.103 140**
2500	100	135	211	10	**9.103 148**
3000	100	145	211	10	**9.103 149**

5 Jars, DURAN®, low form

DURAN Group

With removable, drop-on cover from DURAN® glass. Without handle.



Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
75	approx. 67	approx. 46	1	**9.033 018**
175	approx. 87	approx. 56	1	**9.033 026**
325	approx. 107	approx. 66	1	**9.033 029**
1000	approx. 157	approx. 86	1	**9.033 034**

1



1 LLG-Wide-neck jars, glass

Twist-off jar, wide-neck. Perfect for sample storage. Glass, clear.
Without cap, please order cap separately.

Capacity ml	Ø Glass jar mm	Height Glass jar mm	PK	Cat. No.
106	48	78.0	12	**9.070 301**
212	63	80.5	12	**9.070 302**
375	63	120.5	12	**9.070 303**
720	82	148.0	12	**9.070 304**
1062	82	176.0	12	**9.070 305**

2



2 Caps for LLG wide-neck jars

Twist-off screw cap for LLG- wide-neck jars

Diam. mm	For	PK	Cat. No.
48	106 ml LLG Twist-Off-jar	12	**9.070 306**
63	212 ml and 375 ml LLG Twist-Off-jar	12	**9.070 307**
82	720 ml and 1062 ml LLG Twist-Off-jar	12	**9.070 308**



E & OE.

1 Bottle carriers, wire/PE

Made of PE coated wire.
For carrying laboratory bottles of various sizes.
With base and fixed carrying handle.

For bottles ml	Int. diam. mm	Height mm	PK	Cat. No.
4 x 2000	130	110	1	**9.102 204**
6 x 2000	130	110	1	**9.102 206**
8 x 2000	130	110	1	**9.102 208**
10 x 2000	130	110	1	**9.102 210**
4 x 1000	100	100	1	**9.102 214**
6 x 1000	100	100	1	**9.102 216**
8 x 1000	100	100	1	**9.102 218**
10 x 1000	100	100	1	**9.102 220**
4 x 250	80	80	1	**9.102 224**
6 x 250	80	80	1	**9.102 226**
8 x 250	80	80	1	**9.102 228**
10 x 250	80	80	1	**9.102 230**
12 x 250	80	80	1	**9.102 232**



2 Bottle carriers, wire/plastic coated

Plastic-coated. Strong wire frame.

For bottles ml	PK	Cat. No.
4 x 1000	1	**9.102 321**
2 x 2500	1	**9.102 322**



3 Bottle basket for 6 bottles, ABS

NEW!

Isolab

For safe and convenient transportation of maximum 6 bottles of 250 or 500 ml volume.
Specially designed for holding 500 ml wash bottles. Strong light weight construction with ergonomic handle offers both comfort and control. Unique design of the bottle basket offers stackable solution for space saving.

Description	PK	Cat. No.
for 6 bottles of 250/500ml	1	**6.267 361**



4 Cleaning baskets, stainless steel wire

With cover, made of non-rusting, electrochemically polished, stainless steel wire. For washing hardware.
Frame, base and cover made of 8 x 8 x 1.2mm spot welded wire mesh.

L x W x H approx. 250 x 150 x 150mm.

Type	PK	Cat. No.
Cleaning basket	1	**9.908 130**





1 Transport baskets, stainless steel wire

Non-rusting stainless steel, electrochemically polished. With fold down handle that locks into position. Handle with plastic moulding. Made of 8 x 8 x 1.2mm diameter spot welded wire mesh. Base reinforced with two rods.

Width mm	Length mm	Height mm	PK	Cat. No.
300	400	200	1	**9.143 090**



2 Wire baskets, wire/nylon

White. Nylon coated, strong wire.

Width mm	Length mm	Height mm	PK	Cat. No.
100	100	100	1	**9.033 341**
120	120	120	1	**9.033 342**
140	140	140	1	**9.033 344**
160	160	160	1	**9.033 346**
200	200	200	1	**9.033 350**



3 Wire baskets, stainless steel

Polished stainless steel wire.

Width mm	Length mm	Height mm	PK	Cat. No.
100	100	100	1	**9.033 410**
120	120	120	1	**9.033 412**
140	140	140	1	**9.033 414**
160	160	160	1	**9.033 416**
180	180	180	1	**9.033 418**
200	200	200	1	**9.033 420**
200	300	200	1	**9.033 430**
200	400	200	1	**9.033 440**



4 Aquaria, soda-lime glass

Thick- walled with coarse ground rim.

Width mm	Depth mm	Height mm	PK	Cat. No.
100	100	100	1	**9.003 906**
100	150	150	1	**9.003 920**
130	180	180	1	**9.003 932**
150	200	200	1	**9.003 941**
180	250	220	1	**9.003 951**
220	300	240	1	**9.003 954**
230	360	260	1	**9.003 964**



5 Display boxes, PS

Polystyrol. Heavy duty, industrial quality. Stackable (lengthways and crosswise). With RAL certificate. Shock-resistant, high impact PS. Food safe colors. Smooth underbody, therefore suitable for transport.

Colour	Width mm	Length mm	Height mm	PK	Cat. No.
red	100	165/140	75	1	**9.033 121**
blue	100	165/140	75	1	**9.033 123**
green	100	165/140	75	1	**9.033 124**
red	145	232/200	125	1	**9.033 131**
blue	145	232/200	125	1	**9.033 133**
green	145	232/200	125	1	**9.033 134**
red	200	336/300	150	1	**9.033 141**
blue	200	336/300	150	1	**9.033 143**
green	200	336/300	150	1	**9.033 144**

1 Storage, Stacking and transport containers, PP/PE-HD

White. Thermoplastic resin.
The raw material used is physiologically compatible and corresponds with the directives of the Federal Board of Health.

Capacity Litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Material	PK	Cat. No.
9	510 x 310 x 60	560 x 360 x 64	PP	1	**9.301 643**
10	410 x 310 x 85	445 x 345 x 90	PP	1	**9.301 641**
23	395 x 295 x 200	460 x 330 x 210	HDPE	1	**9.301 663**
28	600 x 400 x 120	660 x 450 x 130	HDPE	1	**9.301 647**
31	480 x 410 x 160	550 x 450 x 170	HDPE	1	**9.301 645**
35	530 x 315 x 210	600 x 350 x 220	HDPE	1	**9.301 661**
50	600 x 400 x 210	660 x 450 x 220	HDPE	1	**9.301 649**
96	600 x 400 x 400	660 x 450 x 410	PP	1	**9.301 651**



2 Lids for storage, stacking and transport containers.

Length mm	Width mm	For	PK	Cat. No.
660	450	9.301 647 / 649 / 651	1	**9.301 655**
460	330	9.301 663	1	**9.301 664**



3 Collapsible boxes, PP

PP. Dim. (WxDxH): 470 x 340 x 240mm. Capacity: 30L

Colour	PK	Cat. No.
Black	1	**9.301 469**



Collapsible Box mini, PP, stackable

NEW!

A straightforward and tough folding mechanism permits a safe and easy handling.
Volume 4 liter, weight 180g, load 2.5kg. Dishwasher safe, food safe.
Autoclavable at 120°C, enduring temperature stability from -40°C to 90°C.

Colour	Dimensions mm	PK	Cat. No.
black	265x171x105	1	**9.301 480**
white	265x171x105	1	**9.301 481**
blue	265x171x105	1	**9.301 482** 4
yellow	265x171x105	1	**9.301 483**
red	265x171x105	1	**9.301 484**



9.301 482

Collapsible Box midi, PP, stackable

NEW!

A straightforward and tough folding mechanism permits a safe and easy handling.
Volume 14.5 liter, weight 300g, load 8kg. Dishwasher safe, food safe.
Autoclavable at 120°C, enduring temperature stability from -40°C to 90°C.
The Folding Box mini perfectly fits two-times into the Midi.

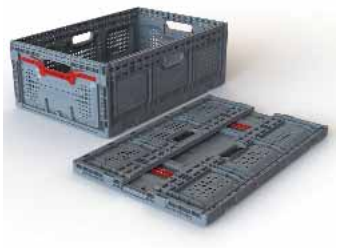
Colour	Dimensions mm	PK	Cat. No.
black	400x300x145	1	**9.301 485** 5
white	400x300x145	1	**9.301 486**
blue	400x300x145	1	**9.301 487**
yellow	400x300x145	1	**9.301 488**
red	400x300x145	1	**9.301 489**



9.301 485

Trolleys - please see page 255

1



2



1 2 Folding Box maxi, PP, foldable and stackable, active lock

NEW!

A straightforward and tough folding mechanism permits a safe and easy handling.
The Active Lock is optimized in its function and allows a safe, easy and fast erecting and folding of the box.
Dishwasher safe, food safe. Autoclavable at 120°C, enduring temperature stability from -40°C to 90°C.

Colour	External dimensions (W x D x H) mm	Capacity l	Load capacity kg	PK	Cat. No.
black	600 x 400 x 117	22.57	11	1	**9.301 490**
grey	600 x 400 x 117	22.57	11	1	**9.301 491**
blue	600 x 400 x 117	22.57	11	1	**9.301 492**
black	600 x 400 x 156	30.79	15	1	**9.301 493**
grey	600 x 400 x 156	30.79	15	1	**9.301 494**
blue	600 x 400 x 156	30.79	15	1	**9.301 495**
black	600 x 400 x 180	35.85	18	1	**9.301 496**
grey	600 x 400 x 180	35.85	18	1	**9.301 497**
blue	600 x 400 x 180	35.85	18	1	**9.301 498**
black	600 x 400 x 220	44.29	22	1	**9.301 499**
grey	600 x 400 x 220	44.29	22	1	**9.301 500**
blue	600 x 400 x 220	44.29	22	1	**9.301 501**

3



3 Euronormboxes, PP, stackable

NEW!

Solid transparent plastic containers, odorless, cold- and heat-resistant, stable against the most acids and alkalis.
Dishwasher safe, food safe. Two sizes (40x30cm und 60x40cm) available. Corresponding lids please order separately.
Suitable Trolley (Cat.No.: 9.301 502)

Type	External dimensions (W x D x H) mm	Capacity l	PK	Cat. No.
Euronormbox	400 x 300 x 220	20	1	**9.301 503**
Euronormbox	600 x 400 x 220	46	1	**9.301 504**
Euronormbox	600 x 400 x 320	66	1	**9.301 505**
Lid	400 x 300 x 10	-	1	**9.301 506**
Lid	600 x 400 x 10	-	1	**9.301 507**

4



4 Insert Boxes for Euronormboxes, PP

NEW!

Fit perfectly into the euronormboxes. Color: grey.
The maximum number of cases per Euronormbox please refer to the table.

Subdivision	External dimensions (W x D x H) mm	Capacity l	max. Qty.	PK	Cat. No.
1/8	176 x 137 x 80	1.7	8	1	**9.301 508**
1/4	280 x 178 x 80	2	4	1	**9.301 509**
1/2	560 x 178 x 80	4	2	1	**9.301 510**
1/2	352 x 270 x 80	6.5	2	1	**9.301 511**

5



5 Transport and storage containers, PE-HD

Stackable. *Kartell*

Width mm	Length mm	Height mm	PK	Cat. No.
415	315	200	1	**9.301 538**
595	365	255	1	**9.301 556**
695	440	306	1	**9.301 566**

1 Euro-boxes, aluminium alloy



- High strength, corrosion resistant aluminium alloy
- Stainless steel hinges
- Cover for protection against dust and water
- Strengthened rim
- Cover clamp straps
- Can be secured with lead seal, padlock or fitted lock
- Stackable
- Impact resistant, blue plastic stacking brackets

Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Capacity litres	Weight g	PK	Cat. No.
350 x 250 x 310	400 x 300 x 340	27	3000	1	**9.301 356**
550 x 350 x 220	600 x 400 x 250	42	4700	1	**9.301 357**
550 x 350 x 310	600 x 400 x 340	60	4900	1	**9.301 358**
550 x 350 x 380	600 x 400 x 410	73	5200	1	**9.301 359**
750 x 350 x 310	800 x 400 x 340	81	6100	1	**9.301 360**
750 x 550 x 380	800 x 600 x 410	157	7500	1	**9.301 361**
750 x 550 x 580	800 x 600 x 610	239	8900	1	**9.301 362**

Usable dimensions approx. 30mm less than internal dimensions.

2 Storage boxes, PE-HD with tightly closing PE-LD lid



PE-HD. With tightly closing PE-LD lid. Suitable for cold storage rooms and refrigerators.
Temperature range/withstands temperatures (without mechanical stress) from -20 to +95°C. Stackable.
Acid and chemical resistant. Food safe. Colour: natural.

Capacity L	Width mm	Length mm	Height mm	PK	Cat. No.
0.50	103	103	64	1	**9.033 270**
1.00	103	103	127	1	**9.033 275**
1.00	103	208	64	1	**9.033 280**
1.50	103	208	94	1	**9.033 285**
2.00	103	255	94	1	**9.033 286**
2.00	208	208	64	1	**9.033 287**
3.20	208	208	94	1	**9.033 288**

3 LLG-Buckets white with lid, PP



For transport, packaging and storage of foodstuffs, building materials and non-corrosive chemicals.
Stability guaranteed when filling up with material up to 80°C.

Capacity Litres	Diam. mm	Height mm	PK	Cat. No.
1	131	127	1	**9.040 030**
2	179	133	1	**9.040 031**
3	198	141	1	**9.040 032**
5	224	193	1	**9.040 033**
10	266	265	1	**9.040 034**

4 LLG-Buckets, PP



Round version 10L with metal handle, graduated, white.

Capacity Litres	PK	Cat. No.
10	1	**9.040 216**

1



1 Buckets, PE-HD, Lids, PE-LD

White. Without spout. With division into 1L segments. *VITLAB*
Stable handle with reinforcement in the middle for comfortable carrying.
Tightly closing, transparent PE-LD lid - please order separately.

Description	Capacity Litres	Diam. mm	Height mm	PK	Cat. No.
Buckets	5	250	240	1	**9.040 006**
Buckets	10	290	300	1	**9.040 012**
Lid	5	-	-	1	**9.040 206**
Lid	10	-	-	1	**9.040 212**

2



2 Buckets with spout, PP

Transparent. With division into 1L segments. *VITLAB*
With stable handle and spout for easy emptying.
Highly resistant to chemicals. Without lid.
Food-safe product according to EC Directive No. 10/2011.

Capacity Litres	Diam. mm	Height mm	PK	Cat. No.
12	310	330	1	**9.040 022**
15	310	370	1	**9.040 025**

3



3 Buckets, series 610/615, PE-LD

Graduated. *Kautex*
- thick-walled
- very stable
- durable
- litre scale
- laboratory and industrial bucket (white) with plastic coated steel carrying handle
- builder's bucket (grey) with rust-free handle

Type 1: with spout
Type 2: without spout

Type	Capacity Litres	Colour	Bottom diam. mm	Top diam. mm	Height mm	PK	Cat. No.
1	10	white	193	280	300	1	**9.040 110**
1	15	white	235	316	335	1	**9.040 115**
2	10	white	212	253	279	1	**9.040 010**
2	10	grey	212	253	279	1	**9.040 011**

4



4 Buckets, 18/10 steel

Graduated. With handle. *RSG*
Lids - Order separately.

Capacity Litres	Diam. mm	Height mm	PK	Cat. No.
6	260	190	1	**9.040 325**
10	280	235	1	**9.040 330**
12	300	270	1	**9.040 332**
15	310	305	1	**9.040 335**

5



5 Lids for buckets 18/10 stainless steel

RSG

For buckets	Diam. mm	PK	Cat. No.
6L	260	1	**7.623 893**
10L	280	1	**6.901 567**
12L	300	1	**7.636 628**
15L	310	1	**7.612 465**

6



6 Transport containers with lid and handle, 18/10 steel

Bochem

Height mm	Diam. mm	Capacity Litres	PK	Cat. No.
155	100	1	1	**9.039 921**
170	135	2	1	**9.039 922**
185	160	3	1	**9.039 923**
240	180	5	1	**9.039 925**
280	180	6	1	**9.039 926**
280	225	10	1	**9.039 928**

E & OE.

1 LLG-Bottles, wide mouth, PE-HD



Suitable for food. With carrying handle. Ideal for containing liquids, powders and granules.
Very strong and durable quality for extended use over time. With gasket in the screw cap and additional inner cap for a very tight seal. Screw cap can be attached to the bottle using the integrated loops.

Capacity Litres	Neck Int. diam. mm	Neck Ext. diam. mm	Body diam. mm	Height mm	Handle	PK	Cat. No.
5	84	94	170	350	1	1	**9.139 938**
10	99	109	210	420	1	1	**9.139 939**

2 LLG-Aspirator Bottles, narrow neck, PE-HD



With carrying handle. Suitable for food. Very strong and durable quality for extended use over time.
With gasket in the screw cap for a very tight seal. Screw cap can be attached to the bottle using the integrated loops.
With thread of 12 mm depth for use with a ¾" stopcock. Please order the stopcock separately (Cat. No. 9.139 937).
The bottles can be used in ambient temperatures below 0°C.

Capacity Litres	Neck Int. diam. mm	Neck Ext. diam. mm	Body diam. mm	Height mm	Handle	PK	Cat. No.
5	52	62	160	350	1	1	**9.139 929**
10	52	62	210	430	1	1	**9.139 930**
25	84	97	270	570	2	1	**9.139 931**
50	84	97	350	690	2	1	**9.139 932**

3 LLG-Aspirator Bottles, narrow neck, PE-HD, with stopcock



With carrying handle and ¾" stopcock. Thread and opening for stopcock provided. Suitable for food.
Very strong and durable quality for extended use over time. With gasket in the screw cap for a very tight seal.
Screw cap can be attached to the bottle using the integrated loops.
The bottles can be used in ambient temperatures below 0°C.

Capacity litres	Neck Int. diam. mm	Neck Ext. diam. mm	Body diam. mm	Height mm	Handle	PK	Cat. No.
5	52	62	160	350	1	1	**9.139 933**
10	52	62	210	430	1	1	**9.139 934**
25	84	97	270	570	2	1	**9.139 935**
50	84	97	350	690	2	1	**9.139 936**

4 LLG-Stopcock, ¾", for Aspirator bottles



For 9.139 933 to 9.139 936 and 9.139 929 to 9.139 932.

Type	PK	Cat. No.
Tap for aspirator bottles	1	**9.139 937**

1 Aspirator bottles, PE-HD

Natural, narrow-neck storage bottles with or without scale. Storage vessel with drain made of food-safe polyethylene. With UV protection for long life. Resistant to acids and chemicals. Special colour and printing possible. With metal carrying belt. With threaded plug and wide thread 22mm. With white screw cap Ø 65mm. With 2 O-rings/seals.
Other sizes available on request.

Please order stopcocks and adapter for stopcocks with R 1/2" separately.

Description	Capacity Litres	Ext. diam. mm	Height mm	PK	Cat. No.
Aspirator bottles, without scale	5	167	348	1	**9.002 601**
Aspirator bottles, without scale	10	210	427	1	**9.002 602**
Aspirator bottles, without scale	25	275	580	1	**9.002 603**
Aspirator bottles, with scale	5	167	348	1	**9.002 606**
Aspirator bottles, with scale	10	210	427	1	**9.002 607**
Aspirator bottles, with scale	25	275	580	1	**9.002 608**
Angle valve with sleeve connection 19mm (3/4")				1	**6.253 481** 2
Adapter for stopcocks with R 1/2"				1	**6.227 536**
Angle valve, straight, with sleeve connection 12mm (1/2")				1	**9.002 670** 3
Angle valve curved, with sleeve connection 12mm (1/2")				1	**9.002 671**

1



2



6.253 481

3



9.002 670



4 Aspirator bottles, series 350, PE-HD

Kautex

Food-grade product according to Regulation (EC) No 10/2011. Natural with printed blue graduations (in L) and screw closure. With or without threaded connection at base.
Inside neck diameter 50mm.
Please order stopcock separately.

Capacity Litres	Stopcock connection	Handle	Ext. diam. mm	Height mm	PK	Cat. No.
5	without	1	167	330	1	**9.011 009**
10	without	1	206	427	1	**9.011 010**
25	without	2	278	580	1	**9.011 025**
60	without	2	346	823	1	**9.011 060**
5	with	1	167	330	1	**9.011 069**
10	with	1	206	427	1	**9.011 071**
25	with	2	278	580	1	**9.011 072**
60	with	2	346	823	1	**9.011 076**

Height in mm without cap.



5 Accessories for series 350 aspirator bottles

NEW!

Type	Figure	PK	Cat. No.
Stopcock, blue PE-HD	a	1	**9.011 181**
Blanking plug with sealing, natural PE-HD	b	1	**9.011 170**
Stopcock, blue PP	c	1	**9.139 997**
Reducer, blue for 9.139 997	d	1	**9.011 078**

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WASH BOTTLES
UN-BOTTLES
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1 2 Aspirator Carboys, Type 2319, 2250, with handle, PP

Thermo Scientific

With 83mm diameter. With screw cap and shoulder handles. Graduated.
For nutritive media, distilled water or other solutions. Leakproof. Not for use with aggressive substances. Neck also accepts stoppers, 36mm in height and a top/bottom diameter of 75/62mm.
Autoclavable - for best results, autoclave using a properly vented closure.





Type	Capacity Litres	Description	PK	Cat. No.
2319	10	with stopcock	1	**9.002 721**
2319	20	with stopcock	1	**9.002 722**
2319	50	with stopcock	1	**9.002 723**
2250	10	without stopcock	1	**9.011 102**
2250	20	without stopcock	1	**9.011 103**
2250	50	without stopcock	1	**9.011 104**

3 Aspirator carboys, Type 2322, PC

Thermo Scientific

Transparent. With PP stopcock. Graduated. Leakproof. Robust.
Suitable for use in cold rooms. Autoclavable, before autoclaving, unscrew cap and set on bottle neck.



Type	Capacity Litres	Width mm	Depth mm	Height mm	PK	Cat. No.
2322	9	216	146	362	1	**9.139 916**
2322	20	318	219	381	1	**9.139 917**

1



1 Aspirator carboys Type 2320, PE-HD

With PP stopcock. Graduated. Leakproof. Stable. Rigid. Suitable for use in cold rooms. *Thermo Scientific*

Type	Capacity Litres	Width mm	Depth mm	Height mm	PK	Cat. No.
2320	9	216	146	356	1	**9.139 918**
2320	20	318	219	381	1	**9.139 919**

2



2 Aspirator carboys Type 2321, PP

Aspirator carboy with screw cap and stopcock made of PP. With stainless steel handle. Graduated. Inside diameter of 86mm neck opening. Robust. Autoclavable only when empty, before autoclaving, unscrew cap. *Thermo Scientific*

Type	Capacity Litres	Width mm	Depth mm	Height mm	PK	Cat. No.
2321	9	216	146	356	1	**9.139 921**
2321	20	318	219	381	1	**9.139 922**

3



3 Carboys Type 2211, PE-HD

With PP screw cap. Robust. Space-saving. With graduations and stainless steel handles. Inside diameter 86mm neck opening. The 20L carboy has recessed handles. *Thermo Scientific*

Type	Capacity Litres	Width mm	Depth mm	Height mm	PK	Cat. No.
2211	9	216	146	343	1	**9.139 906**
2211	20	318	219	381	1	**9.139 907**

4



4 Stopcocks, quick action Type 6422, 6432 , PP or ETFE for Aspirator carboys

Type 6422 PP. Autoclavable. Standard stopcock with quick acting closure. *Thermo Scientific*
Accepts tubing with an inside diameter of up to 16mm.
For tubing with an inside diameter of 6.4mm to 7.9mm. PE-HD adapter is provided.

Type 6432. Autoclavable. Housing and plugs made of Tefzel® ETFE.
For tubing with an inside diameter of 6.4mm to 7.9mm. Without adapter.

Type	Material	PK	Cat. No.
6422	PP	1	**9.139 925**
6432	ETFE	1	**9.139 926**

Tefzel® is registered trademark of DuPont.



1 2 Space saving jerrycan Flachmann LaboPlast®, PP

Bürkle

The compact jerrycan Flachman is ideal as a space-saving canister with a width of only 6.5cm. Different liquids can be stored and decanted in a small space. Flachmann can also be stored lying on its side eg. in a refrigerator. It is very stable due to ribbed structure and thick sides. Using the support stand for two or three canisters, any number of canisters can safely be placed in the open. The compact jerrycan can also be used as a settling canister.

- With or without threaded connector 3/4"
- PP, transparent
- Canister without valve autoclavable
- Volume: 5L
- Dimensions (WxDxH): 65 x 335 x 335mm
- Graduations: 250ml
- With moulded, indestructible litre graduation



Space-saving Compact set: Flachmann LaboPlast® canister and Compact stopcock

The Flachmann canister is ideal to store and decant liquids in a small space. The Compact stop cock for canisters and barrels features an impressive compact design, which does not overlap the footprint of the canister and there fore can be stored on its side e.g. within a refigerator or rack without screwing off the stop-cock.



Type	PK	Cat. No.
with screw neck, with tamper-evident cap, PP, blue	1	**9.140 002**
without screw neck, with tamper-evident cap, PP, blue	1	**9.140 001**
Compact jerrycan & Compact stop cock set (9.140 003)	1	**9.140 004**
Compact jerrycan & stop cock set (9.139 997)	1	**9.140 011**
Support stand for 2 jerrycans	1	**9.139 999**
Support stand for 3 jerrycans	1	**9.139 996**

Stopcocks LaboPlast®

Bürkle

StopCock Siphon

- With rotatable spout, preventing drips
- With tapered spout for bottles with narrow openings from diameter 6mm to 8mm
- Fits screw threads with R ¾"
- Pressure proof to 2 bar at 20°C without discharge angle
- Seals made of PTFE and PE, parts in contact with media made of PP, PE and PTFE



9.139 997

StopCock Compact

- Compact design, the short discharge does not protrude out over the lower edge of the container
- The specially optimised design of the discharge forms an even stream of liquid with no splashing or spattering
- The Compact stop cock fits all containers with R ¾" connecting threads
- PP, PE and PTFE are materials that offer outstanding chemical resistance to acids and bases



9.140 003

StopCock PA

- Made of polyamide electroconductive, can be grounded separately
- Ideally suited for solvents
- Inexpensive alternative to stainless steel stopcocks
- PTFE seal
- Including adapter for ¾" inner thread made of PA electroconductive
- Fits all containers with ¾" outer thread and with included adapter, to all ¾" inner threads
- Pressure proof to 2 bar at 20°C without discharge angle



9.140 000

Type	PK	Cat. No.
StopCock Siphon	1	**9.139 997** 3
StopCock Compact	1	**9.140 003** 4
StopCock PA	1	**9.140 000** 5

1



1 Wide-mouth jerrycans, PE-HD

PE-HD. 88mm filling opening. Offers UV protection. With thread and stopper on the narrow side. Wide thread 22mm. Food safe. Angle valves for 9.002 670 and 9.002 671, 10L variant with additional small spout.

Capacity Litres	Width mm	Depth mm	Height mm	PK	Cat. No.
10	154	302	397	1	**9.139 975**
22	180	370	475	1	**9.139 970**

2



2 Angled stopcocks/Angle valve, PE-HD

HDPE. With spout attachment 12mm (½") diameter and 22mm threaded connector.
For bottles and wide-mouth carboys. Acid and chemical resistant, pressure resistant up to 1.5 bar.
For 9.139 975 and 9.139 970. Food safe.

Description	PK	Cat. No.
Angled stopcock, straight	1	**9.002 670**
Angled stopcock, curved	1	**9.002 671**

3



3 Jerrycan with integrated spout, PE-HD

Jerrycan in stable design for varied applications in industry and leisure made of food safe polyethylene (PE-HD) *Hünersdorff*

- UV protection for long life
- Especially suitable for drinking water and food
- space-saving and stackable
- integrated spout with wide thread
- With transparent PE-protective film
- Blue screw cap 65mm diameter
- With threaded plug and wide thread 22mm

Capacity Litres	Width mm	Length mm	Height mm	PK	Cat. No.
10	350	165	310	1	**9.002 611**
20	350	165	495	1	**9.002 612**

4



4 Aspirator Carboys behroplast®, PE

Polyethylene, with welded stopcock. Food-safe. Leakproof, even after prolonged use. *Behr*

Capacity Litres	Width mm	Length mm	Height mm	PK	Cat. No.
5	160	190	240	1	**9.140 100**
10	190	190	360	1	**9.140 101**
15	170	380	370	1	**9.140 097**
20	250	280	370	1	**9.140 098**
25	240	300	450	1	**9.140 099**
30	260	300	450	1	**9.140 102**
60	330	390	670	1	**9.140 103**



1 Industrial jerrycans, PE-HD

Jerrycans with capacity of 2 to 30L.
Please order closures separately.

Kautex



Capacity L	Width mm	Depth mm	Height mm	Weight g	Thread external diam. mm	Colour	PK	Cat. No.
2.00	145	109	196	110	45	natural	1	**9.140 021**
2.50	153	115	208	125	45*	natural	1	**9.140 022**
3.00	153	115	240	140	45*	natural	1	**9.140 023**
5.00	190	145	251	250	50*	natural	1	**9.140 025**
6.00	192	145	294	265	45	natural	1	**9.140 026**
8.00	230	190	270	320	45	natural	1	**9.140 027**
10.00	230	190	310	450	50*	natural	1	**9.140 030**
20.00	290	246	385	950	60*	blue	1	**9.140 032**
25.00	290	246	450	1100	60*	blue	1	**9.140 031**
30.00	320	284	435	1250	60*	blue	1	**9.140 033**
20.00	290	246	385	950	60*	natural	1	**9.140 037**
30.00	320	284	435	1250	60*	natural	1	**9.140 038**

* With UN approval.

2 Screw caps and accessories for industrial carboys, PE-HD

Kautex



Description	For	PK	Cat. No.
Black, with tear-off ring and vent	2 / 2.5 / 3 / 6 / 8 litre jerrycans	1	**9.140 048**
Black, with tear-off ring and vent	5 / 10 litre jerrycans	1	**9.140 068**
Black, with tear-off ring and vent	20 / 25 / 30 litre jerrycans	1	**9.140 050**
Black, with tear-off ring	2 / 2.5 / 3 / 6 / 8 litre jerrycans	1	**9.140 051**
Black, with tear-off ring	5 / 10 litre jerrycans	1	**9.140 046**
Black, with tear-off ring	20 / 25 / 30 litre jerrycans	1	**9.140 047**
Red, with tear-off ring	2 / 2.5 / 3 / 6 / 8 litre jerrycans	1	**9.140 040**
Red, with tear-off ring	5 / 10 litre jerrycans	1	**9.140 042**
Red, with tear-off ring	20 / 25 / 30 litre jerrycans	1	**9.140 043**
With stopcock	2 / 2.5 / 3 / 6 / 8 litre jerrycans	1	**9.140 062**
With stopcock	5 / 10 litre jerrycans	1	**9.140 061**
With stopcock	20 / 25 / 30 litre jerrycans	1	**9.140 063**
With pump dispenser	2 / 2.5 / 3 / 6 / 8 litre jerrycans	1	**9.140 054**
With pump dispenser	10 litre jerrycans	1	**9.140 065**
With pump dispenser	20 litre jerrycans	1	**9.140 070**
With pump dispenser	25 litre jerrycans	1	**9.140 071**
With pump dispenser	30 litre jerrycans	1	**9.140 072**
Wrench, PE-HD to apply / remove	2 / 2.5 / 3 / 6 / 8 litre jerrycans	1	**9.140 073**
Wrench, PE-HD to apply / remove	5 / 10 / 20 / 25 / 30 litre jerrycans	1	**9.140 108**



1



1 Laboratory bottles Borosilicate glass 3.3, GL 45, with retrace code

Borosilicate glass 3.3. DIN 168 - 1. EN ISO 4796-1.
With graduations and retrace code, pouring ring, PP screw cap and ISO thread.
Certificates are available on request.

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
100	56	100	10	**9.072 331**
250	70	138	10	**9.072 332**
500	86	176	10	**9.072 334**
1000	101	225	10	**9.072 335**
2000	136	260	10	**9.072 336**
5000	186	330	1	**9.072 337**
10000	234	410	1	**9.072 338**
20000	299	505	1	**6.802 824**

2



2 LLG- Protective netting, roll

From polyethylene for covering glass containers. Cut to size with scissors. Package contains 5m roll.

Description	Colour	For bottles diam. mm	PK	Cat. No.
LLG Safety Nets, roll	red	6 - 15	1	**6.258 996**
LLG Safety Nets, roll	blue	12 - 25	1	**6.510 849**
LLG Safety Nets, roll	yellow	20 - 40	1	**6.050 131**
LLG Safety Nets, roll	green	30 - 60	1	**6.050 132**
LLG Safety Nets, roll	red	50 - 100	1	**6.050 133**
LLG Safety Nets, roll	yellow	90 - 200	1	**6.079 513**

3



9.071 676

DURAN® YOUTILITY Laboratory Bottle system GL 45

DURAN Group

- Specially shaped gripping zones on both sides of the bottle for easier and safer handling.
- With the new YOUTILITY bottle thread opening or closing the bottle is significantly faster. The thread is fully compatible with DIN GL 45 closures and other accessories.
- The slimmer YOUTILITY bottle shape allows more optimal use of limited space in autoclaves and laboratory refrigerators.
- A pre-defined labelling area is compatible with the dedicated DURAN® self-adhesive YOUTILITY bottle labels.
- Nominal volume is shown at the top of the easy-to-read graduation scale for fast determination of the volumes.
- Glass bottle body is moulded from the tried and tested DURAN® borosilicate 3.3 Type 1 neutral glass. DURAN® glass offers very good chemical resistance and high temperature resistance.
- The YOUTILITY bottle has an integrated Retrace Code to allow full product traceability. The lot specific certificate of conformance is available at: www.duran-group.com.
- Bottles are available in either clear or amber coloured glass. The amber colour meets the requirements of the USP <660> and Eur. Ph. requirements for UV light protection.
- Each DURAN® YOUTILITY bottle is supplied as a complete system, with a pouring ring (cyan polypropylene) and a GL 45 cap (cyan polypropylene).

4



9.071 675

Capacity ml	Ext. diam. mm	Height mm	Neck thread GL	Colour	PK	Cat. No.
125	55	124	45	clear	4	**9.071 679**
250	66	158	45	clear	4	**9.071 678**
500	78	193	45	clear	4	**9.071 677**
1000	93	253	45	clear	4	**9.071 676** 3
125	55	124	45	amber	4	**9.071 672**
250	66	158	45	amber	4	**9.071 673**
500	78	193	45	amber	4	**9.071 674**
1000	93	253	45	amber	4	**9.071 675** 4

Accessories for DURAN® YOUTILITY Laboratory Bottle system

DURAN Group

Description	PK	Cat. No.
Spare screw caps, GL 45, cyan, PP, food safe	10	**9.209 137**
Spare pouring ring, GL 45, cyan, PP	16	**9.209 138**
Bottle tags, GL 45, 8 colours (2 tags each), silicone	16	**9.209 139**
Self-adhesive label set (200 bottle and 200 cap labels), PES	1	**9.209 140**

Laboratory bottles DURAN®

To ISO 4796-1. Thread acc. to DIN 168-1 and approximate graduations.
A ring mark on the shoulder of the 100ml to 2000ml bottles makes the filling height of the nominal capacity visible.
The 25ml bottle has a specially shaped glass rim for pouring (eliminating the need for an additional pouring ring).
Neutral glass/Type I glass in compliance with USP/EP and JP. With easy to read scale and large labelling field for easy marking, in fired-on, highly durable white ceramic. With Retrace code (Batch identification).
Certificate available via the Internet. Autoclavable.

1 DURAN® laboratory glass bottle GL 25

Areas of application *DURAN Group*
- Storing expensive/sensitive media, reference samples etc.
- Packaging bottle for reference samples, stability tests, proficiency tests and deuteration solutions
- Shipping bottle for small sample volumes
- Storing proteins, vitamins, DNA

Description	Capacity ml	PK	Cat. No.
clear, without cap	10	1	**9.072 181**
clear, with cap	10	1	**9.072 182**
amber, without cap	10	1	**9.072 183**
amber, with cap	10	1	**9.072 184**
protect laboratory glass bottle, without cap	10	1	**9.072 185**



2 Laboratory bottles, DURAN®, with retrace code, without screw cap

NEW!

Please order cap and pouring ring separately. *DURAN Group*

Capacity ml	Diam. mm	Height mm	Neck thread GL	PK	Cat. No.
25*	36	70	25	1	**9.072 013**
50	46	87	32	1	**9.072 020**
100	56	100	45	1	**9.072 011**
150**	62	105	45	1	**9.071 683**
250	70	138	45	1	**9.072 012**
500	86	176	45	1	**9.072 015**
750**	95	203	45	1	**9.071 684**
1000	101	225	45	1	**9.072 016**
2000	136	260	45	1	**9.072 017**
3500**	160	295	45	1	**9.071 685**
5000	182	330	45	1	**9.072 018**
10000	227	410	45	1	**9.072 019**
15000	268	445	45	1	**7.079 854**
20000	288	505	45	1	**9.072 014**

*With specially shaped glass edge for improved pouring out (so that an additional plastic pouring ring is not required)
**Acceptance within iso 4796 standard has been requested



3 Laboratory bottles, DURAN®, with retrace code, with screw cap

With blue PP screw cap and pouring ring. *DURAN Group*

Capacity ml	Diam. mm	Height with cap mm	Neck thread GL	PK	Cat. No.
25*	36	74	25	1	**9.072 003**
50	46	91	32	1	**9.072 000**
100	56	105	45	1	**9.072 001**
150	62	105	45	1	**9.071 680**
250	70	143	45	1	**9.072 002**
500	86	181	45	1	**9.072 005**
750	95	203	45	1	**9.071 681**
1000	101	230	45	1	**9.072 010**
2000	136	265	45	1	**9.072 007**
3500	160	295	45	1	**9.071 682**
5000	182	335	45	1	**9.072 008**
10000	227	415	45	1	**9.072 004**
15000	268	450	45	1	**7.076 312**
20000	288	510	45	1	**9.072 009**

*With specially shaped glass edge for improved pouring out (so that an additional plastic pouring ring is not required).



1



1 Laboratory bottles, DURAN® amber, with retrace code

DURAN®. ISO 4796-1, Amber with DIN thread. Neutral glass/Type I glass acc. to USP/EP and JP. *DURAN Group*
Autoclavable. With approximate graduations. A ring-shaped moulding on the shoulder of the 100 to 2000ml bottles makes the filling height of the nominal capacity visible.
The 25ml bottle has a specially formed rim for pouring (eliminating the need for an additional pouring ring).
UV protection up to 500nm. Unaffected DURAN® properties within the bottle, as colour is applied only to the outer surface. Very uniform, durable and chemically resistant, amber colour due to innovative technology.
With Retrace code (Batch identification). Certificate available via the Internet.
Please order screw cap and pouring ring separately.

Capacity ml	Diam. mm	Height mm	Neck thread GL	PK	Cat. No.
25	36	70	25	1	**9.071 979**
50	46	87	32	1	**9.071 980**
100	56	100	45	1	**9.071 981**
150	62	105	45	1	**9.071 686**
250	70	138	45	1	**9.071 982**
500	86	176	45	1	**9.071 983**
750	95	203	45	1	**9.071 687**
1000	101	225	45	1	**9.071 984**
2000	136	260	45	1	**9.071 985**
3500	160	295	45	1	**9.071 688**
5000	182	330	45	1	**9.071 987**
10000	227	410	45	1	**9.071 988**
15000	268	445	45	1	**7.021 486**
20000	288	505	45	1	**9.071 989**

2



2 Safety-coated bottles, DURAN®, with retrace code

NEW!

Glass laboratory bottles with DIN thread to ISO 4796-1. *DURAN Group*
Safety-coated in plastic (DURAN® Protect). Neutral glass/Type I acc. to USP/EP.
With Retrace code (Batch identification). Certificate available via the Internet. Autoclavable.

DURAN® Protect is a resistant and transparent plastic coating based on a cross-linked co-polymer (polyurethane) applied onto DURAN® 3.3 borosilicate glass. The coating made from PU adheres to the glass surface and fulfils the following functions:
- protects the glass surfaces against mechanical damage **(scratch protection)**
- keeps fragments together in the event of glass breakage **(shatter protection)**
- minimises loss of fluid in the event of glass breakage **(leak and spray protection)**
- absorbs UV rays up to a light wavelength of 380 nm **(light protection)**
- (Cat. No.: 9.071 999) only scratch protection.

Temperature resistance
Do not subject to an open flame or direct heat (e.g. on a laboratory hotplate). The maximum operating temperature sustained is 135°C - continuous use at this temperature (>30 mins.) should be avoided.
DURAN® Protect is suitable for freezing (down to -30°C) and for use in microwaves.
Please order cap and pouring ring separately.

Capacity ml	Ext. diam. mm	Height mm	Neck thread GL	PK	Cat. No.
100	56	100	45	1	**9.071 991**
150	62	105	45	1	**9.071 689**
250	70	138	45	1	**9.071 992**
500	86	176	45	1	**9.071 995**
750	95	203	45	1	**9.071 690**
1000	101	225	45	1	**9.071 996**
2000	136	260	45	1	**9.071 997**
3500	160	295	45	1	**9.071 691**
5000	182	330	45	1	**9.071 998**
10000	227	410	45	1	**9.071 999**

Bottle carriers - please see page 47.

E & OE.

1 Reagent bottles DURAN®, clear/amber, pressure resistant



DURAN® reagent bottles, DIN thread, ISO 4796. Pressure resistance, as a result of amended shape, in the range of -1 up to +1.5 bar (tested by the TÜV in accordance with DIN EN 1595, with GS mark). Neutral/Type 1 glass in accordance with USP/EP. With Retrace code (Batch identification). Certificate available via the Internet. Autoclavable. *DURAN Group*
Please order cap and pouring ring separately.

Capacity ml	Ext. diam. mm	Height mm	Neck thread GL	Colour	PK	Cat. No.
250	70	138	45	clear	1	**9.071 706**
500	86	176	45	clear	1	**9.071 707**
1000	101	225	45	clear	1	**9.971 704**
250	70	138	45	amber	1	**9.071 701**
500	86	176	45	amber	1	**9.071 702**
1000	101	225	45	amber	1	**9.971 703**

2 Laboratory bottles Premium, DURAN®, with retrace code



DURAN®. ISO 4796-1, DIN ISO 718. Premium laboratory bottle with DIN thread. *DURAN Group*
Highly leak-tight using Premium screw cap. Working temperature from -196°C up to 260°C.
With PTFE coated silicone seal and pouring ring. With additional reverse scale, accuracy ±5%.
Thermal shock resistance of 160K (tested by the German TÜV and with GS mark). Bottle and screw cap in accordance to USP/EP guidelines (Glass Type I/Neutral glass, screw cap raw material USP Class VI, seal FDA). Screw cap material is similar to PFA and highly resistant against chemicals. The material is free from colourants and therefore no leaching takes place. DMF available upon request. Premium bottle and screw cap fulfil highest requirements of the pharmaceutical, chemical and food industry. With Retrace code (Batch identification).
Certificate available via the Internet (available for cap and bottle). Autoclavable.

Capacity ml	Ext. diam. mm	Height*	Neck thread GL	PK	Cat. No.
100	56	105	45	1	**9.072 155**
250	70	143	45	1	**9.072 156**
500	86	181	45	1	**9.072 157**
1000	101	230	45	1	**9.072 158**

*Height mm incl. cap

3 Square shape laboratory bottles, DURAN®, with retrace code



Easy to use due to square shape, highly stable, good stackability - proven DURAN® properties give a space saving of 44% in comparison with standard laboratory bottles (example applies to 100ml bottles) *DURAN Group*
With pouring ring and PP screw cap. Temperature (max.): +140°C
Advantages:
- proven DURAN® properties
- excellent chemical resistance
- low coefficient of expansion
- can be sterilised to 140°C. Before autoclaving, unscrew closure and set lightly on the container. Do not tighten the closure.
- freezer limit: -40°C. Only freeze the bottle by laying at an angle and if maximum ¾ full.
- ergonomic shape
- very stable
- with Retrace code (Batch identification). Certificate available via the Internet.
- neutral glass/Type I glass acc. to USP/EP and JP.

Capacity ml	Neck thread GL	Width mm	Height*	PK	Cat. No.
100	32	50	109	1	**9.072 076**
250	45	64	143	1	**9.072 077**
500	45	78	181	1	**9.072 078**
1000	45	94	222	1	**9.072 079**

*Height mm incl. cap



1 Square, screw cap bottles, wide-mouth, soda-lime glass

NEW!

Soda-lime glass. With short thread. Hydrolytical class 3. *DURAN Group*
Please order pouring ring separately.

Capacity ml	Diam. mm	Height mm	Neck thread GL	Colour	PK	Cat. No.
50	48	70	32	clear	1	**9.072 073**
100	49	109	32	clear	1	**9.072 071**
250	64	146	45	clear	1	**9.072 072**
500	77	173	54	clear	1	**9.072 075**
1000	97	213	60	clear	1	**9.072 080**
100	49	109	32	amber	1	**9.072 081**
250	64	146	45	amber	1	**9.072 082**
500	77	173	54	amber	1	**9.072 085**
1000	97	213	54	amber	1	**9.072 090**



2 Screw caps, PP

NEW!

PP. DIN thread. With lip seal. Temperature resistant to 140°C. *DURAN Group*
Only suitable for DURAN® laboratory bottles.

Neck thread GL	Colour	PK	Cat. No.
25	blue	1	**9.209 065**
32	blue	1	**9.209 067**
45	blue	1	**9.209 069**
45	yellow	1	**9.072 400**
45	green	1	**9.072 401**
45	grey	1	**9.072 402**
80	blue	1	**9.140 110**



3 Pouring rings, PP

PP. Autoclavable to 140°C (steam). *DURAN Group*

Neck thread GL	Colour	PK	Cat. No.
32	blue	1	**9.209 081**
45	blue	1	**9.209 083**
45	green	1	**9.209 075**
45	grey	1	**9.209 076**
45	yellow	1	**9.209 077**



4 Screw caps, high temperature, PBT

Red. DIN thread. With PTFE-coated silicone seal. Withstands temperatures up to 180°C. *DURAN Group*
Autoclavable.

Neck thread GL	PK	Cat. No.
14	1	**9.209 014**
18	1	**9.209 018**
25	1	**9.209 025**
32	1	**9.209 032**
45	1	**9.209 045**



9.209 440



9.209 086

Gaskets, silicone/PTFE and pouring rings, ETFE

Pouring rings, ETFE. *DURAN Group*
For screw caps made from PBT. Autoclavable.
Thermical resistance: max. 180°C

Silicone gasket (VMQ), PTFE coated.
For screw caps made from PBT. Autoclavable.
Thermical resistance: max. 130°C (steam), 200°C (heat)

Type	Neck thread GL	Material	PK	Cat. No.
Gasket	14	silicone, PTFE coated	1	**9.209 440** 5
Gasket	18	silicone, PTFE coated	1	**9.209 441**
Gasket	25	silicone, PTFE coated	1	**9.209 442**
Gasket	32	silicone, PTFE coated	1	**9.209 443**
Gasket	45	silicone, PTFE coated	1	**9.209 444**
Pouring ring	32	ETFE	1	**9.209 086** 6
Pouring ring	45	ETFE	1	**9.209 088**

E & OE.

1 Membrane Cap, PP/ PTFE



Cap from PP, membrane from PTFE. Ideal for autoclaving processes because the membrane permits pressure equalisation and tight sealing, reducing the risk of contamination.
Temperature resistant up to 140°C.
Typical applications: storage or transport of gas generating media, autoclaving of media.

DURAN Group

Neck thread GL	PK	Cat. No.
25	1	**9.284 567**
32	1	**9.284 568**
45	1	**9.209 068**
80	1	**9.284 531**

2 Screw cap, GL45, with 2 hose connections, PP



This new hose connection system has been specially developed for the connection of soft elastic tubing which, for example, is used in biotechnology for transferring media with the aid of peristaltic pumps.
The curved hose connections prevent kinking of the tubing. The grey PP core moves freely and allows the vessel to be changed without twisting the securely attached tubing. Autoclavable.
Properties/application:
- safe, sterile transfer of liquid media within a closed system
- highly versatile because the screw cap is based on the standard GL45 thread
- ideal for use with elastic, soft tubing of 6 - 9mm i.d. (Viton®, Tygon®, silicone)
- 2 x polypropylene, curved, hose connections on top and straight connections below
- optional filter top part for sterile pressure equalisation available
- temperature resistant up to +140°C
- autoclavable/dishwasher-proof

DURAN Group

Description	PK	Cat. No.
Screw cap, with 2 hose connections	1	**6.240 019**
Filter top part	1	**9.071 692**

3 Wide-mouth bottles with GLS 80® neck, DURAN®, clear, with screw cap



Laboratory bottle with GLS80® wide neck (80mm diameter). Neutral/Type 1 glass acc. to USP/EP.
With PP screw cap and pouring ring (autoclavable and temperature resistant up to 140°C).
With improved quick release cap which allows the bottle to be easily opened and closed with a minimum of turns.
The wide neck is ideal for any application with powders or granulates, giving easier filling and emptying.
Special thread means opening takes less than a turn. With Retrace code (Batch identification).
Certificate available via the Internet.

DURAN Group

Capacity ml	Diam. mm	Height without closure mm	PK	Cat. No.
250	95	105.0	1	**9.071 896**
500	101	152.0	1	**9.284 510**
1000	101	222.0	1	**9.284 511**
2000	136	252.0	1	**9.284 512**
3500	160	271.0	1	**9.071 966**
5000	182	314.0	1	**9.284 513**
10000	227	389.0	1	**9.284 514**
20000	288	484.0	1	**9.284 515**

Further Safety caps - please see page 1373.



1



1 Wide-mouth bottles GLS 80®, DURAN® amber glass

Temperature-resistant, bottle can be used up to 500°C (for short periods), screw cap and pouring ring up to +140°C. Protects light-sensitive media from light wavelengths between 200nm to 470nm. Unaffected DURAN® properties within the bottle, as colour is only applied on the outer surface. Very uniform, durable and chemically resistant amber colour due to innovative technology. With 80mm wide mouth screw thread. Ideal for applications with powders and granules, easy filling and emptying. Neutral glass/Type I glass acc. to USP/EP and JP. With Retrace Code (Batch Identification). Certificate available via the Internet. Autoclavable.

Capacity ml	Diam. mm	Height without closure mm	PK	Cat. No.
250	95	105.5	1	**9.071 899**
500	101	148.0	1	**9.284 516**
1000	101	218.0	1	**9.284 517**
2000	136	248.0	1	**9.284 518**
3500	160	271.0	1	**9.071 968**
5000	182	310.0	1	**9.284 519**
10000	227	385.0	1	**9.284 520**
20000	288	480.0	1	**9.284 521**

2



2 Wide-mouth bottles GLS 80® protect, DURAN®

DURAN Group

Laboratory bottle with batch identification (Retrace Code), certificate available via the internet, with GLS80® wide-mouth (o.d. 80mm). Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. Ideal for any application with powder or granulate, easier filling and emptying.
The coating of DURAN® protect is a resistant and transparent plastic coating based on a cross-linked copolymer. Complete with blue quick release closure (PP, integral lip seal) and pouring ring (PP) for drip-free pouring and clean, safe working.
The coating adheres to the surface of the glass and fulfils the following functions:
- protection of the glass surface against mechanical damage (e.g. scratches)
- keeps broken glass in place after breakage and avoids or reduces leakage
- minimises loss of media in case of breakage
- absorption of light up to a wavelength of 380nm

Temperature resistance:
- autoclavable (< 135°C)
- can be used in microwaves
- high temperature applications for extended periods (>30min) and direct heating with a flame not recommended
- freezing down to -30°C possible

Temperature (max.): 135°C

Capacity ml	Diam. mm	Height without closure mm	PK	Cat. No.
250	95	105.5	1	**9.071 897**
500	101	148.0	1	**9.284 522**
1000	101	218.0	1	**9.284 523**
2000	136	248.0	1	**9.284 524**
3500	160	271.0	1	**9.071 969**
5000	182	310.0	1	**9.284 525**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

DURAN GROUP magic of precision

1 Double-walled wide-mouth bottles GLS 80®, DURAN®

NEW!



The DURAN® double-walled wide-mouth bottles GLS 80® incorporate an integral jacket that isolates the contents from the external environment. Heated or cooled liquids can be circulated through the jacket to control the temperature within the screw topped DURAN® bottle.

Applications
- Simple, low cost, jacketed chemostat or bioreactor for cell culture.
- Vessel for temperature-controlled reactions such as enzyme digestions.
- Simple continuous flow stirred reactor system with the optional GLS 80® cap components.
- Thermostatic vessel to maintain fluids, or high viscosity liquids at a constant temperature, useful when working with endo- or exothermic reactions.
- Large cold trap or condenser when used with dry ice in the inner container.

Features
- Usable temperature range of - 40 to + 120°C.
- Manufactured from DURAN® borosilicate 3.3 glass.
- All components are fully autoclavable.
- Available in two sizes: 500 and 1000 ml.
- Compatible with full range of wide mouth GLS 80® connection cap systems for liquid addition or removal during processing.

Capacity ml	Diam. mm	Height without closure mm	PK	Cat. No.
500	110	170.0	1	**6.266 805**
1000	110	270.0	1	**6.266 806**

2 Accessories for Wide-mouth bottles GLS 80®, PP



Temperature resistant up to 140°C. Autoclavable. *DURAN Group*

Description	Diam. mm	Height mm	PK	Cat. No.
Screw cap	87	40.0	1	**9.140 110**
Pouring ring, blue	77	6.8	1	**9.284 530**
Membrane cap	86	40.0	2	**9.284 531**

3 Quick release closure, PSU compound, for GLS 80® laboratory bottles



GLS 80® quick release thread allows opening and closing of bottle with three-quarters of a turn *DURAN Group*

- Double-sided PTFE-coated silicone seal, medium in contact with PTFE only
- Excellent mechanical stability, high chemical resistance
- Autoclavable/suitable for hot-air sterilisation, Tmax = 180°C

Suitable GLS 80® pouring ring, PTFE
- Excellent chemical resistance
- Autoclavable/suitable for hot-air sterilisation, Tmax = 250°C

Description	Diam. mm	Height mm	PK	Cat. No.
Screw cap	88.5	40.00	1	**7.651 746**
Pouring ring		6.85	1	**6.237 901**

4 Connection system for wide-mouth bottles GLS 80®



Materials used PP, PBT and PTFE. Flexible modular system. *DURAN Group*
Five different hose diameters (3.2mm, 6.0mm, 8.0mm, 10.0mm and 12.0mm) can be connected. Sterile pressure equalisation is possible through use of membrane filter.
Unused ports can be provided with a blind cap. Typical applications: safe transfer of liquid media within a closed and sterile system (evaporation is reduced). Autoclavable - maximum temperature 140°C.

Description	Neck thread GL	PK	Cat. No.
4-port cap GL 18, diam. 86mm, height approx. 60mm	80	1	**9.284 532**
Insert for screw cap, inner diam. 3.2mm	18	1	**9.284 533**
Insert for screw cap, inner diam. 6.0mm	18	1	**9.284 534**
Insert for screw cap, inner diam. 8.0mm	18	1	**9.284 535**
Insert for screw cap, inner diam. 10.0mm	18	1	**9.284 536**
Insert for screw cap, inner diam. 12.0mm	18	1	**9.284 537**
Screw cap for tube connection, blue	18	1	**9.284 538**
Pressure equalization for 4-port	18	1	**9.284 539**
Screw cap, red	18	1	**9.284 540**



1 Wide-mouth reagent bottles with stopper, soda-lime glass

Soda-lime glass. To ISO 4796-2. Standard ground joint neck. With glass stopper. Hydrolytic class 3.

DURAN Group

Capacity ml	Diam. mm	Height mm	Neck NS	Colour	PK	Cat. No.
50	44	79	24/20	clear	1	**9.071 405**
100	52	97	29/22	clear	1	**9.071 408**
250	71	129	34/24	clear	1	**9.071 414**
500	86	164	45/27	clear	1	**9.071 419**
1000	107	200	60/46	clear	1	**9.071 424**
100	52	97	29/22	amber	1	**9.071 508**
250	71	129	34/24	amber	1	**9.071 514**
500	86	164	45/27	amber	1	**9.071 519**
1000	107	200	60/46	amber	1	**9.071 524**



2 Wide-mouth reagent bottles with stopper, DURAN®

DURAN®. ISO 4796-2. With standard ground joint as outlined below. With glass stoppers. Glass Type I/neutral glass as per USP, EP and JP. With Retrace Code (Batch Identification). Certificate available via the Internet. Autoclavable.

DURAN Group

Capacity ml	Diam. mm	Height mm	Neck NS	Colour	PK	Cat. No.
50	44	79	24/20	clear	1	**9.071 817**
100	52	97	29/22	clear	1	**9.071 824**
250	70	133	34/35	clear	1	**9.071 836**
500	86	163	45/40	clear	1	**9.071 844**
1000	107	201	60/46	clear	1	**9.071 854**
2000	133	247	60/46	clear	1	**9.071 863**
50	44	79	24/20	amber	1	**9.071 917**
100	52	97	29/22	amber	1	**9.071 924**
250	70	133	34/35	amber	1	**9.071 936**
500	86	163	45/40	amber	1	**9.071 944**
1000	107	201	60/46	amber	1	**9.071 954**
2000	133	247	60/46	amber	1	**9.071 963**



3 Wide-mouth bottles, soda-lime glass

Clear or amber glass. Round thread neck in accordance with DIN 168.
Please order screw caps separately.

Capacity ml	Neck thread GL	Diam. mm	Height mm	Colour	PK	Cat. No.
30	32	36.0	68.0	clear	126	**7.960 500**
50	32	44.0	75.0	clear	85	**7.960 501**
100	40	50.0	93.0	clear	63	**7.960 502**
125	40	54.0	98.0	clear	80	**7.960 503**
150	45	57.0	104.0	clear	42	**9.072 210**
250	55	70.0	113.0	clear	48	**7.960 504**
500	55	84.0	154.0	clear	20	**7.960 505**
1000	68	103.5	180.5	clear	18	**7.960 506**
30	32	36.0	68.0	amber	126	**7.960 507**
50	32	44.0	75.0	amber	85	**7.960 508**
100	40	50.0	93.0	amber	63	**7.960 509**
125	40	54.0	98.0	amber	84	**7.960 510**
150	45	57.0	104.0	amber	48	**9.072 211**
250	55	70.0	113.0	amber	42	**7.960 511**
500	55	84.0	154.0	amber	20	**7.960 512**
1000	68	103.5	180.5	amber	12	**7.960 513**



4 Screw caps for wide-mouth bottles, PP/LDPE

Cap PP, seal LDPE
For bottles 9.284 516 to 9.284 521, 9.071 899 and 9.071 968.

Neck thread GL	Material	PK	Cat. No.
32	PP	1	**9.072 164**
40	PP	1	**9.072 165**
45	PP	1	**7.075 021**
55	PP	1	**9.072 166**
68	PP	1	**9.072 167**

E & OE.

Wide-mouth bottles, clear and amber glass, PTFE-lined screw caps

Clear and amber glass. For storage and transport. The PTFE-lined screw caps make them ideal for taking samples. *Behr*
Type RB = amber glass
Type RK = clear glass

Type	Capacity ml	Thread diam. mm	PK	Cat. No.
RB 250 GT	250	55	1	**9.072 325** 1
RB 500 GT	500	55	1	**9.072 326**
RB 1000 GT	1000	68	1	**9.072 327**
RK 250 GT	250	55	1	**9.103 200** 2
RK 500 GT	500	55	1	**9.103 201**
RK 1000 GT	1000	68	1	**9.103 202**

1

9.072 325

2

9.103 200

3 LLG-Wide-mouth bottles, with screw cap, PE-LD, economy pack

Transparent, with cap. The wide neck opening means that the bottles are easy to fill and clean, leak-proof. Ideal for liquids, pastes and granulates.

Capacity ml	Diam. mm	Height mm	Thread external diam. mm	PK	Cat. No.
50	39.0	76.0	32	50	**9.073 510**
100	48.0	93.5	32	20	**9.073 511**
250	64.0	120.0	40	10	**9.073 512**
500	77.0	154.0	50	10	**9.073 513**
1000	95.0	205.0	65	4	**9.073 514**
1500	108.0	226.0	65	4	**9.073 515**
2000	120.0	247.0	65	1	**9.073 516**

3


4 Wide-mouth bottles, series 303, PE-LD

Natural, translucent. Thick-walled. Ideal for taking, storing and transporting samples of liquids, pastes and granulated products. *Kautex*
Please order closure separately.

Capacity ml	Diam. mm	Height mm	Thread external diam. mm	PK	Cat. No.
50	39.0	76.0	32	1	**9.072 981**
100	48.0	93.5	32	1	**9.072 982**
200	59.0	114.0	40	1	**9.072 983**
250	64.0	120.0	40	1	**9.072 984**
300	67.5	128.0	40	1	**9.072 985**
500	77.0	154.0	50	1	**9.072 986**
750	88.0	173.0	50	1	**9.072 987**
1000	95.0	205.0	65	1	**9.072 988**
1500	108.0	226.0	65	1	**9.072 989**
2000	120.0	247.0	65	1	**9.072 990**

Height in mm without cap.

4


5 Caps for wide-mouth bottles, series 303, PE-LD

For 9.072 981 to 9.072 990 series bottles. *Kautex*

For Thread o.d. mm	For bottles ml	PK	Cat. No.
32	50, 100	1	**9.072 778**
40	200, 250, 300	1	**9.072 779**
50	500, 750	1	**9.072 781**
65	1000, 1500, 2000	1	**9.072 782**

5




1 Wide-mouth bottles, series 303, PP

Round, Natural without closure. With approximate graduations. Ideal for liquids, pastes and granulates. For taking samples, sending specimens and as transport containers. Can be filled with hot substances. Autoclavable to max. 121°C.
Please order closure separately.

Kautex

Note: Before autoclaving, unscrew closure and set lightly upside down on the container. Do not screw the closure down.

Capacity ml	Diam. mm	Thread external diam. mm	Height without closure mm	PK	Cat. No.
100	48.5	32	94.0	1	**9.072 965**
250	64.5	40	121.0	1	**9.072 966**
500	77.5	50	155.0	1	**9.072 967**
1000	96.0	65	205.0	1	**9.072 968**



2 Screw caps for wide-mouth bottles, series 303, PP

Natural.

Kautex

For Thread o.d. mm	For bottles ml	PK	Cat. No.
32	100	1	**9.072 970**
40	250	1	**9.072 971**
50	500	1	**9.072 972**
65	1000	1	**9.072 973**



3 Wide-mouth bottles, series 303, PE-LD

Brown, offers protection against UV rays for light sensitive liquids. These wide-mouth bottles are easy to fill and clean. Leakproof.
Please order closure separately.

Kautex

Capacity ml	Thread external diam. mm	Height mm	PK	Cat. No.
50	32	76.0	1	**9.073 681**
100	32	93.5	1	**9.073 682**
250	40	120.0	1	**9.073 684**
500	50	154.0	1	**9.073 686**
1000	65	205.0	1	**9.073 688**

Height in mm without closure.



4 Caps, series 303, PE-LD

Brown, screw caps.

Kautex

For Thread o.d. mm	For bottles ml	PK	Cat. No.
32	50, 100	1	**9.073 778**
40	250	1	**9.073 779**
50	500	1	**9.073 781**
65	1000	1	**9.073 782**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

KAUTEX A Textron Company

E & OE.

1 Medium neck bottles, series 307, PE-HD with screw cap, PP

With graduations. Leakproof screw cap. Multi-purpose bottles for universal use in the laboratory and in industry. Offers a good level of chemical resistance. Generous neck diameters offer easy filling and cleaning. Ideal for pastes, granulates and withstands heat filling.

Kautex



Capacity ml	Thread external diam. mm	Height mm	PK	Cat. No.
100	25	99.5	1	**9.073 344**
250	28	129.5	1	**9.073 345**
500	40	161.0	1	**9.073 346**
1000	50	203.0	1	**9.073 347**

Height in mm without closure.

2 Spare screw caps for series 307 medium neck bottles, PP

NEW!

Natural, spare screw caps.

Kautex



For Thread o.d. mm	For bottles ml	PK	Cat. No.
25	100	1	**9.073 348**
28	250	1	**9.073 349**
40	500	1	**9.072 971**
50	1000	1	**9.072 972**

3 Wide-mouth bottles, series 310, PE-HD

Square, Natural, without closure. Wide mouth, therefore easy to fill and empty, leakproof. Easy to clean. Square shape makes the best use of space. Ribbed sides for a secure hold. With space for a label.
Please order closure separately.

Kautex



Capacity ml	Thread external diam. mm	Width mm	Depth mm	Height mm	PK	Cat. No.
250	40	59.0	59.0	110.5	1	**9.073 385**
500	40	69.0	69.0	145.5	1	**9.073 386**
1000	50	86.5	86.5	178.5	1	**9.073 387**

Height in mm without closure.

4 Caps for series 310 PETG and PVC

NEW!

Black screw caps, suitable for wide mouth containers made of PVC (clear or amber) and PETG.

Kautex



For Thread o.d. mm	For bottle ml	PK	Cat. No.
32	50	1	**9.073 070**
40	100	1	**9.073 071**
50	200 and 300	1	**9.073 072**
65	500	1	**9.073 073**
80	750 and 1000	1	**9.073 074**
80	2000	1	**9.073 075**

5 Tamper-evident caps for series 310, PP/PE

Suitable for series 310 PVC wide mouth containers (transparent and amber). Tamper-evident black PP cap with PE foam liner and tamper-evident ring which immediately indicates unauthorised opening. Perfect for determining whether the cap has been removed.

Kautex



For Thread o.d. mm	For jars ml	PK	Cat. No.
40	100	1	**9.074 071**
50	200 and 300	1	**9.074 072**
65	500	1	**9.074 073**



1 Tamper-evident caps for series 310, PP/PTFE

White with PTFE foam liner. *Kautex*

For Thread o.d. mm	For bottles ml	PK	Cat. No.
32	100 to 250	1	**9.073 480**
45	500 to 1000	1	**9.073 481**



2 Caps for series 310, PE-LD

NEW!

Natural, screw cap for 9.073 385 to 9.073 387. *Kautex*

For Thread o.d. mm	For bottles ml	PK	Cat. No.
40	250, 500	1	**9.072 779**
50	1000	1	**9.072 781**

3 4 Square reagent bottles, PE-HD

Natural or white. Wide neck. UN approved for solid materials. *Kautex*
Please order closure separately.

Capacity ml	Colour	Width mm	Depth mm	Height without closure mm	Thread external diam. mm	PK	Cat. No.
50	natural	36	36	88.5	28*	1	**9.072 869**
100	natural	45	45	101.0	32	1	**9.072 870**
250	natural	59	59	128.0	45	1	**9.072 871**
350	natural	60	60	164.0	45*	1	**9.072 877**
500	natural	75	75	161.0	54	1	**9.072 872**
750	natural	83	83	185.0	54	1	**9.072 878**
1000	natural	85	85	212.0	54	1	**9.072 873**
1500	natural	108	108	209.0	80	1	**9.072 874**
2500	natural	122	122	258.0	80	1	**9.072 875**
4000	natural	142	142	294.0	80	1	**9.072 876**
50	white	36	36	88.5	28*	1	**9.072 879**
100	white	45	45	101.0	32	1	**9.072 880**
250	white	59	59	128.0	45	1	**9.072 881**
500	white	75	75	161.0	54	1	**9.072 882**
750	white	83	83	185.0	54	1	**9.072 883**
1000	white	85	85	212.0	54	1	**9.072 884**
1500	white	108	108	209.0	80	1	**9.072 885**
2500	white	122	122	258.0	80	1	**9.072 886**
4000	white	142	142	294.0	80	1	**9.072 887**

*not UN approved





E & OE.

1 Caps for wide-mouth reagent bottles, PP (melamine*)

NEW!



Guarantees the functionality and the tightness of the bottle to protect the contents. *Kautex*

Type a) Screw cap, black with 1.5mm PE foam lining. Ensures that the bottle is tightly and safely sealed.
Type b) Tamper-evident cap, blue, with conical seal and tamper-evident ring. Immediately indicates unauthorised opening. Perfect for determining whether the cap has been removed.
Type c) Tamper-evident cap, red, with PE foam lining and tamper-evident ring. Immediately indicates unauthorised opening. Perfect for determining whether the cap has been removed.

Type	Colour	For bottles ml	Thread external diam. mm	PK	Cat. No.
Type a*	black	50	28	1	**9.072 894**
Type a	black	100	32	1	**9.072 895**
Type a	black	250, 350	45	1	**9.072 896**
Type a	black	500, 750, 1000	54	1	**9.072 897**
Type a	black	1500 - 4000	80	1	**9.072 898**
Type b	blue	50	28	1	**9.072 904**
Type b	blue	100	32	1	**9.072 092**
Type b	blue	250, 350	45	1	**9.072 093**
Type b	blue	500, 750, 1000	54	1	**9.072 094**
Type b	blue	1500 - 4000	80	1	**9.072 893**
Type c	red	50	28	1	**9.072 899**
Type c	red	100	32	1	**9.072 900**
Type c	red	250, 350	45	1	**9.072 901**
Type c	red	500, 750, 1000	54	1	**9.072 902**
Type c	red	1500 - 4000	80	1	**9.072 903**

* melamine.

2 Wide-mouth containers, series 310, PETG



Square, without closure. Crystal clear, ideal for presenting products in their true colours. *Kautex*
The wide-mouth enables easy filling and cleaning.
Please order closures separately.

Capacity ml	Thread external diam. mm	Height mm	PK	Cat. No.
50	32	60.5	1	**9.073 395**
100	40	71.0	1	**9.073 396**
200	50	88.0	1	**9.073 397**
500	65	108.0	1	**9.073 398**
1000	80	143.0	1	**9.073 399**
2000	80	187.0	1	**9.073 400**

Height in mm without closure.

3 Wide-mouth containers, series 310, PVC



Square, Transparent. Clear, for good product presentation. *Kautex*
Amber, for light sensitive contents. The wide mouth allows for easy filling and cleaning.
Black PP, tamper-evident leakproof closure.
Please order closures separately.

Capacity ml	Colour	Thread external diam. mm	Height mm	PK	Cat. No.
100	Transparent	40	83.5	1	**9.074 051**
200	Transparent	50	98.5	1	**9.074 052**
300	Transparent	50	105.5	1	**9.074 053**
500	Transparent	65	118.5	1	**9.074 054**
100	Amber	40	83.5	1	**9.074 061**
200	Amber	50	98.5	1	**9.074 062**
300	Amber	50	105.5	1	**9.074 063**
500	Amber	65	118.5	1	**9.074 064**

Height in mm without closure.



1 Square, wide-mouth containers, series 310, PVC

Kautex

Rigid, Amber or Clear PVC containers. Universal container for storage, sample dispatch and transport. The clear version is ideal for colour-fast product presentation.
The amber version is suitable for light sensitive products.
Please order screw caps separately.

Capacity ml	Width mm	Depth mm	Height without closure mm	Thread external diam. mm	Colour	PK	Cat. No.
50	38.0	38.0	57.0	32	clear	1	**9.073 050**
100	46.0	46.0	71.0	40	clear	1	**9.073 051**
200	59.5	59.5	87.0	50	clear	1	**9.073 052**
300	67.5	67.5	94.0	50	clear	1	**9.073 053**
500	80.5	80.5	108.0	65	clear	1	**9.073 054**
750	91.5	91.5	120.0	80	clear	1	**9.073 055**
1000	97.5	97.5	143.0	80	clear	1	**9.073 056**
2000	122.0	122.0	187.0	80	clear	1	**9.073 057**
50	38.0	38.0	54.0	32	amber	1	**9.073 060**
100	46.0	46.0	71.0	40	amber	1	**9.073 061**
200	59.5	59.5	87.0	50	amber	1	**9.073 062**
300	67.5	67.5	94.0	50	amber	1	**9.073 063**
500	80.5	80.5	108.0	65	amber	1	**9.073 064**
750	91.5	91.5	120.0	80	amber	1	**9.073 065**
1000	97.5	97.5	143.0	80	amber	1	**9.073 066**
2000	122.0	122.0	187.0	80	amber	1	**9.073 067**



2 Wide-Mouth Bottles Type 2104, PE-HD with screw cap, PP

Thermo Scientific

Durable, general-purpose bottles with countless applications in the lab or field. Translucent, more rigid than PE-LD. Wide mouth is easy to fill with dry materials or liquids. Excellent chemical resistance to most acids, bases and alcohols.
Can be used in freezer - use to -100°C. Suitable for shipping liquids.
Leakproof with PP screw cap.

Type	Capacity ml	Cover type mm	PK	Cat. No.
2104	30	28	12	**9.103 221**
2104	60	28	12	**9.103 222**
2104	125	38	12	**9.103 223**
2104	250	43	12	**9.103 224**
2104	500	53	12	**9.103 225**
2104	1000	63	6	**9.103 226**
2104	1500	63	6	**9.103 227**



3 Wide-mouth bottles, with closure, 357 series, PE-HD

Kautex

Multi-sided (octagonal), natural PE-HD, with screw closure. With an extra-large neck opening, this container is ideal for disposal, storage, collection, transport, waste and sampling of dry substances.

Capacity Litres	Diam. mm	Height mm	Neck diam. mm	Thread external diam. mm	PK	Cat. No.
5	190 x 180	230	108	120	1	**9.073 036**
10	230 x 222	303	108	120	1	**9.073 042**



4 Wide-mouth bottles, 311 series, PE-HD

Kautex

Natural. Square with recessed handle. Large, wide-mouth containers designed to be space-saving. Safe and easy to use.
Ideal for storing, collecting and transporting dry substances.

Type 1: Tamper-evident cap 9.072 893 please order separately.
Type 2: Supplied with closure.

Description	Capacity ml	Height mm	Thread external diam. mm	PK	Cat. No.
Type 1 (without cap)	2300	188	80	1	**9.072 932**
Type 2 (with cap)	4400	263	120	1	**9.072 934**

1 Tamper-evident cap for 311 series, PP

NEW!

Kautex

Blue, with conical seal and tamper-evident ring for 2.3L wide mouth containers. Immediately indicates unauthorised opening. Perfect for determining whether the cap has been removed.



For	PK	Cat. No.
Type 2300, art. nr. 9.072 932	1	**9.072 893**

2 Graduated wide-mouth bottles, PE/PP

Polyethylene (body) and Polypropylene (cap). Will withstand considerable pressure before rupturing. Secured by tagging points on bottle and cap. Confidential notes can be placed in the space between insert sealing plug and cap.



Capacity ml	Grad. ml	Ext. diam. mm	Int. diam. mm	Height mm	PK	Cat. No.
50	10	40	24.00	77	1	**9.072 950**
100	20	48	24.00	89	1	**9.072 951**
250	25	61	34.50	126	1	**9.072 952**
500	50	75	34.50	158	1	**9.072 953**
1000	100	93	45.00	200	1	**9.072 954**
2000	100	115	45.00	247	1	**9.072 955**

3 Graduated square bottles, wide-mouth, PE (Body), PP (Cap)

Space saving bottles, ideal for long term storage of samples. Approximate graduations allow reproducible filling without the use of cylinders/beakers. Easy grip caps can be wired down for security. Suitable for foodstuff.



Capacity ml	Grad. ml	Width mm	Length mm	Height mm	Tubing i.d. mm	PK	Cat. No.
25	5	32	34	52	18.0	1	**9.072 943**
50	10	38	38	70	24.0	1	**9.072 944**
100	20	42	48	90	34.5	1	**9.072 945**
250	50	57	60	110	34.5	1	**9.072 946**
500	100	70	80	138	45.0	1	**9.072 947**
1000	100	80	103	176	58.0	1	**9.072 948**
2000	100	100	134	210	58.0	1	**9.072 949**

4 Bottles, wide-mouth, PE, graduated

PE. General purpose bottle meeting Food and Drug regulations with pictograms. Wide neck for easy filling and emptying of liquid or powder samples. Conform to DIN 13316 and 168. With PE closure. Deep seal ensures leakproof closure.



Capacity ml	Grad. ml	Ext. diam. mm	Height mm	Tubing i.d. mm	DIN	PK	Cat. No.
50	10	38	88	24.0	32	1	**9.072 974**
100	20	48	105	24.0	32	1	**9.072 975**
250	25	60	140	38.0	45	1	**9.072 976**
500	100	75	170	38.0	45	1	**9.072 977**
1000	100	95	206	55.0	63	1	**9.072 978**
2000	100	120	252	55.0	63	1	**9.072 979**

5 Graduated wide-mouth bottles

PP, meeting Food and Drug regulations with pictograms. Very sturdy, rupture-proof bottles. Wide mouth for easy filling and emptying of liquid or powder samples. Conforms to DIN 13316 and 168. With PP closure. Deep seals ensure leakproof closure. Autoclavable.



Capacity ml	Grad. ml	Ext. diam. mm	Height mm	Tubing i.d. mm	DIN	PK	Cat. No.
50	10	38	88	24.0	32	1	**9.073 030**
100	20	48	105	24.0	32	1	**9.073 031**
250	25	60	140	38.0	45	1	**9.073 032**
500	100	75	170	38.0	45	1	**9.073 033**
1000	100	95	206	55.0	63	1	**9.073 034**
2000	100	120	252	55.0	63	1	**9.073 035**



1 Wide-mouth bottle with screw cap Economy Type 2189, PE-HD/PP

Thermo Scientific

With PP screw cap. Economical, ruggedly constructed bottle. Guaranteed leakproof for safe sampling, shipping and storage. Translucent bottle allows viewing of liquid level. EPA-specified sample bottle material for a wide variety of inorganic compound and elemental analyses.

Type	Capacity ml	Cover type mm	PK	Cat. No.
2189	30	28	72	**9.103 228**
2189	60	28	72	**9.103 229**
2189	125	38	72	**9.103 230**
2189	250	43	72	**9.103 231**
2189	500	53	48	**9.103 232**
2189	1000	63	24	**9.103 233**



2 Wide-mouth bottle with screw cap Economy Type DS2185, PE-HD/PP, brown

Thermo Scientific

With amber PP screw cap. Protects light sensitive samples from UV/VIS light transmission during sampling, shipping or storage. Wide mouth allows easy retrieval of grab samples and reduces turbulence when filling. Single-use sample bottle. Leakproof.

Type	Capacity ml	Cover type	PK	Cat. No.
DS2185	30	28	72	**9.103 234**
DS2185	60	28	72	**9.103 235**
DS2185	125	38	72	**9.103 236**
DS2185	250	43	72	**9.103 237**
DS2185	500	53	48	**9.103 238**
DS2185	1000	63	24	**9.103 239**



3 Fluorinated Wide-Mouth Bottles Type 2197, PE-HD

Thermo Scientific

With fluorinated PP screw cap. Safe, durable, cost-efficient line of fluorinated wide-mouth bottles. Fluorinated surface provides improved barrier properties and reduces solvent absorption and permeation. Fluorination enhances long-term container performance, prevents material loss due to permeation and yields lower extractables. Wide mouth design allows for easy filling and dispensing of solid and liquid materials. Split- and puncture-resistant. Recyclable. Leakproof.

Type	Capacity ml	Cover type mm	PK	Cat. No.
2197	125	38	12	**9.103 240**
2197	250	43	12	**9.103 241**
2197	500	53	12	**9.103 242**
2197	1000	63	6	**9.103 243**



4 Wide-mouth Bottle PassPort IP2 Type 2199, PE-HD

Thermo Scientific

With PP screw closure. Safe, durable, cost-efficient line of wide-mouth bottles for packaging and transporting hazardous materials. Recommended for customers who are designing, assembling and certifying their own combination packaging. Split and puncture resistant. Wide mouth allows for easy filling of dry materials or liquids. Heavy duty walls. Moulded into base: IP2 marking, material, volume, registration notch and the Nalgene® brand name. Evaluated at 15psi (103kPa) per 49 CFR 173.27 (c) (2), ICAO Technical Instructions Part 3-1;1.1.6.1, and IATA Dangerous Goods Regulations Section 5.0.2.9. Leakproof.

Capacity ml	PK	Cat. No.
125	12	**9.103 244**
250	12	**9.103 245**
500	12	**9.103 246**
1000	6	**9.103 247**

E & OE.

1 Wide-Mouth Bottles Type 2105 with screw cap, PP

Transparent. Rigid wall. For general laboratory use. *Thermo Scientific*
Withstands temperatures up to +121°C.
Autoclavable - cap should be unscrewed before autoclaving.

Type	Capacity ml	Cover type mm	PK	Cat. No.
2105	30	28	12	**9.103 248**
2105	60	28	12	**9.103 249**
2105	125	38	12	**9.103 250**
2105	250	43	12	**9.103 251**
2105	500	53	12	**9.103 252**
2105	1000	63	6	**9.103 253**



2 Heavy-Duty Vacuum Bottles Type 2126, PP with screw cap PP/TPE

With white PP screw cap and TPE gaskets. Most durable Nalgene-bottle. *Thermo Scientific*
Large, thick-walled bottle with wide mouth for extra-rugged service.
Withstand application of full vacuum for 24 hours at 20°C. Leakproof. Autoclavable.

Type	Capacity ml	Cover type mm	PK	Cat. No.
2126	1000	53B	1	**7.048 062**
2126	2000	53B	1	**7.048 063**
2126	4000	83B	1	**7.048 064**
2126	5000	83B	1	**7.048 065**



3 Wide-mouth bottle Economy Type 2187, PPCO

General-purpose, single-use sample bottle, with PP screw cap. Leakproof. Autoclavable. *Thermo Scientific*

Type	Capacity ml	Cover type mm	PK	Cat. No.
2187	30	28	72	**9.103 254**
2187	60	28	72	**9.103 255**
2187	125	38	72	**9.103 256**
2187	250	43	72	**9.103 257**
2187	500	53	48	**9.103 258**
2187	1000	63	24	**9.103 259**



4 5 Kegs, wide mouth, PE, with UN-approval

PE-HD. White, with red lid. UN-approved for Packaging groups I, II and III. Suitable for use with foodstuffs.
Max. filling temperature of 80°C. Product must have cooled down to 30°C before the barrel is closed and stacked.
All barrels can be sealed airtight, watertight and water-vapour tight. Handles as indicated.

Capacity L	Diam. mm	Height mm	Neck	Handle	PK	Cat. No.
3.6	198	175	Ø 136 mm	without	1	**9.050 020**
6.4	198	266	Ø 136 mm	without	1	**9.050 021**
10.4	274	239	Ø 204 mm	without	1	**9.050 019**
15.4	274	328	Ø 204 mm	without	1	**9.050 022**
20.0	274	418	Ø 204 mm	without	1	**9.050 018**
26.4	316	424	Ø 204 mm	without	1	**9.050 023**
54.0	410	518	Ø 282 mm	with	1	**6.900 353**
68.5	410	632	Ø 282 mm	with	1	**6.401 093**





Suction pumps - please see page 1231.

1



1 Narrow-mouth packaging bottles, soda-lime glass

Amber, with PP (Pilferproof) 28 neck finish.
Please order caps separately.

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
30	35.0	71.0	143	**9.070 200**
50	40.5	81.0	99	**9.070 201**
100	50.5	96.0	56	**9.070 202**
250	65.0	133.0	39	**9.070 203**
500	82.0	160.0	20	**9.070 205**
1000	100.5	207.0	14	**9.070 204**

2



2 Screw caps for narrow-mouth bottles, PP 28

PP Cap (Pilferproof) 28 neck finish, with approx. 19.4mm inner mouth.
For bottles 9.070 200 to 9.070 205 series.

Description	PK	Cat. No.
Closure, black, with foam insert	500	**6.303 525**
Closure, white, with cone sealing	500	**9.070 210**
Closure, white, with pouring ring	500	**9.070 211**
Closure, child proof lock, white, with pouring ring	500	**9.070 212**
Originality closure, white, with foam insert	500	**9.070 213**

3



3 Narrow-mouth bottles, soda-lime glass

NEW!

Amber or Clear, to DIN 5090. Standard packaging bottles. Round thread neck in accordance with DIN 168.
Please order caps separately.

Capacity ml	Neck thread GL	Diam. mm	Height mm	Colour	PK	Cat. No.
30	18	34.0	74.0	clear	1	**9.072 103**
50	18	36.5	97.0	clear	1	**6.263 036**
100	22	45.0	117.0	clear	1	**9.072 108**
250	22	61.5	148.5	clear	1	**9.072 114**
500	25	76.0	186.0	clear	1	**9.072 119**
1000	28	96.5	225.0	clear	1	**9.072 124**
30	18	34.0	74.0	amber glass	1	**9.072 133**
50	18	36.5	97.0	amber glass	1	**9.072 135**
100	22	45.0	117.0	amber glass	1	**9.072 138**
250	22	61.5	148.5	amber glass	1	**9.072 144**
500	25	76.0	186.0	amber glass	1	**9.072 149**
1000	28	96.5	225.0	amber glass	1	**9.072 154**

4



4 Screw caps for narrow-mouth bottles, PP/PE-LD

PP cap with PE-LD seal.
For bottles 9.072 103 to 9.072 154 series.

Neck thread GL	PK	Cat. No.
18	1	**9.072 160**
22	1	**9.072 161**
25	1	**9.072 162**
28	1	**9.072 163**



1 Narrow-mouth reagent bottles with stopper, soda-lime glass

Amber or Clear. Soda-lime glass. ISO 4796-2. With glass stopper. Hydrolytic class 3. Standard ground joint neck.

DURAN Group

Capacity	Diam.	Height	Neck	Colour	PK	Cat. No.
ml	mm	mm	NS			
100	52	96	14/15	clear	1	**9.070 408**
250	72	130	19/26	clear	1	**9.070 414**
500	89	165	24/29	clear	1	**9.070 419**
1000	110	200	29/32	clear	1	**9.070 424**
50	42	80	14/15	amber	1	**9.070 505**
100	52	96	14/15	amber	1	**9.070 508**
250	72	130	19/26	amber	1	**9.070 514**
500	89	165	24/29	amber	1	**9.070 519**
1000	110	200	29/32	amber	1	**9.070 524**



2 Narrow-mouth reagent bottles with stopper, DURAN®

Amber or Clear. DURAN®. ISO 4796-2. With conical ground joint and glass stopper. Glass Type I/neutral glass as per USP, EP and JP. With Retrace code (Batch identification). Certificate available via the Internet. Autoclavable.

DURAN Group

Capacity	Diam.	Height	Neck	Colour	PK	Cat. No.
ml	mm	mm	NS			
10	28	52	10/19	clear	1	**9.070 808**
25	36	64	12/21	clear	1	**9.070 814**
50	42	80	14/15	clear	1	**9.070 817**
100	52	96	14/15	clear	1	**9.070 824**
250	70	130	19/26	clear	1	**9.070 836**
500	86	164	24/29	clear	1	**9.070 844**
1000	107	200	29/32	clear	1	**9.070 854**
2000	134	248	29/32	clear	1	**9.070 863**
5000	182	323	45/40	clear	1	**9.070 873**
10000	227	398	60/46	clear	1	**9.070 886**
50	42	80	14/15	amber	1	**9.070 917**
100	52	96	14/15	amber	1	**9.070 924**
250	70	130	19/26	amber	1	**9.070 936**
500	86	164	24/29	amber	1	**9.070 944**
1000	107	200	29/32	amber	1	**9.070 954**
2000	134	248	29/32	amber	1	**9.070 963**



3 Reagent bottles, narrow-mouth, glass stopper, Pyrex®

NEW!

ISO 4796-2 conformed. Made of Borosilicate glass. With ground neck. Supplied with solid glass stopper.

Scilabware

Capacity	Ext. diam.	stopper size	Height	PK	Cat. No.
ml	mm		mm		
100	54	14/15	106	10	**9.072 371**
250	73	19/26	143	10	**9.072 372**
500	89	24/29	175	10	**9.072 373**
1000	111	29/32	214	10	**9.072 374**
2000	138	29/32	262	10	**9.072 375**
5000	181	45/40	333	1	**9.072 376**
10000	227	60/46	414	1	**9.072 377**
20000	288	60/46	508	1	**9.072 378**



1



1 Reagent bottles, narrow-mouth, Pyrex®

NEW!

Scilabware

- Complies with ISO 4796
- Borosilicate glass with unground neck
- For use with rubber stoppers (not supplied)

Capacity ml	Ext. diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
100	54	13	95	10	**9.072 379**
250	73	18	131	10	**9.072 380**
500	89	23	163	10	**9.072 381**
1000	111	28	200	10	**9.072 382**
2000	138	28	248	10	**9.072 383**
5000	187	44	315	1	**9.072 384**
10000	227	59	398	1	**9.072 385**
15000	258	59	460	1	**9.072 386**
20000	288	59	492	1	**9.072 387**

2



2 Narrow-mouth square bottles, soda-lime glass, with screw cap

DURAN Group

Soda-lime glass, with high threaded neck. Without closure. Hydrolytical class 3.
Without pouring ring and dust cap.

Capacity ml	Diam. mm	Height mm	Neck thread GL	Colour	PK	Cat. No.
100	49	119	32	clear	1	**9.072 051**
250	64	155	32	clear	1	**9.072 052**
500	77	186	32	clear	1	**9.072 055**
1000	97	223	45	clear	1	**9.072 060**
100	49	119	32	amber	1	**9.072 061**
250	64	155	32	amber	1	**9.072 062**
500	77	186	32	amber	1	**9.072 065**
1000	97	223	45	amber	1	**9.072 070**

3



3 Tamper-evident caps for soda-lime square screw cap bottles, PP

Blue PP. For square screw cap bottles (soda-lime glass).
Type H: Narrow-neck, with high form thread.
Type K: Wide-necked, with short form thread.
Temperature (max.): 140°C

Type	Thread	Diam. mm	Height mm	PK	Cat. No.
32 H	32	45	32	1	**9.072 041**
45 H	45	60	35	1	**9.072 042**
32 K	32	44	23	1	**9.072 092**
45 K	45	58	27	1	**9.072 093**
54 K	54	69	29	1	**9.072 094**
60 K	60	78	29	1	**9.072 095**

4



4 Dispensers/bottle-top flasks, Dispensette® III, amber soda-lime glass

NEW!

BRAND

Amber soda-lime glass.With PP screw cap and PE-LD pouring ring.Reservoir bottles.
Space-saving, square design, except 2500ml reservoir which is cylindrical.

Capacity ml	Neck thread GL	Width mm	Height mm	PK	Cat. No.
100	32	50	125	1	**9.284 541**
250	32	65	160	1	**9.284 542**
500	32	80	195	1	**9.284 543**
1000	45	95	230	1	**9.284 544**
2500*	45	140	300	1	**9.284 545**

* cylindrical design

E & OE.

1 LLG-Narrow-mouth bottles with cap, PE-LD, economy pack

Transparent with cap.



Capacity ml	Diam. mm	Height mm	Thread external diam. mm	PK	Cat. No.
50	37.0	78.0	18	50	**9.073 500**
100	47.0	105.0	18	20	**9.073 501**
250	63.0	119.0	25	10	**9.073 502**
500	78.0	152.0	25	10	**9.073 503**
1000	96.0	206.0	28	4	**9.073 504**
2000	120.0	264.0	28	1	**9.073 505**

2 Narrow-mouth bottles, series 301, PE-LD

Natural. Round bottle without closure. Tall, narrow form, leakproof. Easy to handle. *Kautex*
Also available with dropper cap or spray cap.
Please order cap separately.



Capacity ml	Diam. mm	Height mm	Thread external diam. mm	PK	Cat. No.
10	26.0	46.5	14	1	**9.072 741**
20	31.5	56.5	14	1	**9.072 742**
30	33.5	68.5	14	1	**9.072 743**
50	37.5	86.0	18	1	**9.072 745**
100	47.5	105.0	18	1	**9.072 748**
200	57.5	133.0	18	1	**9.072 751**
250	61.3	140.0	25	1	**9.072 750**
500	75.0	177.0	25	1	**9.072 752**
1000	97.5	223.5	28	1	**9.072 755**
2000	120.0	264.0	28*	1	**9.072 757**
3000	138.0	300.0	32*	1	**9.072 759**
5000	162.0	355.0	40*	1	**9.072 762**

Height in mm without seal.
*includes seal.

3 Round square-shouldered bottles, series 302, PE-LD

Natural. Round. Tall, narrow form, leakproof. Easy to handle. *Kautex*
Also available with dropper cap or spray cap.
Please order cap separately.



Capacity ml	Diam. mm	Thread external diam. mm	Height mm	PK	Cat. No.
50	36.5	18	80.0	1	**9.073 365**
100	44.5	18	98.5	1	**9.073 366**
250	60.0	25	127.5	1	**9.073 368**
500	75.5	25	160.0	1	**9.073 369**
1000	95.0	28	196.0	1	**9.073 370**

Height in mm without cap.

Caps for narrow-mouth bottles, series 301/302, PE-LD

Natural. *Kautex*

Description	For Type	For bottles ml	For Thread o.d. mm	PK	Cat. No.
Screw-type cap	301	10, 20, 30	14	1	**9.072 771**
Screw-type cap	301, 302	50, 100, 200	18	1	**9.072 773**
Screw-type cap	301, 302	250, 500	25	1	**9.072 775**
Screw-type cap	301, 302	1000, 2000	28	1	**9.072 777**
Screw-type cap	301	3000	32	1	**9.072 778**
Dropping cap *	301	10, 20, 30	14	1	**9.073 314**
Dropping cap *	301, 302	50, 100, 200	18	1	**9.073 315**
Dropping cap *	301, 302	250, 500	25	1	**9.073 318**
Dropping cap *	301, 302	1000, 2000	28	1	**9.073 319**
Small nozzle cap with red retaining band, PVC	301, 302	all		1	**9.073 320**
Spray cap	301, 302	100	18	1	**9.223 110**
Spray cap	301	200	18	1	**9.223 111**
Spray cap	301, 302	250	25	1	**9.223 112**
Spray cap	301, 302	500	25	1	**9.223 113**
Spray cap	301, 302	1000	28	1	**9.223 114**
Spray cap	301	2000	28	1	**9.223 120**

* with PVC-Nozzle, red.



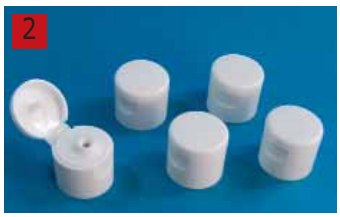
1 Round Bottles, series 308, PE-HD

Neck design allows sngle handed use. *Kautex*
Used for:
- Packaging
- Storage
- Transport

Please order closure separately.

Capacity ml	Diam. mm	Neck diam. mm	Thread external diam. mm	Height mm	PK	Cat. No.
50	32	17.0	22	86.0	1	**9.072 783**
100	41	17.0	22	108.5	1	**9.072 784**
250	56	17.0	22	135.5	1	**9.072 785**
500	70	19.4	25	173.0	1	**9.072 786**
1000	89	19.4	25	211.5	1	**9.072 787**

Height without cap.



2 Caps for Round Bottles, series 308, PP

White caps. *Kautex*

Description	For bottles ml	Thread Internal Ø mm	PK	Cat. No.
Neck opening caps	50 / 100 / 250	22	1	**9.072 788**
Neck opening caps	500 / 1000	25	1	**9.072 789**



3 Round Bottles, series 321 „VarioPack Dual" with PA barrier layer, white

NEW!

High-quality packaging with barrier layer of polyamide for highly volatile or intense smelling media with high permeation rate. *Kautex*
Used for:
- Packaging
- Storage
- Transport

Please order closure separately.

Capacity ml	Diam. mm	Neck diam. mm	Thread external diam. mm	Height mm	PK	Cat. No.
250	62	42.0	50	131.3	1	**9.073 517**
500	69	42.0	50	186.5	1	**9.073 518**
1000	88	42.0	50	234.0	1	**9.073 519**

Height without cap.

Caps for Round Bottles, VarioPack, HDPE

NEW!

Closure HDPE, white, with PA/PE/PA-insert and tamper evident ring *Kautex*

Description	For bottles ml	Thread Internal Ø mm	PK	Cat. No.
Closure HDPE	250 - 1000	50	1	**9.073 520**



4 Narrow-mouth reagent bottles, series 308/310, PE-HD, UN-approved

UN-approved (only with the fitting UN-approved closures: 9.073 379 - 381). *Kautex*
Square except 500ml size which is round and has an outside diameter of 77mm.
Available in natural or black. Suitable for transporting hazardous liquids. Leakproof.

Please order closure separately.

Capacity ml	Colour	Neck thread GL	Weight g	Height mm	Serie	PK	Cat. No.
500	natural	45	50	176.5	308	1	**9.073 373**
1000	natural	45	88	211.8	310	1	**9.073 374**
2500	natural	45	163	282.0	310	1	**9.073 375**
500	black	45	52	176.5	308	1	**9.073 376**
1000	black	45	92	211.8	310	1	**9.073 377**
2500	black	45	167	282.0	310	1	**9.073 378**

Height in mm without closure.

1 Narrow-mouth bottles, series 310 "Clear Grip", PP



Glass-like transparency and glaze, ideal for product presentations. *Kautex*
Low weight, outstanding chemical resistance and thermal stability, balanced stiffness and impact resistance, autoclavable up to 121°C (before autoclaving screw off the closure and place it upside down on the bottle.)

Please order closures separately.

Capacity ml	Neck thread GL	Weight g	Height mm	PK	Cat. No.
100	32	15	108.0	1	**9.073 456**
250	32	21	136.0	1	**9.073 457**
500	45	40	169.0	1	**9.073 458**
1000	45	61	204.0	1	**9.073 459**

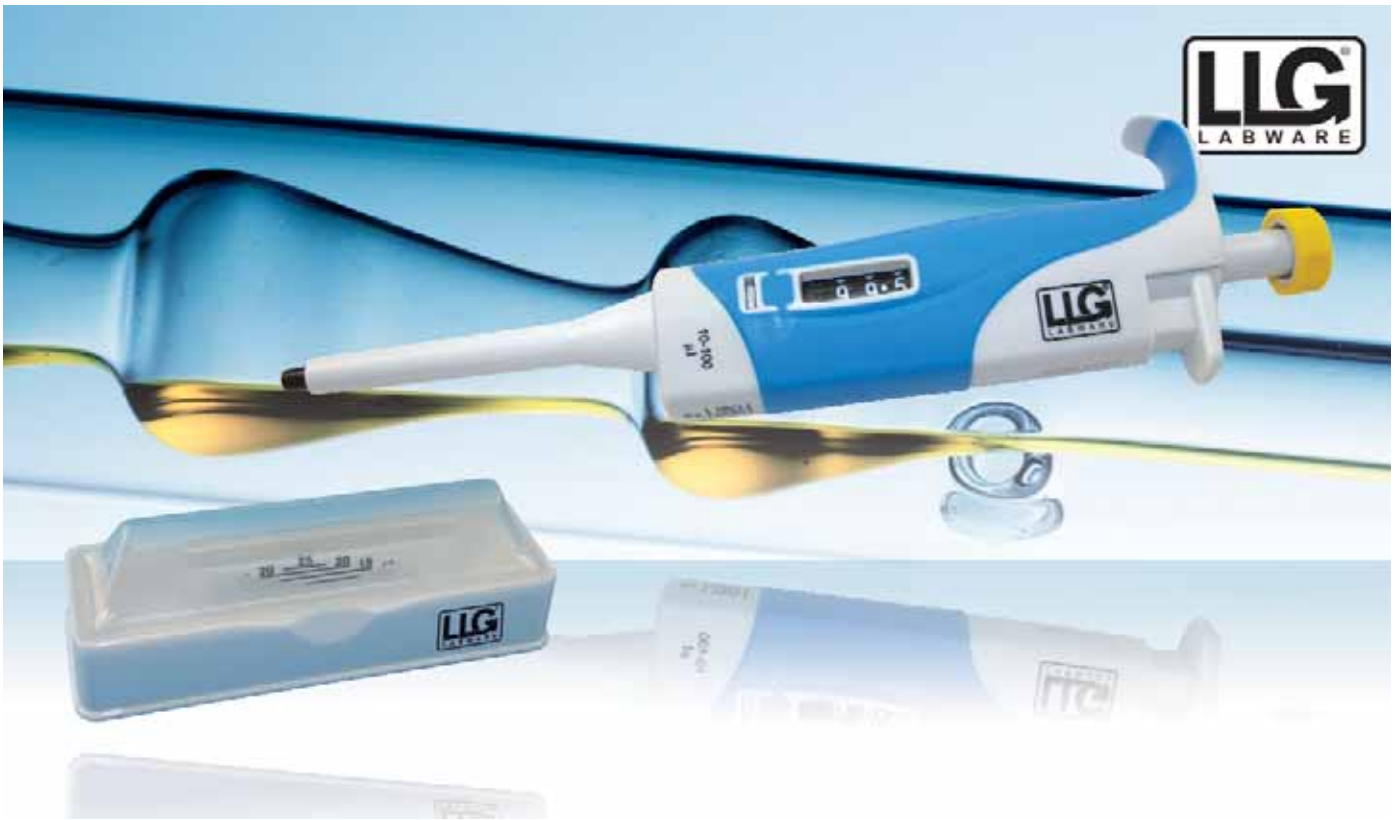
2 Closures for narrow-mouth reagent bottles, series 310, PP, UN-approved

NEW!



UN-approved. *Kautex*
Type 1: Light cap, black, tamper-evident ring and PTFE cup-shaped liner.
Type 2: Bell cap, black, with red PP tamper-evident ring and cup-shaped PTFE liner.
Type 3: Bell cap, red, with degassing membrane, red PP tamper-evident ring and cup-shaped, perforated PTFE liner.

Type	For Thread o.d. mm	For bottles ml	PK	Cat. No.
1. Light cap	45	500, 1000, 2500	1	**9.073 379**
2. Bell cap	45	500, 1000, 2500	1	**9.073 380**
3. Bell cap	45	500, 1000, 2500	1	**9.073 381**





1 Square reagent bottles, PE-HD

Natural or white. Narrow neck. *Kautex*
Please order closures separately.

Capacity ml	Width mm	Depth mm	Height without closure mm	Thread external diam. mm	Colour	PK	Cat. No.
100	45	45	108.0	32	natural	1	**9.072 850**
250	60	60	136.0	32	natural	1	**9.072 851**
500	74	74	170.0	32	natural	1	**9.072 852**
1000	85	85	221.0	32	natural	1	**9.072 853**
2500	122	122	272.0	45	natural	1	**9.072 854**
100	45	45	108.0	32	white	1	**9.072 855**
250	60	60	136.0	32	white	1	**9.072 856**
500	74	74	170.0	32	white	1	**9.072 857**
1000	85	85	221.0	32	white	1	**9.072 858**
2500	122	122	272.0	45	white	1	**9.072 859**



2 Caps for narrow-mouth reagent bottles, PP

NEW!

a) Tamper-evident cap, blue, with conical seal and tamper-evident ring. Immediately indicates unauthorised opening. Perfect for determining whether the cap has been removed. *Kautex*
b) Tamper-evident cap, red, with PE foam lining and tamper-evident ring. Immediately indicates unauthorised opening. Perfect for determining whether the cap has been removed.
c) Tamper-evident cap, white/blue, with child-proof lock, conical seal and tamper-evident ring. Immediately indicates unauthorised opening. Perfect for determining whether the cap has been removed.
d) Tamper-evident cap, white/red, with child proof lock, tamper-evident ring, conical seal and degassing membrane. Immediately indicates unauthorised opening. Perfect for determining whether the cap has been removed.
without Fig.) Tamper-evident cap, red, degassing cap, with conical gasket and degassing membrane.

For bottles ml	For Thread o.d. mm	Figure	PK	Cat. No.
100 to 1000	32	a	1	**9.072 041**
2500	45	a	1	**9.072 862**
100 to 1000	32	b	1	**9.072 863**
2500	45	b	1	**9.072 868**
100 to 1000	32	c	1	**9.072 866**
100 to 1000	32	d	1	**9.072 867**
100 to 1000	32	without Fig.	1	**9.072 905**



3 Narrow-mouth bottles Economy Typ 2087, PPCO, with screw cap, PP

With PP screw cap. General-purpose, single-use sample bottle. Leakproof. Autoclavable. *Thermo Scientific*

Type	Capacity ml	Cover type mm	PK	Cat. No.
2087	30	20	1	**9.103 035**
2087	60	20	1	**9.103 036**
2087	125	24	1	**9.103 037**
2087	250	24	1	**9.103 038**
2087	500	28	1	**9.103 039**
2087	1000	38-430	1	**9.103 040**

E & OE.

1 Diagnostic Bottles Typ 2035, PETG, sterile

Thermo Scientific

With white PE-HD screw cap with liner. Ideal for sterile sampling, storage and shipment of reagents and buffer solutions. Bottles are sterile to 10-6 SAL, non-pyrogenic, non-cytotoxic and comply with USP VI guidelines.



Type	Capacity ml	Cover type	PK	Cat. No.
2035	5	diam. 20 mm/ design 415	100	**6.803 092**
2035	10	diam. 20 mm/ design 415	100	**6.205 128**
2035	20	diam. 20 mm/ design 415	100	**7.632 641**

2 Aluminium bottles, with UN approval

Bürkle

For storage, transport or shipment of samples/ reference materials that must not be contaminated in any way.
- Complies with PCB regulations
- With UN approval (60 - 1200ml)
- Pure aluminium (AL99.5 material)
- PP screw cap with internal aluminium seal



Capacity ml	Diam. mm	Height mm	Thread external diam. mm	PK	Cat. No.
38	35	70	38	1	**9.072 168**
60	40	88	38	1	**9.072 169**
120	57	97	38	1	**9.072 170**
300	57	160	38	1	**9.072 171**
600	74	192	38	1	**9.072 172**
1200	88	248	38	1	**9.072 173**

3 Stainless Steel Bottle, with cap, GL 45, without UN approval

DURAN Group

- corrosion resistant stainless steel
- fully compatible with all the GL 45 caps
- unbreakable
- Hazardous materials laboratory container for storage of liquids, intermediates, or solid product
- Storage of precious materials, such as high purity fine chemicals, pharmaceutical or cosmetic products
- Storage of light sensitive materials



Description	Capacity ml	PK	Cat. No.
DURAN® Group GL 45 Stainless Steel Laboratory Bottle	1500	1	**9.072 175**
DG Stainless steel (316L) cap with PTFE sealing disk, GL 45		1	**9.072 177**
Stand made of plastic, black, for mobile flame sterilizer or cartridges		1	**4.653 267**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

DURAN GROUP magic of precision

1 2 Square bottles, PE-HD and PVC, series 310

Square, PE-HD, Natural, translucent bottle. Square, PVC, transparent, rigid bottle. *Kautex*
Please order screw caps separately.

Capacity ml	Width mm	Depth mm	Height mm	Thread external diam. mm	Material	PK	Cat. No.
100	40.5	32.0	110.5	18	PE-HD	1	**9.072 808**
250	53.5	42.0	146.5	25	PE-HD	1	**9.072 814**
500	63.5	54.5	180.0	25	PE-HD	1	**9.072 819**
1000	84.0	66.0	222.5	25	PE-HD	1	**9.072 824**
250	59.0	38.0	151.5	25	PVC	1	**9.072 914**
500	70.0	50.0	189.0	25	PVC	1	**9.072 919**
1000	87.5	61.0	233.0	25	PVC	1	**9.072 924**

Height in mm without cap.

1


2


3 Caps for PE-HD and PVC square bottles series 310

Kautex

Description	For bottles	PK	Cat. No.
Screw cap, natural LDPE	100 ml, HDPE	1	**9.072 773**
Screw cap, natural LDPE	250 to 500 ml, HDPE	1	**9.072 775**
Dropper cap, natural LDPE, with teat*	100 ml, HDPE	1	**9.073 315**
Dropper cap, natural LDPE, with teat*	250, 500 and 1000 ml, HDPE	1	**9.073 318**
Moulded plastic cap, black melamine	100 ml, HDPE	1	**9.073 321**
Moulded plastic cap, black melamine	250, 500 and 1000 ml, HDPE	1	**9.073 322**
Moulded plastic cap, melamine, white	250, 500 and 1000 ml, PVC	1	**9.072 929**
Screw cap, white PP, with washbottle jet	250, 500 and 1000 ml, PVC	1	**9.072 915**

* incl. small captive cap

3


4


4 Square bottles Type 2007, PE-HD, with PP screw cap

PE-HD bottle with PP screw cap. Leakproof. *Thermo Scientific*

Capacity ml	Screw cap diam. mm	Width mm	Depth mm	Height mm	PK	Cat. No.
125	28	64	58	102	12	**9.103 279**
250	38	76	48	114	12	**9.103 280**
500	48	94	58	140	12	**9.103 281**
1000	53	125	71	180	6	**9.103 282**
2000	63	152	81	239	4	**9.103 283**

E & OE.

1 Square bottles Type 2015, PC, with screw cap, PP

PC bottle with leakproof PP screw cap. With moulded graduations and pouring rim. *Thermo Scientific*
Ideal for storing aqueous solutions and for the short-term storage of cell culture media.
Autoclavable.



Capacity ml	Screw cap diam. mm	Height with cap mm	Width mm	Depth mm	PK	Cat. No.
30	20	64	38	38	12	**9.103 284**
60	24	83	41	41	12	**9.103 285**
125	38-430*	110	54	54	6	**9.103 286**
250	38-430*	146	57	57	6	**9.103 287**
500	38-430*	177	74	74	4	**9.103 288**
1000	38-430*	220	94	94	4	**9.103 289**
2000	53B	271	116	116	1	**9.103 077**

* with high form thread.

2 Acid cap bottles

DURAN®. Conical shoulders. With NS pennyhead stopper and interchangeable glass cap. *DURAN Group*
Glass type I/neutral glass as per USP, EP and JP. Autoclavable.



Capacity ml	Diam. mm	Height mm	NS	Colour	PK	Cat. No.
100	55	145	19/17	clear	1	**9.072 408**
250	75	180	19/17	clear	1	**9.072 414**
500	82	220	24/20	clear	1	**9.072 419**
1000	109	260	29/32	clear	1	**9.072 424**
100	55	145	19/17	amber	1	**9.072 508**
250	75	180	19/17	amber	1	**9.072 514**
500	82	220	24/20	amber	1	**9.072 519**
1000	109	260	29/32	amber	1	**9.072 524**

3 LLG-Wash bottles, narrow neck, PE

Easy to squeeze, semi-rigid, translucent, with excellent clarity. The stream of the liquid can be easily controlled by hand pressure. Dispensing tip provides extra fine stream - tip can be cut back in order to increase the flow rate, if required.



Capacity ml	PK	Cat. No.
100	1	**9.223 500**
250	1	**9.223 501**
500	1	**9.223 502**
1000	1	**9.223 503**

4 LLG-Safety wash bottle, PE-LD

NEW!

Manufactured from PE-LD and with the safety label printed on the wash bottle in accordance with regulation (EC) No. 1272/2008 (GHS).
- Colour coded cap and bottle for easy and quick recognition of the bottle content
- Dispensing tube designed to optimize backflow and turbulence-free operation.
- Permanent printing on the body of safety symbols in acc. with GHS, as well as of chemical formula, CAS number, hazard pictogram, signal word, hazard statements and NFPA code.
- Chemical name and Warning texts in German, English, French and Spanish



Label	Capacity ml	PK	Cat. No.
acetone	500	1	**9.223 504**
distilled water	500	1	**9.223 505**
ethanol	500	1	**9.223 506**
isopropanol	500	1	**9.223 507**
methanol	500	1	**9.223 508**

1



1 LLG-Safety vented wash bottles, LDPE

- Multi-lingual wide neck wash bottles featuring the patented DripLok® vapour venting valve that prevents solvent drips
- Indelibly printed in 4 languages (English, French, German and Spanish)
- Choose from 4 solvent labels all including the new Globally Harmonised Symbols, NFPA diamond, risk phrases and safety information
- Fitted with colour coded, one-piece polypropylene closures that maintain their shape in use
- Closures feature precision jet-tip aperture for fine control

Label	Capacity ml	PK	Cat. No.
Acetone	500	1	**9.223 491**
Methanol	500	1	**9.223 492**
Isopropanol	500	1	**9.223 493**
Ethanol	500	1	**9.223 494**

2



2 Narrow-mouth bottles, series 301, PE-LD

Natural. Round bottle without closure. Tall, narrow form, leakproof. Easy to handle. *Kautex*
Also available with dropper cap or spray cap.
Please order cap separately.

Capacity ml	Diam. mm	Height mm	Thread external diam. mm	PK	Cat. No.
10	26.0	46.5	14	1	**9.072 741**
20	31.5	56.5	14	1	**9.072 742**
30	33.5	68.5	14	1	**9.072 743**
50	37.5	86.0	18	1	**9.072 745**
100	47.5	105.0	18	1	**9.072 748**
200	57.5	133.0	18	1	**9.072 751**
250	61.3	140.0	25	1	**9.072 750**
500	75.0	177.0	25	1	**9.072 752**
1000	97.5	223.5	28	1	**9.072 755**
2000	120.0	264.0	28*	1	**9.072 757**
3000	138.0	300.0	32*	1	**9.072 759**
5000	162.0	355.0	40*	1	**9.072 762**

Height in mm without seal.
*includes seal.

3



3 Round square-shouldered bottles, series 302, PE-LD

Natural. Round. Tall, narrow form, leakproof. Easy to handle. *Kautex*
Also available with dropper cap or spray cap.
Please order cap separately.

Capacity ml	Diam. mm	Thread external diam. mm	Height mm	PK	Cat. No.
50	36.5	18	80.0	1	**9.073 365**
100	44.5	18	98.5	1	**9.073 366**
250	60.0	25	127.5	1	**9.073 368**
500	75.5	25	160.0	1	**9.073 369**
1000	95.0	28	196.0	1	**9.073 370**

Height in mm without cap.

Caps for narrow-mouth bottles, series 301/302, PE-LD

Natural. *Kautex*

Description	For Type	For bottles ml	For Thread o.d. mm	PK	Cat. No.
Screw-type cap	301	10, 20, 30	14	1	**9.072 771**
Screw-type cap	301, 302	50, 100, 200	18	1	**9.072 773**
Screw-type cap	301, 302	250, 500	25	1	**9.072 775**
Screw-type cap	301, 302	1000, 2000	28	1	**9.072 777**
Screw-type cap	301	3000	32	1	**9.072 778**
Dropping cap *	301	10, 20, 30	14	1	**9.073 314**
Dropping cap *	301, 302	50, 100, 200	18	1	**9.073 315**
Dropping cap *	301, 302	250, 500	25	1	**9.073 318**
Dropping cap *	301, 302	1000, 2000	28	1	**9.073 319**
Small nozzle cap with red retaining band, PVC	301, 302	all		1	**9.073 320**
Spray cap	301, 302	100	18	1	**9.223 110**
Spray cap	301	200	18	1	**9.223 111**
Spray cap	301, 302	250	25	1	**9.223 112**
Spray cap	301, 302	500	25	1	**9.223 113**
Spray cap	301, 302	1000	28	1	**9.223 114**
Spray cap	301	2000	28	1	**9.223 120**

* with PVC-Nozzle, red.

1 Wash bottles Type 2401, PE-LD

PE-LD bottle and suction tube. PP screw cap and suction tube support moulded as one piece. *Thermo Scientific*



Capacity ml	Screw cap diam. mm	Height mm	PK	Cat. No.
125	24	147	1	**9.223 223**
250	24	175	1	**9.223 224**
500	28	213	1	**9.223 225**
1000	38-430*	259	1	**9.223 226**

*with high form thread

2 Wide-neck wash bottles, Unitary™, Type 2402, PE-LD, with screw cap, PP

PE-LD Bottle with leakproof PP screw cap. Wide mouth neck. Bottle and dispensing jet are moulded in one piece. *Thermo Scientific*



Type	Capacity ml	Screw cap diam. mm	PK	Cat. No.
2402	125	24	1	**9.223 236**
2402	250	38	1	**9.223 237**
2402	500	38	1	**9.223 238**
2402	750	38	1	**9.223 239**
2402	1000	43	1	**9.223 240**

3 Wide-mouth wash bottles Unitary™ Type DS2408, PE-LD

Red. PE-LD bottle with leakproof PP screw cap. Bottle and dispensing jet are moulded in one piece. *Thermo Scientific*



Type	Capacity ml	Screw cap diam. mm	Height with cap mm	PK	Cat. No.
DS2408	250	38	138	1	**9.223 252**
DS2408	500	38	173	1	**9.223 255**

4 Safety wash bottles, wide mouth, series 303, PE-LD

Laboratory safety wash bottle printed with symbols for hazardous substances. *Kautex*
Leakproof. Description of contents is given in German, English and French.
Scratch-resistant ink. Bottles can be fully emptied thanks to a movable outlet jet, also can be used upside down.
Safety note: If the base of the jet is positioned above the liquid level, no liquid will be ejected in the event of a change in temperature. The jet tip is sealed for safety during transport and must be cut before use.
With fitted PE-LD washbottle cap.



Type	Cover type	Capacity ml	Thread external diam. mm	Height mm	PK	Cat. No.
Acetone	Red	250	40	120	1	**9.073 355**
Acetone	Red	500	50	154	1	**9.073 356**
Ethanol	Green	250	40	120	1	**9.073 357**
Ethanol	Green	500	50	154	1	**9.073 358**
Isopropanol	Yellow	250	40	120	1	**9.073 359**
Isopropanol	Yellow	500	50	154	1	**9.073 360**
Methanol	Orange	250	40	120	1	**9.073 361**
Methanol	Orange	500	50	154	1	**9.073 362**
Distilled water	Blue	250	40	120	1	**9.073 363**
Distilled water	Blue	500	50	154	1	**9.073 364**

Height in mm without closure.

1 VITsafe™ safety wash bottles, wide-mouth, PP/PE-LD

VITLAB

PE-LD or PP Bottles, PP spray tube. Safer due to the durable safety imprint in accordance to Directive (EC) No. 1272/2008 (GHS), as well as with all important information: Material name in German, English, French and Spanish, Chemical formula, CAS No., hazard pictogram, signal word, Risk phrases (H phrases), safety phrases (P phrases), as well as NFPA Code.
Precise spray jet and optimised medium backflow through the continuous and finely drawn tip of the spray tube.
Practically no leakage or dripping with the bright red VENT-CAP screw cap, the design of which prevents almost all static overpressure.

Label	Capacity ml	Neck thread GL	Material	PK	Cat. No.
Acetone	250	45	PP	1	**9.223 375**
Acetone	500	45	PP	1	**9.223 381**
Acetone	1000	63	PP	1	**9.223 390**
Acetonitrile	500	45	PE-LD	1	**6.235 042**
Distilled water	250	45	PE-LD	1	**9.223 370**
Distilled Water	500	45	PE-LD	1	**9.223 376**
Distilled water	1000	63	PE-LD	1	**9.223 385**
Ethanol	250	45	PE-LD	1	**9.223 374**
Acetic acid	500	45	PE-LD	1	**6.234 466**
Ethanol	500	45	PE-LD	1	**9.223 380**
Ethanol	1000	63	PE-LD	1	**9.223 389**
Ethyl acetate	250	45	PE-LD	1	**9.223 373**
Ethyl acetate	500	45	PE-LD	1	**9.223 379**
Ethyl acetate	1000	63	PE-LD	1	**9.223 388**
Isopropanol	250	45	PE-LD	1	**9.223 372**
Isopropanol	500	45	PE-LD	1	**9.223 378**
Hexane	500	45	PE-LD	1	**9.223 391**
Heptane	500	45	PE-LD	1	**9.223 392**
Isopropanol	1000	63	PE-LD	1	**9.223 387**
Methanol	250	45	PE-LD	1	**9.223 371**
Methanol	500	45	PE-LD	1	**9.223 377**
Methanol	1000	63	PE-LD	1	**9.223 386**
Methylethylchloride	500	45	PE-LD	1	**6.225 506**
Methylethylketone (MEK)	500	45	PP	1	**9.223 384**
N,N-Dimethylformamide	500	45	PE-LD	1	**6.225 507**
Pentane	500	45	PE-LD	1	**9.223 397**
Tetrahydrofuran (THF)	500	45	PE-LD	1	**9.223 393**
Toluene	500	45	PE-LD	1	**9.223 394**
Xylol	500	45	PE-LD	1	**9.223 395**

1



2



2 Wash bottle caps, Vent-Cap, PP

VITLAB

Screw cap and PP spray tube.
Practically no leakage or dripping with the bright red VENT-CAP screw cap, the design of which prevents almost all static overpressure.
Precise spray jet and optimised medium backflow through the continuous and finely drawn tip of the spray tube.

Neck thread GL	PK	Cat. No.
25	1	**9.223 400**
32	1	**9.223 401**
45	1	**9.223 402**
63	1	**9.223 403**

E & OE.

1 VITsafe™ Safety wash bottles, narrow neck, PP/PE-LD



Bottles made from PE-LD, spray tube from PP. Safer due to the durable safety imprint in accordance to Directive (EC) No. 1272/2008 (GHS), as well as with all important information: Material name in German, English, French and Spanish, Chemical formula, CAS No., hazard pictogram, signal word, Risk phrases (H phrases), safety phrases (P phrases), as well as NFPA Code. Precise spray jet and optimised medium backflow through the continuous and finely drawn tip of the spray tube. Practically no leakage or dripping with the bright red VENT-CAP screw cap, the design of which prevents almost all static overpressure. *VITLAB*

Label	Capacity ml	Neck thread GL	Material	PK	Cat. No.
Acetone	250	25	PP	1	**9.223 345**
Acetone	500	25	PP	1	**9.223 351**
Acetone	1000	32	PP	1	**9.223 360**
Acetonitrile	500	25	PE-LD	1	**7.058 640**
Distilled water	250	25	PE-LD	1	**9.223 340**
Distilled water	500	25	PE-LD	1	**9.223 346**
Distilled water	1000	32	PE-LD	1	**9.223 355**
Ethanol	250	25	PE-LD	1	**9.223 344**
Ethanol	500	25	PE-LD	1	**9.223 350**
Ethanol	1000	32	PE-LD	1	**9.223 359**
Ethyl acetate	250	25	PE-LD	1	**9.223 343**
Ethyl acetate	500	25	PE-LD	1	**9.223 349**
Ethyl acetate	1000	32	PE-LD	1	**9.223 358**
Acetic acid	500	25	PE-LD	1	**7.079 737**
Isopropanol	250	25	PE-LD	1	**9.223 342**
Isopropanol	500	25	PE-LD	1	**9.223 348**
Isopropanol	1000	32	PE-LD	1	**9.223 357**
Methanol	250	25	PE-LD	1	**9.223 341**
Methanol	500	25	PE-LD	1	**9.223 347**
Methanol	1000	32	PE-LD	1	**9.223 356**
Methylene chloride	500	25	PE-LD	1	**7.078 722**
Methylethylketone (MEK)	500	25	PP	1	**9.223 354**
N, N-Dimethylformamide	500	25	PE-LD	1	**6.401 458**
Xylene	500	25	PE-LD	1	**7.087 939**
Hexane	500	25	PE-LD	1	**7.009 310**
Heptane	500	25	PE-LD	1	**6.073 505**
Tetrahydrofuran (THF)	500	25	PE-LD	1	**7.087 940**
Toluene	500	25	PE-LD	1	**7.087 938**
Pentane	500	25	PE-LD	1	**6.242 784**

2 Dropper bottles, PE-HD



Natural. Without PE-HD combination closure with screw-on dropping tip which must be ordered separately. Highly suitable for adhesives and other liquids that can be finely dispensed. *Kautex*

Capacity ml	Diam. mm	PK	Cat. No.
10	24.0	1	**9.073 310**
25	31.3	1	**9.073 311**
50	40.0	1	**9.073 312**

3 Cap for dropping bottles, PE-HD



For bottles 9.073 310 to 9.037 312 series. *Kautex*

Type	PK	Cat. No.
Cap for dropping bottles	1	**9.073 313**



1 Dropping bottles, pipette bottles, soda-lime glass

Amber or Clear. Soda-lime glass, NS 14/15. With interchangeable ground joint transparent pipette. Hydrolytical class 3. Complete with rubber teat.

DURAN Group

Capacity ml	Height mm	Colour	PK	Cat. No.
50	79	clear	1	**9.072 646**
100	105	clear	1	**9.072 648**
50	79	amber	1	**9.072 656**
100	105	amber	1	**9.072 658**



2 Pressure atomizer LaboPlast®, PE-HD

PE/PP/glass-fibre reinforced PA, V2A, FKM/bottle material: PE-HD. With short spray nozzle. Left-handed and right-handed pistol control. The pressurised spray has a working pressure of 4 bar.

Bürkle

Capacity ml	Ext. diam. mm	Height mm	Neck diam. mm	Weight g	PK	Cat. No.
1500	142	315	45	475	1	**9.223 162**

Bürkle

Type	PK	Cat. No.
Spray lance, 300mm long	1	**9.223 165**
Foam jet	1	**9.223 166**



3 Spray bottles LaboPlast®, PE/PP

Chemical resistant to a large extend. Trigger-action spray pump with continuously adjustable spray nozzle.

Bürkle

Capacity ml	Ext. diam. mm	Height mm	Neck diam. mm	Weight g	PK	Cat. No.
250	60	220	18.0	54	1	**9.223 152**
500	75	240	18.0	79	1	**9.223 155**
1000	98	295	17.5	111	1	**9.223 160**



4 5 Spray bottle Turnn'Spray with overhead valve, PE/PP

Spraying upwards overhead is not possible with standard spray bottles. As soon as the suction tube is no longer immersed in liquid, you can't spray any more. Not so with our overhead spray bottle, Turn'n'Spray. It features a special technology that allows you to spray from any position. That means you can spray practically and conveniently from any angle and reach hard-to-access places easily and without straining. The high-quality, refillable spray bottle can be used again and again.

Bürkle

- Uninterrupted spraying, even above your head
- Parts in contact with media made of PP, PE, silicon and stainless steel
- Nozzle diameter 0.6mm; nozzle is continuously adjustable
- Amount sprayed per stroke: 1.2ml ±0.1ml



Capacity ml	Height with closure mm	Neck diam. mm	Weight g	PK	Cat. No.
250	220	19	18	1	**6.252 153**
500	240	19	18	1	**6.252 154**
1000	295	19	17	1	**6.252 166**

1 LLG-Funnel, borosilicate glass 3.3

With short stem. Cone angle of 60°. Standard borosilicate funnels with excellent heat resistance.
All funnels have a cone angle of 60° and therefore offer an optimum fit for all filter sizes. DIN ISO 4798

Funnel diam. mm	Shaft diam. mm	Stem length mm	For filter paper diam. mm	PK	Cat. No.
40	6.0	70	55 - 70	1	**9.251 200**
60	8.0	100	70 - 90	1	**9.251 201**
80	8.0	140	125 - 150	1	**9.251 202**
100	10.0	180	150 - 185	1	**9.251 203**
120	16.0	210	185 - 240	1	**9.251 204**
150	16.0	250	240 - 270	1	**9.251 205**



2 Funnels, soda-lime glass

DIN ISO 4798. With short stem. *DURAN Group*

Diam. mm	Height mm	For filter paper diam. mm	PK	Cat. No.
35	60	45 to 55	1	**9.251 003**
45	80	55 to 70*	1	**9.251 005**
55	95	70 to 90	1	**9.251 007**
70	125	110 to 125	1	**9.251 011**
80	140	125 to 150	1	**9.251 016**
100	180	150 to 185	1	**9.251 019**

* Not to DIN ISO 4798.



3 Funnels, DURAN®

DIN ISO 4798. With short stem. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*

Diam. mm	Height mm	For filter paper diam. mm	PK	Cat. No.
35	60	45 to 55	1	**9.251 123**
45	80	55 to 70	1	**9.251 128**
55	95	70 to 90	1	**9.251 133**
70	125	110 to 125	1	**9.251 138**
80	140	125 to 150	1	**9.251 141**
100	180	150 to 185	1	**9.251 146**
120	210	185 to 240	1	**9.251 023**
150	265	240 to 270	1	**9.251 157**
200	325	320 to 385	1	**9.251 161**
300	409	500	1	**9.251 169**



4 Analytical funnels, DURAN®

For rapid filtration. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*

Funnel diam. mm	Height mm	For filter paper diam. mm	PK	Cat. No.
65	200	70 to 90	1	**9.251 237**
80	210	110 to 125	1	**9.251 241**
110	265	150 to 185	1	**9.251 248**



For Filter paper, please have a look at page 652.



1 LLG-Fast filtration funnels with internal rib, PP

- clear, virgin polypropylene.
- polypropylene funnels are autoclavable at 121°C and 1.1 bar for 30 minutes.
- external ribs prevent airlock and back pressure.
- with internal helicoidal rib which prevents filter papers from sticking and increases filtration speed.

Funnel diam. mm	Shaft diam. mm	Stem length mm	For filter paper diam. mm	PK	Cat. No.
40	6.0	40	55 - 70	10	**9.251 191**
60	8.0	60	70 - 90	10	**9.251 192**
80	8.0	80	125 - 150	10	**9.251 193**
80	9.0	150	125 - 150	10	**9.251 197**
100	10.0	100	150 - 185	10	**9.251 194**
120	16.0	120	185 - 240	10	**9.251 195**
150	16.0	150	240 - 270	10	**9.251 196**



2 Urbanti TPX rapid funnels

TPX clear. For rapid filtration. Ribbed inside. Heat resistant up to 177°C. Autoclavable. *Bel-Art Products*

Top diam. mm	Stem int. diam. mm	Stem ext. diam. mm	For filter paper diam. mm	Capacity ml	Stem mm	PK	Cat. No.
51	3	7.5	75 to 90	28.3	150	1	**9.251 391**
70	3	7.5	110 to 125	76	150	1	**9.251 392**
70	7	10.0	110 to 125	76	70	1	**9.251 393**
100	7	10.0	150 to 185	224	108	1	**9.251 394**
140	10	16.0	240 to 270	586	132	1	**9.251 395**
196	20	26.0	320 to 385	1532	160	1	**9.251 396**



3 LLG-Funnels, PP

Made of clear, virgin polypropylene.
- autoclavable at 121°C and 1.1 bar for 30 minutes.
- external ribs prevent airlock and back pressure.

Funnel diam. mm	Shaft diam. mm	Stem length mm	For filter paper diam. mm	PK	Cat. No.
40	6.0	40	55 - 70	10	**9.251 185**
60	8.0	60	70 - 90	10	**9.251 186**
80	8.0	80	125 - 150	10	**9.251 187**
100	10.0	100	150 - 185	10	**9.251 188**
120	16.0	120	185 - 240	10	**9.251 189**
150	16.0	150	240 - 270	10	**9.251 190**



4 Funnels, PP

Transparent. Rapid flow due to a steep 60° angle. *VITLAB*
Practical handle with loop for hanging.
Food-safe product according to EC Directive No. 10/2011.

Funnel diam. mm	Shaft diam. mm	Length*	Height mm	PK	Cat. No.
30	1.5	25	45	1	**9.251 602**
30	4.0	25	47	1	**9.251 605**
40	4.0	35	65	1	**9.251 610**
50	7.0	43	85	1	**9.251 615**
75	6.0	55	110	1	**9.251 620**
100	8.0	77	155	1	**9.251 625**
120	11.0	90	180	1	**9.251 630**
150	15.0	95	220	1	**9.251 635**

* Stem length (mm)

Funnel PE-HD

NEW!

Naturfarben.

Hünersdorff

Funnel diam. mm	Diam. of the filler mm	PK	Cat. No.
50	3	1	**9.073 464**
60	8	1	**9.073 465**
80	11	1	**9.073 466**
100	12	1	**9.073 467**
120	12	1	**9.073 468**
164	17	1	**9.073 469**
208	20	1	**9.073 470** 1

9.073 470 with stainless steel mesh, 50 mm dia.

1



9.073 470

2 Disposable paper funnel Eco-smartFunnel™

NEW!

Supplied flat-pack to minimize storage space and keep it clean. A more environmentally friendly paper product that will naturally biodegrade in the standard waste stream.
Fits a wide variety of openings and can be used with virtually any liquid or powder.
Cut the stem to any size or shape to meet with your needs.

Heathrow Scientific

Capacity ml	Dimensions top (D x W) mm	Dimensions bottom (D x W) mm	Height mm	PK	Cat. No.
186	60 x 60	6.4 x 6.4	128	25	**9.194 032**

2



Barrel funnels, PP/PE-HD

Transparent. Rapid flow due to a steep 60° angle. Practical handle for hanging. Suitable for filling large amounts of liquids. Cat. No. 9.251 640, 9.251 645 and 9.251 650 are food-safe products according to EC Directive No. 10/2011.

Sieve for 9251 640 and 9251 645 available (not approved as a food-safe article). Please order separately.

Funnel diam. mm	Stem diam. mm	Length*	Height mm	Material	PK	Cat. No.
200	22	90	200	PP	1	**9.251 640** 3
250	30	100	260	PP	1	**9.251 645**
350	35	170	440	PP	1	**9.251 650**
400	42	150	365	PE-HD	1	**9.251 655** 4
430	37	420	420	PE-HD	1	**9.251 660**

* Stem length (mm)

3



9.251 640

4



9.251 655

5 Sieve filter for barrel funnels

For 9.251 640 and 9.251 645.

Type	Diam. mm	PK	Cat. No.
Sieve filter	50	1	**9.251 665**

5



6 Funnels, stainless steel Remanit® 4301

With filling vent and handle.

RSG

Funnel diam. mm	Tube diam. mm	Height mm	PK	Cat. No.
50*	8.0	90	1	**6.231 805**
80*	12.0	115	1	**9.251 208**
100	12.0	125	1	**9.251 210**
120	13.0	145	1	**9.251 212**
150	17.0	190	1	**9.251 215**
200	18.0	220	1	**9.251 220**
250	18.0	260	1	**9.251 225**

* without handle and vent.

6





1 Powder funnels, PP

Transparent.
With short, wide stem. For transfer of powdered and granular substances. Rapid flow due to a steep 60° angle.
Food-safe products according to EC Directive No. 10/2011.

Funnel diam. mm	Height mm	Stem diam. mm	PK	Cat. No.
65	68	15	1	**9.251 720**
80	76	21	1	**9.251 725**
100	94	22	1	**9.251 730**
120	110	26	1	**9.251 735**
150	138	28	1	**9.251 740**
180	160	43	1	**9.251 741**



2 Powder funnels, soda-lime glass

Hydrolytical class 3. With short wide stem.

Funnel diam. mm	Height mm	Stem diam. mm	PK	Cat. No.
55	60	20	1	**9.251 307**
70	72	22	1	**9.251 311**
80	79	24	1	**9.251 316**
100	94	26	1	**9.251 319**



3 Powder funnels, DURAN®

With short, wide stem.

Funnel diam. mm	Height mm	Stem diam. mm	PK	Cat. No.
120	105	34	1	**9.251 323**
160	140	35	1	**9.251 332**
200	170	40	1	**9.251 338**



4 Powder funnels, borosilicate glass 3.3, with NS-cone

With short stem and NS cone.

Funnel diam. mm	NS	Stem diam. mm	PK	Cat. No.
60	14/23	13	1	**4.008 433**
80	19/26	17	1	**4.008 434**
100	24/29	22	1	**4.008 435**
120	29/32	26	1	**4.008 436**



5 Funnels with NS cone, DURAN® tubing

Solid addition funnels (angle: 60°), with NS cone, made of DURAN® tubing.

Funnel diam. mm	NS	PK	Cat. No.
45	14 / 23	1	**9.251 340**
55	19 / 26	1	**9.251 341**
70	24 / 29	1	**9.251 342**
80	29 / 32	1	**9.251 343**

E & OE.

1 Standard joint funnels, PP

Transparent.
For multi-neck flasks, laterally flattened, suitable for standard joint necks of various sizes.
Suitable for the filling of liquid or powdered reagents into a reaction flask, partyicularly multi-neck flasks, during a reaction.
Food-safe product according to EC Directive No. 10/2011.

Funnel diam. mm	Height mm	Joint size (NS)	PK	Cat. No.
40	75	14 / 23	1	**9.251 814**
50	95	19 / 26	1	**9.251 819**
75	135	29 / 32	1	**9.251 829**



2 LLG-Funnel holder, PP

Manufactured from best quality polypropylene. Suitable to hold all types of laboratory funnels with diameters up to 150mm. Two tapered wedges are provided to ensure firm grip on rods having diameters of 10-13mm.

Description	PK	Cat. No.
LLG-Funnel holder	1	**9.251 558**



3 LLG-Funnel holders, stainless steel, with or without boss head

These funnel holders are suitable to hold all types of funnels with a diameter up to 150mm.
They can also accommodate separating funnels (up to 1000ml). With or without boss head.

Diam. mm	Description	PK	Cat. No.
40	without bosshead	1	**9.251 550**
60	without bosshead	1	**9.251 551**
80	without bosshead	1	**9.251 552**
100	without bosshead	1	**9.251 553**
40	with bosshead	1	**9.251 554**
60	with bosshead	1	**9.251 555**
80	with bosshead	1	**9.251 556**
100	with bosshead	1	**9.251 557**



4 Funnel stands LaboPlast®, PP

White, glass-fibre reinforced polypropylene. For 2 or 4 funnels. Corrosion resistant. Robust, heavy base provides good stability. Funnel holders are fully height-adjustable. With aperture reduction insert for small funnels.
Suitable for funnels from 40mm to 160mm diameters.

To hold funnels piece	Width mm	Length mm	Height mm	PK	Cat. No.
2	140	300	480	1	**9.069 922**
4	150	550	500	1	**9.069 924**



5 Funnel holders, PP

Polypropylene. Single or double holder for funnels from 25mm (with adapter supplied) up to 170mm diameter. Without adapter they can be used for powder funnels with stem diameters not exceeding 35mm. Two clamp adapters are provided for use with rods from 8mm to 14mm. *Kartell*

To hold funnels piece	PK	Cat. No.
1	1	**9.251 561**
2	1	**9.251 560**





1 Funnel holders, stainless steel

Adjustable height 140 to 220 mm. Inner diameter upper ring: 47 mm. *Isolab*

Description	PK	Cat. No.
Funnel holders	1	**4.008 510**



9.318 107



9.318 034

Gas jars, DURAN®

DURAN®. With base. Rim flanged and surface-ground or rim roughly ground. Autoclavable. *DURAN Group*

Capacity ml	Diam. mm	Height mm	Description	PK	Cat. No.
130	40	100	Rim flanged, surface-ground	1	**9.318 107** 2
250	40	200	Rim flanged, surface-ground	1	**9.318 134**
500	40	400	Rim flanged, surface-ground	1	**9.318 168**
570	60	200	Rim flanged, surface-ground	1	**9.318 136**
700	60	250	Rim flanged, surface-ground	1	**9.318 146**
250	40	200	Rim roughly ground	1	**9.318 034** 3
300	50	150	Rim roughly ground	1	**9.318 021**
380	40	300	Rim roughly ground	1	**9.318 052**
500	40	400	Rim roughly ground	1	**9.318 068**
570	60	200	Rim roughly ground	1	**9.318 036**
600	50	300	Rim roughly ground	1	**9.318 053**
700	60	250	Rim roughly ground	1	**9.318 046**
1000	50	500	Rim roughly ground	1	**9.318 080**
1500	65	450	Rim roughly ground	1	**9.318 077**
2000	80	400	Rim roughly ground	1	**9.318 074**



4 Gas jar covers, glass

For gas jars. Clear glass.

For diam. mm	PK	Cat. No.
50	1	**9.318 407**
60	1	**9.318 408**
70	1	**9.318 409**
90	1	**9.318 411**



5 Glass cylinders with knob lid, DURAN®

DURAN®. With knob lid and polished rim. *DURAN Group*

Diam. mm	Height mm	PK	Cat. No.
80	80	1	**9.318 201**
100	100	1	**9.318 203**
120	120	1	**9.318 205**
150	150	1	**9.318 210**
210	210	1	**9.318 221**
260	260	1	**9.318 232**



6 Watch glasses, Soda-lime glass

To DIN 12341. Ground edges. Hydrolytical class 3.

Diam. mm	PK	Cat. No.
40	1	**9.263 004**
50	1	**9.263 005**
60	1	**9.263 006**
70	1	**9.263 007**
80	1	**9.263 008**
90	1	**9.263 009**
100	1	**9.263 010**
110	1	**9.263 011**
120	1	**9.263 013**
125	1	**9.263 012**
150	1	**9.263 015**
200	1	**9.263 020**
250	1	**9.263 025**

E & OE.

1 Watch glasses, Borosilicate glass 3.3

DIN 12341. Flame-polished edges. Autoclavable.

Diam. mm	PK	Cat. No.
50	10	**9.263 470**
60	10	**9.263 471**
70	10	**9.263 472**
80	10	**9.263 473**
100	10	**9.263 474**
125	10	**9.263 475**
150	10	**9.263 476**
200	10	**9.263 477**



2 Watch glasses, DURAN®

DURAN®. DIN 12341. Flame-polished edges. Autoclavable. *DURAN Group*

Diam. mm	PK	Cat. No.
40	1	**9.263 424**
50	1	**9.263 432**
60	1	**9.263 434**
80	1	**9.263 441**
100	1	**9.263 446**
125	1	**9.263 452**
150	1	**9.263 457**
200	1	**9.263 461**
250	1	**9.263 466**



3 Watch glasses, PP

With base. Resistant to steam sterilisation (121°C). *Kartell*

Diam. mm	PK	Cat. No.
60	1	**9.263 526**
80	1	**9.263 528**
100	1	**9.263 530**
125	1	**9.263 532**



4 Evaporating dishes, DURAN®

DURAN®. DIN 12336. Flat-bottom with spout. Autoclavable. *DURAN Group*

Capacity ml	Rim diam. mm	Height mm	PK	Cat. No.
15	50	25	1	**9.000 032**
45	60	30	1	**9.000 034**
60	70	35	1	**9.000 038**
90	80	45	1	**9.000 041**
170	95	55	1	**9.000 044**
320	115	65	1	**9.000 049**
600	140	80	1	**9.000 054**
1500	190	100	1	**9.000 059**
2500	230	130	1	**9.000 063**



5 Evaporating basins, Quartz glass

Transparent silica (Quartz glass). In accordance with DIN 12336.
Flat-bottom with spout. *proQuarz*

Capacity ml	Rim diam. mm	Height mm	PK	Cat. No.
10	40	18	1	**9.000 110**
15	50	25	1	**9.000 111**
45	60	30	1	**9.000 112**
60	70	35	1	**9.000 113**
90	80	45	1	**9.000 114**
170	95	55	1	**9.000 115**
320	115	65	1	**9.000 116**



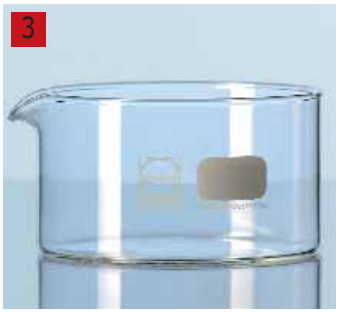




1 2 LLG-Crystallising dishes, borosilicate glass

Crystallising dishes with or without spout. DIN 12337/12338. Autoclavable.

Capacity ml	Diam. mm	Height mm	DIN	Description	PK	Cat. No.
20	40	25	12337	without spout	1	**7.616 800**
40	50	30	12337	without spout	1	**6.228 031**
60	60	35	12337	without spout	1	**6.236 596**
100	70	40	12337	without spout	1	**6.233 757**
150	80	45	12337	without spout	1	**6.227 688**
300	95	55	12337	without spout	1	**6.205 104**
500	115	65	12337	without spout	1	**6.205 105**
900	140	75	12337	without spout	1	**6.236 597**
2000	190	90	12337	without spout	1	**6.236 598**
3500	230	100	12337	without spout	1	**6.236 599**
20	40	25	12338	with spout	1	**6.226 043**
40	50	30	12338	with spout	1	**7.616 171**
60	60	35	12338	with spout	1	**6.227 922**
100	70	40	12338	with spout	1	**6.228 387**
150	80	45	12338	with spout	1	**6.225 256**
300	95	55	12338	with spout	1	**6.803 567**
500	115	65	12338	with spout	1	**6.223 298**
900	140	75	12338	with spout	1	**6.206 856**
2000	190	90	12338	with spout	1	**6.803 371**
3500	230	100	12338	with spout	1	**6.231 072**



3 Crystallising dishes, DURAN®

DURAN®. To DIN 12338. With spout. Dishes with capacity of 100ml and above have labelling patch. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable.

DURAN Group

Capacity ml	Diam. mm	Height mm	DIN	Description	PK	Cat. No.
20	40	25	12338	with spout	1	**9.144 024**
40	50	30	12338	with spout	1	**9.144 032**
60	60	35	12338	with spout	1	**9.144 034**
100	70	40	12338	with spout	1	**9.144 038**
150	80	45	12338	with spout	1	**9.144 041**
300	95	55	12338	with spout	1	**9.144 044**
500	115	65	12338	with spout	1	**9.144 049**
900	140	75	12338	with spout	1	**9.144 054**
2000	190	90	12338	with spout	1	**9.144 059**
3500	230	100	12338	with spout	1	**9.144 063**



4 LLG-Crystallising dishes, stainless steel

NEW!

Alternative to borosilicate glass dishes for similar applications.
Manufactured from seamless and robust stainless steel.

Length mm	Width mm	PK	Cat. No.
70	35	1	**6.267 379**
85	45	1	**6.267 380**
110	55	1	**6.267 381**



5 Crystallising dishes, flat bottom, Pyrex®

NEW!

Scilabware

- Complies to DIN 12337
- Manufactured from Pyrex® borosilicate glass
- Suitable for use up to 400°C
- Chemically and thermally resistant

Capacity ml	Diam. mm	Height mm	DIN	Description	PK	Cat. No.
100	70	40	12337	without spout	10	**9.000 074**
500	115	65	12337	without spout	10	**9.000 075**
900	140	75	12337	without spout	10	**9.000 076**
2000	190	90	12337	without spout	10	**9.000 077**



6 LLG-Porcelain evaporating dishes with spout, flat bottom, shallow form

Glazed.

Capacity ml	Ext. diam. mm	Height mm	DIN	PK	Cat. No.
10	50	10	12903	1	**9.115 301**
20	60	14	12903	1	**9.115 302**
28	75	15		1	**9.115 305**
55	80	20	12903	1	**9.115 303**
110	100	25	12903	1	**6.231 540**
250	130	30	12903	1	**9.115 304**
450	160	40		1	**9.115 306**
1100	200	55		1	**9.115 307**
1750	250	55		1	**9.115 308**

E & OE.

1 Evaporating basins, porcelain, shallow form

Glazed inside and outside except for rim. *Haldenwanger*

Capacity ml	Rim diam. mm	Height mm	PK	Cat. No.
8*	40	9	1	**9.000 204**
10*	50	11	1	**9.000 205**
20*	63	13	1	**9.000 206**
40*	80	20	1	**9.000 208**
80*	100	22	1	**9.000 210**
270*	125	25	1	**9.000 212**
450	160	35	1	**9.000 216**
1100	190	55	1	**9.000 220**
1750	240	65	1	**9.000 225**
2500	300	60	1	**9.000 230**

*According to DIN standard



2 LLG-Porcelain evaporating dishes with spout, round bottom, medium form

Glazed.

Capacity ml	Ext. diam. mm	Height mm	DIN	PK	Cat. No.
10	40	16	12903	1	**9.115 310**
20	50	20	12903	1	**9.115 311**
30	63	25	12903	1	**6.239 177**
60	80	32	12903	1	**9.115 312**
150	100	40	12903	1	**9.115 313**
285	125	50	12903	1	**9.115 314**
700	170	74	12903	1	**9.115 315**
1000	200	80	12903	1	**9.115 316**
41	72	26		1	**9.000 150**
62	83	27		1	**9.000 151**
110	96	30		1	**9.000 152**
240	127	42		1	**9.000 153**
420	154	50		1	**6.232 525**
558	170	55		1	**9.000 154**



3 LLG-Porcelain evaporating dishes with spout, flat bottom, medium form

Glazed.

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
93	86	33	1	**6.251 474**
1200	195	74	1	**6.241 820**



4 Evaporating basins, porcelain, with spout, round bottom, medium form

Round bottom with spout. DIN 12903. 10 to 310ml sizes are completely glazed inside and out. 640 to 3400ml sizes are glazed with the exception of the outer base. *Haldenwanger*

Capacity ml	Rim diam. mm	Height mm	PK	Cat. No.
10	40	16	1	**9.000 304**
25	50	20	1	**9.000 305**
35	63	25	1	**9.000 306**
75	80	32	1	**9.000 308**
115	100	40	1	**9.000 310**
250	115	50	1	**9.000 312**
580	160	64	1	**9.000 316**
1000	200	80	1	**9.000 320**
2200	250	86	1	**9.000 325**
3400	310	110	1	**9.000 330**



5 LLG-Evaporating basins, stainless steel

NEW!

Manufactured from stainless steel as round bottom. A perfect product for heating and evaporating liquids. Can be used with direct flame in order to prevent breakage.

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
50	60	30	1	**6.267 376**
130	80	40	1	**6.267 377**
250	100	50	1	**6.267 378**



1



1 Evaporating basins, 18/10 steel

18/10 steel. Cylindrical. *Bochem*

Description	Capacity ml	Diam. mm	Height mm	PK	Cat. No.
Tall	125	75	35	1	**9.000 460**
Tall	250	85	50	1	**9.000 461**
Tall	500	110	55	1	**9.000 462**
Shallow	50	60	20	1	**9.000 470**
Shallow	75	70	20	1	**9.000 471**
Shallow	100	80	20	1	**9.000 472**

2



2 LLG- Casserole with handle, Porcelain

NEW!

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
22	45	26	1	**7.656 131**
84	67	39	1	**9.252 512**
176	85	49	1	**9.252 513**
270	101	51	1	**9.252 514**
450	120	64	1	**9.252 515**
960	150	86	1	**9.252 516**

3



3 Porcelain Crucible

To DIN 12907. Glazed inside and outside except for rim. *Haldenwanger*

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
80	63	35	1	**9.140 113**
140	80	45	1	**9.140 114**
290	100	65	1	**9.140 115**
500	125	70	1	**9.140 116**
1300	160	97	1	**9.140 118**
2600	215	112	1	**9.140 119**

Capacity brimful. Dimensions may vary by up to 4%.

4



4 Bowls, PP

Round , white with broad, stable edge and circumferential standing ring on the bottom. *VITLAB*
Food-safe product according to EC Directive No. 10/2011.

Capacity Litres	Ext. diam. mm	Height mm	PK	Cat. No.
1	160	70	1	**9.301 216**
2	200	80	1	**9.301 220**
3	240	100	1	**9.301 224**
4	280	120	1	**9.301 228**
7	320	130	1	**9.301 232**
9	360	150	1	**9.301 236**
13	400	180	1	**9.301 240**

5



5 Laboratory-bowls, 18/10 steel

With flanged rim. Polished finish. *Bochem*

Capacity ml	Int. diam. mm	Height mm	PK	Cat. No.
1000	165	75	1	**9.200 518**
2000	220	75	1	**9.200 524**
3000	240	95	1	**9.200 526**
4500	260	120	1	**9.200 529**
6000	305	120	1	**9.200 533**
8000	320	145	1	**9.200 536**

6



6 Instrument trays, melamine resin

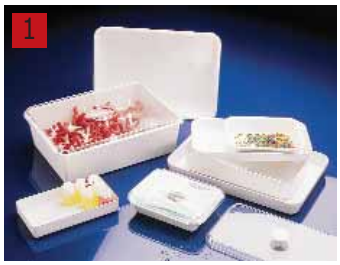
White, melamine resin. Autoclavable (121°C)

Width mm	Length mm	Height mm	PK	Cat. No.
190	150	20	1	**7.608 352**
240	180	20	1	**9.200 324**
270	210	20	1	**9.200 327**
300	150	20	1	**9.200 328**
300	190	20	1	**7.055 383**
360	240	20	1	**9.200 335**
430	290	20	1	**9.200 345**

7.603 295 with handle bar

1 Instrument boxes, melamine resin

Melamine resin. Base section is autoclavable (121°C).
Please order lid separately.



Width mm	Length mm	Height mm	PK	Cat. No.
110	210	30	1	**9.200 177**
150	190	40	1	**9.200 170**
160	290	30	1	**9.200 165**
160	290	60	1	**9.200 160**
240	350	40	1	**9.200 155**
250	350	100	1	**9.200 150**

2 LLG-Assortment box

NEW!

Designed for storing and transporting small labwares such as magnetic stirring bars. Manufactured from clear material for easy observation of the contents. Different size of compartments for different size of materials.



Dimensions (W x D x H) mm	PK	Cat. No.
97 x 182 x 33	1	**6.267 405**

3 Lids, PS for instrument boxes



For	PK	Cat. No.
9.200 177	1	**9.200 181**
9.200 170	1	**9.200 182**
9.200 165 und 9.200 160	1	**9.200 183**
9.200 155 und 9.200 150	1	**9.200 184**

4 Trays, stainless steel

RSG



Width mm	Length mm	Height mm	PK	Cat. No.
110	170	20	1	**9.150 722**
120	200	20	1	**9.150 723**
140	220	28	1	**9.150 724**
180	240	30	1	**9.150 726**
180	260	30	1	**9.150 727**
180	280	30	1	**9.150 728**
210	310	40	1	**9.150 729**
250	350	40	1	**9.150 730**
280	420	50	1	**9.150 732**
340	520	50	1	**9.150 733**

5 Instrument boxes, stainless steel 18/10

Stainless steel 18/10. Satin finish. With knob lid.



Width mm	Length mm	Height mm	PK	Cat. No.
80	120	40	1	**9.200 412**
100	160	30	1	**9.200 416**
100	200	50	1	**9.200 420**
150	260	50	1	**9.200 426**
200	300	50	1	**9.200 430**
180	280	60	1	**9.200 428**
200	400	80	1	**9.200 440**
300	500	100	1	**9.200 450**

6 Instrument boxes, glass

Glass. With vertical walls and polished rims.
With or without stainless steel lid. Dimensions stated are nominal.



Lid	Width mm	Length mm	Height mm	PK	Cat. No.
without	60	120	40	1	**9.200 014**
without	90	170	45	1	**9.200 017**
without	100	200	50	1	**9.200 020**
without	100	200	100	1	**9.200 037**
without	150	220	55	1	**9.200 022**
without	150	275	60	1	**9.200 028**
without	220	350	70	1	**9.200 035**
with	60	120	40	1	**9.200 114**
with	90	170	45	1	**9.200 117**
with	100	200	50	1	**9.200 120**
with	100	200	100	1	**9.200 137**
with	150	220	55	1	**9.200 122**
with	150	280	60	1	**9.200 128**
with	220	350	70	1	**9.200 135**

1



1 Laboratory trays LaboPlast®, PP

White multi-purpose trays. Injection-moulded. Durable and resist flexing, with strong, rounded rim. Stackable and hygienic. Polished surface is easy to clean.
Resistant to many acids and alkaline solutions. Food Safe.

Bürkle

Internal dimensions mm	Width mm	Length mm	Height mm	PK	Cat. No.
130 x 180	230	180	42	1	**9.200 203**
180 x 240	310	250	65	1	**9.200 204**
240 x 300	370	310	75	1	**9.200 205**
300 x 400	520	420	120	1	**9.200 206**
400 x 500	634	534	140	1	**9.200 207**
500 x 700	846	648	160	1	**9.200 208**

2



2 Tray, PP

NEW!

For multi purpose use. Durable and resist to bending, with strong rounded rim.
Stackable for space solving solutions, polished surface for easy cleaning.
Resistant to many acids and alkaline solutions, can be used with foods.

Isolab

Length mm	Width mm	Height mm	PK	Cat. No.
183	127	50	1	**6.267 362**
255	180	60	1	**6.267 363**
355	245	70	1	**6.267 364**

3



3 Photographic trays LaboPlast®, PVC, with or without grooves

White, with or without grooves in the base. Temperature resistant up to +70°C.
Trays in red or black available on request.

Bürkle

Base	Type	Width mm	Length mm	Height mm	PK	Cat. No.
140 x 190	with grooves	230	180	40	1	**9.200 220**
190 x 260	with grooves	320	240	50	1	**9.200 225**
260 x 320	with grooves	370	320	50	1	**9.200 232**
310 x 410	with grooves	530	430	105	1	**9.200 243**
420 x 510	with grooves	610	520	110	1	**9.200 252**
510 x 610	with grooves	730	630	110	1	**9.200 267**
110 x 160	without grooves	200	150	30	1	**9.200 269**
140 x 190	without grooves	230	180	40	1	**9.200 270**
190 x 260	without grooves	320	240	50	1	**9.200 275**
260 x 320	without grooves	370	320	50	1	**9.200 282**
310 x 410	without grooves	530	430	105	1	**9.200 283**
420 x 510	without grooves	610	520	110	1	**9.200 292**
510 x 610	without grooves	730	630	110	1	**9.200 297**

4



4 Photographic trays, PVC

PVC. With ribbed base.

Kartell

Width mm	Length mm	Height mm	PK	Cat. No.
150	200	45	1	**9.200 372**
200	250	60	1	**9.200 373**
260	320	70	1	**9.200 374**
300	350	80	1	**9.200 375**
330	430	90	1	**9.200 376**
420	520	90	1	**9.200 377**
530	675	100	1	**9.200 378**
420	540	180	1	**9.200 379**

5



5 Photographic trays, 18/10 steel

18/10 steel. With rounded edges.

Mühlacker

Width mm	Length mm	Height mm	PK	Cat. No.
140	190	50	1	**9.200 700**
180	250	60	1	**9.200 701**
190	260	50	1	**9.200 702**
260	320	60	1	**9.200 703**
240	350	70	1	**9.200 704**
270	400	80	1	**9.200 705**
330	500	100	1	**9.200 706**

E & OE.

1 Tidy trays, PVC

PVC. With compartments. For use as drawer trays or bench tidy trays. *Kartell*

Compart-ments no.	Width mm	Length mm	Height mm	PK	Cat. No.
5	304	404	64	1	**9.200 370**
12	303	403	63	1	**9.200 380**



2 LLG-Porcelain crucibles, low, DIN 12904

To DIN 12904. Glazed.

Capacity ml	Ext. diam. mm	Height mm	Form	PK	Cat. No.
5	30	19	Low form	1	**9.250 900**
10	35	22	Low form	1	**9.250 901**
17	40	25	Low form	1	**9.250 902**
21	45	28	Low form	1	**9.250 903**
34	50	32	Low form	1	**9.250 904**
63	60	38	Low form	1	**9.250 905**
91	70	44	Low form	1	**9.250 906**



3 LLG-Porcelain crucibles, medium, DIN 12904

To DIN 12904. Glazed.

Capacity ml	Ext. diam. mm	Height mm	Form	PK	Cat. No.
10*	30	25	Medium form	1	**9.250 907**
12	35	28	Medium form	1	**9.250 910**
20	40	32	Medium form	1	**9.250 911**
30	45	36	Medium form	1	**9.250 912**
45	50	40	Medium form	1	**9.250 913**
80	60	48	Medium form	1	**9.250 914**
120	70	56	Medium form	1	**9.250 915**
200*	80	62	Medium form	1	**9.250 916**

* Not to DIN



4 LLG-Porcelain crucibles, tall, DIN 12904

To DIN 12904. Glazed.

Capacity ml	Ext. diam. mm	Height mm	Form	PK	Cat. No.
15	30	38	Tall form	1	**9.250 920**
26	35	44	Tall form	1	**9.250 921**
35	40	50	Tall form	1	**9.250 922**
50	45	56	Tall form	1	**9.250 923**
72	50	62	Tall form	1	**9.250 924**
130	60	75	Tall form	1	**9.250 925**



5 LLG-Porcelain lids for crucible, DIN 12904

Glazed. For Cat. No. 9.052 080 to 9.052 092.

Lid diam. mm	Crucible diam. mm	DIN	PK	Cat. No.
34	30	12904	1	**9.250 930**
39	35	12904	1	**9.250 931**
44	40	12904	1	**9.250 932**
49	45	12904	1	**9.250 933**
54	50	12904	1	**9.250 934**
64	60	12904	1	**9.250 935**
74	70	12904	1	**9.250 936**
84	80		1	**9.250 937**



Filter crucibles - please see page 693

1



1 LLG-Crucibles, stainless steel

NEW!

Stainless steel crucibles can resist up to 1200°C.

Ext. diam. mm	Height mm	PK	Cat. No.
40	35	1	**6.267 382**
50	45	1	**6.267 383**
60	50	1	**6.267 384**

2



2 Crucibles, porcelain, low form

To DIN 12904. Glazed. Without lid. *Haldenwanger*

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
8	30	19	1	**9.250 030**
11	35	22	1	**9.250 035**
20	40	25	1	**9.250 040**
25	45	28	1	**9.250 045**
40*	50	32	1	**9.250 050**
65	60	38	1	**9.250 060**
95	70	47	1	**9.250 070**

* Conradson crucible in accordance with ASTM D 189-65

3



3 Crucibles, porcelain, medium form

To DIN 12904. Glazed. Without lid. *Haldenwanger*

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
10*	30	25	1	**9.250 130**
13	35	28	1	**9.250 135**
20	40	32	1	**9.250 140**
38	45	36	1	**9.250 145**
49	50	40	1	**9.250 150**
90	60	50	1	**9.250 160**
150	70	60	1	**9.250 170**
230*	82	65	1	**9.250 180**

* Not to DIN.

4



4 Crucibles, porcelain, tall form

To DIN 12904. Glazed. Without lid. *Haldenwanger*

Capacity ml	Top diam. mm	Height mm	PK	Cat. No.
11	26	33	1	**9.250 225**
15	30	38	1	**9.250 230**
24	35	44	1	**9.250 235**
40	40	50	1	**9.250 240**
50	46	58	1	**9.250 245**
85	50	65	1	**9.250 250**
140	60	79	1	**9.250 260**

5



5 Lids for porcelain crucibles, DIN 12904

Haldenwanger

Lid diam. mm	Crucible diam. mm	PK	Cat. No.
28	20	1	**6.005 993**
32	26	1	**9.250 306**
35	30	1	**9.250 308**
43	35	1	**9.250 310**
46	40	1	**9.250 313**
52	46	1	**9.250 314**
60	52	1	**9.250 316**
75	70	1	**9.250 319**
87	83	1	**9.250 327**

1 Crucibles, Alsint, wide form

Conical. For use up to approx. 1700°C.
Al_2O_3 content 99.7%.

Haldenwanger

Capacity ml	Top diam. mm	Bottom diam. mm	Height mm	PK	Cat. No.
10	30	14	24	1	**9.250 389**
25	41	18	37	1	**9.250 390**
40	48	20	41	1	**9.250 391**
60	54	24	50	1	**9.250 392**
80	60	26	50	1	**9.250 393**
100	66	30	56	1	**9.250 394**



2 Crucibles, Alsint, tall form

Conical. Max. 1700°C.
Al_2O_3 99.7%.

Haldenwanger

Capacity ml	Top diam. mm	Bottom diam. mm	Height mm	PK	Cat. No.
10	25	15	30	1	**9.250 399**
15	30	18	38	1	**9.250 400**
20	33	18	40	1	**9.250 401**
30	38	21	47	1	**9.250 402**
45	42	25	54	1	**9.250 403**
80	50	27	65	1	**9.250 404**
150	62	32	75	1	**9.250 405**
250	73	35	90	1	**9.250 406**
350	85	35	100	1	**9.250 407**



3 Lids for alsint crucibles

Haldenwanger

Lid diam. mm	Crucible diam. mm	PK	Cat. No.
28	25	1	**6.241 895**
32	30	1	**6.801 239**
35	33	1	**7.602 538**
43	38	1	**6.304 147**
46	42	1	**6.900 118**
52	50	1	**6.236 618**
60	54	1	**7.970 090**
68	62	1	**7.620 719**
75	73	1	**6.231 115**
87	85	1	**6.253 443**



4 Crucibles, quartz glass, medium form

Transparent silica (Quartz glass). Medium form.

proQuarz

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
20	40	32	1	**9.250 340**
49	50	40	1	**9.250 350**
90	60	48	1	**9.250 351**



5 LLG-Porcelain incinerating dishes

Capacity ml	Ext. diam. mm	Height mm	Form	pour stopper	PK	Cat. No.
21	40	20	deep	without	1	**6.237 126**
64	60	30	deep	with	1	**6.241 972**
64	60	30	deep	without	1	**6.242 424**
70	81	20	low	without	1	**7.654 046**
103	70	35	deep	without	1	**7.654 045**





1 Incinerating dishes, porcelain, flat form

Without spout. Glazed except for base exterior. *Haldenwanger*

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
8	37	10	1	**9.115 036**
10	42	11	1	**9.115 041**
15	47	12	1	**9.115 045**



2 Incenerating dishes, porcelain, cylindrical form

Deep. Without spout. Glazed, except for base exterior. *Haldenwanger*

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
15	40	20	1	**9.115 140**
30	50	25	1	**9.115 150**
60	60	30	1	**9.115 160**



3 Incinerating dishes, porcelain, rectangular

With vertical side walls. Glazed, except for base exterior. *Haldenwanger*

Capacity ml	Length mm	Depth mm	Height mm	PK	Cat. No.
10	48	25	10	1	**9.115 245**
20	70	45	12	1	**9.115 265**
55	95	55	15	1	**9.115 295**



4 LLG-Porcelain incinerating boats, with loop handle

Unglazed.

Length mm	Width mm	Height mm	PK	Cat. No.
40	12	10	1	**9.250 943**
75	13	8	1	**9.250 940**
85	13	8	1	**9.250 942**
90	13	8	1	**6.243 229**
105	14	9	1	**9.250 941**



5 Incinerating boats, porcelain, with loop handle

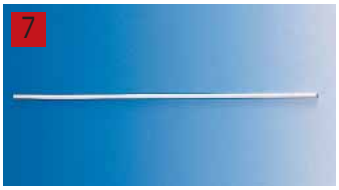
Glazed porcelain. *Haldenwanger*

Length mm	Width mm	Height mm	PK	Cat. No.
85	13	8	1	**9.201 590**
102	13	10	1	**9.201 596**



6 Magnesia trays

Width mm	Length mm	PK	Cat. No.
9	100	100	**9.152 109**



7 Magnesia rods

For flame tests.

Type	PK	Cat. No.
Magnesia rods	100	**9.152 125**

E & OE.

1 Flame test glasses

Cobalt blue glass.

Width mm	Length mm	PK	Cat. No.
50	50	1	**9.140 205**
100	100	1	**9.140 210**



2 Combustion tube, hard porcelain

Unglazed, hard porcelain. *Haldenwanger*
For Carbon and Sulphur determinations.

Ext. diam. mm	Int. diam. mm	Length mm	PK	Cat. No.
22	17	600	1	**9.173 176**



3 Crucibles, nickel

99.6% nickel. *Bochem*
Wall thickness 1mm.
Please order lid separately.

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
15	30	30	1	**9.250 630**
25	35	35	1	**9.250 635**
30	40	40	1	**9.250 640**
70	50	50	1	**9.250 650**



4 Lids for Crucibles, nickel

Bochem

For Crucibles	Ext. diam. mm	PK	Cat. No.
15 ml	30	1	**9.250 660**
25 ml	35	1	**9.250 665**
30 ml	40	1	**9.250 670**
70 ml	50	1	**9.250 680**



5 Laboratory spoon, stainless steel 18/10

Stainless steel 18/10

Bochem

Length mm	Spoon L x W mm	PK	Cat. No.
135	45 x 31	1	**9.150 213**
180	55 x 38	1	**9.150 218**
195	60 x 45	1	**9.150 221**
280	85 x 70	1	**9.150 226**



Spoon, stainless steel

Remanit® 4301. Polished. With one open spoon and one tapered flat end. *RSG*
Length 200mm.

Length mm	PK	Cat. No.
200	1	**9.150 050** 6



9.150 050

Note: Platinum Crucibles available on request.

1



1 Pharmacist's spoon, stainless steel

Remanit® 4301. Polished. Slim form. Length 150mm. *RSG*

Length mm	Spoon L x W mm	PK	Cat. No.
150	30 x 16	1	**9.150 060**



2 Reagent spoons, 18/10 steel

Dimensions spoon (W x L): 15mm x 25mm

Overall length mm	PK	Cat. No.
200	1	**4.008 513**



3 Reagent spoons, double-ended, 18/10 steel

18/10 steel. Double ended. *Bochem*

Length mm	Spoon L x W mm	PK	Cat. No.
120	30x22 - 23x17	1	**9.150 012**
150	30x22 - 23x17	1	**9.150 015**
180	40x29 - 30x22	1	**9.150 018**
210	40x29 - 30x22	1	**9.150 021**
250	48x29 - 40x29	1	**9.150 025**
300	48x35 - 40x29	1	**9.150 030**



4 LLG Multi-purpose spoon, 18/10 steel

Length mm	For	Dimensions Spoon (L x W) mm	Spatulas L x W mm	PK	Cat. No.
150	Right handed user	15 x 35	25 x 13	1	**9.150 800**
180	Right handed user	15 x 35	25 x 13	1	**9.150 801**
210	Right handed user	15 x 35	25 x 13	1	**9.150 802**
250	Right handed user	15 x 35	25 x 13	1	**9.150 073**
300	Right handed user	15 x 35	25 x 13	1	**9.150 074**
150	Left handed user	15 x 35	25 x 13	1	**9.150 080**
180	Left handed user	15 x 35	25 x 13	1	**9.150 081**
210	Left handed user	15 x 35	25 x 13	1	**9.150 082**



5 Spatulas, round grooved, 18/10 steel

Polished, round grooved. *Isolab*

Length mm	Spatula width mm	PK	Cat. No.
150	9	1	**4.008 448**
180	9	1	**4.008 449**
210	9	1	**4.008 450**



6 Powder spoon, 18/10-steel

18/10 steel. Narrow form. *Bochem*

Length mm	Spoon L x W mm	PK	Cat. No.
170	40 x 10	1	**9.150 620**



7 Ladles, 18/10 steel

18/10 steel. Bowl diameters as outlined below.

Bochem

Capacity ml	Length mm	Diam. mm	PK	Cat. No.
90	185	70	1	**9.150 665**
200	315	90	1	**9.150 685**
220	315	100	1	**9.150 700**
620	345	140	1	**9.150 703**

E & OE.

1 LLG- Spoon spatulas, 18/10 steel, deep form

18/10 steel. Deep form.

Length mm	Spoon L x W mm	Spatulas L x W mm	PK	Cat. No.
120	31 x 23	30 x 20	1	**4.008 445**
150	38 x 27	32 x 22	1	**9.150 810**
180	40 x 30	35 x 25	1	**9.150 811**
210	40 x 30	35 x 25	1	**9.150 812**
250	50 x 38	45 x 32	1	**4.008 446**
300	55 x 45	50 x 40	1	**4.008 447**

1



2 Micro spoon spatulas, 18/10 steel

Excellent grade polished stainless steel with one end having a flat spatula and the other end having a micro spoon.

Length mm	Spoon L x W mm	PK	Cat. No.
150	9 x 5	1	**9.150 820**
180	9 x 5	1	**4.008 451**

2



3 Micro powder spatula, stainless steel

Remanit® 4301. Polished. Very flexible. *RSG*

Width mm	Length mm	PK	Cat. No.
3	150	1	**6.239 195**
3	210	1	**9.220 205**
4	130	1	**9.220 206**
4	150	1	**9.220 207**
4	185	1	**9.220 208**
5	150	1	**6.231 957**
6	130	1	**9.220 201**
6	150	1	**9.220 202**
6	185	1	**9.220 203**
6	210	1	**9.220 204**
7	150	1	**6.226 081**

3



4 5 Micro Spatulas, 18/10 steel

Round bent ends. *Bochem*

Type	Width mm	Length mm	PK	Cat. No.
A- Single-ended	5	130	1	**9.220 313**
A- Single-ended	5	185	1	**9.220 318**
A- Single-ended	5	210	1	**9.220 321**
B- Double-ended	5	130	1	**9.220 363**
B- Double-ended	5	185	1	**9.220 368**
B- Double-ended	5	210	1	**9.220 371**

4



5



6 Micro double-ended spatulas, 18/10 steel

Stainless steel with one end having a flat spatula and the other end having a flat spatula with rounded edges. *Bochem*

Length mm	Spatula width mm	PK	Cat. No.
100	3	1	**9.220 210**
130	3	1	**9.220 213**
150	5	1	**9.220 215**
185	5	1	**9.220 218**
210	5	1	**9.220 221**

6



1



2



1 2 Double ended spatulas, 18/10 steel

18/10 steel. Narrow form.

Length mm	Type	PK	Cat. No.
130	straight	1	**4.008 454**
150	straight	1	**4.008 455**
185	straight	1	**4.008 456**
210	straight	1	**4.008 457**
250	straight	1	**4.008 458**
300	straight	1	**4.008 459**
150	curved	1	**6.267 385**
180	curved	1	**6.267 386**
210	curved	1	**6.267 387**

3



4



3 4 Double-ended spatulas, 18/10 steel

18/10 steel. With one end having a flat spatula and the other end having a flat spatula with rounded edges. *Bochem*

Length mm	Spatula width mm	Type	PK	Cat. No.
130	9	Straight	1	**9.220 013**
150	9	Straight	1	**9.220 015**
185	9	Straight	1	**9.220 018**
210	11	Straight	1	**9.220 021**
250	11	Straight	1	**9.220 025**
300	16	Straight	1	**9.220 030**
150	9	Bent	1	**9.220 115**
185	9	Bent	1	**9.220 118**
210	11	Bent	1	**9.220 121**
250	11	Bent	1	**9.220 125**

5



5 Double ended spatulas chattaway, 18/10 steel

Polished stainless steel with one end flat and the other with a bent flat end.

Length mm	Spatula width mm	PK	Cat. No.
100	9	1	**4.008 452**
130	9	1	**4.008 453**
150	9	1	**9.150 815**
180	9	1	**9.150 816**
210	9	1	**9.150 817**

6



6 LLG-Macro Spoon Spatula, PP

Consists of a spoon on one side which allows easy transfer of sample, while the other end is a flat construction with a knife edge which can be used to draw salt or breaking crystals.

Length mm	PK	Cat. No.
150	25	**6.267 390**
180	25	**6.267 391**
210	25	**6.267 392**

7



7 Spatula with knob, 18/10 steel

Drop-forged 18/10 steel. With one flat end and one knob end. *Bochem*

Width mm	Length mm	Length Flat end	PK	Cat. No.
9	150	60	1	**9.220 415**
11	210	70	1	**9.220 421**

E & OE.

1 Sampling spoon, PP



White PP. Length 180mm. Autoclavable at 121°C. *Bel-Art Products*
Long handle reaches easily into jars, bottles and other confined areas; minimizes the potential of personal contact with sampled material. Safe for food, drug and cosmetic contact.

Capacity ml	Width mm	PK	Cat. No.
1.25	20	1	**9.150 643**
2.46	25	1	**9.150 644**
4.93	30	1	**9.150 645**
14.79	39	1	**9.150 646**

2 LLG-Sampling scoops, Set of 3 parts, PP



Volume marked. Scoops have flat bottom which enables horizontal standing. Scoops have rounded corners for easy cleaning. Excellent for scooping of small or large volumes anything from powder to ice. Packed as 3 scoops as a set with scoop volume of 50, 100 and 250 ml.

Description	PK	Cat. No.
Set 3-parts each 1x 50,100 and 250ml	1	**6.267 393**

3 Disposable spoons LaboPlast/SteriPlast, PS, white



Bürkle

The LaboPlast and SteriPlast spoons made of polystyrene are clean-room produced and individually packed for one-way needs. The spoons are ideal for sampling powders, granules and pastes. The sampling spoons are available in 2.5ml (similar to teaspoons) and 10ml (similar to tablespoons). Additionally the SteriPlast spoons are gamma radiation sterilized.

- Individually packed
- Production and packaging acc. to clean-room class 7 (10 000)
- According to EU food and FDA guidelines

Type	Length mm	Capacity ml	Description	PK	Cat. No.
LaboPlast	127	2.5	non-sterile	100	**6.265 033**
LaboPlast	170	10	non-sterile	100	**6.265 034**
SteriPlast	127	2.5	sterile	100	**6.265 045**
SteriPlast	170	10	sterile	100	**6.265 046**

4 Disposable spoons LaboPlast Bio/SteriPlast Bio, Green PE, white



Bürkle

The LaboPlast Bio and SteriPlast Bio spoons made of Green PE are clean-room produced and individually packed (packaging also made of Bio-PE) for one-way needs. The LaboPlast Bio products are entirely made of renewable resources. Not only with regard to quality but also with regard to its characteristics for high-quality sampling, it is perfectly comparable with conventional polyethylene. They are ideal for sampling of powder, granules and pastes. Additionally the SteriPlast Bio scoops are gamma radiation sterilized.

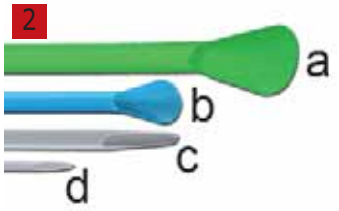
- Product and packaging entirely made of renewable resources
- Individually packed
- Production and packaging acc. to clean-room class 7 (10.000)
- According to EU food and FDA guideline

Type	Length mm	Capacity ml	Description	PK	Cat. No.
LaboPlast	127	2.5	non-sterile	100	**6.265 059**
LaboPlast	170	10	non-sterile	100	**6.265 060**
SteriPlast	127	2.5	sterile	100	**6.265 053**
SteriPlast	170	10	sterile	100	**6.265 054**

1



2



1 2 Powder spatula smartSPATULAS®, PP

NEW!

Heathrow Scientific

Single use polypropylene lab tools made to increase productivity and reduce costly contamination errors. They offer a clean alternative to metal spatulas.
- Size related designs to fit perfectly with standard 0.5, 1.5/2.0, 15 and 50 mL tubes
- Ideal for dispensing or sample collection of powders or soft solids
- Shatter resistant in liquid nitrogen and resistant to dilute acids and bases and can be used with hot liquids
- Anti-static, sterile and Eco-friendly versions available
- Autoclavable and complies with FDA standards for food contact

Description	Colour	For tubes ml	Length mm	Diam. mm	Figure	PK	Cat. No.
Micro Antistatic	Natural	0.2	140	3.5	d	300	**6.256 896**
Eco	Natural	15/1.5/2.0	140	7.0	-	300	**6.256 894**
Standard	Blue	15/1.5/2.0	210	7.0	b	300	**6.256 893**
Standard	Natural	15/1.5/2.0	210	7.0	c	300	**6.256 895**
Standard sterile	Natural	15/1.5/2.0	210	7.0	-	100	**6.256 898**
Macro	Green	50	310	1.0	a	150	**6.256 897**

3



3 Spatulas, PS

Impact resistant polystyrol. Available as double-ended flat spatula or one end flat and the other with spoon.

BRAND

Type	Length mm	PK	Cat. No.
Double-ended	150	1	**9.220 850**
Double-ended	180	1	**9.220 851**
With spoon	180	1	**9.220 852**
With spoon	210	1	**9.220 853**

4



4 Spoon spatulas, porcelain

Glazed.

Haldenwanger

Length mm	Spoon L x W mm	Spatulas L x W mm	PK	Cat. No.
121	36 x 11	33 x 10	1	**9.220 812**
170	45 x 20	42 x 21	1	**9.220 816**
210	54 x 30	48 x 25	1	**9.220 820**
305	131 x 42	56 x 39	1	**9.220 830**

5



5 Spatula set, stainless steel, 7 pieces

Remanit® 4301.

RSG

7 pieces:
1 x pair of forceps, blunt, straight, 145mm
1 x micro spoon-spatula 150/5mm
1 x micro spoon-spatula 150/7mm
1 x double spatula 150/9mm
1 x powder spatula 150/9mm
1 x micro powder spatula 150/4mm
1 x micro double spatula 150/4mm

In synthetic leather bag with hook-and-loop fastener. Made in Germany.

Type	PK	Cat. No.
Spatula set	1	**7.630 153**

6



6 Chemist's small instrument set, 5 pieces

Hammacher

1 x micro-powder-spatula, flexible, 150mm long
1 x spatula, double-ended, flexible, 150mm long
1 pair of scissors, sharp/sharp, straight, 140mm
1 x spoon spatula, 150mm, 32 x 22 mm (blade L x W)
1 pair of thumb forceps, simple type, 130mm long

Type	PK	Cat. No.
HSO 125-00	1	**9.160 004**

1 Chemist's large instrument set, 9-piece

Large, 9-piece set, containing: *Hammacher*

Micro-spatula, double ended, flexible, 130mm long
Micro-spoon spatula, spoon 5 x 7 mm, 150mm long
Micro-powder spatula, double ended, flexible, 185mm long
Weighing scoop, 10 x 40mm W x L, 170mm long
Scissors, straight, serrated, 170mm long
Poly-spoon, 180mm long
Spatula, double ended, non-flexible, 185mm long
Spatula, wide type, both ends round, 150mm long
Forceps, sharp, simple type, 160 mm

Type	PK	Cat. No.
HSO 126-00	1	**9.160 010**



2 Spatula/section lifter, 18/10 steel

18/10 steel. With wooden handle. Short, flexible blade. *Bochem*

Length mm	Blade width mm	Blade length mm	PK	Cat. No.
150	10	50	1	**9.220 510**
150	15	50	1	**9.220 515**



3 Spatulas with wooden handle, stainless steel

Flexible, long blade as outlined below. *Bochem*

Length mm	Blade length mm	Blade width mm	PK	Cat. No.
165	75	14	1	**9.220 607**
190	100	18	1	**9.220 610**
230	130	20	1	**9.220 613**
250	150	22	1	**9.220 615**
275	165	27	1	**9.220 616**
310	200	32	1	**9.220 620**
365	250	38	1	**9.220 625**
415	300	42	1	**9.220 630**



4 Pharmacist's spatula

Stainless steel 4310. With durofol handle. Flexible blade.

Length mm	Blade width mm	Blade length mm	PK	Cat. No.
165	14	75	1	**9.220 490**
190	18	100	1	**9.220 491**
230	20	130	1	**9.220 492**
250	22	150	1	**9.220 493**
310	32	200	1	**9.220 495**



5 Laboratory spatula, PC

Polycarbonate, crystal clear.

Width mm	Length mm	Weight g	PK	Cat. No.
20	145	18	1	**9.220 841**



6 Tongue depressors, wooden

Wooden.

Length mm	PK	Cat. No.
150	100	**9.165 101**





1 Stirring rods, AR- clear soda glass

AR- clear soda glass. With flame-polished ends.

Length mm	Ext. diam. mm	PK	Cat. No.
200	3	10	**9.197 403**
150	4	10	**9.197 404**
200	4	10	**9.197 405**
150	5	10	**9.197 406**
200	5	10	**9.197 407**
150	6	10	**9.197 408**
200	6	10	**9.197 424**
250	6	10	**9.197 426**
300	7	10	**9.197 431**
300	8	10	**9.197 433**
300	9	10	**9.197 435**



2 Disposable stirrer, PS

PS. Stem diameter 3mm. *BRAND*
With one round end and one spatula-shaped end.

Length mm	PK	Cat. No.
120	500	**9.409 501**



3 Deflagrating spoon

Steel. Cup 18mm diameter, shaft 450mm. *Juchheim Laborgeräte*

Stem diam. mm	PK	Cat. No.
3	1	**9.150 530**



4 Spatula and scissor set, stainless steel

All items are manufactured from high quality AISI 304 polished stainless steel. *Isolab*
Easy to store and carry with the wallet.

Description	PK	Cat. No.
Spatula and scissor set	1	**6.267 388**
Empty wallet for spatula and scissor set	1	**6.267 389**



5 Scissors dissecting, stainless steel

Excellent grade polished stainless steel with fine sharps points and close shanks.
Available as 2 types:
- straight body form
- curved body form

Type	Length mm	PK	Cat. No.
straight body form	130	1	**6.236 264**
curved body form	130	1	**9.204 222**

E & OE.

1 LLG-Scissors general purpose, stainless steel

Excellent grade polished stainless steel with straight form and close shanks.
Available as 3 types:
- sharp/sharp points
- blunt/blunt points
- sharp/blunt points

Type	Length mm	PK	Cat. No.
sharp - sharp	130	1	**6.237 703**
sharp - sharp	160	1	**9.204 231**
blunt - sharp	130	1	**9.204 232**
blunt - sharp	160	1	**9.204 233**
blunt - blunt	130	1	**9.204 234**
blunt - blunt	160	1	**9.204 235**

1



2 Surgical scissors, stainless steel

Straight, closed shanks. Point/blunt.

Length mm	PK	Cat. No.
130	1	**9.204 220**

2



3 Surgical scissors, sharp points, stainless steel

Fine-polished finish.
Closed shanks with fine sharp points, curved or straight, as outlined below.

Length mm	Type	PK	Cat. No.
105	Straight	1	**9.204 206**
105	Curved	1	**9.204 207**

3



Universal scissors, stainless steel, plastic handle

NEW!

All purpose scissors for use in the office and at home. Produced from stainless steel. Sharp blades for accurate cutting.
Ergonomic designed handles made from ABS material feature soft-grip insert. Supplied on try-me card.
Colour: black/red
- stainless steel, polished
- special grinding for precise cuts
- ergonomic handles

Length mm	Description	PK	Cat. No.	
140	Straight	1	**9.160 651**	4
160	Sharp	1	**9.160 652**	5
210	Straight	1	**9.160 653**	6
255	Straight	1	**9.160 654**	7

4



9.160 651

5



9.160 652

6



9.160 653

7



9.160 654

8 Heavy Duty Scissor, stainless steel, black

NEW!

Stainless steel blades and large comfortable black ABS handles. Suitable for cutting tougher materials.
Features integral groove center for opening corks from bottles, nutcracker, bottle opener, etc. Supplied on try-me card.

Description	Length mm	PK	Cat. No.
Universal scissor	215	1	**9.160 655**

8



1



1 Paper-cutting scissors, stainless steel

Bochem

Length mm	Blade length mm	PK	Cat. No.
250	135	1	**9.204 325**

2



9.160 656

3



9.160 657

LLG-Allround Cutter

NEW!

An easy and comfortable handling is ensured by the ergonomically shaped and rubber grip.
The break-off device is integrated into the grip section of the ABS plastic casing.
Comes with a metal blade guide and auto-lock system. Both cutters will be delivered on blister cards including 2 spare cutting blades.

Type	PK	Cat. No.
Allround Cutter 18 mm	1	**9.160 656** 2
Allround Cutter 9 mm	1	**9.160 657** 3
Replacment blade for Allround Cutter 18mm	10	**9.160 658**
Replacment blade for Allround Cutter 9mm	10	**9.160 659**

4



9.156 027

5



9.156 030

Cutter M 9

Edding

Small, handy pocket sized model with plastic handle and clip. With retractable blade and slotted cover for breaking off the blades safely. 13 break-off blades per knife.
Barrel colour black. Replacement blades available.

Type	PK	Cat. No.
Cutter	1	**9.156 027** 4
Spare blade for M 9	10	**9.156 030** 5

6



9.156 018

7



9.156 020

Cutter ML 18

Edding

For heavy use, with patented safety lock for blade-lock with one hand. With retractable blade and slotted cover for breaking off the blades safely. 8 break-off blades per knife.
Barrel colour white. Replacement blades available.

Type	PK	Cat. No.
Cutter	1	**9.156 018** 6
Spare blade for ML 18	10	**9.156 020** 7

Apollo blades

NEW!

High-quality Swedish alloy steel. Standard quality.

Type	Width mm	Height mm	Thickness mm	PK	Cat. No.
Bail blades with handle	39	19	0.25	100	**6.322 097** 8
Bail blades with handle	57	25	0.28	5	**6.800 353** 9
Apollo Ever-Sharp-Blades	39	19	0.30	5	**9.156 110** 10

8



6.322 097

9



6.800 353

10



9.156 110

11



11 Safety razor blades smartSlicer™, PET

NEW!

Heathrow Scientific

Thin as a single edge industrial razor blade, but much safer. Cleanly slice gels and combs. Available in two sizes. Adjust the size required by simply cutting with scissors.
The smartSlicer™ can be used on delicate surfaces, without scratching them.

Type	Width mm	Height mm	Thickness mm	PK	Cat. No.
smartSlicer™	38	19	0.22	100	**9.194 030**
smartSlicer™	50	25	0.22	100	**9.194 031**

E & OE.

1 Multi-purpose knife

With 3 blades.

Type	PK	Cat. No.
Multi-purpose knife	1	**9.160 001**



2 LLG-Multi-purpose tool

Blue anodised housing with stainless steel screws. Specifications: Needlenose Pliers, Wire Cutters, Wire Stripper, Knife, Saw Knife, Saw, Screwdriver, Crosshead Screwdriver, Bottle/Can Opener, File.
Supplied completely with Nylon Belt Pouch. Dimensions: 100 x 45 x 20mm

Type	Weight g	PK	Cat. No.
LLG-Multi-purpose tool	230	1	**9.160 000**



3 Leatherman® Wingman Multi-Tool, Stainless Steel

Tools: Spring-action Needlenose Pliers, Spring-action Regular Pliers, Spring-action Wire, Cutters, 420HC Combo Knife, Package Opener, Wood/Metal File, thomann Scissors, Small Screwdriver, Medium Screwdriver, Phillips Screwdriver, Ruler (1.5 in), Bottle Opener, Can Opener, Wire Stripper, Features: Removeable Pocket Clip.
Measurements: 6.6cm (Blade Length), 9.7cm (Closed)

Type	Weight g	PK	Cat. No.
Leatherman® Wingman Multi-Tool	198	1	**9.159 996**



4 LLG-Hose cutter

NEW!

A perfect tool to cut even thick hoses with external diameter from 6.0 mm to 25 mm. The cut edges of tubings with the tube cutter are always clean and flat. Offers a clean and sharp cut of tubings in few seconds. Hose cutter has a two end blade which can be turned when one gets blunt and the other sharp side used.

Description	PK	Cat. No.
for diam. 6 - 25mm	1	**6.267 395**



5 Universal slicer

Stainless steel. Sturdy with plastic coated handle. Persistard metal handle (inside). *Bochem*

Length mm	Blade length mm	PK	Cat. No.
190	40	1	**9.204 332**



6 LLG-Universal slicer

NEW!

Heavy duty scissor for cutting almost all material even also thin layers of steel. Cutting blade is manufactured from high quality hardened stainless steel. Spring supported ergonomic plastic handle with safety lock offers easy and secure use.

Length mm	PK	Cat. No.
185	1	**6.267 394**



7 Ceramic knife

Stainless. Non-magnetic. Heavy duty ceramic, metal-free blade. Specially for preparing samples in trace element analysis. Dishwasher safe. Blade length 120mm.

Type	PK	Cat. No.
Knife	1	**9.160 680**





1 Glass markers, diamond-tipped

Writing diamond for writing on glass. Available as a pen with retractable tip or mounted on a wooden handle.

Type	PK	Cat. No.
With wooden grip	1	**9.032 920**
Pen type	1	**9.032 930**



2 Glascribe® Pen

Mark laboratory glassware with the Glascribe® Pen with retractable tungsten carbide tip (Mohs Hardness = 9). It easily inscribes on glass, ceramics, and plastic.
The pen has a pocket clip so it is always handy when needed.

Bel-Art Products

Type	PK	Cat. No.
Glascribe® pen	1	**9.032 932**



3 Electro-diamond pen

For writing on specimen slides and for marking, labelling or engraving metal or plastic. The motor automatically switches on once the hand is in the writing position and switches off once the pen is horizontal again.
The writing nib rotates rapidly allowing effortless engraving. The nib can be exchanged easily without the need for tools.
The engraving is deep so that it will last indefinitely. Weight approx. 100g, finger grip approx. 15mm.
Includes nib type A for glass, 1.5mm diameter. Other nib types are available as accessories.

Type	PK	Cat. No.
Electro-diamond pen	1	**9.032 940**



4 Nibs, for electro-diamond pen.

For electro-diamond pen. Supplied singly.

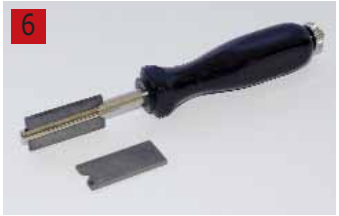
Type	For	PK	Cat. No.
A	Glass, 1.5 mm dia.	5	**9.032 945**
B	Hardened metal, 2.5 mm dia.	5	**9.032 946**



5 Glass tubing cutter

For glass tubing up to 30mm Ø. With interchangeable hard metal wheel.

Type	PK	Cat. No.
Glass tubing cutter	1	**9.110 510**
Replacement roller	1	**9.110 511**



6 Glass cutting knife

With interchangeable blades made of metal.

Type	PK	Cat. No.
Glass cutting knife	1	**9.110 500**
Replacement blade	1	**9.110 501**



7 Hammer

DIN 1041, steel-forged hammer head, double bracketed with ash handle.

Weight g	PK	Cat. No.
300	1	**9.306 127**

E & OE.

1 Double open-ended spanner set

Chrome vanadium steel. Complies with DIN 3110.
Drop-forged, chromium-plated. Comprises of 8 spanners, 6mm to 22mm.

Type	PK	Cat. No.
Double open-ended spanner set	1	**9.306 021**



2 Combination spanner set

Chrome vanadium steel. Complies with DIN 3113. Comprises of 8 spanners, 8mm, 9mm, 10mm, 11mm, 13mm, 14mm, 17mm and 19mm.

Type	PK	Cat. No.
Combination spanner set	1	**9.306 105**



3 Precision engineer's set

With 1/4" square drive, 36-piece set. Includes 4mm - 13mm sockets, screwdriver bits with square drive for slotted, Phillips, TORX (with frontal hole) and Allen sockets as well as 1.25mm - 1.5mm - 2.0mm - 2.5mm and 3mm angled Allen keys.

Type	PK	Cat. No.
PROXXON 23080	1	**9.306 121**



4 Laboratory tool box

12 piece ring/open end spanner set: 1 piece each in sizes 6mm to 15mm, 17mm and 19mm.
Knipex 180mm combination pliers. Knipex 240mm water pump pliers. FLEX-DOT screwdriver set: 1 slotted screwdriver each in sizes 8.0 x 1.2mm - 5.5 x 1.0mm and 3.0 x 0.5mm. 1 Phillips screwdriver, size 2. Including two stubby screwdrivers: 1 size 2 Phillips screwdriver and 1 slotted screwdriver 5.5 x 1.0mm. Automotive light tester with cable and crocodile clip (for automotive electrical systems only).

Sockets, sizes 8mm - 10mm - 12mm - 13mm - 14mm - 15mm - 17mm - 19mm - 22mm and 24mm. Reversible ratchet. Universal joint. 1 each 125mm and 250mm extensions. Long T-handle with slide (for loosening wheel nuts). Special 16mm and 21mm spark plug sockets with ball head on longer side. Pocket Allen key set (8 piece set) from 1.5 - 8.0mm. PROXXON ball-peen hammer (300g), ground on all sides and partially polished. With inseparable graphite handle (fibre-glass reinforced, non-slip soft coating in grip area) for unparalleled vibration damping.

Type	PK	Cat. No.
PROXXON 23650	1	**9.306 125**



5 Screwdriver set

Hardened, chrome vanadium molybdenum steel. With impact-resistant, cadmium-free, plastic handles.
Insulated in accordance with VDE 0680/2, 1000V, 7 screwdrivers.

4 VDE screwdriver:	2.5 x 80/3.5 x 100/4 x 100/5.5 x 125mm
2 VDE Phillips screwdriver:	PH1 x 80/PH2 x 100mm
1 Voltage detector	

Type	PK	Cat. No.
Wera 160i/7	1	**9.306 107**



6 Allen key set

8 piece, 2-10mm.
In shock-resistant plastic case with clear, sliding lid.

Type	PK	Cat. No.
Wiha 351	1	**6.206 421**



1



1 Electronics screwdriver set with rack

6-piece screwdriver set consisting of:
4 flat screwdrivers: 2.5mm/3.0mm/3.5mm/4.0mm
2 PH screwdrivers: Size 0 and 1

Type	PK	Cat. No.
Electronics screwdriver set with rack	1	**9.210 143**

2



2 Side cutting pliers

Type 7001. DIN 5238 B. ISO 5749. For hard and soft wire. Inductively hardened precision cutting edges. Cutting hardness approx. 62 HRC. Plastic coated handles.

Length mm	PK	Cat. No.
180	1	**9.306 111**

3



3 Water pump pliers

Chrome vanadium steel. Form D. With locking groove and glide adjustment. Inductively hardened toothed grips. 6 position jaw opening.

Length mm	PK	Cat. No.
250	1	**9.306 115**

4



4 Combination pliers

Tool steel. Light design. DIN ISO 6746. For cutting hard and soft wire. Long cutting edges for thicker cable. Inductively hardened cutting edges. Cutting hardness 60 HRC. Plastic coated handle grips.

Length mm	PK	Cat. No.
180	1	**9.306 117**

5



5 Vernier calliper gauge, digital

Stainless steel, with 5 digit LCD display. Accuracy ±0.03mm, resolution 0.01mm. Switchable between metric/imperial. *Bochem*

Type	Length mm	PK	Cat. No.
Digital	150	1	**9.204 610**

6



6 LLG-Torch

Sturdy torch with 12 energy saving LED lights for ultra-bright light.
Made from metal with practical hand strap incl. 3 x 1.5V AAA batteries.

Dimensions (Dia. x L): 30 x 120mm

Type	PK	Cat. No.
LLG-Torch	1	**9.961 000**

7



7 LED-Flashlight, Lumatic Spot

NEW!

3 Watt CREE LED, range up to 120m, zoom or focus for diffused light. Durable aluminum housing, splash-proof, with carrying strap and bag, batteries 3 x 1.5V AAA. *TFA Dostmann*

Specifications
Dimensions (Dia. x L): 34 x 115mm
Weight: 170g

Type	PK	Cat. No.
Lumatic Spot	1	**9.156 233**

E & OE.

1 LLG - Forceps assortment, 4-parts, chromium-nickel steel

NEW!



LLG - Forceps assortment, 4-parts, chromium-nickel steel (1.4301) in synthetic leather bag including:
1 Sharp forcep, curved, 115mm
1 Thumb forcep, 115mm
1 Forcep with guide pin straight, 130mm
1 Coverglas forcep, 115mm
1 Synthetic leather bag, 6 subjects 100 x 175mm

Description	PK	Cat. No.
LLG - Forceps assortment, 4-parts	1	**9.160 394**

2 High Precision forceps kit, 5-parts, stainless steel, anti-magnetic, anti-acid

NEW!



Ideal-tek

High Precision Tweezers Kit, swiss made, high quality finish, anti-magnetic and acid resistant stainless steel in a solid cardboard box with foam insert, including 5 forceps:
120 mm, flat edges, fine tips
120 mm, flat, accurate, round tips
110 mm, very sharp, fine tips
110 mm, extra fine tips
115 mm, very fine, 45° curved tips

Description	PK	Cat. No.
High Precision forceps kit, 5-parts	5	**9.160 124**

3 TRIZETTE® - Magnifier tweezer with LED light



Werner Dorsch

- extra bright LED light to be switched on when needed
- approx. 3.2 cm big plastic lens for 4-fold magnification

Size: approx. 14 x 4 x 2 cm, Weight: 27 g.
Delivery on blister card. 3 button cell batteries (LR44) incl.

Description	PK	Cat. No.
TRIZETTE®	1	**9.160 660**

4 One-time tweezers, PS, sterile

NEW!



One-time tweezers, 120 mm, sterile, PS, anatomic

Description	Length mm	PK	Cat. No.
One-time tweezers, sterile	120	500	**7.634 697**

5 LLG-Forceps, 18/10 steel



Sprung flutes.

Length mm	Type	PK	Cat. No.
105	blunt-straight	1	**4.008 471**
115	blunt-straight	1	**4.008 472**
130	blunt-straight	1	**4.008 473**
145	blunt-straight	1	**6.255 826**
160	blunt-straight	1	**4.008 474**
200	blunt-straight	1	**4.008 475**
250	blunt-straight	1	**4.008 476**
300	blunt-straight	1	**4.008 477**
115	blunt-straight, with tooth	1	**4.008 478**
130	blunt-straight, with tooth	1	**4.008 479**
145	blunt-straight, with tooth	1	**4.008 480**
160	blunt-straight, with tooth	1	**4.008 481**

1



1 LLG-Dissecting forceps, stainless steel 420

Manufactured from premium grade polished stainless steel with fine sharp points and sprung flutes.
Available as 2 types:
- straight body form
- curved body form

Length mm	Type	PK	Cat. No.
105	sharp - straight	1	**4.008 482**
115	sharp - straight	1	**9.171 121**
130	sharp - straight	1	**9.171 122**
150	sharp - straight	1	**9.171 123**
160	sharp - straight	1	**4.008 483**
200	sharp - straight	1	**4.008 484**
105	sharp - curved	1	**4.008 485**
115	sharp - curved	1	**9.171 124**
130	sharp - curved	1	**6.236 683**

2



2 Tissue forceps, 18/10 steel

With tooth grips 1:2.

Length mm	PK	Cat. No.
115	1	**9.171 311**
130	1	**9.171 313**
145	1	**9.171 314**
160	1	**9.171 316**

3



3 Forceps, curved end, stainless steel

Remanit® 4301, with sharp ends, angled.

Length mm	PK	Cat. No.
105	1	**7.637 274**
115	1	**9.171 211**
130	1	**9.171 213**
145	1	**9.171 214**
160	1	**9.171 215**
200	1	**9.171 217**

4



9.160 130

5



9.160 135

Forceps, fine, 18/10 steel

Non-magnetic. Extra fine ends, without grooves.

Length mm	Type	PK	Cat. No.
105	Straight	1	**9.160 130** 4
105	Curved	1	**9.160 135** 5

6



6 Forceps, curved end, 18/10 steel

Stainless 18/10 steel. Curved ends with sharp tips.

Length mm	PK	Cat. No.
115	1	**9.171 221**
135	1	**9.171 223**
145	1	**9.171 224**
160	1	**9.171 225**

1 Precision Forceps, anti-Magnetic, anti-Acid, replaceable tips

NEW!

Ideal-tek

130 mm high quality steel tweezers with strong plastic replaceable tips. Tips made of plastic type CF (carbon fibre), handles made of anti-magnetic anti-acid stainless steel. For laboratory applications in moderately aggressive chemical environments.

Tips made of PA66/CF30 polyamide 66 reinforced with 30 % carbon fibre. Very high rigidity, excellent tensile and flexural strength, fatigue resistance. Excellent wear and abrasion resistance. Not resistant to strong acids, alkalis and hot water or steam. Very low coefficient of linear thermal expansion.
Forceps made of Stainless Steel type SA, from 16.5 to 18.5 % chromium and nickel and molybdenum as additional alloying elements. Non-magnetizable.

1



Description	Length mm	PK	Cat. No.
Tweezers, exchangeable fine tips	130	1	**6.266 878**
Tip tweezers, exchangeable extra fine tips	130	1	**6.266 879**
Tip set for plastic replaceable tip tweezers, 2 tips, 3 screws for article no. 6.266 878		1	**6.266 880**
Tip set for plastic replaceable tip tweezers, 2 tips, 3 screws for article no. 6.266 879		1	**6.266 881**

2 High Precision Tweezers, anti-Magnetic, anti-Acid

NEW!

Ideal-tek

High Precision Tweezers, swiss made, high quality finish, anti-magnetic and acid resistant stainless steel

Type	Length mm	PK	Cat. No.
flat edges, fine tips	120	1	**6.266 873**
flat, round tips	120	1	**6.266 874**
very sharp, fine tips	110	1	**6.266 875**
extra fine tips	110	1	**6.266 876**
very fine, 45° curved tips	115	1	**6.266 877**

2



High Precision Forceps

NEW!

Ideal-tek

Swiss made. Stainless steel. Electro-polished surface. Precision made.
Very fine tips as outlined below.

Type	Length mm	Width Tip mm	Thickness mm	PK	Cat. No.
Angled 45°	110	0.10	0.06	1	**9.160 125** 3
Angled 90°	110	0.10	0.06	1	**9.160 126**
Straight	110	0.10	0.06	1	**9.160 127** 4
Curved	115	0.17	0.10	1	**9.160 128** 5
Straight	135	0.10	0.06	1	**9.160 129**

3



9.160 125

4



9.160 127

5



9.160 128

6 7 Gerald micro forceps, stainless steel

Dressing forceps, 175mm long

Length mm	Form	PK	Cat. No.
175	straight	1	**9.160 187**
175	curved	1	**9.160 188**

6



7



8 LLG-Cover glass forceps, self-locking, stainless steel

Stainless steel 4301

Length mm	Form	PK	Cat. No.
105	Straight	1	**9.160 380**
105	Curved	1	**9.160 381**

8



9 Membrane Tweezers

NEW!

Ideal-tek

Swiss made. Made of austenitic steel. Non-magnetizable. Good corrosion resistance to most chemicals, salts and acids. Flat, with round tips and rounded edges.
Especiallysuitable for safe handling of transfer membranes.

Length mm	Form	PK	Cat. No.
115	flat, round tip	1	**9.160 131**

9



1



1 LLG-Cover glass forceps, type Kühne, stainless steel

Stainless steel 4301

Length mm	Form	PK	Cat. No.
115	Curved	1	**9.160 386**
130	Curved	1	**9.160 387**
145	Curved	1	**9.160 388**
115	Straight	1	**9.160 391**
130	Straight	1	**9.160 392**
145	Straight	1	**9.160 393**

2



9.160 205

3



9.160 210

Cover glass forceps, stainless 18/10 steel

With flattened ends, straight or curved as outlined below. Points 6mm wide.

Length mm	Form	PK	Cat. No.
105	straight	1	**9.160 205** 2
105	curved	1	**9.160 210** 3

4



4 Tweezers for filter paper, stainless steel

NEW!

Perfect tool to use for handling papers.

Isolab

Description	PK	Cat. No.
Tweezers for filter paper	1	**6.243 682**

5



5 Forceps, PMP

White. Polymethylpentene (PMP). Elastic. With pointed ends. Comfortable to use. Self-sprung. Autoclavable (121°C).

Length mm	PK	Cat. No.
115	1	**9.171 411**
145	1	**9.171 414**

6



6 Forceps, POM

Polyoxymethylene(POM). Yellow. Glass-fibre reinforced POM. With blunt, rounded tips. Flexible. Non-conductive.

Length mm	PK	Cat. No.
115	1	**7.009 045**
145	1	**7.009 046**
180	1	**9.171 418**
250	1	**9.171 425**

Further forceps please see page 1275.

7



7 LLG-Dispensing scoops, PE-HD

For heavy industrial use. Suitable for foodstuff.

Capacity ml	Length mm	PK	Cat. No.
250	25	1	**9.201 091**
500	30	1	**9.201 092**
1000	35	1	**6.240 471**
1500	40	1	**9.201 093**

8



8 Measuring scoops, PE-HD

Natural colouring. Conical in shape with tapered filling edge.
Food-safe product according to EC Directive No. 10/2011.

VITLAB

Capacity ml	Length mm	PK	Cat. No.
15	115	1	**7.008 959**
25	135	1	**7.008 960**
65	185	1	**7.008 961**
110	215	1	**7.008 962**
150	250	1	**9.201 025**
350	310	1	**9.201 030**
750	350	1	**9.201 035**
1250	400	1	**9.201 040**

E & OE.

1 Measuring scoops, PP

White measuring scoops which are also suitable as weighing scoops. *VITLAB*
With precision formed filling edge and comfortable, stable handle.
Easily readable volume quantities on the upper side of the handle.
Food-safe products according to EC Directive No. 10/2011.



Capacity ml	Length mm	PK	Cat. No.
2	60	1	**9.201 052**
5	82	1	**9.201 053**
10	100	1	**9.201 055**
25	135	1	**9.201 057**
50	160	1	**9.201 058**
100	200	1	**9.201 059**
250	260	1	**9.201 061**
500	315	1	**9.201 062**
1000	385	1	**9.201 065**

2 Dispensing scoops, Aluminium



Capacity ml	Overall length mm	Length Scoop mm	PK	Cat. No.
42	135	80	1	**9.201 113**
105	185	113	1	**9.201 118**
140	210	120	1	**9.201 121**
260	250	145	1	**9.201 125**
340	265	155	1	**9.201 126**
555	310	185	1	**9.201 131**
675	350	220	1	**9.201 135**
1510	400	270	1	**9.201 140**
3000	430	300	1	**9.201 143**

3 FoodScoop, Stainless steel

NEW!

Very stable hand scoop for various applications, particularly suited for the food industry. *Bürkle*
Seamless connection of scoop and hollow handle, therefore without crevices and edges.
Especially smooth, highly polished surface.

- Especially sturdy model
- Stainless steel V2A (1.4301)
- With handy suspension eyelet



Capacity ml	Overall length mm	Length Scoop mm	PK	Cat. No.
100	215	120	1	**6.254 785**
200	230	140	1	**6.252 363**
250	245	155	1	**6.254 786**
350	290	180	1	**6.242 476**
500	350	220	1	**6.072 181**

4 Dispensing scoops, stainless steel

Remanit® 4301 *RSG*



Capacity ml	Overall length mm	Length Scoop mm	Diam. mm	PK	Cat. No.
120	190	100	50	1	**9.201 219**
450	250	150	75	1	**9.201 222**
1000	310	200	105	1	**9.201 232**
1500	350	240	120	1	**9.201 235**
2000	365	250	150	1	**6.080 286**

5 Laboratory dryer HT0139

Power: approx. 2100 W. 2 speed settings, 3 temperature settings with cold air-stream button. soft-touch housing.
Air-inlet grille detachable for cleaning. cable retracts at the touch of a button.



Type	PK	Cat. No.
HT0139	1	**9.106 788**

1



1 Bunsen burner, portable Labogaz® 206

For operation with gas cartridge C 206 GLS (Cat.-No.: 9.018 520). DVGW-authorised.

Weight: 380g without cartridge
Height: 200mm with cartridge
Consumption: 55g/h

Type	PK	Cat. No.
Labogaz® 206	1	**9.018 510**

2



2 Bunsen burner, portable, Labogaz® 470

For operation with gas cartridges CV 300 Plus (Cat.-No.: 6.243 905) or CV 470 Plus (Cat.-No.: 9.018 512).

Weight: 380g without cartridge
Height: 190mm with cartridge
Consumption: 55g/h

Type	PK	Cat. No.
Labogaz® 470	1	**9.018 511**

3



9.018 540

4



9.018 539

Blowlamp Soudogaz® X 2000/X 2000 PZ

High performance multi-purpose blowlamp with a high quality brass burner.
Metallic cartridge cover with plastic screw-on base for easy cartridge insertion.
To use with cartridge C 206 GLS.

Weight: 380g without cartridge
Consumption: 120g/h
Flame temperature: approx. 1750°C

Type	PK	Cat. No.
Soudogaz® X 2000 without piezo ignition	1	**9.018 540** 3
Soudogaz® X 2000 PZ with piezo ignition	1	**9.018 539** 4

5



5 Blowlamp PT 2000

Sturdy brass body and burner with fine flame adjustment for soft and hard soldering.
Polypropylene shock-resistant, ergonomic handle. To use with cartridge C 206 GLS.

Weight: 380g without cartridge
Consumption: 120g/h
Flame temperature: 1750°C

Type	PK	Cat. No.
Blowtorch PT 2000	1	**9.018 547**

E & OE.

Gas cartridges

C 206 GLS pierceable cartridge
Piercing cartridge with integrated gas lock system according to EN 417: 2012. For bunsen burner without safety valve. For bunsen burners Labogaz® 206 and Soudogaz blow torches.
CV470 Plus and CV 300 Plus valve cartridge
With safety valve. For bunsen burner Labogaz® 470.
CV 360 valve cartridge
With safety valve. For gas-safety burner schuett phoenix (Cat.-No. 9.018 761).

Safety valve allows removal of partially used valve gas cartidges.

Type	Capacity g	Height mm	Description	PK	Cat. No.
C 206 GLS	190	90	Gas ratio 80/20 Butane/Propane	1	**9.018 520** 1
C 206 GLS	190	90	Gas ratio 80/20 Butane/Propane (large pack)	36	**6.261 010**
CV 300 Plus	240	105	Gas ratio 80/20 Butane/Propane	1	**6.243 905** 2
CV 470 Plus	450	140	Gas ratio 80/20 Butane/Propane	1	**9.018 512** 3
CV 470 Plus	450	140	Gas ratio 80/20 Butane/Propane (large pack)	12	**6.261 011**
CV 360	52	140	Butane	1	**9.018 519** 4

1



9.018 520

2



6.243 905

3



9.018 512

4



9.018 519

5 Spirit burner

18/10 steel. With wick height adjuster and sealing cap. Capacity approx. 60ml.

Type	PK	Cat. No.
Spirit burner	1	**9.018 560**

5



Spirit lamp

Soda-lime glass. Flat conical form. With ground on cover. Without filling inlet, without wick or nozzle (please order separately). Capacity 100ml.

Type	PK	Cat. No.
Without filler inlet	1	**9.018 549** 6
Wick	1	**9.018 553**
Nozzle	1	**9.018 554**

6



9.018 549

7 Teclu burner, Ms-Ni

Nickel-plated brass and steel. DIN 30665. max. 1300°C, with needle valve, air regulator and pilot light. An anti-slip rubber coating under the base ensures absolute stability. *Bochem*

Height mm	Rating kW	Type	PK	Cat. No.
180	1.53	Natural	1	**9.018 377**
180	2.36	Propane	1	**9.018 378**

7



1



1 Safety burner, Ms-Ni

Maximum temperature 1300°C, with needle valve, **thermo safety element** (bimetallic flame sensor with magnetic lock), air regulator and pilot light.
Nickel-plated brass and steel. An anti-slip rubber coating under the base ensures absolute stability.

Bochem

Height mm	Rating kW	Type	PK	Cat. No.
180	1.53	Natural gas	1	**9.018 388**
180	2.36	Propane	1	**9.018 389**

2



2 Bunsen burner, Ms-Ni

With needle valve DIN 30665. Air regulation, pilot flame, max. 1300°C.
An anti-slip rubber coating under the base ensures absolute stability.

Bochem

Height mm	Rating kW	Type	PK	Cat. No.
160	1.53	Natural gas	1	**6.076 257**
160	2.36	Propane	1	**6.088 530**

3



3 Teclu burners

Teclu burner with stopcock and pilot flame DIN (NG-2411 BO0033)

Juchheim Laborgeräte

Height mm	Weight g	Description	PK	Cat. No.
165	360	for natural gas	1	**9.018 311**
165	360	for propane gas	1	**9.018 312**

4



4 Teclu burners

Teclu safety burner with needle stopping valve and thermofeeler with safety valve on heavy plate shaped base.

Juchheim Laborgeräte

Height mm	Weight g	Description	PK	Cat. No.
200	685	for natural gas	1	**6.056 812**
200	685	for propane gas	1	**6.072 042**

5



5 Bunsen burners

Bunsen burner with needle valve and pilot flame DIN (NG-2411 BO0031).

Juchheim Laborgeräte

Height mm	Weight g	Description	PK	Cat. No.
150	300	for natural gas	1	**9.018 313**
150	300	for propane gas	1	**9.018 314**

6



6 Teclu burners

Teclu burner with needle valve DVGW-Nr. NG-2411BO0033.

Juchheim Laborgeräte

Height mm	Weight g	Description	PK	Cat. No.
150	325	for propane gas	1	**6.236 456**
150	325	for natural gas	1	**9.018 310**

Gas safety tubing please see page 139

E & OE.

1 Bunsen burners

Bunsen burner with stopcock and pilot flame DIN (NG-2411 BO0032) *Juchheim Laborgeräte*

Height mm	Weight g	Description	PK	Cat. No.
155	315	for natural gas	1	**9.018 318**
155	315	for propane gas	1	**9.018 319**

1



2 Bunsen burners

Bunsen burner with needle valve DIN (NG-2411 BO0031). *Juchheim Laborgeräte*

Height mm	Weight g	Description	PK	Cat. No.
150	320	for natural gas	1	**9.018 316**
150	320	for propane gas	1	**9.018 317**

2



3 Rubber sucker base for Juchheim laboratory burner

Juchheim Laborgeräte

Description	PK	Cat. No.
Rubber sucker base for Juchheim laboratory burner	1	**9.018 315**

3



4 Bunsen burners with air regulator and needle valve

With air regulator and needle gas valve.

Height mm	Type	PK	Cat. No.
160	Universal burner	1	**9.018 294**
	Rubber sucker base	1	**9.018 360**

4



5 Multi gas burner Teclu, Ms-Ni

With stopcock. Air regulation, max. 1300°C. An anti-slip rubber coating under the base ensures absolute stability.

Height mm	Rating kW	Type	PK	Cat. No.
160	0.5 - 3	Multi gas	1	**9.018 292**

5



6 Gas lighter

For all types of gas. Bow-shaped. With flint.

Type	PK	Cat. No.
Gas lighter	1	**9.018 801**
Flints	1	**9.018 805**

6



7 Piezoelectric gas lighter, Clipper

Piezoelectric.

Type	PK	Cat. No.
Piezoelectric gas lighter, Clipper	1	**9.018 820**

7



Safety Laboratory Gas Burners Fuego SCS series

Suitable for all flame related applications in the laboratory. The low profile body facilitates ergonomic operation; the streamlined design reduces air flow disturbances in a clean room workbench. The Fuego SCS series can be operated with foot pedal, button function or touch free IR-Sensor. Made of stainless steel, with fireproof controls. *WLD-TEC*

- SCS Safety Control System with gas safety cut off: Ignition and flame control, temperature monitor, automatic unit switch off, residual heat display, burner head assembly monitor.
- BHC Burner Head Control.
- Removable burner head.
- Tilt mechanism right/left.
- Turbo flame.
- Holding device for 3 inoculation loop holders.
- Nozzles for natural gas, propane/butane gas.
- Approved by DIN-DVGW, approval no. NG2211AS0167.
- Warranty: 2 years.

Fuego SCS basic/ Fuego SCS basic RF: With stainless steel foot pedal. The foot pedal regulates the burning time either by continuous foot pressure or by start-stop function. Instrument with ON/OFF button function. Basic model without IR-Sensor and without graphic display.

Fuego SCS basic RF: Features as Fuego SCS basic but enables wireless operation due to modern radio foot pedal.

Fuego SCS/Fuego SCS pro: with Double-Click IR-sensor, button function and foot pedal operation. (foot pedal optional).
Double-Click IR-sensor: This adjustable safety function ensures that the burner can only be ignited by activating the IR-Sensor twice.
Adjustable IR-sensor reaction distance: 5mm to 50mm.
Illuminated graphic display: The animated, self-explanatory and language-less symbol display facilitates a rapid selection of all functions.
6 standard-programs with count down display: 1sec to 2hrs selectable.
The first safety laboratory gas burner with comfort package: Cooling time reminder for inoculation loops, temperature regulation for heating media, gas consumption display for gas cartridges, flexible and individual by selecting user account, acoustic signals as operating aids.
Additional safety assistance: Zero-pressure shut off for a pressureless gas hose. Graphical installation instructions facilitate the initial start-up.

Fuego SCS pro: Features as Fuego SCS, plus battery operation (9hrs), 2 rechargeable batteries (Mignon AA), fast charge function (3hrs) and safety tilt sensor.

Additional accessories are available on request.

Specifications

Dimensions (WxDxH):	103 x 130 x 49mm
Power supply:	100-240V 50/60Hz
Weight:	700g

Type	PK	Cat. No.	
Fuego SCS basic	1	**6.232 207**	1
Fuego SCS basic RF	1	**6.255 678**	
Fuego SCS	1	**6.231 770**	2
Fuego SCS pro	1	**9.018 584**	
Stainless steel foot pedal	1	**9.018 585**	

1



6.232 207

2



6.231 770

E & OE.

1 schuett phoenix II Safety Bunsen Burner

schuett-biotec

For sterilising, heating, flame sterilising. For use in every microbiological laboratory or in safety cabinets. Modern Bunsen burner with state-of-the-art safety features plus outstanding quality characteristics:

- Controlled burning time 1 sec to 120 min (selectable)
- Automatic safety shut-off when not in use (selectable)
- Overheating protection/burner control by sensors
- Precise economic flame regulation (stable flame in strong air current)
- Flame and ignition monitoring
- Tilting right or left
- Operating status, safety notes and warnings in written language for most international languages. Brilliant colour display. Unique Joy-Stick navigation. Operating modes: by hand or with foot pedal or motion sensor.

Housing made of stainless steel and safety glass. UV- and solvent resistant. For case of cleaning and flame-sterilising. Suitable for use with natural gas (central gas) or butane/propane gas (gas cartridges).
"Push-and-Twist" bayonet fixture for burner head, no tools needed for cleaning. Integrated stand for tilting right or left. Safety standard acc. to DIN 30665 part 1, DIN-DVGW Reg.NG-2211AR0750.

3 models available:
schuett phoenix II eco
(with LED control lamp and foot-switch) Start flame by foot-switch or button (On/Off). Best suited for use in microbiological safety cabinets. Best price to performance ratio.
schuett phoenix II standard
(brilliant colour display, selection of native language, sensor and foot- switch) Start/Stop flame by activating sensor 1x or 2x, use foot switch or press button by hand. Continuous display of timer.
schuett phoenix II accu
(brilliant colour display, selection of native language, sensor and built-in extra heavy duty power cells) Start/stop flame by activating sensor 1x or 2x, use foot-switch or press button by hand. Continuous display of timer and battery power. Operates for up to 30 hours, intermittent use.
Complete with battery charger for 3 hour recharging. Ideal for mobile usage.
Flame sterilization carousels semi- and fully automated
For precise and time-controlled flaming of different kinds of inoculating loops. Minimization of gas consumption, the life of the inoculating loops is significantly increased. The inoculating loop is placed into the carousel after use and is sterilized immediately after turning the holder in flaming position. Sterilization time infinitely adjustable. Designed for continuous work-flow with sample series in the Laminar Flow.
Semi-automated: schuett easyloop (for 6 Inoculating loop holders, included)
Comfortable manual rotation,fully automated flaming process. For use with Safety Bunsen Burners schuett phoenix II standard and accu.
Sterilization time: 3 to 5 s (adjustable from 1 s to 120 min)
Fully automated: schuett flammy R (for 5 Inoculating loop holders, included)
Fully automated rotation and inoculating. In combination with a standard gas-safety-burner (e.g. schuett phoenix II).
Sterilization time: 2 to 10 s



Type	Width mm	Depth mm	Height mm	Weight g	PK	Cat. No.
schuett phoenix II eco (Fig. b)*	128	160	85	1000	1	**9.018 760**
schuett phoenix II standard (Fig. a)*	128	160	85	1000	1	**9.018 761**
schuett phoenix II accu (Fig. a)	128	160	85	1000	1	**9.018 762**
schuett easyloop (Fig. g)	150	190	310	900	1	**9.018 798**
schuett flammy R	100	160	345	2000	1	**9.018 779**

*incl. foot switch, stainless steel

Accessories for gas-safety burner schuett phoenix II

schuett-biotec

Type	PK	Cat. No.
Adapter for gas cartridges CV 360 incl. pressure reducer (Fig. f)	1	**7.930 139**
Adapter for gas cartridges C 206* (Fig. e)	1	**6.244 006**
Adapter for gas cartridges CV 300/470*	1	**6.240 475**
Adapter for gas cartridges CP 250*	1	**9.018 750**
Adapter for gas cartridges CG 1750*	1	**9.018 751**
Windshield, stainless steel (Fig. d)	1	**9.018 752**
Glass spatter guard (Fig. c)	1	**9.018 753**
Gas safety hose with threaded screw connections for propane/butane 0.5m	1	**9.018 754**
Gas safety hose with threaded screw connections for propane/butane 2.0m	1	**9.018 755**
Hot-Tray, stainless steel, height-optimized	1	**9.018 756**
Instrument tray	1	**9.018 758**
Foot-switch, stainless steel	1	**9.018 759**

* Incl. pressure regulator and 0.5m safety gas tubing.

1 Loop Sterilizer schuett solaris

Sterilization of inoculating loops, tweezers and small instruments within seconds. *schuett-biotec*
- Sturdy and maintenance-free, no wearing parts
- No gas, no open flame - Works with standard electrical power
- Intuitive, easy to use
- Instant, ready-to-use, no warm-up time, no waiting
- Sterilization temperature: 900 to 1300°C
- Touch-free START, with IR- sensor and adjustable timer (5 to 7 seconds)
- For use in Laminar Flow Cabinets
- Ideal for mobile operation in the field

The schuett solaris is the perfect solution if an open flame should be avoided or gas cartridges etc. are not available. Used with standard electrical power. Reaches the safe working temperature of 900 to 1300°C within a split second. No excess heat, no energy consumption between work cycles. START is generated by an infra-red sensor, which allows for efficient one-handed operation. Pathogenic material is kept inside the sterilization chamber. No spreading, no splashing. Working angle adjustment (4-steps).

Specifications

Dimensions (WxDxH): 152 x 195 x 210mm
Weight: approx. 2500g

Type	PK	Cat. No.
Loop Sterilizer schuett solaris	1	**9.018 741**
Quartz tube with bottom, outer diam. 17mm, length 100 mm	1	**9.018 742**





2 Flame sterilizer schuett easyflame

NEW!

Mobile device for scarfing and flame-sterilising. *schuett-biotec*
With piezoelectric-ignition and gas supply control. Infinite adjustment of the flame.
Highest operational safety. In short-term use, the flame is activated as long as the push button is pressed.
For continuous operation with lock key.

schuett easyflame to use with propane/butane gas
1. Suitable with gas cartridges with 7/16" connection thread, e.g. CG 1750, Express 444, AT 2000.
2. Adapters for CV 360 or CP 250 gas cartridges optional.

schuett easyflame^{plus} for connecting natural gas and propane/butane gas with gas safety hoses
1. Natural gas hose for central gas supply for easy plugging the device (hose barb included)
2. Propane/butane gas hose with fitting (¼ "-left-hand thread) for the use of gas cartridge adapters or gas cylinders with pressure reducer. Matching adapters C 206 and CV 300/470 (already equipped with gas safety hose, 0.5m and reducer). Gas safety tubing in other lengths on request.

Specifications:

Dimensions (WxDxH): 260 x 90 x 60mm
Weight: approx. 350g

Type	PK	Cat. No.
schuett easyflame for propane/butane gas	1	**9.018 794**
Adapter CV 360 (only for 9.018 794)	1	**6.260 874**
Adapter CP 250 (only for 9.018 794)	1	**6.266 817**
schuett easyflame^{plus} for natural gas and propane/butane gas	1	**6.266 818**
Adapter C 206 (only for 6.266 818)	1	**6.244 006**
Adapter CV 300/470 (only for 6.266 818)	1	**6.240 475**

Further Burners - please see page 128

E & OE.

1 Electric Bunsen burner BA6101

NEW!

Electrothermal

Electrothermal's Electric Bunsen, combines the advantages of a regular gas burner with the clean, easy operation of our Electromantles. The Electric Bunsen is ideal for heating test tubes, crucibles, small flasks and beakers, regardless of their shape.

- Conical shaped heating element directs radiant heat to the top cavity
- Top cowl deflects heat away from your hand
- Air circulation from the vented housing keeps the base cool enough to hold during operation
- Corrosion-resistant

1



Specifications:

Power consumption:	400W
Dimensions (diam. x H):	120 x 177mm
Weight:	0.5kg
Temperture range:	800 to 1000°C

Type	Description	PK	Cat. No.
BA6101	without controller	1	**9.018 691**
BA6101/C	with controller	1	**4.011 122**

Electric laboratory burner

NEW!

HORO

Simple power supply through the electrical connector with an integrated switch for power on/off, no dangerous gas supply and gas leakage
- Electrical power supply instead of gas
- Fast heat up without a flame
- Highest security operated through an RCD: suitable for education
- No waste and storage of gas cartridges
- Continuous power regulation through the optional power regulator
- Heat protection through the optional glass support: deposition for dishes and flasks
- Improved heat protection with an improved glass support
- Clean odorless working in regular atmosphere without a flame

The components need to be ordered separately.

Specifications

Power supply:	590W/230V
Dimensions (diam. x H):	125 x 180mm
Weight:	800g
Max. temperature:	900°C
Heated area:	diam. 38mm

Type	PK	Cat. No.	
Electric laboratory burner	1	**9.018 601**	2
Power regulator for electric laboratory burner	1	**9.018 602**	
Glass support for electric laboratory burner	1	**9.018 603**	3
Safety glass support for electric laboratory burner	1	**9.018 604**	4

2



9.018 601

3



9.018 603

4



9.018 604

1



1 Infrared burner PowerCube IRB2

Laboratory heating device for the safe, rapid heating of large samples. Can be used anywhere, even where standard burners with an exposed flame cannot be used.

Bühler

Advantages:
- Heats up quickly, constant heating
- No open flames, no soot, odourless
- Integral continuous electronic power adjustment between 0% and 100%.
- Casing safe to touch even when hot.
- Built-in casing handles for safe transport.
- Inert ceramic, long-life heating element.
- Built-in overheat monitor.
- Protection of electrical components against spilled liquids
- Additional side safety shield on burner element.
- Includes four-arm support for flat bottom containers. By using an accessory bracket the burner can be mounted on a tripod.

Accessories: bracketfor mounting the PowerCube into a tripod stand. With stainless steel rod approx. 13cm long.

Specifications:

Connector:	800W/230V
Dimensions (WxDxH):	150 x 150 x 170mm
Weight:	approx. 2.5kg
Max. temperature:	900°C
Heated area:	100 x 100mm

Type	PK	Cat. No.
PowerCube IRB 2. 800 W / 230 V	1	**9.018 699**

2



2 Accessories for Infrared burner PowerCube IRB2

Tripod bracket for mounting the PowerCube into a tripod stand. With stainless steel rod approx. 13cm long.

Bühler

Description	PK	Cat. No.
Tripod bracket	1	**9.018 698**

3



3 Hook clamp

With heart screw.

Jaw opening mm	Angle	Thread	Description	PK	Cat. No.
13	90	M8	Nickel plated steel	1	**9.224 284**
13	90	M8	18/10 steel	1	**9.224 289**

4



4 Beaker tongs, with rubber-sleeved jaws

Jaws protected with 2 rubber pads each. Arm length: 160mm.

Length mm	Jaw opening mm	PK	Cat. No.
300	50 to 100	1	**9.310 010**

5



5 Beaker tongs

Electro polished 18/10 steel wire frame with bowed strip-metal jaws and ceramic fibre jaw linings.

Length mm	Jaw opening mm	PK	Cat. No.
300	60 to 100	1	**9.310 016**

6



6 Beaker tongs, stainless steel

Beaker tong of 300mm length is made out of stainless steel. Insulated jaws are used to hold all types of beakers.

Isolab

Length mm	For	Temp. range max. °C	PK	Cat. No.
300	beakers volume up to 1000ml	120	1	**6.237 287**

E & OE.

1 Flask tongs, stainless steel

Stainless steel flask tong - 300mm length with insulated jaws, used to hold all types of flasks. *Isolab*

Length mm	For	Temp. range max. °C	PK	Cat. No.
300	flasks volume up to 2000ml	120	1	**4.008 397**



2 Flask tongs

18/10 steel. Electro polished. Polyamide coated jaw clamps.

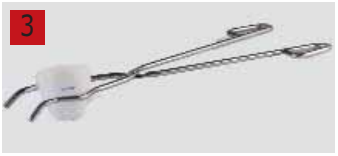
Length mm	Jaw opening mm	PK	Cat. No.
230	15 to 60	1	**9.310 025**



3 Crucible tongs, 18/10 steel

With bow and flutes.

Length mm	PK	Cat. No.
300	1	**4.008 441**



4 Crucible tongs, 18/10 steel

18/10 steel. Electro polished. With bow and gripping tips.

Length mm	PK	Cat. No.
160	1	**9.310 116**
200	1	**9.310 120**
220	1	**9.310 122**
250	1	**9.310 125**
300	1	**9.310 130**
400	1	**9.310 140**
500	1	**9.310 150**
600	1	**9.310 160**



5 Crucible tongs, 18/10 steel, PTFE-coated

18/10 steel. With bow, and up to 100mm long PTFE-coated tips.

Length mm	PK	Cat. No.
200	1	**9.310 285**
250	1	**9.310 290**



6 Basin tongs, 18/10 steel

Length mm	PK	Cat. No.
300	1	**4.008 440**



7 Safety tripod for laboratory gas burners

NEW!

Perfect and safe combination of tripod and laboratory gas burner *Windaus-Labortechnik*
- No risk of toppling the tripod and the laboratory burner!
- The laboratory gas burner is always in an optimal position, no risk of shifting of the burner.
- The safety tripod is suitable for use with DIN laboratory gas burners.
- Assembling is very easy - just screw one of the delivered screws into the interior thread at the bottom of the gas burner.

Description	PK	Cat. No.
TECLU Unit with adapter screws	1	**6.265 849**





1 Tripod stand

Zinc-plated steel. With circular top and flared legs.

Diam. mm	Height mm	PK	Cat. No.
100	180	1	**9.034 110**
120	210	1	**9.034 112**
120	250	1	**6.200 910**
140	220	1	**9.034 114**
160	230	1	**6.059 957**



2 Tripod stand

Chrome plated steel. Tripods are meant to be used in conjunction with wire gauze, triangles or a sand bath. *Isolab*

Diam. mm	Description	PK	Cat. No.
125	total height 200mm	1	**6.242 704**
125	adjustable height min 200mm/ max 250mm	1	**4.008 512**

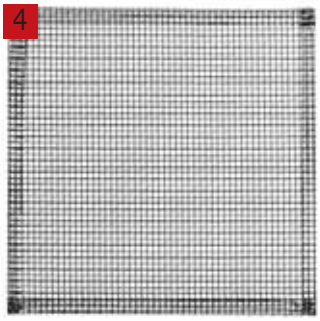


9.034 557

Square Quadrupod

Nickel chromium steel. For glass ceramic laboratory plates. *DURAN Group*
Dimensions as outlined below.

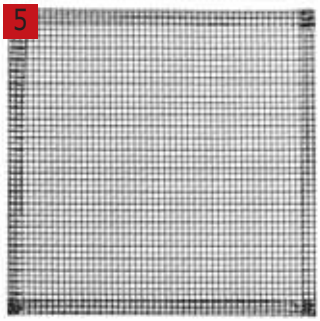
Width mm	Length mm	Height mm	PK	Cat. No.
135	135	220	1	**9.034 553**
155	155	220	1	**9.034 557** 3
175	175	220	1	**9.034 558**



4 Wire gauzes

Plain, stainless steel wire with flanged edges. Mesh: 0.6mm x 2.0mm. *RSG*
Sizes as outlined below.

Width mm	Length mm	PK	Cat. No.
115	115	1	**9.150 717**
135	135	1	**9.150 718**
155	155	1	**9.150 719**
175	175	1	**9.150 720**
195	195	1	**9.150 721**



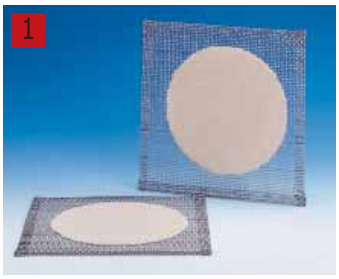
5 Wire gauzes

Plain, stainless steel wire with heat resistant center, mesh: 0.6mm x 2.0mm *RSG*

Width mm	Length mm	PK	Cat. No.
135	135	1	**9.033 653**
155	155	1	**9.033 655**
175	175	1	**9.033 657**
195	195	1	**9.033 659**

1 Wire gauzes

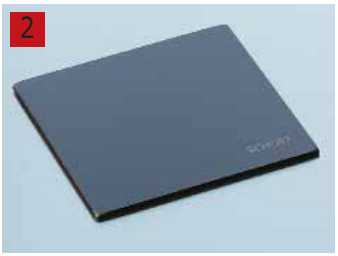
Steel wire with round ceramic centre. Sizes as outlined below.



Width mm	Length mm	PK	Cat. No.
120	120	1	**9.033 632**
160	160	1	**9.033 636**
200	200	1	**9.033 640**

2 Glass ceramic laboratory protection plate

Glass ceramic material with a smooth, pore-free surface. Chemically resistant and operates between -200°C and +700°C. Ideal for use as a bench protector or heating surface in place of a wire gauze or pipeclay triangle. *DURAN Group*



Width mm	Length mm	PK	Cat. No.
135	135	1	**9.034 253**
155	155	1	**9.034 257**
175	175	1	**9.034 258**

3 Triangle

Zinc-plated steel wire with pipeclay tubes. *Juchheim Laborgeräte*



Pipeclay tube Length mm	Weight g	PK	Cat. No.
40	16	1	**9.033 740**
50	33	1	**9.033 741**
60	38	1	**6.250 142**
100	58	1	**6.085 914**

4 Gas safety tubing, rubber

Flexible connecting line of a rubber tubing with a contracted metal spiral and double-sided end sockets according to DVGW 5501(P). Kink resistant. For connecting between safety gas connection fitting according to DIN 3383-4 and gas burners for laboratories according to DIN 30665 section 1.
For all gases according to DVGW worksheet G 260, at pressures up to 100 mbar and temperatures up to 70°C. Installations according to DVGW-TRGI 2008 and DVGW worksheet G 621. DVGW Reg.-No. DG-4607AU2366.
Sold only in specified lenght *Deutsch & Neumann*



Length mm	PK	Cat. No.
500	1	**9.018 935**
600	1	**9.018 936**
750	1	**9.018 937**
1000	1	**9.018 940**
1250	1	**9.018 942**
1500	1	**9.018 945**
2000	1	**9.018 950**
3000	1	**9.018 960**

5 Tubing for gas burners

According to DIN 30664 section 1. Without reinforcement and jacket. Connecting line for connecting between safety gas connection fitting according to DIN 3383-4 and gas burners for laboratories according to DIN 30665 section 1.
For all gases according to DVGW worksheet G 260, at pressures up to 100 mbar and temperatures up to 70°C. Installations according to DVGW-TRGI 2008 and DVGW worksheet G 621. DVGW Reg.-No. NG-4607AU2366.
Supplied per metre. *Deutsch & Neumann*



Int. diam. mm	Wall thickness mm	PK	Cat. No.
10	2.00	1	**9.018 970**



1 Tubing

Red. Rubber (NR). Durometer 45 Shore A. *Deutsch & Neumann*
Supplied per metre or in standard coils of 25m.

Int. diam. mm	Wall thickness mm	PK	Cat. No.
2	1.00	1	**9.205 157**
3	1.00	1	**9.205 158**
3	1.50	1	**9.205 159**
4	1.00	1	**9.205 160**
4	1.50	1	**9.205 166**
5	1.50	1	**9.205 170**
5	2.00	1	**9.205 171**
6	1.50	1	**9.205 173**
6	2.00	1	**9.205 174**
7	1.50	1	**9.205 179**
7	2.00	1	**9.205 180**
8	2.00	1	**9.205 184**
9	2.00	1	**9.205 187**
10	2.00	1	**9.205 192**
12	2.50	1	**9.205 195**
18	3.00	1	**9.205 200**



2 Vacuum tubing, rubber

Red. Rubber (NR). Durometer 45 Shore A. *Deutsch & Neumann*
Supplied per metre or standard coils of 25m.

Int. diam. mm	Wall thickness mm	PK	Cat. No.
4	4.00	1	**9.205 804**
5	5.00	1	**9.205 805**
6	5.00	1	**9.205 806**
7	5.00	1	**9.205 807**
8	5.00	1	**9.205 808**
10	5.00	1	**9.205 809**



3 Viton Tubing

Supplied per metre. *Deutsch & Neumann*
- Fluoroelastomer Rubber (FPM), black
- Temperature range -10°C to over +200°C
- Good resistance to ozone and weathering, as well as benzine and mineral oil
- Durometer 75 Shore A

Int. diam. mm	Wall thickness mm	PK	Cat. No.
2	1.00	1	**9.205 745**
3	1.00	1	**9.205 758**
4	1.00	1	**9.205 765**
5	1.00	1	**9.205 769**
6	1.00	1	**9.205 772**
6	2.00	1	**9.205 774**
8	1.50	1	**9.205 782**
8	2.00	1	**9.205 784**
9	2.00	1	**9.205 787**
10	2.00	1	**9.205 792**

We can supply this
manufacturer's whole product range !
partner of the LLG Lab Logistics Group
DEUTSCH & NEUMANN GmbH D&N

E & OE.

1 Tubing, silicone, Rausil FG



Suitable for food use, talc-powdered, according to BfR (BgVV) and FDA§177.2600.
Supplied per meter or in standard coils of 50m. Durometer 60 Shore A.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
1.00	3.0	1.0	1	**9.205 222**
1.50	3.5	1.0	1	**9.205 233**
2.00	4.0	1.0	1	**9.205 245**
2.00	6.0	2.0	1	**9.205 246**
3.00	5.0	1.0	1	**9.205 258**
3.00	6.0	1.5	1	**9.205 259**
3.00	7.0	2.0	1	**9.205 260**
4.00	6.0	1.0	1	**9.205 265**
4.00	7.0	1.5	1	**9.205 266**
5.00	7.0	1.0	1	**9.205 269**
5.00	8.0	1.5	1	**9.205 270**
6.00	9.0	1.5	1	**9.205 273**
6.00	10.0	2.0	1	**9.205 274**
7.00	10.0	1.5	1	**9.205 279**
7.00	11.0	2.0	1	**9.205 280**
8.00	11.0	1.5	1	**9.205 282**
8.00	12.0	2.0	1	**9.205 284**
9.00	13.0	2.0	1	**9.205 287**
10.00	14.0	2.0	1	**9.205 292**
12.00	16.0	2.0	1	**9.205 294**

2 Versilic silicone tubing

NEW!

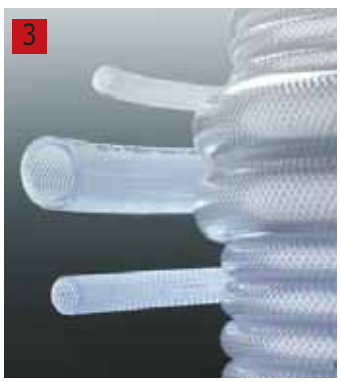


Saint Gobain

Pure silicone with high-grade properties. To Ph.Eur, DAB 10 and USP XXIIl Class VI (biological tests). Suitable for food use to FDA, BGA and EU guidelines. Temperature range from -60 to +200°C (up to +220°C for short periods). Transparent to translucent. Shore strength 62 ±5. Density 1.16. Biologically neutral. Suitable in particular for use in biotechnology, fermentation or pharmaceutical production. Good physical properties such as suppleness, elasticity, flexibility, resistant to bending and tearing. Good recovery characteristics, with high fatigue resistance when twisted. Elongation at tear >300%.
Supplied per metre or in standard coils of 25m.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
0.50	2.5	1.00	1	**9.205 300**
1.00	3.0	1.00	1	**9.205 301**
2.00	4.0	1.00	1	**9.205 302**
3.00	5.0	1.00	1	**9.205 303**
4.00	6.0	1.00	1	**9.205 304**
4.00	8.0	2.00	1	**9.205 267**
5.00	7.0	1.00	1	**9.205 305**
6.00	10.0	2.00	1	**9.205 275**
7.00	11.0	2.00	1	**9.205 306**
8.00	12.0	2.00	1	**9.205 285**
9.00	13.0	2.00	1	**9.205 307**
10.00	14.0	2.00	1	**9.205 308**
12.00	17.0	2.50	1	**9.205 309**

3 Fabric-reinforced PVC tubing



Transparent. Supplied per metre or in standard coils of 50M. PVC with terylene mesh reinforcement.
Certificated by German TÜV with due regard to regulatory of DIN EN ISO 5774:2008.
Proofed by BGVO directive 2002/72/EC bis 2008/39/EC for food contact. Durometer 77 Shore A.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
6.00	12.0	3.00	1	**9.205 816**
8.00	14.0	3.00	1	**9.205 818**
10.00	16.0	3.00	1	**9.205 820**
12.50	18.5	3.00	1	**9.205 823**



1 PVC-Tubing

Approved by BGVO directive 2002/72/EC and 2008/39/EC for food contact.
Approved by KTW-C directive - Germany Federal Environment Agency for use in cold water.
Durometer 77 Shore A.
Price per metre.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
2.00	4.0	1.00	1	**9.205 345**
3.00	5.0	1.00	1	**9.205 358**
3.00	6.0	1.50	1	**9.205 359**
4.00	6.0	1.00	1	**9.205 365**
4.00	7.0	1.50	1	**9.205 366**
5.00	7.0	1.00	1	**9.205 369**
5.00	8.0	1.50	1	**9.205 370**
6.00	8.0	1.00	1	**9.205 372**
6.00	9.0	1.50	1	**9.205 373**
6.00	10.0	2.00	1	**9.205 374**
7.00	10.0	1.50	1	**9.205 379**
7.00	11.0	2.00	1	**9.205 380**
8.00	11.0	1.50	1	**9.205 382**
8.00	12.0	2.00	1	**9.205 384**
9.00	12.0	1.50	1	**9.205 386**
9.00	13.0	2.00	1	**9.205 387**
10.00	14.0	2.00	1	**9.205 392**
12.00	16.0	2.00	1	**9.205 394**
15.00	19.0	2.00	1	**9.205 397**
18.00	22.0	2.00	1	**9.205 398**



2 Laboratory tubing Isoflex

Autoclavable PVC tubing, transparent and non-toxic, non ageing and non oxidising. Packed in PE bags.
The tubing is marked every metre. Good resistance against strong acids and akalis, fair resistance against organic solvents. Durometer 77 Shore A.
Supplied in 20m coil.

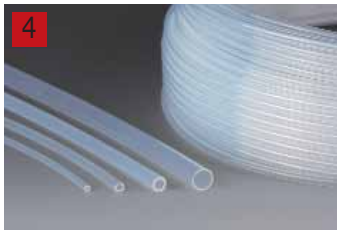
Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
1	2.6	0.80	20	**9.205 142**
2	4.0	1.00	20	**9.205 143**
4	6.0	1.00	20	**9.205 144**
5	8.0	1.50	20	**9.205 145**
6	9.0	1.50	20	**9.205 146**
7	11.0	2.00	20	**9.205 147**
8	12.0	2.00	20	**9.205 148**
10	14.0	2.00	20	**9.205 149**
12	17.0	2.50	20	**9.205 150**



3 PE-Tubing

Durometer 45 Shore D. Price per meter.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
2.00	2.8	0.40	1	**6.079 602**
2.00	4.0	1.00	1	**6.070 172**
8.00	10.0	1.00	1	**9.205 482**
8.00	11.0	1.50	1	**6.900 070**
9.00	13.0	2.00	1	**6.070 228**
10.00	14.0	2.00	1	**9.205 492**



4 Tubing, PFA

PFA fluorocarbon resin. Highly chemical resistant and temperature resistant up to +260°C. *BOLA*
Supplied per metre.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
0.80	1.60	0.40	1	**9.205 824**
1.58	3.18	0.80	1	**9.205 825**
2.00	4.00	1.00	1	**9.205 827**
4.00	6.00	1.00	1	**9.205 830**
6.00	8.00	1.00	1	**9.205 833**
8.00	10.00	1.00	1	**9.205 836**
10.00	12.00	1.00	1	**9.205 839**

E & OE.

1 Flex tubing, PFA



BOLA

Corrugated tubing with circular corrugations around the longitudinal axis and cylindrical tubing ends with a length of 40mm which can for example be connected directly to fittings, stopcocks or hose connectors. Together with BOLA Laboratory Screw Joints, the connection is tight and suitable for vacuum.

- highly flexible
- tight bending radius only causes little cross-section reduction
- non-porous
- translucent
- ideal for connections under vibrations
- usable with a small bending radius
- for compensation of thermal expansions
- for easy handling of liquids

Int. diam. mm	Ext. diam. mm	Wall thickness mm	Length m	Size NW	PK	Cat. No.
8.00	10.0	1.00	1.00	10.0	1	**9.205 732**
10.00	12.0	1.00	1.00	13.0	1	**9.205 733**
12.00	14.0	1.00	1.00	14.0	1	**9.205 734**
14.00	16.0	1.00	1.00	16.0	1	**9.205 735**
10.00	12.0	1.00	2.50	13.0	1	**9.205 740**

Special lengths available on request

2 Tubing, PTFE



BOLA

Highly chemical resistant and withstands temperatures from -200°C to +260°C.
Supplied per metre.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
0.50	1.0	0.25	1	**9.205 608**
0.50	1.6	0.55	1	**9.205 609**
0.80	1.6	0.40	1	**9.205 616**
1.00	1.6	0.40	1	**9.205 619**
1.00	2.0	0.50	1	**9.205 621**
1.50	2.1	0.30	1	**9.205 630**
1.60	3.2	0.80	1	**9.205 634**
2.00	3.0	0.50	1	**9.205 644**
2.00	4.0	1.00	1	**9.205 645**
3.00	4.0	0.50	1	**9.205 657**
3.00	5.0	1.00	1	**9.205 658**
4.00	6.0	1.00	1	**9.205 665**
5.00	6.0	0.50	1	**9.205 668**
6.00	8.0	1.00	1	**9.205 672**
8.00	10.0	1.00	1	**9.205 680**

3 Iso-Versinic Tubing



Synthetic fluoroelastomer.
Chemically resistant to hydrocarbons (aromatic and aliphatic), oils, strong acids, oxidizing agents and chlorous solvents. Excellent resistance to abrasion and flexing. Good ozone and radiation protection. Impermeable to gas and steam. Shore A, hardness see table below. Density 1.9. Temperature range -20°C to +200°C (up to +300°C for short periods). Elongation at tear >250%. Suitable for transporting corrosive liquids.
Supplied per metre.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	Shore	PK	Cat. No.
1	3	1.00	67	1	**9.205 700**
2	4	1.00	67	1	**9.205 701**
3	5	1.00	67	1	**9.205 702**
4	6	1.00	67	1	**9.205 703**
5	8	1.50	72	1	**9.205 704**
6	9	1.50	72	1	**9.205 705**
7	10	1.50	72	1	**9.205 706**
8	12	2.00	72	1	**9.205 707**
10	14	2.00	72	1	**9.205 708**
12	17	2.50	72	1	**9.205 709**



1 Norprene® tubing A 60 G

Black, Thermoplastic elastomer, Shore A 61. Temperature range -60 to +135°C.
Suitable for use as tubing for peristaltic pumps. Very high endurance. Resistant to many aggressive chemicals.
Heat and ozone resistant (does not turn brittle). Fills the performance gap between single elastomers
(such as EPDM, chloroprene) and expensive polymers (viton, silicone).
Supplied per metre or in standard coils of 15m.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
1.60	4.8	1.60	1	**9.206 941**
3.20	6.4	1.60	1	**9.206 944**
4.80	8.0	1.60	1	**9.206 951**
6.40	9.6	1.60	1	**9.206 956**
6.40	11.2	2.40	1	**9.206 957**
8.00	11.2	1.60	1	**9.206 961**
8.00	12.8	2.40	1	**9.206 962**
9.50	12.7	1.60	1	**9.206 967**
9.60	14.4	2.40	1	**9.206 968**
11.10	14.3	1.60	1	**9.206 973**
12.70	15.9	1.60	1	**9.206 976**
12.70	17.5	2.40	1	**9.206 977**



2 Tygon® tubing 3350

Silicone-platinum sanitary tubing, Shore A 50. *Saint Gobain*
Temperature range -81 to +200°C. Very high-grade silicone tube with smooth inner surface.
Ozone and UV resistant. High flexibility with good recovery characteristics.
To FDA and USP Class VI, in accordance with ISO 10993.
Supplied in 15m coil.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
3.20	6.4	1.60	15	**9.208 380**
4.80	8.0	1.60	15	**9.208 381**
6.40	9.6	1.60	15	**9.208 382**
6.40	11.1	2.40	15	**9.208 383**
8.00	12.7	2.40	15	**9.208 384**
9.50	12.7	1.60	15	**9.208 385**
12.70	15.9	1.60	15	**9.208 386**
12.70	17.5	2.40	15	**9.208 387**



3 Tygon® tubing ELFL

Transparent, flexible, Shore A 56. *Saint Gobain*
Temperature range -54 to +74°C. Tygon tubing with the longest "Flex-Life" (lifespan)
when used in peristatic pumps. To FDA/USP Class VI. ISO 10993, according to REACH without phthalates.
Suitable for food, drinks or pharmaceutical applications. Resists ageing and non-toxic. Resistant to many chemicals.
Supplied in 7.5m coil.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
1.60	4.8	1.60	7	**9.208 439**
3.20	6.4	1.60	7	**9.208 440**
4.80	8.0	1.60	7	**9.208 441**
6.40	9.6	1.60	7	**9.208 442**
8.00	11.2	1.60	7	**9.208 443**
9.50	15.9	3.20	7	**9.208 444**
12.70	19.1	3.20	7	**9.208 445**



E & OE.

1 Peristaltic pump tubing, Tygon® LMT-55



With 2 colour-coded bridges (international standards). ID 0.13 to 0.64 wall thickness: 0.9mm, ID 0.76 to 3.18 wall thickness: 0.85mm.
Shore: 55. Fits most common peristaltic pump models, e.g. Verder, Ismatec, Watson-Marlow, IKA and Heidolph.
Standard tubing, transparent. Length 380mm. Long working lifespan. Good resistance to acids and alkalis.
Suitable for general use and with food.

Saint Gobain

Int. diam. mm	Colour	PK	Cat. No.
0.13	orange-black	12	**9.208 201**
0.19	orange-red	12	**9.208 202**
0.25	orange-blue	12	**9.208 203**
0.38	oragne-green	12	**9.208 204**
0.51	orange-yellow	12	**9.208 205**
0.64	orange-white	12	**7.661 159**
0.76	black-black	12	**9.208 207**
0.89	orange-orange	12	**9.208 208**
1.02	white-white	12	**9.208 209**
1.14	red-red	12	**9.208 210**
1.30	grey-grey	12	**9.208 211**
1.42	yellow-yellow	12	**9.208 212**
1.52	yellow-blue	12	**9.208 219**
1.65	blue-blue	12	**9.208 213**
1.85	green-green	12	**9.208 214**
2.06	purple-purple	12	**9.208 215**
2.29	purple-black	12	**9.208 216**
2.54	purple-orange	12	**9.208 217**
2.79	purple-white	12	**9.208 218**
3.18	black-white	12	**9.208 222**

2 Flow indicators LaboPlast®



Gives a visual indication of liquid or gas flow in tubing. Operates in both directions and at any angle. Can accomodate flow rates down to approx. 150ml/min. Length incl. nozzle 88mm. For tubing from 6mm to 11mm diameter. Maximum pressure: 2 bar. Food Safe.
Choice of models:
- LiquiMobil made of SAN up to 30°C working temperature.
- CheMobil made of PMP up to 60°C working temperature, autoclavable good, chemically resistance.

Bürkle

Type	Colour	PK	Cat. No.
LiquiMobil/SAN	blue	1	**9.003 910**
LiquiMobil/SAN	red	1	**9.003 911**
LiquiMobil/SAN	black	1	**9.003 912**
CheMobil/ PMP	blue	1	**9.003 913**
CheMobil/ PMP	red	1	**9.003 901**
CheMobil/PMP	black	1	**9.003 914**

3 Plastic tubing cutter



Portable, pocket-sized cutter cuts flexible tubing from 1.6mm to 19mm O.D.
The jaw is lightly spring-loaded and will remain closed for safety when not in use.
A replaceable, hardened steel blade makes clean, straight cuts.

Bel-Art Products

Type	PK	Cat. No.
Tubing cutter	1	**9.205 898**
Replacement blade	1	**9.205 899**

4 Rod and tubing cutter



Suitable for all rubber tubing, even PTFE and fabric-reinforced tubing.
Interchangeable blade.

Buddeberg

Type	PK	Cat. No.
Cutter	1	**9.306 000**
Replacement blades	10	**9.306 001**



1 Messfix tubing gauge

NEW!

Small, red, handy polypropylene gauge. *schuett-biotec*
For rapid measurement of internal and external diameters of tubing, test tubes etc. within the range 1.5mm to 16mm.

Width mm	Length mm	Height mm	PK	Cat. No.
50	120	12	1	**9.205 800**



2 Laboratory threaded joints - GL 14/18/25

Enables GL threads to clamp easily to fluoroplastic or thick-walled tubing made out of other plastics, glass or metal. (Ideally suited for connection with Bola GL fittings, Bola pressure valves, Bola GL taps and Bola GL ball valves). *BOLA*
The laboratory threaded joints consist of a red screw cap made of glass-fibre reinforced ETFE, a sealing disc and a tapered sealing ring made of PTFE, as well as a V-ring made of glass-fibre reinforced ETFE. This patented system withstands pressures up to approx. 10 bar, is suitable for a vacuum (at room temperature in the case of sizes 14 to GL25) and is easy to assemble without tools. The substance that passes through only comes in contact with PTFE.

Bola laboratory threaded joints can, for example, be used to hold probes (including stainless steel probes), sensors, laboratory taps, submerged tubes, thermometers or as a cable feed.

For external tube diam. mm	Neck thread GL	PK	Cat. No.
1.6	14	1	**9.209 803**
3.0	14	1	**9.209 806**
3.2	14	1	**9.209 807**
4.0	14	1	**9.209 808**
6.0	14	1	**9.209 809**
6.35	14	1	**9.209 810**
3.2	18	1	**9.209 817**
6.0	18	1	**9.209 819**
8.0	18	1	**9.209 820**
10.0	18	1	**9.209 821**
6.0	25	1	**9.209 839**
8.0	25	1	**9.209 840**
10.0	25	1	**9.209 841**
12.0	25	1	**9.209 842**



3 GL fittings, PTFE

PTFE couplings with GL connector screwthread. Connect PTFE, PFA, FEP, glass and metal tubing. *BOLA*
Fittings are chemical and temperature resistant to approx. 250°C. Can be used at working pressures of up to 10 bar when used in combination with Bola laboratory screwthread connections (at room temperature).
A further advantage is that they can be used as expansion/reduction adapters to connect tubing of different diameters.
For easy tubing connection we recommend accessory Bola Laboratory screwthread connectors which can be ordered separately.

Neck thread GL	Bore mm	PK	Cat. No.
14	6.5	1	**9.207 113**
18	10.5	1	**9.207 114**
25	14.5	1	**9.207 115**



4 GL fittings

PTFE couplings with GL connector screwthread. Connect PTFE, PFA, FEP, glass and metal tubing. *BOLA*
Fittings are chemical and temperature resistant to approx. 250°C. Can be used at working pressures of up to 10 bar when used in combination with Bola laboratory screwthread connections (at room temperature).
A further advantage is that they can be used as expansion/reduction adapters to connect tubing of different diameters.
For easy tubing connection we recommend accessory Bola laboratory screwthread connectors - please order separately.

Neck thread GL	Bore mm	PK	Cat. No.
14	6.5	1	**9.207 133**
18	10.5	1	**9.207 134**
25	14.5	1	**9.207 135**

E & OE.

Bottle distributors, PTFE

With GL-threaded necks and screw caps. Suitable for GL45 threaded bottles. *BOLA*
The distributors are ideal for decanting liquids, whereby the necks are connected either to a liquid source or to an excess pressure or vacuum system (up to 6mm max. tubing diameter).
For hassle-free connection, we recommend the Bola threaded connector (please order separately) in accordance with the outer diameter of the tubing.

Type	Neck	PK	Cat. No.
PFA	2 x GL 14	1	**9.209 851** 1
PTFE	3 x GL 14	1	**9.209 852**
PTFE	3 x GL 18	1	**9.209 844**

1



9.209 851

Flexible Distributors, PP

For connecting elastic tubing by simply slipping it onto hose connectors. *BOLA*
Suitable for GL45 threaded bottles. With screw cap made of glass-fibre reinforced PP, ideal for transferring liquids or gases. The angled tubing connectors can be attached to a liquid source, a pressure source or a vacuum system. Avoid crimping of the tubing. The distributor can be loosened by simply turning the screw cap. The complete distribution system can then be fixed onto another bottle.

number of nozzles	For tubing bore mm	PK	Cat. No.
2	6 - 9	1	**7.634 892** 2
3	6 - 9	1	**9.209 858**
2	7 - 11	1	**9.209 859**

2



7.634 892

3 GL stopcocks, PTFE

Stopcocks with cylindrical taps and GL screwthread made of pure PTFE, giving almost total chemical resistance. Can be used at working pressures of up to 6 bar when used in combination with Bola laboratory screwthread connections (at room temperature). *BOLA*
A further advantage is that they can be used as expansion/reduction adapters to connect tubing of different diameters.
For easy tubing connection we recommend accessory Bola laboratory screwthread connectors - please order separately.

2-way construction.

Neck thread GL	Bore diam. mm	PK	Cat. No.
14	4	1	**9.207 153**
18	6	1	**9.207 154**
25	8	1	**9.207 155**

3

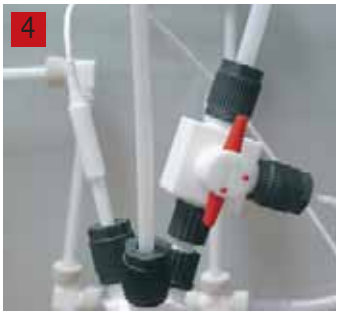


4 Stopcocks, PTFE

With 3-way GL screwthread connections. With L-shape key bore. *BOLA*

Neck thread GL	Bore diam. mm	PK	Cat. No.
14	4	1	**9.207 156**
18	6	1	**9.207 157**
25	6	1	**9.207 158**

4



5 Two-way valves Laboplast®

Resistant to compression max. 1 bar. *Bürkle*
- PVDF: excellent chemical resistance, transparent, suitable for food
- PP/PE: for industrial use, red/white
- Operating temperature: PVDF +0 up to +40°C, PP/PE +5 up to +40°C

For tubing bore mm	Valve bore mm	Material	PK	Cat. No.
5 to 7	4	PVDF	1	**9.116 771**
7 to 9	6	PVDF	1	**9.116 772**
9 to 11	8	PVDF	1	**9.116 773**
11 to 13	8	PVDF	1	**9.116 775**
5 to 7	4	PE / PP	1	**9.116 781**
7 to 9	6	PE / PP	1	**9.116 782**
9 to 11	8	PE / PP	1	**9.116 783**
11 to 13	8	PE / PP	1	**9.116 784**

5





1 Three-way valves Laboplast®

- Transparent, PVDF. Very high chemical resistance. Suitable for food use. Maximum pressure 1 bar. *Bürkle*
- Red/white, PE/PP. Economical. For industrial use. Suitable for food use. Maximum pressure 1 bar.
- Operating temperature: PVDF +0°C up to +40°C, PP/PE +5°C up to +40°C.

For tubing bore mm	Valve bore mm	Material	PK	Cat. No.
5 to 7	4	PVDF	1	**9.116 776**
7 to 9	6	PVDF	1	**9.116 777**
9 to 11	8	PVDF	1	**9.116 778**
11 to 13	8	PVDF	1	**9.116 780**
5 to 7	4	PE / PP	1	**9.116 786**
7 to 9	6	PE / PP	1	**9.116 787**
9 to 11	8	PE / PP	1	**9.116 788**
11 to 13	8	PE / PP	1	**9.116 789**



2 Tubing connectors, PP

Transparent, PP. Straight, *BRAND*

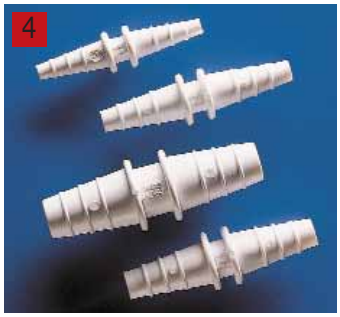
For tubing bore mm	Length mm	PK	Cat. No.
3 to 5	47	1	**9.207 163**
6 to 10	55	1	**9.207 165**
9 to 13	57	1	**9.207 168**



3 Tubing connectors, PP

Transparent, PP. Straight. Used to link tubing of different diameters. *BRAND*

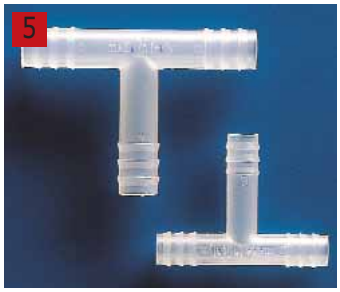
For tubing bore mm	Length mm	PK	Cat. No.
5 to 17	110	1	**9.207 270**



4 Tubing connectors, PP

Grey. PP. Straight. *Kartell*

For tubing bore mm	Length mm	PK	Cat. No.
4 to 5	39	1	**9.207 221**
5 to 7	52	1	**9.207 222**
7 to 9	59	1	**9.207 223**
9 to 11	59	1	**9.207 224**
11 to 13	66	1	**9.207 225**
13 to 15	66	1	**9.207 226**



5 Tubing connectors, PP

PP. T- shape. *Kartell*

For tubing bore mm	Length mm	PK	Cat. No.
3 - 4	20	1	**9.207 182**
4 - 5	30	1	**9.207 183**
6 - 7	40	1	**9.207 184**
8 - 9	55	1	**9.207 185**
10 - 11	69	1	**9.207 189**
12 - 13	79	1	**9.207 190**



6 Tubing connectors, PE-HD

PE-HD. Straight. *BRAND*

For tubing bore mm	Length mm	PK	Cat. No.
10 to 11	45	1	**9.207 167**
12 to 14	74	1	**9.207 169**
19 to 21	74	1	**9.207 174**
24 to 26	84	1	**9.207 179**

E & OE.

1 Plug tubing connectors, PE

PE. Comprising of two pull-apart sections, similar to conical ground joint. Not suitable for high pressure applications.

Kartell

For tubing bore mm	Length mm	PK	Cat. No.
3 to 5	57	1	**9.207 261**
5 to 7	65	1	**9.207 262**
7 to 9	70	1	**9.207 263**
9 to 12	75	1	**9.207 264**
11 to 14	80	1	**9.207 265**



2 Reduction adapters, PP

Transparent , PP.

BRAND

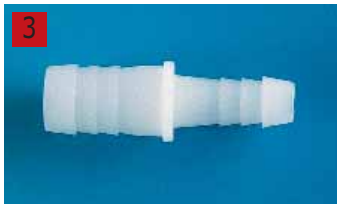
For tubing bore mm	Length mm	PK	Cat. No.
3 to 5 / 6 to 10	55	1	**9.207 336**
3 to 5 / 9 to 13	55	1	**9.207 338**
6 to 10 / 9 to 13	59	1	**9.207 340**



3 Reduction adapters, PE-HD

BRAND

For tubing bore mm	Length mm	PK	Cat. No.
8 to 10/11 to 14	66	1	**9.207 356**
12 to 14/18 to 20.5	73	1	**9.207 357**



4 Y - tubing connectors, PP

Transparent, PP. Y- shape.

Kartell

For tubing bore mm	Length mm	PK	Cat. No.
3 to 4	24	1	**9.207 200**
4 to 5	35	1	**9.207 203**
6 to 7	54	1	**9.207 205**
8 to 9	64	1	**9.207 207**
10 to 11	74	1	**9.207 208**
12 to 13	87	1	**9.207 210**



5 120° Y connectors, PP

Kartell

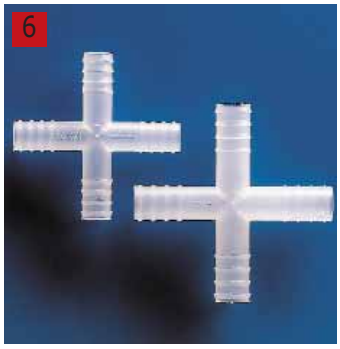
Diam. mm min./max.	Tubing i.d. mm	PK	Cat. No.
4/5/6	1.5	1	**9.207 231**
6/7/8	2.7	1	**9.207 232**
8/9/10	4.7	1	**9.207 233**
10/11/12	5.5	1	**9.207 234**
12/13/14	7.6	1	**9.207 235**
14/15/16	9.6	1	**9.207 236**

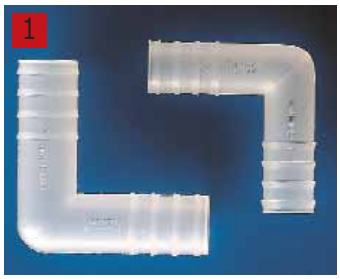


6 4 way connectors, PP

Kartell

Diam. mm	Tubing i.d. mm	PK	Cat. No.
3.5	1.5	1	**9.207 241**
6.0	2.7	1	**9.207 242**
8.0	4.6	1	**9.207 243**
10.0	7.0	1	**9.207 244**
12.0	8.0	1	**9.207 245**
13.5	9.5	1	**9.207 246**
15.0	11.6	1	**9.207 247**





1 L - tubing connectors, PP

Transparent, PP. L-shape. *Kartell*

For tubing bore mm	Length mm	PK	Cat. No.
3 to 4	15	1	**9.207 251**
5	21	1	**9.207 252**
6 to 7	25	1	**9.207 253**
8 to 9	30	1	**9.207 254**
10 to 11	36	1	**9.207 255**
12 to 13	42	1	**9.207 256**
14 to 15	48	1	**9.207 257**



2 Tubing connectors, TPX

Type	For tubing bore mm	PK	Cat. No.
C-1, straight	3-5	1	**9.207 601**
C-2, straight	5-8	1	**9.207 602**
C-3, straight	8-10	1	**9.207 603**
Y-1, Y-shape	3-5	1	**9.207 611**
Y-2, Y-shape	5-8	1	**9.207 612**
Y-3, Y-shape	8-10	1	**9.207 613**
T-1, T-shape	3-5	1	**9.207 621**
T-2, T-shape	5-8	1	**9.207 622**
T-3, T-shape	8-10	1	**9.207 623**
E-1, reduction adapter	3-5 / 5-8	1	**9.207 631**
E-2, reduction adapter	5-8 / 8-13	1	**9.207 632**



3 Mini tubing connectors, PP

Type	For tubing bore mm	PK	Cat. No.
Straight, AA	1.6	1	**9.207 291**
Straight, DD	2.5	1	**9.207 292**
Straight, CC	3.2	1	**9.207 293**
Straight, 4040	4.0	1	**9.207 801**
T-shape, T10	1.6	1	**9.207 294**
T-shape, T20	2.5	1	**9.207 295**
T-shape, T30	3.2	1	**9.207 296**
T-shape, T40	4.0	1	**9.207 811**
T-shape, T50	5.0	1	**9.207 812**
T-shape, T60	6.5	1	**9.207 813**
L-shape, L10	1.6	1	**9.207 821**
L-shape, L20	2.5	1	**9.207 822**
L-shape, L30	3.2	1	**9.207 823**
Y-shape, Y210	1.6	1	**9.207 831**
Y-shape, Y220	2.5	1	**9.207 832**
Y-shape, Y230	3.2	1	**9.207 833**
Reduction adapter, AD	1.6 - 2.5	1	**9.207 297**
Reduction adapter, AC	1.6 - 3.2	1	**9.207 298**
Reduction adapter, 1040	1.6 - 4.0	1	**9.207 834**
Reduction adapter, 1050	1.6 - 5.0	1	**9.207 835**
Reduction adapter, DC	2.5 - 3.2	1	**9.207 299**
Reduction adapter, 2040	2.5 - 4.0	1	**9.207 841**
Reduction adapter, 2050	2.5 - 5.0	1	**9.207 842**
Reduction adapter, 3040	3.2 - 4.0	1	**9.207 843**
Reduction adapter, 3050	3.2 - 5.0	1	**9.207 844**
Reduction adapter, 3060	3.2 - 6.5	1	**9.207 845**
Reduction adapter, 4050	4.0 - 5.0	1	**9.207 846**
T-reduction adapter, T230/210	1 x 1.6, 2 x 3.2	1	**9.207 865**
T-reduction adapter, T230/220	1 x 2.5, 2 x 3.2	1	**9.207 866**
T-reduction adapter, T210/220	1 x 2.5, 2 x 1.6	1	**9.207 867**
T-reduction adapter, T220/230	1 x 3.2, 2 x 2.5	1	**9.207 869**
Straight, threaded, M6210	1.6	1	**9.207 871**
Straight, threaded, M6220	2.5	1	**9.207 872**
Straight, threaded, M6230	3.2	1	**9.207 873**
Straight, threaded, M6240	4.0	1	**9.207 874**
Straight, threaded, M6250	5.0	1	**9.207 875**

Other materials on request!



4 Non-return valves, PE-HD

PE-HD. FKM (Viton®) valve disc. Not suitable for pressure applications. *BRAND*

Int. diam. mm	Length mm	PK	Cat. No.
6 to 9	80	1	**9.303 039**

Glass connectors - please see page 604.

E & OE.

1 Non-return valves, PP

Prevents water back-flow when pressure falls. Useful for any tubing system and vacuum line. *Kartell*
Maximum safe working pressure:2 bar, minimum: 0.07 bar at room temperature (20°C).



Int. diam. mm	PK	Cat. No.
8-10	1	**9.303 028**
10-15	1	**9.303 029**

2 Dialysis tubing clips

Orange, PP. Suitable for RC standard membranes. Autoclavable.



Flat width mm	PK	Cat. No.
12	1	**9.206 734**
23	1	**9.206 735**
35	1	**9.206 736**
55	1	**9.206 737**
75	1	**9.206 738**

Further colours and clips for Biotech membranes available on request.

3 Mediclips

Robust PPF. For flat widths of dialysis tubing up to 40mm.



Type	PK	Cat. No.
Mediclips	1	**9.206 300**

4 Keck tubing clamps KT

Thermoplastic polyester (PBT). Continuous control of flow rate in tubing with just one finger.



For external tube diam. mm	Colour	PK	Cat. No.
4.5	red	1	**9.205 904**
6.0	yellow	1	**9.205 906**
10.0	blue	1	**9.205 910**
14.0	red	1	**9.205 914**

5 Tubing clamps, Acetal

Resistant to deformation and corrosion. Mini-Clamp: Single position on/off clamp. *Bel-Art Products*
Use for thin-walled tubing with outer diameter up to 4.7mm
Mid-Range Clamp: Adjustable in 15 positions. Suitable for tubing with outer diameter from 3.2 to 11mm.
Maxi Clamp: Adjustable in 12 positions. Suitable for tubing with outer diameter up to 19mm



Description	PK	Cat. No.
Tubing clamp, mini	100	**6.301 574**
Tubing clamp, mid-range	12	**9.205 918**
Tubing clamp, maxi	6	**6.254 275**

Sample bags - please see page 180.

1



1 Tubing clamp, Acetal

Bel-Art Products

Clamp is molded of strong, durable plastic with serrated jaws 27mm long. Attach at any point on tubing without disconnecting tubing. Designed to be operated with one hand, the clamp locks closed and opens when the locking tab is released.

- Autoclavable
- One hand open and close operation
- For use on tubing with a wall thickness of 0.82mm or thinner
- When not in use, the circular opening (approximately 6 mm diameter) at hinge end allows clamp to remain attached to tubing having 6-10mm OD with little to no restriction in flow
- Overall length is 59mm

Type	PK	Cat. No.
Tubing clamp	12	**6.200 838**

2



3



2 3 Curved tubing clamps stop-it, PVDF

Bürkle

Stepless flow regulation. The micro setting screw allows very fine stepless flow control, the flow can also be shut off completely. The fully adjustable pressure plate squeezes the hose against the stable steel hook. The hose is compressed over a wide area in order to prevent it from being damaged. Easy-Click closure - Stopper can be opened and closed in any position - without tiresome screwing on and off. Stopper is with up to 160°C heat-resistant and chemical resistant plastic PVDF, the clamp is galvanised steel. Available in 3 sizes for hose diameters up to 20mm.

Colour	To fit tubing mm	PK	Cat. No.
red	0.5 to 10	1	**9.303 775**
red	0.5 to 15	1	**9.303 776**
red	1.0 to 20	1	**9.303 777**
yellow	0.5 to 10	1	**9.303 778**
yellow	0.5 to 15	1	**9.303 779**
yellow	1.0 to 20	1	**9.303 780**
blue	0.5 to 10	1	**9.303 781**
blue	0.5 to 15	1	**9.303 782**
blue	1.0 to 20	1	**9.303 783**
green	0.5 to 10	1	**9.303 784**
green	0.5 to 15	1	**9.303 785**
green	1.0 to 20	1	**9.303 786**

4



5



4 5 Tubing clamps stop-it, Metall

Bürkle

Tubing clamps can regulate or stop the flow through of tubings that carry fluids or gases.
Stepless flow regulation: The knurled screw allows very fine stepless flow control.
The flow can also be shut off completely. The fully adjustable pressure plate squeezes the hose against the stable steel hook. The hose is compressed over a wide area, in order to prevent it from being damaged, stop-it can be mounted on hoses after they have been connected. stop-it metal is extremely heat resistant and robust due to the steel and aluminum. The hose clamp is available in four different sizes up to a maximum hose diameter of 30mm.

To fit tubing mm	PK	Cat. No.
0.5 to 10	1	**9.303 787**
0.8 to 15	1	**9.303 788**
1.1 to 20	1	**9.303 789**
2.5 to 30	1	**9.303 790**

6



6 Tubing clips, Mohr pattern

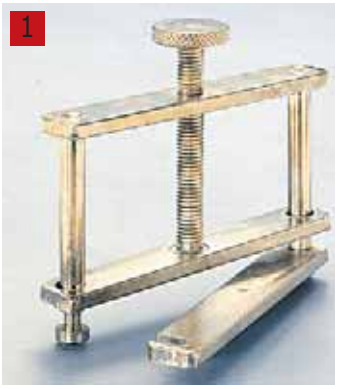
Nickel plated. Spring pinchclip.

Length mm	PK	Cat. No.
40	1	**9.180 040**
50	1	**9.180 050**
60	1	**9.180 060**
70	1	**9.180 070**
80	1	**9.180 080**

1 Tubing clips, Hofmann pattern

Brass nickel plated. Bottom hinged.

Clamping range mm	PK	Cat. No.
12	1	**9.180 112**
17	1	**9.180 117**
20	1	**9.180 120**
25	1	**9.180 125**
30	1	**9.180 130**
40	1	**9.180 140**
50	1	**9.180 142**



2 Tubing clips, Hofmann pattern

Brass/nickel. Extra strong. With wing nut closure. Bottom hinged. *Bochem*

Clamping range mm	PK	Cat. No.
50	1	**9.180 150**



3 Tubing clamps

Pean pattern. Polished stainless steel. For clamping tubing. *Bochem*

Length mm	PK	Cat. No.
140	1	**9.180 199**
160	1	**9.180 200**
180	1	**9.180 201**



4 WILO- Curved tubing clamps

SK range. Steel. Large, plastic knurled nut with embedded brass screwthread insert which closes a metal bracket onto the curved tubing stirrup. Clamping range 10mm to 30mm. Temperature resistant up to 150°C.

Clamping range mm	Material	PK	Cat. No.
10	Knurled nut Aluminium	1	**9.180 210**
15	Knurled nut Moulded plastic	1	**9.180 215**
20	Knurled nut Moulded plastic	1	**9.180 220**
30	Knurled nut Moulded plastic	1	**9.180 230**



5 Nickel chromium steel clips

Hose clips, with hexagonal head.

Jaw opening mm	PK	Cat. No.
10 to 5.5	1	**9.207 510**
12 to 8.5	1	**9.207 512**
14 to 9.5	1	**9.207 514**
17 to 12.0	1	**9.207 517**
21 to 16.0	1	**9.207 521**
25 to 20.0	1	**9.207 525**
29 to 24.0	1	**9.207 529**



6 Worm drive tubing clamps

To DIN 3017. Chrome steel 1.4016. With galvanized, worm drive screw.

Jaw opening mm	Band-width nm	PK	Cat. No.
7 to 11	5.0	1	**9.207 435**
11 to 19	5.0	1	**9.207 436**
8 to 12	7.5	1	**9.207 437**
10 to 16	7.5	1	**9.207 439**
12 to 22	9.0	1	**9.207 440**
16 to 25	9.0	1	**9.207 445**
20 to 32	9.0	1	**9.207 452**
25 to 40	9.0	1	**9.207 460**
32 to 50	9.0	1	**9.207 465**
40 to 60	9.0	1	**6.241 130**





1 Herbie tubing clamps

Beetle nylon 6.6. Simple to assemble by pressing together without the need for tools. Quick to detach with side dislocation. Good chemical resistance. Temperature resistant from -40°C to +170°C. Longterm temperature 125°C, shortterm temperature 170°C.

Type	Jaw opening mm	PK	Cat. No.
AA	6.5 to 7.9	1	**9.207 707**
B	7.9 to 9.2	1	**9.207 708**
BB	9.2 to 10.3	1	**9.207 709**
C	10.2 to 11.8	1	**9.207 710**
D	12.0 to 13.8	1	**9.207 712**
E	13.1 to 15.1	1	**9.207 713**
F	15.0 to 17.1	1	**9.207 715**
G	16.9 to 19.1	1	**9.207 717**
H	18.1 to 20.6	1	**9.207 718**
I	20.3 to 23.0	1	**9.207 720**
K	22.2 to 24.9	1	**9.207 722**
L	24.5 to 27.6	1	**9.207 725**



2 Tubing clamps POM

Hose clips made of Polyacetal (POM). *Bürkle*

Jaw opening mm	PK	Cat. No.
6.0 to 6.5	10	**6.052 587**
9.0 to 10	10	**6.052 588**
10.0 to 11	10	**6.052 589**
11.0 to 12	10	**6.052 590**
12.0 to 14	10	**6.052 591**
13.0 to 15	10	**6.052 592**
15.0 to 17	10	**6.052 593**
17.0 to 19	10	**6.052 594**
18.0 to 20	10	**6.052 595**
20.0 to 22	10	**6.052 596**
23.0 to 25	10	**6.052 598**



3 Autoclavable adhesive Tape

NEW!

Indicator adhesive tape with steam indicator, for steam sterilisation.
The white stripes change colour to brown whilst being autoclaved (121°C and 134°C).
Supplied in a roll of 50M, 19mm wide.

Type	PK	Cat. No.
Indicator adhesive tape	1	**9.140 784**



4 Indicator Tape, Comply™

Lead free version available now. *3M Deutschland*
Semi-crepe paper. Self adhesive. Very good adhesion on various soft packagings.
Tape stretches to minimize tape pop-off, which reduces need for re-sterilization due to packs opening during processing.
Accepts handwriting and labelling for easy use and better record keeping.
Supplied in a roll of 55M.

Type	For	Width mm	PK	Cat. No.
Comply™	Dry-Heat Sterilisation	19	1	**9.140 783**
Comply™ lead free	Steam Sterilisation	18	1	**9.140 786**



5 Adhesive parcel tape tesapack® 4124

NEW!

tesapack® 4124, transparent.

Description	Width mm	Length m	PK	Cat. No.
Adhesive parcel tape	25	66	1	**9.140 814**
Adhesive tape dispenser	25		1	**9.140 815**

For more sterilization tapes, please see page 1098.

1 Adhesive parcel tape tesapack® 4024

Strong, brown tape.

Width mm	Length m	PK	Cat. No.
50	66	1	**9.140 813**



2 Adhesive tape dispenser tesa® 6285

For sealing cardboard boxes, using accessory tesapack®, tesafilm® or tesakrepp® sealing materials.

Width mm	PK	Cat. No.
50	1	**9.140 817**



3 Adhesive label tape Write-on™, writable

Bel-Art Products

Specially coated plastic tape with adhesive backing. Makes labels of any length.
Can be used with any pens. Excellent adhesion to glass, metal, PE etc. Resistant to humidity, as well as acids and alkali solutions in weak concentrations. Leaves no residue when removed.

Temperature resistance
up to +257°C: 30 min
up to +80°C: 24 h
Resistant to -80°C.

Colour	Width mm	Length m	PK	Cat. No.
White	12.7	36.4	1	**9.040 379**
White	19.0	36.4	1	**9.040 380**
White	25.4	36.4	1	**9.040 381**
White	12.7	54.6	1	**9.040 351**
White	19.0	54.6	1	**9.040 352**
White	25.4	54.6	1	**9.040 353**
Red	12.7	36.4	1	**9.040 336**
Red	19.0	36.4	1	**9.040 341**
Red	25.4	36.4	1	**9.040 346**
Yellow	12.7	36.4	1	**9.040 337**
Yellow	19.0	36.4	1	**9.040 342**
Yellow	25.4	36.4	1	**9.040 347**
Green	12.7	36.4	1	**9.040 338**
Green	19.0	36.4	1	**9.040 343**
Green	25.4	36.4	1	**9.040 348**
Blue	12.7	36.4	1	**9.040 339**
Blue	19.0	36.4	1	**9.040 344**
Blue	25.4	36.4	1	**9.040 349**
Orange	12.7	36.4	1	**9.040 340**
Orange	19.0	36.4	1	**9.040 345**
Orange	25.4	36.4	1	**9.040 350**



4 Adhesive tape dispenser Write-On™

Bel-Art Products

- For one roll Write-On™ adhesive tape
- With epoxy-coated steel writing platform
- Weighted base with non-skid pads prevents sliding or lifting
- 76mm core fits standard tape rolls up to 25mm wide and accepts tape rolls having a maximum diameter of 133mm
- Accepts 36.6m as well as 54.9m rolls
- Dimensions (WxDxH): 213 x 87 x 95mm
- Dimensions of writing platform 102 x 152mm

Type	PK	Cat. No.
Write-On™	1	**9.040 388**



1



1 Adhesive tape dispenser Write-On™ Economy

Bel-Art Products

Provides a smooth writing surface, making labeling easy and fast. When marked tape is advanced and cut off on the serrated edge, a fresh length of label tape is positioned on the writing platform. Plastic cutting edge is moulded into the housing. Various widths and colours of tape rolls can be mixed together on the spindles, which accommodates 5 or more 12 to 19mm narrow rolls or 4 x 25mm wide rolls. Spindles are easily removed from the unit for loading and unloading and can be adjusted to hold either 25 or 75mm core diameter rolls.

- Includes three plastic separating discs to assure smooth, snag free dispensing for up to four rolls of tape (additional discs on request).
- Moulded-in pen holder wells on the dispenser help to keep writing instruments handy
- Ideal for use with the full line of Write-On™ Tapes, which are available in 6 colors and 3 widths.
- Includes mounting holes for secure attachment to a benchtop (screws not included). Can also be attached to vertical surfaces using Wall Mount Adapter

Dimensions (WxDxH): 302 x 143 x 105 mm

Items supplied:
Write-On™ Economy: Adhesive tape dispenser incl. 1 roll of 12mm white Write-On™ Labeling Tape

Type	PK	Cat. No.
Write-On™ Economy	1	**9.040 389**

2



2 Adhesive tape for label protection, PES and Tape dispenser, ABS

Bel-Art Products

Adhesive tape for label protection
Clear polyester tape with special synthetic adhesive. Resistant to moisture and most solvents. Resistant to temperatures of -196 to +200°C (dry heat) and up to +121°C (steam sterilization). Excellent adhesion to glass, metal, PE etc. Supplied in rolls as outlined below.

Tape dispenser
Durable tape dispenser is molded of strong ABS plastic with a steel serrated cutting blade; tape roll held in place by aluminum roller and spring-loaded cover. Includes four non-slip rubber feet and screws. Dimensions (L x W x H): 206 x 117 x 600mm.

Description	Width mm	Length m	PK	Cat. No.
Adhesive tape	25	32,9	1	**9.040 425**
Adhesive tape	38	32,9	1	**9.040 438**
Adhesive tape	51	32,9	1	**9.040 450**
Tape dispenser	-	-	1	**9.040 550**

3



3 Adhesive labels

White, blank, self-adhesive labels. 75g/m² woodfree paper, with strong rubber adhesive coating. Smear-resistant, sheet size approx. 168 x 120mm. Packed in sturdy cardboard boxes. Label sizes and pack quantities as outlined below.

Width mm	Length mm	PK	Cat. No.
30	12	10000	**9.040 612**
40	13	5000	**9.040 614**
22	16	10000	**9.040 616**
40	19	5000	**9.040 618**
50	20	5000	**9.040 620**
40	25	5000	**9.040 625**
53	34	2500	**9.040 635**
67	34	1000	**9.040 636**
82	52	1000	**9.040 652**

4



4 Deep freeze labels SuperPrint, white

Self-adhesive deep-freeze labels on A4 sheets. Remains firmly attached even at very low temperatures. Perfect for all PC printers (laser/inkjet/dot-matrix), copiers and multi-functional machines. Not suitable for colour laser printers and colour copiers. The label paper in High-Resolution-Quality guarantees perfect toner fixing and optimum laser printing results, also at high resolution. Trouble-free processing due to all-around protective edge and optimum flatness.

Length mm	Width mm	PK	Cat. No.
38.1	21.2	25	**6.201 004**
66.0	33.8	25	**6.201 005**

E & OE.

1 Cryogenic labels, Type 5040

Durable, non-shrinking, plain cloth labels. Ideal for labelling cryoboxes. *Thermo Scientific*
Supplied in packs of 10 sheets of labels with each sheet containing 20 labels.

Type	Width mm	Height mm	PK	Cat. No.
5040	50	25	200	**9.400 976**

1



2 3 Cryo labels Rainbow

NEW!

For customizing the white Cryo Boxes, the Rainbow Cryo labels are available in modern colors: red, yellow, green, blue, purple. *Ratiolab*
- temperature-resistant down to -150°C
- 50 labels per pack, divided into 5 colors, 10 pieces from each color

Type	Width mm	Height mm	PK	Cat. No.
Rainbow	200	40	50	**6.256 343**

2



3



4 Deep freeze labels TOUGH-SPOTS®

Pre-cut Peel-off round lables for 0.5 and 1.5/2.0ml microcentrifuge tube tops. *Heathrow Scientific*
Temperature resistant from -196°C to 80°C.
Easy to write on: PVC labels accept writing from most lab markers.
Convenient: Dispensing box assists in labeling individual tubes used in small experiments.

Diam. mm	Colour	For vessels	PK	Cat. No.
9.5	White	0.5 ml Tubes	1000	**9.040 711**
9.5	Blue	0.5 ml Tubes	1000	**9.040 712**
9.5	Green	0.5 ml Tubes	1000	**9.040 713**
9.5	Red	0.5 ml Tubes	1000	**9.040 714**
9.5	Yellow	0.5 ml Tubes	1000	**9.040 715**
13.0	White	1.5/2.0 ml Tubes	1000	**9.040 716**
13.0	Blue	1.5/2.0 ml Tubes	1000	**9.040 717**
13.0	Green	1.5/2.0 ml Tubes	1000	**9.040 718**
13.0	Red	1.5/2.0 ml Tubes	1000	**9.040 719**
13.0	Yellow	1.5/2.0 ml Tubes	1000	**9.040 720**

4



5 Deep freeze labels Cryo-Babies®/Cryo-Tags®

Temperature resistant from -196°C to +150°C. All labels withstand freezer temperatures down to -196°C (liquid and vapor phase nitrogen), boiling water baths (100°C), autoclaving and moderate ovens (150°C). Chemically inert labels resist most organic solvents and caustic agents. They adhere to most plastics, glass and metals without cracking, peeling or degrading. Made with a flexible, polyfin label material and acrylic adhesive. This unique combination expands and contracts together with temperature fluctuations resulting in a strong adhesive bond. Convenient dispensing box assists in labeling individual tubes used in small experiments. Easy to write on. PVC labels accept writing from most lab markers including solvent resistant pens. *Heathrow Scientific*

5



Type	Dimensions (W x D) mm	Colour	For vessels	PK	Cat. No.
Cryo-Babies®	24 x 13	White	0.5ml tubes	1000	**9.100 030**
Cryo-Babies®	33 x 13	White	1.5/2.0ml tubes	1000	**9.100 031**
Cryo-Tags®	38 x 13	White	General application	1000	**9.100 032**

6 Laser deep freeze labels Cryo-Babies®

Temperature resistant from -196°C to +150°C. All sheets withstand freezer temperatures down to -196°C (liquid and vapor phase nitrogen), boiling water baths (100°C), autoclaving and moderate oven temperatures (150°C). Chemically inert labels resist most organic solvents and caustic agents. They adhere to most plastics, glass and metals without cracking, peeling and degrading. Made with a flexible, polyfin label material and acrylic adhesive. This unique combination expands and contracts together with temperature fluctuations resulting in a strong adhesive bond. Label sheets are specially top-coated to readily accept laser printing. Heat-resistant, stay-flat sheets will not jam in laser printers. Easy to write on. PVC labels accept writing from most lab markers including solvent resistant pens. *Heathrow Scientific*

6



Type	Dimensions (W x D) mm	For vessels	PK	Cat. No.
Cryo-Babies®	33 x 13	1.5/2.0ml tubes	1700	**9.100 033**

Cryogenic items - please see our chapter 7

1



1 Labels Tough-Tags®

Heathrow Scientific

Temperature resistant from -40°C to +121°C. Tough-Tags resist boiling water baths, autoclaving and moderate freezer temperatures. Chemically inert labels resist most organic solvents and caustic agents. They adhere to most plastics, glass and metals without cracking, peeling and degrading. Tubes are pre-cut, peel-off labels which accept many marking instruments. They are perfectly sized to fit microcentrifuge tubes and other containers in the laboratory. Tubes labeled with Tough-Tags® easily slide in and out of centrifuge rotors without binding.

Dimensions (W x D) mm	Colour	For vessels	PK	Cat. No.
24 x 13	White	0.5ml tubes	1000	**9.100 045**
24 x 13	Blue	0.5ml tubes	1000	**9.100 046**
24 x 13	Green	0.5ml tubes	1000	**9.100 047**
24 x 13	Red	0.5ml tubes	1000	**9.100 048**
24 x 13	Yellow	0.5ml tubes	1000	**9.100 049**
33 x 13	White	1.5/2.0ml tubes	1000	**9.100 040**
33 x 13	Blue	1.5/2.0ml tubes	1000	**9.100 041**
33 x 13	Green	1.5/2.0ml tubes	1000	**9.100 042**
33 x 13	Red	1.5/2.0ml tubes	1000	**9.100 043**
33 x 13	Yellow	1.5/2.0ml tubes	1000	**9.100 044**
38 x 6	White	Microplates	1000	**9.100 050**
21 x 7	White	PCR tubes	1500	**9.100 051**
38 x 19	White	General application	1000	**9.100 052**

2



2 Label station, acrylic for Tough-Tags®/Cryo-Babies®/Tough-Spots®

Heathrow Scientific

Portable label station holds up to six standard size boxes of Tough-Tags®, Cryo-Babies®, and Tough-Spots®. Just drop the box in the label station and feed the paper through the slot.
- Acrylic station includes a writing surface, a cutting edge for easy dispensing and non-skid rubber feet
- Counter-sunk holes provided for wall mounting

Dimensions (W x D x H) mm	PK	Cat. No.
280 x 89 x 120	1	**9.100 060**

3



3 Label remover, Solvent 50

SOLVENT 50 is a highly effective label solvent for the effortless removal of self adhesive labels on the basis of natural orange terpenes. It works on the adhesive and quickly and gently dissolves adhesive labels on glass, porcelain, metal, wood, foil and cardboard. SOLVENT 50 also removes sticky residue of any kind, such as tar spots or glue residue from stickers. Check compatability when using on plastics. Not suitable for polystyrene.

Density:	Spray: 0.74g/cm³ (20°C) Jerrycan: 0.83g/cm³ (20°C)
Ignition point:	Spray: < 0°C Jerrycan: 46°C
Evaporation rate:	Spray and jerrycan: 94 (DIN 53170 Ether = 1).

Type	Capacity L	PK	Cat. No.
Spray can	0.20	1	**9.412 810**
Jerrycan	5.00	1	**9.412 811**

4



4 BMP™21 Plus Hand-held label printer

NEW!

Brady

The portable label printer BMP™21 Plus creates long lasting labels which adhere securely. Even under extremely demanding industrial applications the thermal transfer printer BMP™21 labels are pin sharp and clearly legible.

Key Features:
- Hard wearing design
- 203 dpi thermal transfer print
- Large LCD Display (3 lines of text, 1 line of icons)
- Left or right handed cutter activation
- Automatic data serialisation and built-in graphics and barcodes

Type	PK	Cat. No.
BMP™21 Plus	1	**9.040 586**

1 Accessories for BMP™21 Hand-held label printer

Brady

Description	PK	Cat. No.
Magnet	1	**9.040 556**
Tool	1	**9.040 557**
AC Adapter - Europe 220V	1	**9.040 553**
AC Adapter - UK 220V	1	**9.040 554**
AC Adapter - USA 110V	1	**9.040 552**

1



Application Key for Brady labels

F = Freezer (-70°C)
N = Liquid Nitrogen (-196°C)
A = Autoclave
H = Hot Water Bath (100°C)
S1 = Self-laminating label
L = Low-Profile (extremely thin)
V = Vial Identification
S2 = Slide Identification
P = Plate Identification
G = General Identification

Brady labels Material overview

Type B-499: Permanent adhesive, write-on capabilities

Type B-461: Permanent adhesive - suitable for liquid nitrogen application if label material is wrapped around itself, as in self-lamination, write-on capabilities

Type B-481: Clear polyester will remain resistant when exposed to xylene and other chemicals that are commonly used in the slide staining process.

Type B-488: Permanent acrylic adhesive - ideal for flat surfaces, write-on capabilities, excellent solvent resistance and xylene resistance

Type B-427: Permanent acrylic adhesive; self-laminating, write-on capabilities, suitable for liquid nitrogen application and can be used to ID a frozen vial if label material is wrapped around itself, as in self-lamination

Type B-492: Label material that will adhere to frozen surfaces

Type B-595: Mark aisles, passageways, storage locations, point out safety equipment, exits. Indoor/outdoor marking film, high gloss, durable, flexible. Temperature range: -40°C to 82°C, durability outdoors up to 10 years.

Labels for BMP™21 Hand-held label printer

Black on white. Brady´s laboratory labels are designed to withstand extreme laboratory environments. The labels are rersistent against high/low temperatures, solvents and chemicals (Alcohol and DMSO).

Brady

Type	Material	Width mm	For	PK	Cat. No.
B-461	Polyester	9.50	F N A H S1 L V S2	1	**9.040 562**
B-461	Polyester	12.70	F N A H S1 L V S2	1	**9.040 574**
B-461	Polyester	19.05	F N A H S1 L V S2	1	**9.040 575**
B-499	Nylon cloth	9.53	F N A V P G	1	**9.040 576**
B-499	Nylon cloth	12.70	F N A V P G	1	**9.040 577**
B-499	Nylon cloth	19.05	F N A V P G	1	**9.040 578**
B-488	Polyester	9.53	F A S2 P G	1	**9.040 579**
B-488	Polyester	12.70	F A S2 P G	1	**9.040 580**
B-488	Polyester	19.05	F A S2 P G	1	**9.040 581**
B-427	Vinyl	19.05	F N S1 V S2 P G	1	**9.040 582**
B-427	Vinyl	25.40	F N S1 V S2 P G	1	**9.040 583**
B-427	Vinyl	30.48	F N S1 V S2 P G	1	**9.040 584**
B-427	Vinyl	38.10	F N S1 V S2 P G	1	**9.040 585**

1 Label printer BBP™ 33

Brady

The BBP™ 33 Label Printer is a completely hassle free, easy to use PC-based printer that can print signs and labels up to 101.6 mm wide. Smart chip supplies automatically set up the label in your Brady software, eliminating manual calibration and label waste. Drop-in ribbon and label cartridges ensure fast and effortless material changes. The BBP™ 33 Label Printer can print on a full range of laboratory labels and provides clear and durable labelling to eliminate errors in sample identification and ensure traceability. It is really that simple and hassle free - exactly the way label making should be. Solves all your labelling challenges

- Thermo transfer printer
- Printer resolution: 300dpi
- Printer speed: 101mm/sec (Max.)
- Dimensions (W x H x D): 230.6 x 241.6 x 304.8mm
- Use LabelMark™and CodeSoft™ label software or with Windows® based driver for 3rd party software use
- Fast and effortless material changeovers

Type	PK	Cat. No.
BBP™ 33 EU Printer	1	**9.050 797**
BBP™ 33 UK Printer	1	**9.050 796**
BBP™ 33 EU Printer + MarkWare	1	**9.050 799**
BBP™ 33 UK Printer + MarkWare	1	**9.050 798**

1



Labels for Label printer BBP™33

NEW!

Brady

Type	Material	Dimensions mm	Description	For ink ribbon	PK	Cat. No.
B-461	Polyester	9.53	Labels for vial top identification	B30-R4300	1000	**9.050 811**
B-461	Polyester	12.70	Labels for vial top identification	B30-R4300	1000	**9.050 812**
B-461	Polyester	12.70 x 55.88*	Labels for ampoules and tubes	B30-R4300	1500	**9.050 815**
B-461	Polyester	25.40 x 133.35**	Labels for ampoules and tubes	B30-R4300	650	**9.050 816**
B-481	Polyester	22.86 x 22.86	Labels for slides	B30-R6400	1800	**9.050 817**
B-488	Polyester	22.86 x 19.05	Labels for microplates	B30-R4300	3000	**9.050 813**
B-488	Polyester	48.26 x 6.35	Labels for microplates	B30-R4300	2000	**9.050 814**

Dimensions printable height: *19.05mm, **38.10mm

E & OE.

1 2 Label printer BMP™71

Brady

- Large, highly visible colour display with on screen indicators
- WYSIWYG interface
- Easy to load materials; Drop & Go
- Use 1 printer for all your applications
- Computer style keypad, with a selection of 4 layouts
- Standalone operation
- PC connectivity and operational through Brady's software packages LabelMark™ and MarkWare™
- Fast printing
- True field usable printer with long lasting battery and easy to carry printer design
- Auto font sizing
- Multi language user interface
- All European character sets embedded in the printer
- Built in barcode - time/date stamp - 500+ graphics
- Specific label applications
- Wizard based applications for Electrical, Tele/Datacom & Safety labels

1



Key Material features
- Smart cell technology for all materials and ribbons providing auto formatting
- Largest variety of materials available in the market, both standard and custom made labels
- Can print both on diecut labels and continuous materials, including PermaSleeves™,
- Self-laminating Labels, EPREP (Engraved Plate REPlacement) labels, Reflective, Phosphorescent and Tamper Resistant tapes
- 30+ different materials
- Labels up to 50.80mm wide
- Labels up to 1016mm long
- Prints on all TLS2200® and HandiMark™ parts, including bulk packs

2



Supplied with: BMP71 comes in a hard carry case with battery pack, AC adapter/battery charger, USB connection cable, TLS/HandiMark label roll adapter, Cleaning card and swab, Product CD (contains user manual, printer driver and tutorial), Quick Start Guide, M71-R6000 black ribbon, M71-31-423 diecut labels and M71C-2000-595-WT tape

Type	PK	Cat. No.
BMP™71-QWERTZ-EU	1	**9.412 915**
BMP™71-QWERTZ-EU + Software Labelmark 5.0	1	**9.412 916**

3 Labels for label printers BMP™71

Please order printer ribbons separately.

Brady

3



Type	Length	Width	For ink ribbon	Description	PK	Cat. No.
	m	mm				
B-595	15.24	13,00	M71-6000	Continuous roll	1	**9.412 900**
B-595	15.24	25,40	M71-6000	Continuous roll	1	**9.412 901**
B-595	15.24	50,80	M71-6000	Continuous roll	1	**9.412 902**
B-461	12.70	45,72	M71-4300	Single labels	500	**9.412 903**
B-461	9.53	45,72	M71-4300	Single labels	500	**6.228 911**
B-461	15.24	41,28	M71-4300	Single labels	250	**6.224 171**
B-498	12.70	25,40	M71-6200	Single labels	500	**9.412 904**
B-498	38.10	25,40	M71-6200	Single labels	250	**9.412 905**
B-499	25.40	9,53	M71-4300	Single labels	500	**9.412 906**
B-499	12.70	22,86	M71-4300	Single labels	500	**9.412 907**
B-499	9.53	25,40*	M71-4300	Single labels	500	**9.412 908**
B-488	22.86	19,05	M71-4300; M71-6200	Single labels	250	**9.412 909**
B-488	22.86	22,86	M71-4300; M71-6200	Single labels	250	**9.412 910**

* with 9.53 mm diameter vial top label.

4 Permanent markers, edding 404, 0.75mm

Stroke width approx. 0.75mm. Low-odour, smudge-proof water-resistant and quick drying. Refillable. Replaceable tips. For labelling, painting and writing on virtually all materials, including glass, metal and plastics. Alcohol-based ink without toluene/xylene. Colours as outlined below.

Edding

4



Colour	PK	Cat. No.
Black	1	**9.050 451**
Red	1	**9.050 452**
Blue	1	**9.050 453**
Green	1	**9.050 454**

1



1 Permanent markers, edding 400, 1mm

Stroke width approx. 1mm. Low odour, smudge-proof water-resistant and quick-drying. Refillable. With replaceable tips. For labelling, painting and marking on virtually all materials including glass, metal and plastics. Alcohol-based ink without toluene/xylene.

Edding

Colour	PK	Cat. No.
Black	1	**9.050 421**
Red	1	**9.050 422**
Blue	1	**9.050 423**
Green	1	**9.050 424**

2



2 Permanent markers, edding 3000, 1.5mm to 3mm

The classic with round tip. Stroke width approximately 1.5mm to 3mm. Low-odour, smudge-proof and water-resistant and quick drying. Refillable. Replaceable tips. For labelling, painting and writing on virtually all materials, including glass, metal and plastics. Alcohol-based ink without toluene/xylene. Colours as outlined below.

Edding

Colour	PK	Cat. No.
Black	1	**9.050 411**
Red	1	**9.050 412**
Blue	1	**9.050 413**
Green	1	**9.050 414**

3



3 Lab markers, 1.0mm point

Writes on dry or wet surfaces including glass, plastic, china and metal. Colour does not run in water or alcohol when used normally, but can be washed off.

Colour	PK	Cat. No.
black	1	**9.050 601**
red	1	**9.050 602**
blue	1	**9.050 603**
green	1	**9.050 604**

4



4 LAB-Marker II, 0.6mm, highly permanent

With hard wearing, fine fibre point. For labelling most materials (plastic, metal, china, glass etc.). Particularly suitable for tissue and cell culture applications. The non-toxic ink is dye, bleach and wash-resistant and also resists solvents including alcohol and xylene.

Colour	PK	Cat. No.
black	1	**9.050 611**
red	1	**9.050 612**

5



5 CD/DVD/BD markers, edding 8400, 0.5mm to 1mm

Stroke width approx. 0.5mm to 1mm. Special marker for the careful and permanent labelling of CDs, DVDs and Blu-ray discs. Soft tip and special water-based ink (solvent-free) will not damage the sensitive surface of the data layer unlike alcohol-based ink. Ink is smudge-proof and water-resistant on drying.

Edding

Colour	PK	Cat. No.
Black	1	**9.050 696**

6



6 LLG-Lab Notebook

For recording research data, experimental procedures, and design ideas. Use these notebooks to keep your information safe and well organised. Numbered, acid-free, grid pages include spaces for title, project number, book number, date, and witness signature. Lined notebooks feature college ruled pages for easy report writing. Covers are waterproof and chemical-resistant. All notebooks contain periodic and conversion tables in the back. Admissible as court evidence when used as prescribed by law. Measures: 216 x 279mm.

Description	Type	Colour	PK	Cat. No.
100 pages	grid	black	1	**9.050 750**
200 pages	grid	blue	1	**9.050 751**
200 pages	lined	red	1	**9.050 752**

1 Molecular model system Molymod®

The Molymod® system is an original, unique system of high quality molecular models.
The set consists of a variety of atom parts and links designed to make a large number of possible structures relevant to a specific chemistry subject or use, e.g. Biochemistry, Organic or Inorganic. All sets are fully compatible.
Atom parts are made of solid clouded plastic spheres. They are available with holes from 1 to 6 in the usual angular orientations.



Type	Description	PK	Cat. No.
Introductory Set	48 atom parts, 62 links	1	**9.883 101**
Organic Set, large	111 atom parts, 140 links	1	**9.883 103**
Biochemistry Set, large	257 atom parts, 160 links	1	**9.883 107**
Organic Set, small	50 atom parts, 64 links	1	**9.883 108**
Inorganic/Organic Set, small	51 atom parts, 38 links	1	**9.883 109**
Inorganic/Organic Set, large	106 atom parts, 86 links	1	**9.883 104**
Molecular Orbital Organic	Carbon 12/18 hydrogen bonds 9/18	1	**9.883 111**
Molecular self-assembly kit Inorganic	diamond 30 atoms	1	**9.883 112**
Molecular self-assembly kit Inorganic	graphite 45 atoms	1	**9.883 113**
Molecular self-assembly kit Inorganic	sodium chloride, 27 atoms	1	**9.883 114**
Molecular self-assembly kit Inorganic	water 26 units	1	**9.883 115**

2 3 Molecular model system miniDNA®

The advanced miniDNA® system comprises colour-coded, abstract-shaped parts designed to represent the nitrogenous bases, pentagonal sugar and pyramidal phosphate components needed to make a double-helix model of DNA. The three hydrogen bonds that connect Cytosine to Guanine and the two that connect Thymine to Adenine are represented by the appropriate number of pegs.
Two DNA kits are available to make either a 12-layer (1 turn) or 22-layer (2 turns) DNA model. The models can be displayed on their stands, or unzipped into a ladder form to demonstrate the process of Replication. A similar approach can be taken with the two RNA kits to model the process of Protein Synthesis known as Transcription.





Type	Description	PK	Cat. No.
miniDNA®	12-layer Kit	1	**6.261 370**
miniDNA®	22-layer Kit	1	**6.261 344**

4 LLG-Laboratory jack, stainless steel



Length mm	Width mm	Min. height mm	Max. height mm	Max. load kg	PK	Cat. No.
200	200	90	320	25	1	**9.117 220**

5 Swiss Boy laboratory jacks, anodised aluminium.

Anodised aluminium. Corrosion proof, stable and easily adjustable. Upper and lower end positions are adjustable.
At reaching the setting, the laboratory support stops automatically. In various colours as outlined below.



Width mm	Length mm	Adjustable from / to mm	Max. load kg	Colour	PK	Cat. No.
40	50	31 - 93	20	Green	1	**9.117 100**
75	80	49 - 147	30	Blue	1	**9.117 105**
140	120	60 - 243	50	Pink	1	**9.117 110**
150	122	80 - 278	80	Gold	1	**9.117 115**
216	180	95 - 398	90	Light blue	1	**9.117 116**
320	240	120 - 500	90	Grey	1	**9.117 118**

1



1 Swiss Boy laboratory jack accessories

Swiss Boy laboratory stand accessories. Baseplates and ancilliary plates made of grey/black anodised aluminium. Support used to attach Swiss Boys in any position to apparatus scaffolding existing in many laboratories. Maximum support rod diameter 20mm. Black.

Description	Width mm	Length mm	PK	Cat. No.
Ancillary plate	200	200	1	**9.117 130**
Ancillary plate	300	300	1	**9.117 131**
Ancillary plate	260	180	1	**9.117 132**
Ancillary plate	500	400	1	**9.117 134**
Ancillary plate	220	320	1	**9.117 135**
Baseplate	200	200	1	**9.117 133**
Support rod	12	650	1	**9.117 177**
Support			1	**9.117 199**

2



3



2 3 Laboratory jacks, 18/10-stainless steel

Bochem

For those who wish to reach the top
New design and improved construction:
- Improved scissor technology with reduced tolerances
- Ergonomic knob, rounded and user friendly
- Scissor-construction made of 18/10-stainless steel

Properties:
- All models are manufactured according to DIN 12897.
- With the operating load we differ between the maximal dynamic operating load (Kg max. dyn.) and the maximal static operating load (Kg max. stat.) of the lab jack. These norms are also according to DIN 12897.
- Smaller models up to 240mm x 240mm (Type A) have a simple adjusting wheel, which can be operated by hand.
- Bigger models from 300mm x 300mm on (Type B) have a special adjusting wheel, which is used with the included ratchet.

Type	Width mm	Length mm	Min. height mm	Max. height mm	Max. dyn. kg	Max. stat. kg	PK	Cat. No.
A	100	100	55	120	5	10	1	**9.118 923**
A	130	160	60	275	7	30	1	**9.118 924**
A	200	200	60	275	7	30	1	**9.118 925**
A	240	240	60	275	7	30	1	**9.118 926**
B	300	300	130	470	12	60	1	**9.118 928**
B	400	400	130	470	15	60	1	**9.118 929**
Ratchet		190					1	**9.118 921**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

LABORBEDARF BOCHEM® LAB SUPPLY

E & OE.

1 2 Laboratory jacks, aluminium

NEW!

Bochem

For those who wish to reach the top
New design and improved construction:
- Improved scissor technology with reduced tolerances
- Ergonomic knob, rounded and user friendly
- Scissor-construction made of 18/10-stainless steel

Properties:
- All models are manufactured according to DIN 12897.
- With the operating load we differ between the maximal dynamic operating load (Kg max. dyn.) and the maximal static operating load (Kg max. stat.) of the lab jack. These norms are also according to DIN 12897.
- Smaller models up to 240mm x 240mm (Type A) have a simple adjusting wheel, which can be operated by hand.
- Bigger models from 300mm x 300mm on (Type B) have a special adjusting wheel, which is used with the included ratchet.

1



2



Type	Width mm	Length mm	Min. height mm	Max. height mm	Max. dyn. kg	Max. stat. kg	PK	Cat. No.
A	100	100	55	120	5	10	1	**9.118 960**
A	160	130	60	275	7	30	1	**9.118 961**
A	200	200	60	275	7	30	1	**9.118 962**
A	240	240	60	275	7	30	1	**9.118 963**
B	300	300	130	470	12	60	1	**9.118 964**
B	400	400	130	470	15	60	1	**9.118 965**
Ratchet		190					1	**9.118 921**

3 4 Laboratory jacks, aluminium anodized

Bochem

For those who wish to reach the top
New design and improved construction:
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- Ergonomic knob, rounded and user friendly
- Scissor-construction made of 18/10-stainless steel

Properties:
- All models are manufactured according to DIN 12897.
- With the operating load we differ between the maximal dynamic operating load (Kg max. dyn.) and the maximal static operating load (Kg max. stat.) of the lab jack. These norms are also according to DIN 12897.
- Smaller models up to 240mm x 240mm (Type A) have a simple adjusting wheel, which can be operated by hand.
- Bigger models from 300mm x 300mm on (Type B) have a special adjusting wheel, which is used with the included ratchet.

3



4



Type	Width mm	Length mm	Min. height mm	Max. height mm	Max. dyn. kg	Max. stat. kg	PK	Cat. No.
A	100	100	55	120	5	10	1	**9.118 975**
A	160	130	60	275	7	30	1	**9.118 976**
A	200	200	60	275	7	30	1	**9.118 977**
A	240	240	60	275	7	30	1	**9.118 978**
B	300	300	130	470	12	60	1	**9.118 979**
B	400	400	130	470	15	60	1	**9.118 970**
Ratchet		190					1	**9.118 921**

5 Laboratory jacks MAXI, 18/10-stainless steel

Bochem

For those who wish to reach the top:
New design and improved construction:
- Improved scissor technology with reduced tolerances
- Ergonomic knob, rounded and user friendly
- Scissor-construction made of 18/10-stainless steel

Properties:
- The MAXI lab jacks offer 30% more height because of an amplified construction
- Scissor-construction made of 18/10-stainless steel
- Adjustment of height with the help of an adjusting wheel.
- Ergonomic knob, rounded and user friendly
- With the operating load we differ between the maximal dynamic operating load (Kg max. dyn. = 7kg) and the maximal static operating load (Kg max. stat. = 30kg) of the lab jack. These norms are also according to DIN 12897.

5



Width mm	Length mm	Min. height mm	Max. height mm	PK	Cat. No.
130	160	75	400	1	**6.225 931**
200	200	75	400	1	**9.118 945**

1



1 Laboratory jacks MAXI, aluminium

Bochem

For those who wish to reach the top:
New design and improved construction:
- Improved scissor technology with reduced tolerances
- Ergonomic knob, rounded and user friendly
- Scissor-construction made of 18/10-stainless steel

Properties:
- The MAXI lab jacks offer 30% more height because of an amplified construction
- Scissor-construction made of 18/10-stainless steel
- Adjustment of height with the help of an adjusting wheel.
- Ergonomic knob, rounded and user friendly
- With the operating load we differ between the maximal dynamic operating load (Kg max. dyn.) and the maximal static operating load (Kg max. stat.) of the lab jack. These norms are also according to DIN 12897.

Width mm	Length mm	Min. height mm	Max. height mm	PK	Cat. No.
130	160	75	400	1	**9.118 946**
200	200	75	400	1	**9.118 947**

2



2 Laboratory jacks with hydraulic drive, stainless steel

Juchheim Laborgeräte

Advantages:
- easy, safe lifting
- stable, parallel movement
- alternative stainless steel versions available on request

Max. kg	Width mm	Length mm	Min. height mm	Max. height mm	PK	Cat. No.
25	200	230	91	285	1	**9.118 980**
25*	200	230	91	285	1	**9.118 971**
25**	200	230	91	285	1	**9.118 981**
15	200	230	108	393	1	**9.118 982**
25	300	300	91	285	1	**9.118 983**
25*	300	300	91	285	1	**9.118 984**

* With safety lowering device
**High-grade steel, except the pump unit

3



3 Laboratory jacks with hydraulic drive, high capacity

Juchheim Laborgeräte

Advantages:
- Easy and safe lifting
- Stable, parallel movement
- Alternative stainless steel versions (1.4571) on request

Width mm	Depth mm	Min. height mm	Max. height mm	Max. kg	PK	Cat. No.
400	450	175	625	85	1	**9.118 985**
500	500	230	850	85	1	**9.118 986**
600	600	230	1060	85	1	**9.118 987**

4



4 Laboratory jack LABLIFT m

IKA

IKA® lab lifts are suitable for raising and supporting small laboratory devices or vessels.
The maximum weight that can be raised is up to 7 kg (max. dynamic load) and the maximum supporting weight is up to 25 kg (max. static load). The working height can extend from 70 mm to 300 mm. The auxiliary springs ensures that users can raise large loads easily, especially from the lowest position.

- The hand wheel ensures that the operation is smooth and comfortable
- The self-lubricating bearing significantly reduces friction

Width mm	Depth mm	Min. height mm	Max. height mm	Max. kg	PK	Cat. No.
200	310	70	300	25	1	**9.720 419**

E & OE.

1 Retort stand bases

Lacquered steel with green finish, M10 thread hole on one short side, 1 foot adjustable. *Bochem*
To DIN 12892. Laboratory stands are supplied without support rod.
Please select the suitable rod from "support rods".

Width mm	Length mm	Thickness mm	Weight g	PK	Cat. No.
160	250	6	2000	1	**6.077 369**
200	315	6	3000	1	**9.224 041**
130	210	8	1800	1	**9.224 042**
160	250	8	2600	1	**9.224 043**
200	315	8	4000	1	**9.224 044**
200	315	10	5000	1	**9.224 045**

1



2 Rectangular retort stand bases, Stainless steel, lacquered

Highly stable laboratory stand due to the steel rectangular base which is stove enamel coated.
With an M10 threaded hole in the middle of one short side. Rubber support feet prevents the stand from sliding.
Laboratory stands are supplied without support rod. Please select the suitable rod from "support rods".

Width mm	Length mm	Weight g	PK	Cat. No.
130	210	1725	1	**6.242 701**
150	300	2830	1	**4.008 486**
200	315	4000	1	**4.008 487**

2



3 Retort stand bases, Steel

Steel, powder-coated. With an M10 bore hole in the middle of one of the shorter sides. *Juchheim Laborgeräte*
Laboratory stands are supplied without support rod.
Please select the suitable rod from "support rods".

Width mm	Length mm	Weight g	PK	Cat. No.
130	210	1800	1	**6.301 718**
150	300	2900	1	**6.307 252**
200	315	4100	1	**6.074 044**

3



4 Tripod retort stand bases 18/10 Stainless steel

Highly stable laboratory stand due to the steel tripod base which is stove enamel coated. With an M10 threaded hole in the middle. Rubber support feet prevents the stand from sliding. Laboratory stands are supplied without support rod.
Please select the suitable rod from "support rods".

Foot length mm	Weight g	PK	Cat. No.
115	805	1	**4.008 488**
150	1050	1	**4.008 489**

4



5 Retort stand base, tripod pattern

Steel, powder-coated. Tripod pattern, with rubber feet. With M10 threaded central hole.
Laboratory stands are supplied without support rod.
Please select the suitable rod from "support rods".

Foot length mm	Weight g	PK	Cat. No.
115	1000	1	**9.224 051**
150	1350	1	**9.224 054**

5



6 Retort stand base, tripod pattern

Cast iron varnished. Thread M10. Laboratory stands are supplied without support rod. *Bochem*
Please select the suitable rod from "support rods".

Foot length mm	Weight g	PK	Cat. No.
105	1200	1	**6.401 256**
145	2000	1	**6.084 197**

6



1



1 Table clamps for rods, malleable cast iron, coated

For table tops with a thickness of max. 55mm. Rod diameter 12/13mm. *Bochem*

Description	PK	Cat. No.
Table clamps	1	**6.089 284**

2



2 Support rods galvaniser steel

Galvanised steel. External diameter 12mm.
With or without M10 thread.

Type	Length mm	PK	Cat. No.
With thread	600	1	**4.008 490**
With thread	750	1	**6.242 703**
With thread	1000	1	**4.008 491**
With thread	1500	1	**9.224 115**
Without thread	600	1	**9.224 126**
Without thread	750	1	**9.224 127**
Without thread	1000	1	**9.224 130**
Without thread	1500	1	**9.224 135**

3

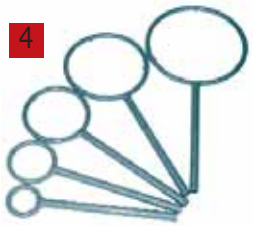


3 Support rods 18/10 stainless steel

18/10 stainless steel. 12mm external diameter.

Thread	Length mm	PK	Cat. No.
M 10	600	1	**4.008 492**
M 10	750	1	**4.008 493**
M 10	1000	1	**4.008 494**
without	600	1	**9.224 226**
without	750	1	**9.224 227**
without	1000	1	**9.224 230**

4



5



4 5 Support ring

Steel. With or without bosshead, as outlined below. *Juchheim Laborgeräte*

Type	Ext. diam. mm	Weight g	PK	Cat. No.
without bosshead	70	157	1	**6.900 428**
without bosshead	100	216	1	**6.900 429**
without bosshead	130	230	1	**6.201 068**
without bosshead	160	260	1	**6.900 430**
without bosshead	180	346	1	**6.900 761**
with bosshead	70	210	1	**6.076 309**
with bosshead	100	236	1	**9.223 900**
with bosshead	130	266	1	**9.223 901**

6



7



6 7 Support rings

With or without bosshead, as outlined below. *Bochem*

Length mm	Int. diam. mm	Material	Description	PK	Cat. No.
200	70	18/10 steel	without bosshead	1	**9.225 027**
220	100	18/10 steel	without bosshead	1	**9.225 030**
220	120	18/10 steel	without bosshead	1	**9.225 033**
200	70	steel zincked	without bosshead	1	**6.239 507**
220	100	steel zincked	without bosshead	1	**6.239 804**
220	130	steel zincked	without bosshead	1	**6.239 822**
70	70	steel zincked	with bosshead	1	**9.225 081**
70	100	steel zincked	with bosshead	1	**6.238 844**
70	130	steel zincked	with bosshead	1	**7.651 881**

E & OE.

1 Bosshead

Malleable cast iron with lacquered chrome finish. DIN 12895. With lug screw.



Jaw opening mm	PK	Cat. No.
16.5	1	**9.224 254**
20	1	**6.225 278**
36	1	**6.802 614**

2 Bosshead

18/10 steel. To DIN 12895. Material number 4301. Electrolytically polished, with heart screw. Angle 90°.



Jaw opening mm	PK	Cat. No.
16.5	1	**9.224 252**

3 Swivelling bosshead

18/10 steel. To DIN 12895. Material no. 4301. Electrolytically polished, with heart screw. Angle 0 to 360°.



Jaw opening mm	PK	Cat. No.
16.5	1	**9.224 253**

4 Bosshead, standard

Chrome plated cast alloy with smoothly opening distance of 0 - 15mm.
Available as 2 types:
- with fix stem that holds the objects on fixed position.
- with swivel mechanism which enables the object to freely swivel 360° and lockable at any desired angle.



Jaw opening mm	PK	Cat. No.
swivel bosshead	1	**6.239 009**
solid stem bosshead	1	**6.238 711**

5 Cross bosshead

Malleable cast iron with chrome finish. DIN 12895. 90° and 180° angle with lug screw.



Jaw opening mm	PK	Cat. No.
16.5	1	**9.224 264**

6 Cross bosshead

18/10 steel. To DIN 12895. Material no. 4301. Electrolytically polished, with heart screws.
Opening angles 90° and 180°.



Jaw opening mm	PK	Cat. No.
16.5	1	**9.224 263**

7 Bossheads

Aluminium alloy or stainless steel 18/10.
Angle 180° and 90°.



Jaw opening mm	Thread	Material	Description	PK	Cat. No.
16.5	M8	Aluminium alloy	with thumb screw	1	**9.224 268**
16.5	M8	stainless steel 18/10	with heart screw	1	**9.224 258**
27	M10	Aluminium alloy	with thumb screw	1	**9.224 269**

8 Lightweight bosshead

Aluminium alloy. Angle 90°. With thumb screw.



Jaw opening mm	PK	Cat. No.
16.5	1	**9.224 291**

1



1 Bosshead, malleable iron

Double bosshead malleable iron, epoxy coated. *Juchheim Laborgeräte*

Jaw opening mm	Description	PK	Cat. No.
20	with M8 brass thumb bolt	1	**9.223 902**

2



2 Bossheads, stainless steel

Stainless steel, electrolytically polished, for rods up to 16mm diameter. With tommy-bar screws.

Description	PK	Cat. No.
Bosshead	1	**6.071 888**

3



3 Base, flexible, zinc die casting

Zinc die casting, nickel-plated, vinyl-coated jaws. Stem length 300mm, with 82mm diameter, heavy, stable base.

Description	Jaw opening mm	PK	Cat. No.
Three-prong, stable base	0 to 40	1	**6.303 795**
Curved jaws, stable base	12 to 25	1	**7.605 582**

4



4 Clamp, flexible with bosshead, zinc die casting

Zinc die casting, nickel-plated, vinyl-coated jaws, with revolvable sleeve. Stem length 300mm.

Description	Jaw opening mm	PK	Cat. No.
Three-prong, with revolvable sleeve	0 to 40	1	**6.088 853**
Round jaws, with revolvable sleeve	12 to 25	1	**6.800 733**

5



5 Cross bosshead, cast steel

Chrome plated cast steel. Suitable for frame works and fixing perpendiculars.
Can be moved vertically and horizontally along the rods.

Description	PK	Cat. No.
suitable for rods 12mm	1	**9.224 278**

6



6 Cross bosshead, right-angle format, Aluminum alloy

LABOMECA. With hexagon socket screw. *Bochem*

Jaw opening mm	PK	Cat. No.
12 to 13 x 12 to 13	1	**9.224 274**

7



7 Bossheads, malleable cast iron, chromed

Swivelling (360°). For M8 rods.

Jaw opening mm	PK	Cat. No.
16.5	1	**6.079 307**

E & OE.

1 Bossheads, aluminium

For M8 rods. Angle 90° and 180°.

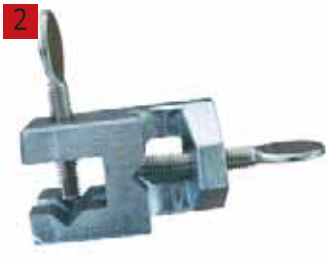
Jaw opening mm	PK	Cat. No.
13	1	**6.202 021**



2 Multi-purpose bosshead light alloy

Juchheim Laborgeräte

Clamping range mm	Weight g	Description	PK	Cat. No.
16	140	with M8 brass thumb bolt	1	**9.223 904**



Hook connector, steel/stainless steel

Hook bosshead steel, epoxy coated or stainless steel with brass pressure block. *Juchheim Laborgeräte*

Material	Clamping range mm	Description	PK	Cat. No.
stainless steel	13	M8 stainless steel thumb bolt	1	**9.223 905** 3
steel	13	M8 brass thumb bolt	1	**9.223 906** 4



9.223 905



9.223 906

5 Scaffold bosshead, cast iron

Malleable cast iron with lacquered chrome finish. With heart screws.

Jaw opening mm	Angle	PK	Cat. No.
13	90	1	**9.224 267**



Clamp, 2 prongs

Chrome plated cast steel with two PVC coated prongs for gently holding the objects. Two seperately adjustable clamps enable perfect control of holding pressure and precise positioning of the objects. Clamps can be opened and closed smoothly with a grip width of 0-50mm.
Available as 2 types:
- with solid stem of 12mm rod diameter, the holding angle and distance from the support rod can be adjusted by a separate bosshead.
- with swivel mechanism which enables the object to freely swivel 360° and lockable at any angle. Complete with a integral bosshead, usable for rods maximum diameter of 21mm.

Description	Jaw opening mm	PK	Cat. No.
solid stem clamp	0 to 50	1	**6.237 648** 6
swivel clamp	0 to 50	1	**9.224 401** 7



6.237 648



9.224 401

8 Three-prong clamps, aluminium

PVC-coated jaws. *Bochem*

Jaw opening mm	Shaft length min. mm	PK	Cat. No.
0 to 70	140	1	**6.510 909**



1



1 Retort clamps

Standard to DIN 12894. With round jaws. *Bochem*

Jaw opening mm	Shaft length min. mm	Material	PK	Cat. No.
25	150	Malleable cast iron, chromed	1	**9.224 470**
40	150	Malleable cast iron, chromed	1	**9.224 471**
60	150	Malleable cast iron, chromed	1	**9.224 472**
80	180	Steel, zinc coated	1	**6.306 164**

2



2 Support clamps

18/10 steel. DIN 12984. Prongs with cork and round jaws. *Bochem*

Clamping range mm	Shaft length min. mm	PK	Cat. No.
25	150	1	**9.224 425**
40	150	1	**9.224 440**
60	150	1	**9.224 460**

3



3 Clamps, malleable iron

Stand clamp rounded jaws, malleable iron, epoxy coated. To DIN 12894. *Juchheim Laborgeräte*

Clamping range mm	Weight g	PK	Cat. No.
25	180	1	**6.800 204**
40	204	1	**6.200 398**
60	310	1	**6.800 126**

4



5



4 5 Retort clamps

Flexible shaft, nickel-plated. *Bochem*

Jaw opening mm	Description	Shaft length mm	Material	PK	Cat. No.
0 to 30	Finger with silicone coating	220	Alu-alloy	1	**6.303 841**
40	Finger with cork	290	18/10 steel	1	**6.300 995**

6



6 Clamps, retort, 3-prong, stainless steel

NEW!

Isolab

Manufactured from chrome plated cast steel with two prongs which are PVC coated for gentle hold of the objects. Two separately adjustable clamps enables perfect control of holding pressure and precise positioning of the objects. Clamps can be opened and closed smoothly with a grip width of 0-70 mm.

With solid stem of 12 mm rod diameter with the holding angle and distance from the support rod can be adjusted by a separate bosshead.

With swivel mechanism which enables the object freely swivel 360° and lockable at any desired angle. Complete with an integral bosshead usable for rods maximum diameter of 21 mm.

Description	Jaw opening mm	Figure	PK	Cat. No.
solid stem clamp	0 - 70	a	1	**6.242 700**
swivel clamp	0 - 70	b	1	**6.243 690**

7



7 Retort clamp

18/10 stainless steel. 3-prong with plastic covered jaws. *Bochem*

Jaw opening mm	Shaft length min. mm	PK	Cat. No.
0 to 120	150	1	**9.224 445**

E & OE.

1 Beaker and flask clamp

18/10 steel. 4 prong with silicone corered jaws. *Bochem*

Jaw opening mm	Shaft length min. mm	PK	Cat. No.
0 to 120	150	1	**9.224 448**


1

2 Micro-clamps, die-cast zinc

DIN 12894, form A. Die-cast zinc, powder coated. With angular jaws.

Jaw opening mm	PK	Cat. No.
10 to 25	1	**9.224 307**


2

3 Micro clamp

Lacquered green finish. Malleable cast iron. Prongs with cork. *Bochem*

Type	Jaw opening mm	Shaft length min. mm	PK	Cat. No.
1	15	150	1	**9.224 330**


3

Micro clamps, with cork or silicone

18/10 steel. Cork/silicone*coated jaws. *Bochem*

Type	Jaw opening mm	Shaft length mm	PK	Cat. No.
1	15	150	1	**9.224 310** 4
2	15	150	1	**9.224 311** 5
3*	0 to 20	150	1	**9.224 312** 6


4

9.224 310


5

9.224 311


6

9.224 312

7 Universal clamp, with cork

Prongs with cork. *Bochem*

Jaw opening mm	Shaft length mm	Material	PK	Cat. No.
0 to 80	180	Aluminium, DIN pattern	1	**9.224 501**
0 to 80	150	18/10 steel	1	**9.224 502**


7

8 Burette and thermometer clamp

"Automatic". Sprung-clip jaws with chrome-plated shaft. *Bochem*

Jaw opening mm	Shaft length mm	PK	Cat. No.
0 to 25	115	1	**9.224 320**


8

9 Burette and thermometer clamp

'Automatic'. Sprung-clip jaws with attached chrome-plated bosshead for 13.5mm max. diameter rods. *Bochem*

Jaw opening mm	Length mm	PK	Cat. No.
0 to 25	100	1	**9.224 322**


9

1



1 Chain clamp, steel/zincked

Chain 70cm, silicone coating. *Bochem*

Jaw opening mm	Shaft length mm	PK	Cat. No.
50 to 160	250	1	**6.079 772**

2



2 Condenser clamp, malleable iron

Condenser clamp moveable support rod, malleable iron, epoxy coated. *Juchheim Laborgeräte*

Jaw opening mm	Weight g	PK	Cat. No.
85 mm	480	1	**9.223 907**

3



3 Condenser clamp, malleable cast iron, chromed

Swivel type, silicone coated. *Bochem*

Jaw opening mm	Shaft length mm	PK	Cat. No.
50 to 100	150	1	**6.070 044**

4



4 Three-prong clamp, malleable iron

Malleable iron with epoxy coating for 1 burette *Juchheim Laborgeräte*

Jaw opening mm	Weight g	PK	Cat. No.
0 - 30	140	1	**9.223 915**

5



5 Burette clamps, nickel plated brass

Burette clamp with boss, nickel plated brass, for 1 burette. *Juchheim Laborgeräte*

Jaw opening mm	Weight g	PK	Cat. No.
0 - 40	180	1	**9.223 916**

6



6 Burette clamps, nickel plated brass

Burette clamp with boss, nickel plated brass, for 2 burettes. *Juchheim Laborgeräte*

Jaw opening mm	Weight g	PK	Cat. No.
0 - 40	180	1	**9.223 917**

7



7 Burette roller clamp, steel

Burette roller clamp with boss, for 1 burette, epoxy coated. *Juchheim Laborgeräte*

Jaw opening mm	Weight g	PK	Cat. No.
0 - 30 mm	220	1	**9.223 918**

8



8 Burette roller clamp, steel

Burette roller clamp with boss, for 2 burettes, epoxy coated. *Juchheim Laborgeräte*

Jaw opening mm	Weight g	PK	Cat. No.
0 - 30 mm	380	1	**9.223 919**

E & OE.

1 Burette holders, aluminium

For two burettes. With bosshead. Distance between rollers 170mm. PVC rollers. *Bochem*

Jaw opening mm	PK	Cat. No.
0 to 13	1	**6.076 204**



Burette clamp

- Metal burette clamps are made out of steel and can hold one burette at a time. Graduations and meniscus line of the burette are clearly visible. They can be used on support rods of 8-14mm diameter.
- Polypropylene burette clamp can hold one burette at a time. Graduations and meniscus line of the burette are clearly visible. They can be used on support rods of 10-12mm diameter.

Description	PK	Cat. No.
Burette clamp, metal	1	**4.008 313** 2
Burette clamp, PP	1	**6.240 474** 3



4.008 313



6.240 474

4 Alkaline Batteries, Energizer Industrial

Best performance for industrial, medical and laboratory applications.

Type	Volt	PK	Cat. No.
LR14/EN93/C/Baby	1.5	12	**9.012 921**
LR6/EN91/AA	1.5	10	**9.012 939**
LR03/EN92/AAA/Micro	1.5	10	**9.012 944**
LR20/EN95/D/Mono	1.5	12	**9.012 922**
6LR61/EN522/9V/E-Block	9.0	12	**9.012 923**



5 Alkaline Special Batteries Energizer

For a variety of measuring devices; thermometers, digital balances, pocket calculators, watches, timers etc.

Type	Volt	PK	Cat. No.
A76/LR44/13GA	1.5	2	**9.012 932**
EPX76/SR44	1.5	2	**9.012 933**
189/LR54/10GA	1.5	2	**9.012 934**



Lithium Photo Batteries Energizer

For temperatures from -40°C to +60°C.

Type	Volt	PK	Cat. No.
EL123AP/CR17345	3.0	1	**9.012 935** 6
ELCR2AP	3.0	1	**9.012 936**
EL223AP/CRP2	6.0	1	**9.012 937** 7
EL2CR5AP/2CR5	6.0	1	**9.012 938**



9.012 935



9.012 937

8 Lithium coin cells Energizer (Batteries)

For a variety of meters, thermometers, digital balances, pocket calculators, watches, timers etc.

Type	Volt	PK	Cat. No.
CR2032	3.0	1	**9.012 971**
CR2025	3.0	1	**9.012 972**
CR2016	3.0	1	**9.012 973**
CR1025	3.0	1	**9.012 974**
CR1220	3.0	1	**9.012 975**
CR1620	3.0	1	**9.012 976**



1



9.012 945

2



9.012 927

Rechargeable NiMH batteries Energizer Profi

- rapid recharging
- no memory effect
- ecologically friendly
- economical

Type	Current mAh	Volt	PK	Cat. No.
HR6/AA/Mignon	2000	1.2	4	**9.012 925**
HR6/AA/Mignon	2300	1.2	2	**9.012 945** 1
HR22/9V/E-Block	175	8.4	1	**9.012 927** 2

3



3 Universal Charger Energizer

- For NiCd and NiMH cells
- Accomodates 1 to 4 round batteries, sizes AA/AAA/C or D, and 2 x 9V square batteries
- Detects chemistry, capacity and inappropriate batteries
- Suitable for use in European countries with Schuko plug

Type	PK	Cat. No.
Universal battery charger	1	**9.012 977**

4



4 1 hr Charger, Energizer

NEW!

This 1 hr rapid charger with universal voltage for worldwide use is the ideal travel companion.
With 4 separate LED lights for each charging channel to conveniently manage charging status.
Energy Star certified logo, indicating an energy saving, efficient chargers.
- For Mignon and Micro batteries
- Charges 1 to 4 "AA" or "AAA" NiMH rechargeable batteries at a time
- Includes 4 x AA 2300mAh AA batteries, ready to use (already pre-charged and ready to use).
- Polarity protection
- Charging status LED, trickle charge
- with EU plug and car charger

Type	PK	Cat. No.
1 hr Charger	1	**6.264 647**

5



9.726 000

Adaptor plugs, Swiss and UK

NEW!

9.726 000: Adapter plug with earthing contact from plug with earthing contact and additional earthing socket to British version 13 A, with fine-wire fuse 3, 5 or 13 A ("non rewireable")
9.726 001: One-way plug adapter from plug with additional earthing contact (CEE 7) to plug Swiss version type 12 ("non rewireable")

Type	PK	Cat. No.
with adapter UK	1	**9.726 000** 5
with adapter CH	1	**9.726 001**

6



6 LLG-Laboratory Power Failure Detector

- Alarm is reported immediately visually and acoustically
- Reports alarm even for short power outages or for a period of at least 12 hours (can be switched off manually)
- Plug safety cover offers protection against accidentally pulling the plug
- Maximum total power of connected devices. 3500W power supply 230V 50Hz
- Suitable for European plugs
- Max. Rating 16 A
- With built-in battery

Scope of supply:
1 x power failure detector
2 x plug safety caps
2 x screws

Type	PK	Cat. No.
LLG-Laboratory Power Failure Detector	1	**6.255 819**

E & OE.

1 Aluminium foil

Suitable for a wide range of laboratory applications, sealing, wrapping and forming temporary containers.



Description	Length m	Width mm	Thickness µm	PK	Cat. No.
Short roll	20	300	13	1	**9.106 013**
Short roll	10	450	15	1	**9.106 015**
Dispenser box	150	450	15	1	**9.106 102**
Dispenser box	100	300	13	1	**9.106 103**
Refilling roll	150	450	15	1	**9.106 104**
Dispenser box	100	500	30	1	**9.106 105**
Short roll	10	300	15	1	**9.106 106**
Short roll	10	300	30	1	**9.106 107**
Roll	200	500	50	1	**9.106 205**

2 Aluminium Pop-up sheets

Embossed pure aluminium foils, extremely tare resistent
- Handy for everyday use
- Heat-resistant up to 600°C
- Air-tight and a barrier to light
- Dimensions (sheet): 230 mm x 270 mm

200 sheets in a box



Description	PK	Cat. No.
Box à 200 sheets	1	**6.230 318**

3 Round aluminium discs

Interleaved with tissue paper. Foil thickness 0.03mm



Diam. mm	PK	Cat. No.
80	1000	**9.106 208**
100	1000	**9.106 210**
120	1000	**9.106 212**
130	1000	**9.106 213**
150	1000	**9.106 215**

4 Aluminium containers, round



Capacity ml	Top diam. mm	Bottom diam. mm	Fill height mm	PK	Cat. No.
28	64	51	13	100	**9.106 240**
110	80	56	34	100	**9.106 241**
110	99	70	25	100	**9.106 242**
125	96	78	24	100	**9.106 261**
280	114	58	50	50	**9.106 263**

Aluminium containers, square

With lid.



9.106 266

Capacity ml	Dimensions top (D x W) mm	Dimensions bottom (D x W) mm	Fill height mm	PK	Cat. No.
250	103 x 128	67 x 93	34	100	**6.226 802**
500	127 x 191	92 x 156	29	60	**9.106 266** 5

1



1 LLG-Surface protector DescProtect

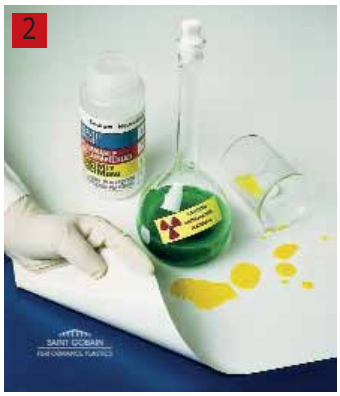
DescProtect is a durable paper which quickly absorbs liquid spills. The PE-coated base layer stops liquids reaching the work surface.

- stays flat, does not ripple or curl to de-stabilise vessels
- white surface can be written on using pens or pencils
- rapid absorption of liquid spills
- excellent fluid protection
- no contamination of work surfaces or laboratory cabinets
- suitable for school laboratories, wet chemistry, industry

Surface protection paper with two layers:
- Layer 1: Highly absorbent carrier paper, sucks up spilled toxic or radioactive liquids quickly
- Layer 2: Wetness impermeable polyethylene layer, protection for lab workbenches, trays or chemical cabinets
- Additional advantages: impermeable cover in animal cages, ideal in humidity chambers for atmospheric regulation

Type	Size	PK	Cat. No.
Sheets	460mm x 570mm	50	**9.160 270**
Spool	400mm x 50m	1	**9.160 271**

2



2 Bytac® Bench protectors

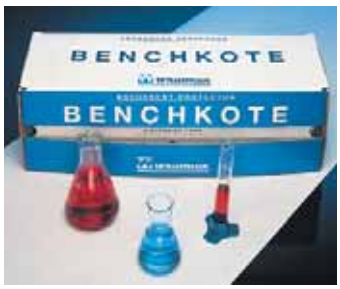
NEW!

Saint Gobain

Bytac® Bench protectors, FEP Film with Vinyl or Aluminum Backing.
Inert to most chemicals - Non-stick; easy to clean - Use to resurface bench tops and line fume hoods.
Contrasting work surface for viewing color changes during titrations.
Protects surfaces against absorption of radioactive chemicals.
Vinyl backing is recommended for all applications up to 93°C
Aluminium foil-backing is resistant to high temperatures up to 182°C for up to one hour

Width mm	Length m	Description	PK	Cat. No.
635	4.6	FEP/Vinyl	1	**9.106 300**
320	4.6	FEP/Vinyl	1	**6.267 458**
100	33.0	FEP/Vinyl	1	**6.267 459**
50	33.0	FEP/Vinyl	1	**6.267 460**
25	33.0	FEP/Vinyl	1	**6.267 461**
635	4.6	FEP/Alu	1	**9.106 310**
320	4.6	FEP/Alu	1	**6.225 629**
100	33.0	FEP/Alu	1	**6.267 462**
50	33.0	FEP/Alu	1	**6.267 463**
25	33.0	FEP/Alu	1	**6.267 464**

3



3 Benchkote surface protector®

GE Healthcare

The upper side consists of a particularly absorbent filter paper, the lower side is a non-permeable, chemically resistant PE layer. This combination makes Benchkote into a protective paper with a particularly high wet strength for universal use, helping to meet the requirements of Good Laboratory Practice (GLP):
- Completely absorbs escaped liquids
- Prevents spills from reaching the workbench
- Protects against contamination

Applications:
- Surface protection for lab workbenches, trays or chemical cabinets
- Contamination protection, e. g. in isotope or bacteriological labs
- Adsorption of toxic or radioactive substances
- Hygienic protection in animal cages
- Atmospheric regulation in humidity chambers

Type	Width mm	Length m	PK	Cat. No.
Pack of loose sheets	460	0.57	50	**9.106 280**
Roll	460	5	1	**9.106 284**
Roll	920	5	1	**9.106 286**
Pad of sheets	460	0.57	1	**9.106 287**
Sheets	600	0.50	50	**9.106 278**
Roll	600	5	1	**9.106 279**

E & OE.

1 Bench protector, Labmat™

Bel-Art Products

Labmat™ Bench Liner speeds clean-up and safeguards work surfaces from stains, spills and wear. Highly absorbent upper surface.Flexible polyethylene film backing is non-skid and prevents soak-through of most solutions.
Simply roll up and discard after contamination. Easily cut custom size sheets.
Color: white



Type	Width mm	Length m	PK	Cat. No.
Bench protector, Lab Mat™	508	15.2	1	**9.106 288**

2 Desk protector, cork

NEW!

Isolab

Made from natural agglomerated cork which can be easily cleaned. Non-allergenic, anti-fungal, anti-bacterial and antistatic material. Heat and erosion resistant and also reduces noise and vibration.

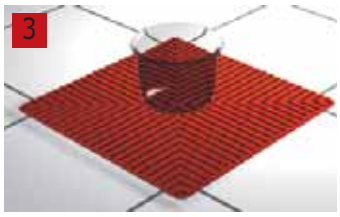


Dimensions mm	PK	Cat. No.
200 x 200 x 10	1	**6.267 409**
300 x 300 x 10	1	**6.267 410**

3 Laboratory mats

Deutsch & Neumann

- non-slip
- silicone
- withstands temperatures up to 260°C
- available in black or red



Colour	Dimensions mm	PK	Cat. No.
Red	250 x 250	1	**9.390 090**
Black	250 x 250	1	**9.390 091**
Red	350 x 350	1	**9.390 092**
Black	350 x 350	1	**9.390 093**

4 Impulse generator polystar®120 GE

For impulse heat sealing tongs 9.106 837 and 9.106 838.

Electric current requirement:	3.7A max.
Power consumption:	approx. 0.1kW/hr
Supply requirements:	220V 50Hz



Description	Dimensions (W x D x H) mm	PK	Cat. No.
Impulse generator polystar® 120 GE	246 x 195 x 135	1	**6.261 006**

Impulse heat sealing tongs polystar® 120 GE

Double impulse heating. LED readout allows a visual check on the sealing progress.
Pressure switch triggers the welding process. A special pressure switch for generating the heat impulse guarantees constant welding results. Includes 3m connection cable.

Type	Length*	Weight g	PK	Cat. No.
200 D	200	750	1	**9.106 837**
300 D	300	800	1	**9.106 838**

* Seal length max. (mm)

5 Plastic film, rolls

Transparent. PE. Supplied in 25m rolls.
Other widths are available on request.



Thickness mm	Width mm	PK	Cat. No.
0.05	80	1	**9.106 508**
0.05	100	1	**9.106 510**
0.05	150	1	**9.106 515**
0.05	200	1	**9.106 520**
0.05	250	1	**9.106 525**
0.05	300	1	**9.106 530**
0.10	80	1	**9.106 538**
0.10	100	1	**9.106 540**
0.10	150	1	**9.106 545**
0.10	200	1	**9.106 550**
0.10	250	1	**9.106 555**
0.10	300	1	**9.106 560**

1



1 SAROGOLD® foil

Extra-strong foil. PVC-based. Good barrier properties protects the user against contact with dangerous substances (e.g. ethidium bromide or contaminated isotopes) from the sealed material and it is therefore suitable for covering sequencing gels in Electrophoresis applications.

Ideal characteristics for use:
- does not stick, easy to unravel
- with cutter
- non-flammable
- self-extinguishing
- microwaveable

Specifications

Film thickness:	11.5µm
Permeability in the visible area:	90%
UV-filtering:	300Å
IR-permeability:	88%
Width:	300mm
Length:	300m

Type	PK	Cat. No.
SAROGOLD® foil	1	**9.106 460**

2



2 Cling film Toppits®

- easy to use and better adhesion
- Our best freshness protection
- slight initial determination
- very easy to roll
- particularly strong
- With time beginning Finder
- Tear-off cap box with stable
- Role of fixation for easy rolling

Width mm	Length m	PK	Cat. No.
320	20	1	**9.106 450**

3



3 Freezer bags

Polar One. With tear-resistant seam.

Capacity Litres	Width mm	Length mm	PK	Cat. No.
1	190	240	40	**9.033 251**
3	250	320	30	**9.033 252**
6	290	470	20	**9.033 253**

4



4 LLG-Disposal bags, PE

Transparent. PE. Without seal.

Width mm	Length mm	Thickness mm	PK	Cat. No.
100	150	0.05	100	**9.404 128**
150	200	0.05	100	**9.404 130**
200	350	0.05	100	**9.404 140**
250	400	0.05	100	**9.404 150**
250	400	0.10	100	**9.404 151**
300	500	0.05	100	**9.404 152**
300	500	0.10	100	**9.404 153**

For sterile bags - please see page 511.

E & OE.

1 LLG-Pressure-seal bags with write on patch, PE

Transparent. PE. With rim channel seal that can be opened and closed repeatedly, and write-on patch.



Width mm	Length mm	Thickness mm	PK	Cat. No.
40	60	0.05	100	**9.404 176**
70	100	0.05	100	**9.404 173**
80	120	0.05	100	**9.404 179**
100	150	0.05	100	**9.404 171**
120	170	0.05	100	**9.404 172**
160	220	0.05	100	**9.404 177**
200	300	0.05	100	**9.404 178**

2 LLG-Pressure-seal bags, PE

Transparent. PE. With rim channel seal that can be opened and closed repeatedly.



Width mm	Length mm	Thickness mm	PK	Cat. No.
80	120	0.05	100	**9.404 160**
100	150	0.05	100	**9.404 161**
120	170	0.05	100	**9.404 162**
150	220	0.05	100	**9.404 163**
180	250	0.05	100	**9.404 164**
200	300	0.05	100	**9.404 165**
220	310	0.05	100	**6.304 307**
250	350	0.05	100	**9.404 166**
300	400	0.05	100	**9.404 167**

3 Sealing tape PetriSeal/ContainerSeal

Heathrow Scientific

An ideal Sealing Tape for Petri Dishes, Microplates, Lids, Caps and other Lab Items.
Tape stretches, conforms and seals the irregular perimeter of microtiter plates and petri dishes. Tape and adhesive resist most solvents and caustic agents.
Seal remains flexible in moderate freezer temperatures and withstands intermittent exposure to 100°C.
Waterproof.



Colour	Width mm	PK	Cat. No.
Blue	13	1	**9.170 057**
Clear	13	1	**9.170 058**
Red	13	1	**9.170 059**
White	13	1	**9.170 060**
Yellow	13	1	**9.170 061**
Red	19	1	**9.170 051**
White	19	1	**9.170 052**
Yellow	19	1	**9.170 053**
Red	25	1	**9.170 054**
White	25	1	**9.170 055**
Yellow	25	1	**9.170 056**

4 PARAFILM® M sealing film

Can be stretched up to 200% and clings around irregular shapes and surfaces. Parafilm® M is resistant to many polar substances such as saline solutions, inorganic acids and alkaline solutions for up to 48 hours (After this time it may become brittle). Parafilm® M conforms to general FDA requirements if used below 55°C.



Parafilm® M data

Toxicity	Non-toxic
Melting temperature:	60°C
Burning point:	301°C
Continued use temperature:	-45°C to +50°C
Stretching ability:	200%
Elongation at tear:	300%
Gas permeability over 24 hours at 23°C and 50% relative air humidity	
O_2 (Oxygen):	less than 350cm³/m²
N_2 (Nitrogen):	less than 105cm³/m²
CO_2 (Carbon dioxide):	less than 1100cm³/m²
Steam permeability over 24 hrs. at 37°C and 90% relative air humidity:	0.8g/m²

Type	Width mm	Length m	PK	Cat. No.
PARAFILM® M	50	75	1	**9.170 003**
PARAFILM® M	100	38	1	**9.170 002**
PARAFILM® M	100	75	1	**9.170 005**
PARAFILM® M	500	15	1	**9.170 004**

1



1 LLG-Dispenser for PARAFILM® M, orange, ABS

NEW!

PARAFILM® M feeds through easily and is easy to cut using the safety cutting device.
For rolls with width up to 100mm.

Type	PK	Cat. No.
PARAFILM® M dispenser, ABS	1	**9.170 006**

PARAFILM® M dispenser

PARAFILM® M feeds through easily and is easy to cut using the safety cutting device. For rolls up to 100mm wide.

Type	PK	Cat. No.
PARAFILM® M dispenser, Plexiglas®	1	**9.170 000** 2
PARAFILM® M dispenser, plastic	1	**9.170 010** 3

2



9.170 000

3



9.170 010

4



4 PTFE spray

In canister.

Capacity ml	PK	Cat. No.
400	1	**9.220 980**

5



5 Silicone separating agent AK

To aid the separation of 'frozen' ground glass connections and lubricate stirrer bearings etc.
Supplied in a spray as outlined below.

Capacity ml	PK	Cat. No.
200	1	**9.220 990**

6



6 Gas leak detection fluid

DIN 30657 gas, trace and leak detection fluid. Non-allergenic, non-toxic and odourless. Suitable for all pressure ranges. Non-flammable and therefore suitable for all technical gases such as ammonia, argon and other noble gases, freon, carbon dioxide, coal gas, compressed air, propane, oxygen, nitrogen, water etc.
Propellant-free. Unpressurised canister. Flash-point greater than 50°C. Unlimited shelf life.
Tested and approved under DIN-DVGW-No. NG to 5170 AN 0456

Type	PK	Cat. No.
Gas leak detection fluid	1	**9.110 010**
Sprayhead	1	**9.110 011**

E & OE.

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1



1 LLG-Safety Eyeshields *basic*

- CE approved to EN166 and EN170
- Perfect for visitors as well as over goggles for spectacles wearers
- Integrated side lens with venting, 180° visual field
- Frame made of tested hypo-allergenic material
- 100% UV protection (up to 380 nm)
- Weight: 43g

Colour	Lens	PK	Cat. No.
Clear	Clear, uncoated, 2-1.2 U 1 F CE	10	**9.006 002**

2



2 LLG-Safety Eyeshields *classic*

- CE approved to EN166 and EN170
- Integrated side-lenses with vents, 180° field of vision
- Frame made of tested hypo-allergenic material
- Side arms adjustable in length and inclination
- 100% UV protection (up to 380nm)
- Weight: 34g only

Colour	Lens	PK	Cat. No.
Blue	Clear, anti-scratch lens, 2C-1.2 U 1 F CE	1	**9.006 001**

3



3 LLG-Safety Eyeshields *classic light*

NEW!

- CE approved to EN166 and EN170
- Integrated side-lenses with vents, 180° field of vision
- Frame made of tested hypo-allergenic material
- Side arms adjustable in length
- 100% UV protection (up to 380nm)
- Weight: 29g only

Colour	Lens	PK	Cat. No.
light blue	clear, AF, AS, 2C-1.2 U 1 FT CE	1	**9.006 011**

4



9.006 010

5



9.006 000

LLG-Safety Eyeshields *evolution* and *evolution+*

NEW!

- CE approved to EN166, EN170 and EN 172 for tinted lens
- Panoramic wrapping lens
- 180° field of vision
- Frame made of tested hypo-allergenic material
- Side arms adjustable in length
- Nose pad and arm tips are made from soft, mouldable material offer optimal comfort and individual customisation
- Rubber eyebrow protection for greater shock absorption
- 100% UV protection (up to 400nm)
- Lightweight: only 30g

Type	Colour	Lens	PK	Cat. No.	
Evolution	black/green	clear, anti-scratch and anti-fog lens, 2C-1.2 U 1 FT CE	1	**9.006 010**	4
Evolution+	black/green	smoke, anti-scratch and anti-fog lens, 2C-3/5-3.1 U 1 FT N CE	1	**9.006 000**	5

6



6 LLG-Safety Eyeshields *blue*

NEW!

- CE approved to EN166 and EN170
- Panoramic wrapping lens
- 180° field of vision
- Frame made of tested hypo-allergenic material
- Side arms adjustable in length and inclination
- Soft ends made with outsert moulding
- 100% UV protection (up to 380nm)
- Lightweight: only 29g

Colour	Lens	PK	Cat. No.
blue/silver	Clear, anti-scratch lens, 2C-1.2 U 1 F CE	1	**9.006 012**

E & OE.

LLG-Safety Eyeshields *lady*

NEW!

- CE approved to EN166 and EN170
- Panoramic wrapping lens
- 180° visual field
- Frame made of tested hypo-allergenic material
- Temples with rubber tips, adjustable in length and inclination
- Nosepad and terminal tips made from soft, moldable material offer optimal comfort and individual customisation
- 100% UV protection (up to 400 nm)
- Weight 25 g only

Colour	Lens	PK	Cat. No.	
white/green	clear, AF+, AS+, 2C-1.2 U 1 FT KN CE	1	**9.006 007**	1
white/pink	clear, AF+, AS+, 2C-1.2 U 1 FT KN CE	1	**9.006 008**	2
black/green	clear, AF, AS, 2C-1.2 U 1 FT CE	1	**9.006 009**	3

1



9.006 007

2



9.006 008

3



9.006 009

Safety Eyeshields SecureFit™ 200

NEW!

- 3M Pressure Diffusion Technology allows temples to naturally adjust to individual head sizes.
- Self-adjusting feature eliminates need to stock multiple frame sizes at worksites.
- Secure, snug fit keeps eyewear in place without slippage even when the person is in motion.
- Anti-fog coating helps keep lenses free of moisture in hot and humid conditions.
- Polycarbonate lenses absorb 99.9% UVA and UVB

Colour	Lens	PK	Cat. No.	
clear	2C-1.2, UV, anti-scratch, anti-fog	1	**9.006 127**	4
clear	2C-1.2, UV, anti-fog	1	**9.006 128**	5
grey	2C-1.2, UV, anti-scratch, anti-fog	1	**9.006 129**	6
amber	2C-1.2, UV, anti-scratch, anti-fog	1	**9.006 130**	7

4



9.006 127

5



9.006 128

6



9.006 129

7



9.006 130

8 Safety Eyeshields 2720

NEW!

3M Deutschland

The 3M™ Safety Spectacles 2720 offer cost-effective protection and comfort, they are lightweight and offer the wearer high levels of comfort together with reliable protection.
Blue frame with clear lens.
- Premium protection with optical class 1 to allow prolonged, comfortable wear
- Good impact resistance with Anti-Scratch coating for improved durability
- Special Anti-fog coating which reduces fogging and ensures clearer vision
- Lightweight and comfortable

8



Colour	Lens	PK	Cat. No.
blue	2C-1.2.3M.1.FT	1	**9.006 120**

9 Safety Eyeshields uvex x-trend 9177

Uvex

With an anatomically shaped, wrap-around lens, the uvex x-trend is an expression of today's fashion - after all, eyewear with large lenses conquered the world long ago.
In addition to its stylish design, the uvex x-trend offers a high degree of safety with its large lens.It offers a clear view in all directions, 20 % more cover than traditional spectacles, gives UV protection of up to 400 nm and comfortable temples.

Coating of the lens
ultradura: excellent scratch resistance, 100 % UV protection

9



Colour	Lens	PK	Cat. No.
black	PC transparent / UV 2-1.2, ultradura	1	**9.005 147**
black	PC grey / UV 5-2.5, ultradura	1	**9.005 149**

1



1 Safety Eyeshields uvex skylite 9174

Uvex

Red fashionable sports-style frame. Arms can be tilted. High impact resistant, optically correct, polycarbonate lens. Lenses have integral matt side panels. Weighing only 26g, these eyeshields are the lightest of their kind.
The lens coating is ultradura, excellent scratch resistance and gives 100% UV protection.

Colour	Lens	PK	Cat. No.
red	grey / UV 5-2.5 ultradura	1	**9.005 127**
red	transparent / UV 2-1.2 ultradura	1	**9.005 128**
blue	grey / UV 5-2.5 ultradura	1	**6.200 303**
blue	transparent / UV 2-1.2 ultradura	1	**6.900 098**

2



2 Safety Eyeshields Pulsafe Millennia

Honeywell Safety

Pulsafe Millennia offers uninterrupted vision through 9 dioptre lens curves with constant distance from pupil, close fitting to the eye sockets, ergonomically shaped, non-pressing frame in a choice of colours, and modern styling. With non-misting FogBan lenses. Even in extreme situations such as erratic changes in temperature, high humidity etc. condensation is no longer an issue.

Colour	Lens	PK	Cat. No.
Black	Transparent, non-misting	1	**9.005 073**
Black	Grey, non-misting	1	**9.005 074**
Blue	Transparent, non-misting	1	**9.005 075**

3



3 Safety Eyeshields uvex super g 9172

Uvex

One of the lightest safety eyeshields worldwide.
Using state-of-the-art manufacturing processes, an extremely thin lens with exceptional optical clarity can be created. The lenses have ideal aerodynamics and are angled forwards to provide excellent ventilation, keeping the eyes comfortable.
The frame is made of ultra light, high-tech polymers, guaranteeing maximum flexibility. The innovative side piece concept features Uvex x-stream-technology for an excellent, non-slip fit and a wide range of applications.
The super g is completely metal-free and provides top-level protection, with a weight of only 18g.

The coating of the lens is supravision HC-AF, outside scratch-resistant, inside non-fogging and gives 100% UV protection. Optidur NCH, excellent scratch and chemical resistance and gives 100% UV protection.

Colour	Lens	PK	Cat. No.
crystal	PC transparent/UV, 2-1.2, supravision HC-AF	1	**6.228 096**
titan	PC transparent/UV, 2-1.2, optidur NCH	1	**9.005 164**
navy blue	PC transparent/UV, 2-1.2, optidur NCH	1	**9.005 169**

4



4 Safety Eyeshields uvex skyper 9195/skyper S 9196

Uvex

colour: blue, skyper 9195
Extremely lightweight (approx. 30g), modern, safety eyeshields with panoramic field of view and excellent fit. Five individual side-arm lengths with integral pull-out stops. The soft frame ensures a pressure-free fit and can be finely adjusted. Lenses and frame are made of impact resistant, synthetic material. Matt finish side shields offer extra protection from reflected light
colour: blue, skyper S 9196
Skyper S is a smaller model of Skyper 9195, specially designed for smaller head sizes. Provide the same features as Skyper 9195.

Coating of the lens
supravision HC-AF: outside scratch-resistant, inside non-fogging, 100 % UV protection
optidur NCH: excellent scratch and chemical resistance, 100 % UV protection

Type	Lens	PK	Cat. No.
Skyper 9195	transparent/UV, 2-1.2, supravision HC-AF	1	**9.005 123**
Skyper 9195	transparent/UV, 2-1.2, optidur NCH	1	**9.005 125**
Skyper S 9196	transparent/UV, 2-1.2, supravision HC-AF	1	**9.005 124**
Skyper S 9196	transparent/UV, 2-1.2, optidur NCH	1	**9.005 126**

E & OE.

1 Safety Eyeshields uvex racer MT 9153

Uvex

- colour: gun
- metal sunglasses, sports-type
- very low-profile metal frame, high flexibility and extremely low weight
- lens held in place without screws, making the glasses safe, even under mechanical strain, the glasses fit perfectly on all head sizes
- flexible nose piece, adjustable
- scratch-resistant lens

1



Colour	Lens	PK	Cat. No.
gunmetal grey	transparent/UV 2C-1.2, non-fogging	1	**9.005 134**

2 Safety Eyeshields uvex i-vo 9160

Uvex

Fashionable, sports-style design, eyeshield with comfortable, semi-elastic frame incorporating two-component technology. Ultra-transparent lenses with scratch-proof, outer coating. Eyeshields for use when carrying out all potentially hazardous work in the laboratory.

The coating of the lens is supravision HC-AF, outside scratch-resistant, inside non-fogging and gives 100% UV protection. Optidur NCH, easy to clean coating, excellent scratch and chemical resistance and gives 100% UV protection.

2



Colour	Lens	PK	Cat. No.
blue/grey	transparent/UV 2-1.2, supravision HC-AF	1	**9.005 116**
blue/orange	transparent/UV 2-1.2, supravision HC-AF	1	**6.311 677**
black/grey	transparent/UV 2-1.2, supravision HC-AF	1	**6.901 653**
blue/orange	transparent/UV 2-1.2, optidur NCH	1	**6.324 668**
black/grey	grey/UV 5-2.5, optidur NCH	1	**9.005 117**
blue/orange	brown/UV 5-2.5, optidur NCH	1	**6.318 848**

Safety Eyeshields uvex i-3 9190

Uvex

These innovative protective spectacles are designed to perfectly fit the face. Their flexible side arms with variable inclination can be individually adjusted, while the integrated Softflex zone ensures outstanding wearer comfort for all head sizes.
The extremely soft Softflex nose piece ensures that even when worn for long periods, spectacles are comfortable, do not press on sensitive areas and remain firmly in place. Soft ear pieces and the Softflex zone at the temples ensure a secure fit in any situation.

Coating of the lens:
uvex supravision NCH : Scratch-resistant and non-fogging on the inside, while the outside is extremely scratchproof, resistant to chemicals and very easy to clean thanks to nano-technology.
uvex optidur NCH : extremely scratch-resistant and also highly resistant to chemicals. The lacquer system features nano technology, consid-erably increasing its non-stick properties.
uvex optidur 4C PLUS : combines 4 features in one lens for permanent antifog, scratchproof and antistatic properties plus 100% UV protection.
uvex supravision performance : prevent moisture from accumulating to ensure a permanent antifog effect, meaning the lenses cannot steam up.

Colour	Lens	PK	Cat. No.	
anthracite/blue	PC clear/UV 2C-1.2, uvex supravision NCH	1	**6.253 649**	3
graphite/olive	PC clear/UV 2C-1.2, uvex optidur NCH	1	**9.006 020**	4
orange/light blue	PC clear/UV 2C-1.2, uvex optidur 4C PLUS	1	**6.253 408**	5
anthracite/yellow	PC yellow/UV 2C-1.2, uvex supravision NCH	1	**7.629 639**	6
anthracite/red	PC grey/UV 5-2.5 uvex supravision NCH	1	**7.629 638**	7
white/lime	PC clear/UV 2C-1.2 uvex supravision performance	1	**7.629 636**	8

3



6.253 649

4



9.006 020

5



6.253 408

6



7.629 639

7



7.629 638

8



7.629 636

1



1 Safety Eyeshields JACKSON SAFETY*V60 Nemesis RX, with reading aid

Kimberly-Clark

A stylish new standard in eye protection that improves personal comfort and safety and assists worker performance.

- Impact resistent polycarbonate lens that meets European standard EN166 1F
- Lightweight wrap-around design for added comfort and coverage
- 99.9% UVA/UVB Protection
- Black frame
- Bifocal style with diopters for vision assistance
- **V60 Nemesis RX is a stylish solution for users who require protection reading diopters (strengths include), +1.0 to +3.0 available**
- Enhanced nose piece design to channel away sweat
- Includes free neck cord

Diopter	PK	Cat. No.
+1.0	1	**9.005 171**
+1.5	1	**9.005 172**
+2.0	1	**9.005 173**
+2.5	1	**9.005 174**
+3.0	1	**9.005 175**

2



2 Safety Eyeshields uvex astrospec 9168

Uvex

- Unrestricted peripheral vision
- Superlight, weight 36g
- With Uvex Duo-flex® frame for maximum comfort
- 3-position adjustable lens
- 4 adjustable side-arm lengths with built-in pull-out stops
- Lens made from impact resistant polycarbonate, 100% UV protection
- Integral side shields

Coating of the lens
optidur NCH: excellent scratch and chemical resistance
optidur 4C PLUS: anti-fog lens and scratch resistant

Colour	Lens	PK	Cat. No.
Silver-grey	transparent / 2-1.2 UV, optidur NCH	1	**9.005 105**
Yellow/black	transparent / 2-1.2 UV, optidur NCH	1	**9.005 106**
Blue	transparent / 2-1.2 UV, optidur NCH	1	**6.800 139**
Blue	transparent / 2-1.2 UV, optidur 4C PLUS	1	**9.005 109**
Yellow/black	grey / 5-2.5 UV, optidur NCH	1	**9.005 100**
Violet/green	transparent / 2-1.2 UV, optidur NCH	1	**9.005 157**

3



3 Safety Eyeshields uvex skyguard NT 9175

NEW!

Uvex

The uvex skyguard NT spectacles have been improved to provide all-round protection.
Based on the existing uvex skylite spectacle we have added a conceptually simple, injection moulded TPU frame to significantly increase wearer protection levels, through minimising the risk of particle ingress. The flexible, closed-pore soft components of the frame enables a customised, individual fit and are easy to clean to promote long term use.Optional: uvex side arms can be adjusted to four different lengths and finely angled, guaranteeing a comfortable, customised fit.
The coating of the lens is supravision HC-AF, outside scratch-resistant, inside non-fogging and gives 100% UV protection. Optidur NCH, easy to clean coating, excellent scratch and chemical resistance and gives 100% UV protection.

Colour	Lens	PK	Cat. No.
blue/grey	clear/UV 2-1.2 supravision extrem	1	**9.005 078**
grey/orange	clear/UV 2-1.2 supravision HC-AF	1	**6.239 420**

4



4 Safety Eyeshields uvex astroflex 9163

Uvex

Highly suited to overhead work. The soft, flexible sealing rim protects the face from frame pressure, dust and splashes from above. Additionally provides impact protection.

Coating of the lens
supravision HC-AF: outside scratch resistant, inside non-fogging, 100% UV protection

Colour	Lens	PK	Cat. No.
blue	transparent/UV 2-1.2, supravision HC-AF	1	**9.005 118**

E & OE.

1 Panoramic Eyeshield 2890 and 2890SA

NEW!

3M Deutschland

The 3M™ 2890 and 2890SA safety goggles are a classic panoramic eye shield, with a modern, slim design. They feature acetate, anti-fog lenses, that offer reliable protection and optimized sight. The broad, comfortable and adjustable headband, variable lateral joints and grooves allow the 3M™ 2890 and 2890SA to be worn over prescription glasses, and is ideal for use in many laboratory applications. Can be worn with the 3M 4000 half mask series for complete face protection.

- Suitable for over glasses
- Compatible with the 3M 4000 half mask series
- Type 2890 with indirect ventilation
- Type 2890SA without ventilation, gas-tight
- Protection against gas and fine dust
- Excellent chemical resistance
- UV-protection
- EN 166

1



Type	Colour	Lens	PK	Cat. No.
2890SA	transparent	clear, acetate, 2C-1.2 3M 1 N FT	1	**6.235 920**
2890	transparent	clear, polycarbonate, 2C-1.2 3M 1 N BT 9	1	**6.266 909**

2 Panoramic Eyeshield uvex 9405

Uvex

- large goggle with front ventilation system
- suitable for use with half masks and filtering half masks
- ideal for prescription glasses, easy headband adjustment, easy changing of lens
- crystal acrylic lens, non-fogging

2



Colour	Lens	PK	Cat. No.
transparent grey	transparent /UV 2-1.2, non-fogging	1	**9.005 090**
	Replacement lens, transparent , non-fogging	1	**6.268 289**

3 Panoramic Eyeshield uvex ultrasonic 9302

Uvex

Extremely safe and comfortable, semi-elastic frame incorporating two-component technology. Panoramic lens with two separate lacquer coatings.

Coating of the lens
supravision HC-AF: outside scratch-resistant, inside non-fogging, 100 % UV protection

3



Colour	Lens	PK	Cat. No.
orange/grey	transparent / UV 2-1.2, supravision HC-AF	1	**9.005 115**

4 Panoramic Eyeshield uvex carbonvision 9307

Uvex

The intelligent use of ultra-modern materials and manufacturing technologies enables Uvex to design frames which combine reduced size/volume and high mechanical resistance. Uvex carbon vision provides the wearer with unparalleled comfort levels despite the very high-level of mechanical stability. The TPU layer is permanently fixed to the frame, ensuring a perfect individual fit and easier cleaning and maintaining. The Uvex carbon vision, weighing just 46g is undoubtedly one of the lightest wide-vision goggles on the market, enabling the wearer to work for longer periods without the distractions and problems caused by discomfort, thereby increasing thier productivity. The newly developed supravision extreme coating technology prevents the goggles from steaming up, even in the most demanding conditions. Uvex carbonvision goggles are recommended for protection against dust, liquid splashes and mechanical hazards. The goggles are ideal for wearing with disposable respirators and bump caps.

4



Colour	Lens	PK	Cat. No.
black/grey	clear/UV 2-1.2 uvex supravision extreme	1	**9.005 079**

1



1 LLG-Safety Eyeshields *basic*

- CE approved to EN166 and EN170
- Perfect for visitors as well as over goggles for spectacles wearers
- Integrated side lens with venting, 180° visual field
- Frame made of tested hypo-allergenic material
- 100% UV protection (up to 380 nm)
- Weight: 43g

Colour	Lens	PK	Cat. No.
Clear	Clear, uncoated, 2-1.2 U 1 F CE	10	**9.006 002**

2



2 Overgoggles Armamax AX1H

Made of tough-coated PC. *Honeywell Safety*

- Covers the whole eye area
- Complete side protection with wide frame
- Matt finish brow piece prevents glare
- High nose bridge prevents scratches on the lens
- Extra large
- Fits over almost all prescription spectacles

Type	PK	Cat. No.
Eyeshield	1	**9.005 065**

3



3 Overgoggles uvex 9161 and uvex 9161 duo-flex®

Uvex

- designed to fit over prescription spectacles
- unlimited side vision through super panorama lenses with a 180° field of view
- excellent, pressure-free fit
- effective indirect ventilation through special frame construction with side shields

Type 9161 duo-flex®
- frame can be adjusted four ways for optimal comfort
- scratch resistant lens

Type	Colour	Lens	PK	Cat. No.
9161	transparent*	transparent, PC lenses	1	**9.005 166**
9161 duo-flex®	blue/black	transparent, UV 2-1.2 optidur NCH	1	**9.005 107**

*autoclavable

Overgoggles uvex super OTG 9169

Uvex

The super OTG and the super f OTG are equipped with this state-of-the-art lens technology.
Alongside the tried and tested hingeless spectacles and highly flexible soft ear pieces, a hinged design has been developed.
The revolutionary new design of the super f OTG with hinge combines all the principles of contemporary spectacles with the advantages of state-of-the-art materials.
Both designs are well-suited to any wearer situation, and can also be used as overspecs for prescription wearers.

Coating of the lens
optidur NCH: excellent scratch and chemical resistance, 100% UV protection
supravision NCH: excellent scratch and chemical resistance and easy to clean (nano clean hybrid)

Type	Colour	Lens	PK	Cat. No.	
super OTG	navy blue	PC transparent/UV 2-1.2, supravision NCH	1	**6.234 320**	
super OTG	navy blue	PC transparent/UV 2-1.2, optidur NCH	1	**7.650 112**	5
super OTG	black	PC grey /UV 5-2.5, optidur NCH	1	**7.653 307**	6
super F OTG	black	PC transparent/UV 2-1.2, optidur NCH	1	**6.252 619**	
super F OTG	black	PC light green/UV 5-1,1 2,5/variomatic	1	**6.252 620**	4

4



6.252 620

5



7.650 112

6



7.653 307

7



7 Ribbon for Spectacles, Nylon

NEW!

Ribbon for spectacles, Nylon, black. *3M Deutschland*

Description	PK	Cat. No.
Ribbon for spectacles	1	**9.006 131**

E & OE.

1 Safety Spectacles Dispenser

Guards against dust.
Hinged cover.
With holes for wall mounting and label in German. To hold single pair of spectacles.

Internal dimensions (W x D x H) mm	PK	Cat. No.
180 x 85 x 75	1	**9.005 131**

1



2 Safety Glasses Dispenser Clearly Safe®

Ergonomically angled for easy dispensing. Translucent acrylic dispenser provides easy access to safety accessories. Flip open to fill from top; close to keep contents dust-free. Tilt-open bottom lid stays in place during repeated use. The safety glasses dispenser holds approximately 20 glasses. *Heathrow Scientific*

Description	Dimensions (W x D x H) mm	PK	Cat. No.
Clearly Safe®, Safety Glasses Dispenser	203 x 203 x 406	1	**6.238 548**

2



Safety Equipment Storage Boxes please see Page 201.

3 Lens Cleaning Tissues

Non-abrasive cleaning for delicate optical surfaces. Lint-free fibre paper is ideal for cleaning lens and optics.
5 Booklets with 100 sheets. *Heathrow Scientific*

Width mm	Length mm	PK	Cat. No.
100	150	500	**9.056 899**

3



4 Lens Cleaning Tissues 9963

- suitable for all uvex lenses
- silicone-free
- 100 individually sealed tissues in a box.
- incl. clip for wall mounting

Please order wall mounting unit separately. *Uvex*

Description	PK	Cat. No.
Cleaning tissues 9963	100	**6.200 654**
Wall mounting unit	1	**6.242 313**

4



5 Lens Cleaning Station 99700

For wall mounting. Easy operation. Frequent cleaning increases safety and enhances durability of spectacles. *Uvex*

Description	PK	Cat. No.
Station, complete, with paper, plastic pump bottle and cleaning fluid	1	**9.005 101**
Silicone-free paper	1	**9.005 102**
Cleaning fluid, 0.5 L	1	**9.005 103**
Plastic pump	1	**9.005 104**

5



1



1 Ultrasonic Cleaner Ultra 2000

NEW!

For convenient cleaning of goggles or smaller laboratory instruments. Eco-friendly, only needs warm water. By ultrasonic sound millions of small air bubbles are generated. Combined with a very high pressure these achieve a fast, efficient and effortless cleaning .

- 450ml stainless steel tank (filled to max.: 350 ml)
- Automatic 3-minute-operation can be stopped anytime
- Easy handling
- Removable lid
- Heat-retaining structure
- Weight: 630g only
- 45 kHz ultrasonic frequency
- 30 Watt cleaning performance
- Power supply 220 - 240 V , 50 Hz
- Dimensions device (WxDxH) approx .: 198 x 110 x 124mm
- Dimensions tank (WxDxH) approx .: 155 x 80 x 40mm
- Ready to use , no assembly required

Description	PK	Cat. No.
Ultrasonic cleaner Ultra 2000	1	**6.267 123**

2



2 Face Shields Clearways

Honeywell Safety

Browguard CB14:
- Light weight
- Elastic napestrap allows individual adjustment
- Adjust headband while wearing the face shield

Browguard CB20:
- Light weight
- Browguard with ratched headband

Face shield visors:
- Impact and chemical resistant
- Comfortable and lightweight, even during extended usage
- Visor can be tilted upwards and locked in any position
- Easy exchangeable visors

Please order browguard and visor separately.

Type	Description	PK	Cat. No.
CB14	Browguard with elastic napestrap	1	**9.005 067**
CB20	Browguard with ratched headband	1	**7.617 935**
CV83 P	Face shield visor, PC with UV-protection, against mechanical hazards	1	**9.005 066**
CV84 A	Face shield visor, Acetat, against spilling chemical	1	**6.070 565**



E & OE.

1 Surgical Face Masks, Eco Elastic Bands

Unigloves

- soft, non-irritating, elastic bands
- three-ply, non-fibre-glass, filter material
- integral nose bridge
- bacterial filtration efficiency 99%
- EN 14683 CE



Colour	PK	Cat. No.
white	50	**6.264 475**
green	50	**6.264 631**
blue	50	**9.405 162**

2 Surgical Face Masks BASIC

Unigloves

- tear-resistant, bands
- three-ply, non-fibre-glass filter material
- integral nose bridge
- bacterial filtration efficiency 98%
- EN 14683, CE



Colour	PK	Cat. No.
white	50	**9.405 165**

3 Surgical Masks 1818 Tie-On

3M Deutschland

Made of lightweight, close-fitting rayon fabric. Superb, non-allergenic material. Hardly noticeable: close, safe fit, even over facial hair. 50% increase in air permeability - constant, high filter performance (99.7 %), which is not affected by inhaled dust or dampness of the material. Liquid repellent.



Type	PK	Cat. No.
Surgical mask	50	**9.405 106**

4 Protective Masks 1800+ Aseptex™, Moulded Masks

3M Deutschland

Aseptex™ Fluid Resistant Molded Mask 1800+ is ideal for general-purpose use. Closely fit both male and female face contours, leaving adequate room for breathing and speaking - without restricting mouth contact or impairing the excellent filtration characteristics. With practical, elastic rubber headband for quick fitting, removal or moving to side. Not suitable for those with facial hair. Liquid repellent, enhancing safety.



Type	PK	Cat. No.
1800+ Aseptex™	50	**9.405 101**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

3M

Protection level classification

These filter classes are minimum requirements and simply serve as a guide. It is the wearers' responsibility to make sure the breathing apparatus conforms to the requirements in terms of hazardous materials and concentration before use!

FFP 1: for particles that are neither toxic nor associated with fibrosis. For protection up to 4 times the corresponding threshold limit value
FFP 2: for hazardous or harmful particles, vapour and smoke; filters for solid and liquid particles with a medium filtering level. For protection up to 10 times the corresponding threshold value
FFP 3: for poisonous particles, vapour and smoke; filters for solid and liquid aerosols with a high filtering classification. For protection up to 30 times the corresponding threshold limit value

R labelling: The mask has been tested for reusability and has the required performance features for wearing during a second work shift.
NR: non reusable

D labelling: The mask has undergone additional dolomite dust testing and therefore affords excellent breathability, even in extremely dusty environments and during longer periods of use.

1



9.005 733

Respirators ClassicLine, Folding Masks

ClassicLine fine dust masks are our advantageous standard programme. They offer a reliable and professional protection.

Description	Protection-level	PK	Cat. No.	
without valve	FFP 1	10	**9.005 731**	
without valve	FFP 2	10	**9.005 732**	
with valve	FFP 1	10	**9.005 733**	1
with valve	FFP 2	10	**6.258 155**	

2



9.005 698

Respirators ClassicLine, Moulded Masks

NEW!

ClassicLine fine dust masks are our advantageous standard programme. They offer a reliable and professional protection.
- CE marked
- acc. to EN 149:2001

Description	Protection-level	PK	Cat. No.	
ClassicLine without valve	FFP 1	10	**9.005 695**	
ClassicLine without valve	FFP2	10	**9.005 696**	
ClassicLine with valve	FFP 1	10	**9.005 697**	
ClassicLine with valve	FFP2	10	**9.005 698**	2
ClassicLine with valve	FFP3	10	**9.005 699**	

3



6.263 884

Respirators Series K100 Economy, Folding Masks

NEW!

Respirators play an important part in keeping you and your workers protected in your workplace *3M Deutschland*
- Single loop strap for easy adjustment
- Dust mask headband does not contain natural rubber latex material to decrease the risk of allergic reaction
- Comes with a metal-detectable adjustable nose clip for easy checking if respirator mask is worn properly
- Coloured noseclip allows for easy identification of Respirator Masks: yellow for FFP1, blue for FFP2, and red for FFP3
- Valved Respirator Masks allows longer continuous use, effective removal of heat and moisture buildup and reduced misting when used with eyewear

4



6.263 885

Description	Protection-level	Colour coding	PK	Cat. No.	
Folding mask	FFP1	yellow	1	**6.263 882**	
Folding mask, with valve	FFP1	yellow	1	**6.263 883**	
Folding mask	FFP2	blue	1	**6.263 884**	3
Folding mask, with valve	FFP2	blue	1	**6.263 885**	4
Folding mask, with valve	FFP3	red	1	**6.235 660**	

E & OE.

Respirators silv-Air c, Moulded Masks

1

- highest safety (certified according EN149) *Uvex*
- anatomical design and soft material-edges, avoid bruising to the face
- compatible with safety spectacles because of the safe optimised nose-area
- seamless, continuous headband for comfortable and secure mask fit
- innovative shape-optimised design - completely metal free
- circulatory venting via the soft edges, prevents fogging of safety spectacles
- colour coding
- model silv-Air 2220 with carbon layer in the filter reduces unpleasant odors additionally



9.005 753

Type	Description	Protection-level	Colour coding	Colour	PK	Cat. No.
silv-Air 2100		FFP1	blue	white	20	**9.005 750**
silv-Air 2110	with exhale valve	FFP1	blue	white	15	**9.005 751**
silv-Air 2200		FFP2	orange	white	20	**9.005 752**
silv-Air 2210	with exhale valve	FFP2	orange	white	15	**9.005 753** 1
silv-Air 2220	with exhale valve and carbon filter	FFP2	orange	silver	15	**9.005 754**
silv-Air 2310	with exhale valve	FFP3	black	white	15	**9.005 755**

Respirators Aura™ 9300+ Series, Folding Masks

2

Particle masks Series 3M ™ Aura ™ 9300+ offer effective respiratory protection in industrial applications where workers are exposed to dust and/or non-volatile liquid particles. *3M Deutschland*

Features and advantages of the Aura™ 9300+ series

- Clear vision: Embossed top panel helps reduce fogging of eyewear
- Low breathing resistance filter technology combines the benefits of 3M's electret particulate filter material with advanced low breathing resistance filter technology
- 3M™ Cool Flow™ Valve effectively removes heat build up to provide a cooler and more comfortable wear
- Innovative chin tab improves ease of donning and adjustment to help achieve a comfortable fit
- Ingenious 3-Panel design fits a wide range of face shapes and sizes to accommodate your facial movements
- Coloured headbands for easy identification: yellow for FFP1, blue for FFP 2 and red for FFP3
- flat-fold; easy to store when not in use
- hygienic individual packaging helps protect the respirator from contamination before use



9.005 672

3



9.005 673

Authorization: EU construction test (CE mark)
Testing standards: EN 149:2001 + A1:2009

Type	Description	Protection-level	PK	Cat. No.
Aura™ 9310+	without valve	FFP1	20	**9.005 670**
Aura™ 9312+	with Cool-Flow valve	FFP1	10	**9.005 671**
Aura™ 9320+	without valve	FFP2	20	**9.005 672** 2
Aura™ 9322+	with Cool-Flow valve	FFP2	10	**9.005 673** 3
Aura™ 9330+	without valve	FFP3	20	**9.005 674**
Aura™ 9332+	with Cool-Flow valve	FFP3	10	**9.005 675**

4 Respirators with 2-Way-Protection Aura™ 1883+, Folding Masks

4

The 3M™ Aura™ Health Care Particulate Respirator 1883+ provides effective respiratory protection for use in medical environments where health care workers will be exposed to airborne dust particles, non-volatile liquid particles and bio-aerosols. This respirator limits the transmission of infectous agents from staff to patients and is suitable for use during surgical procedures and certain other medical procedures. *3M Deutschland*
It protects the user as well as the product being handled. This product also offers resistance to penetration of splashes of liquid.
Features and advantages as Aura™ 9300+ series



Authorisation: EU construction test (CE mark)
Testing standards: EN 149:2001 + A1:2009
EN14683:2005

Type	Description	Protection-level	PK	Cat. No.
Aura™ 1883+	with valve	FFP 3	8	**9.005 681**

Respirators 8000 series, Moulded Masks

NEW!

3M Deutschland

The convex cup-shape design, along with twin strap design, nose foam and nose clip ensure comfortable wear over a range of face sizes. The collapse resistant shell offers durable, comfortable protection particularly in hot and humid conditions.
- Traditional convex shape, with nose clip and twin strap design.
- Durable, collapse resistant inner shell.
- Reliable, effective protection against fine particles.
- 3M™ Advanced Electret Filter Material gives effective filtration with low breathing resistance for consistent high quality performance.
- Coloured headbands for easy identification: yellow for FFP1 and blue for FFP2.
- Very good compatibility with panoramic eyeshield 3M™

Type	Description	Protection-level	PK	Cat. No.	
8710	without valve	FFP1 NR D	20	**6.050 640**	1
8810	without valve	FFP2 NR D	20	**6.078 942**	2
8812	with Cool-Flow valve	FFP1 NR D	10	**6.202 080**	3
8822	with Cool-Flow valve	FFP2 NR D	10	**6.052 910**	4

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6.050 640

2



6.078 942

3



6.202 080

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6.052 910

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5 Premium Respirators 8825 and 8835, Moulded Masks

3M Deutschland

Robust and durable design. Adjustable braided headbands and soft inner face-seal improve fit and comfort. Soft Inner Face-Seal Ring can be cleaned for wearer hygiene if used for longer than one shift With Cool-Flow valve. Increased filter area helps extend the life of the respirator. Premium masks Type 8825 and 8835 are RD marked and can be used for more than one shift.

Authorization: EU construction test (CE mark)
Testing standards: EN 149:2001

Type	Protection-level	Usage restrictions	PK	Cat. No.
8825	FFP2 RD	12 x TLV	5	**9.005 456**
8835	FFP3 RD	50 x TLV	5	**9.005 458**

6



6 Half Mask, Series 4000 Plus, Ready to Use

NEW!

3M Deutschland

The 4000 Series Respirators by 3M™ are a range of ready-to-use, maintenance-free half masks with built in filters designed for effective and comfortable protection against a combination of many gases, vapours and particulate hazards found throughout the industry. A unique filter technology enables a very low-profile design for undisturbed field of vision to make your worklife more comfortable.

Features and Benefits:
- Low profile design for better peripheral vision
- Lightweight, well balanced design
- Soft, non-allergenic material with textured face seal
- One piece, maintenance-free construction
- Central position of the exhalation valve for effective removal of heat and moisture build up within face piece
- Easy to fasten neck strap
- Use until damaged, particulate filters clog or gas filters become saturated
- Very good compatibility with panoramic eyeshield 3M™ 2890 and 2890SA

Type	Protection-level	Usage restrictions	PK	Cat. No.
4251	FFA1P2 R D	12 x TLV	1	**6.072 615**
4255	FFA2P3 R D	50 x TLV	1	**6.802 700**
4277	FFABE1P3 R D	50 x TLV	1	**6.202 909**
4279	FFABEKP3 R D	50 x TLV	1	**6.073 056**

Half Mask 620 N and 620 S

All masks approved according to EN 140 and certified according to council directive 89/686/EEC. Standard thread connection according to EN 148-1 which allows cost-efficient use of standard screw-filters besides insert filters and reusable holders. The masks can be used as pure filtration device and also as a mask for light airline systems. Two exhalation valves ensure low respiratory resistance. Ergonomic design of the mask bodies and sealing zone as well allow one single size of mask for all faces.

Type	PK	Cat. No.	
Half mask 620 N*	1	**6.800 724**	1
Half mask 620 S**	1	**9.005 575**	2
Carrying box for half-mask	1	**6.801 096**	

* With quick adjustable rubber harness and faceblanc.
** With quick adjustable silicone harness and faceblanc.

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6.800 724

2



9.005 575

3 Respiratory Protection - Plug-In Filters for Half Mask 620 N and 620 S

Tested and approved to EN 143/EN 14387 standards with CE mark. Plug-in filters are connected to the mask by a filter mount. The filter mount is fitted with standard thread connections to EN 148-1.

Particle filters consist of a light PE housing with a built-in glas fibre filter. Special folding provides a large filter surface area in a confined space.

A pre-filter collects aerosol mist and dust and prevents rapid accumulation of dirt particles in the main filter, thereby prolonging its lifespan. Easy to exchange by inserting into the outer chamber of the filter mount. Flame resistant.

3



Filter type A:	Vapours from organic compounds with boiling point >65°C
Filter type B:	Inorganic gases and vapours e.g. chlorine
Filter type E:	Sulphur dioxide
Filter type K:	Ammonia
Filter type P 1:	Low particle filtration capacity
Filter type P 2:	Medium particle filtration capacity
Filter type P 3:	High particle filtration capacity

4



9.005 580

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9.005 585

Type	Protection-level	PK	Cat. No.	
Gas filter 19 A	A1	1	**9.005 580**	4
Gas filter 19 B	B1	1	**9.005 581**	
Particle filter 25 P3	P3 R	1	**9.005 585**	5
Pre-filter 35/70	-	20	**9.005 577**	
Filter mount 5570/35	for Filter 19A, 19B, 24 P2, 25 P3	1	**9.005 586**	
Filter mount 5570/70	-	1	**9.005 587**	

6 Half Mask Twinfilter X-plore® 3300, Chemistry set

NEW!

Dräger

Safe and easy bayonet connection. A unique two-point bayonet connector attaches both filters to the mask using the same technique. Compact, low-profile design. The swept-back position of the filters guarantees a wide field of vision free from obstruction and ensures optimal fit for use under protective visors. High grade materials provide extreme comfort when worn. Innovative, X-guided, strap system. Cross-over straps ensure an even weight distribution.
Chemistry set supplied with Halfmask and 2 Filters.

6



Type	Description	PK	Cat. No.
X-plore® 3300 Set	Dräger X-plore® 3300 M and A1B1E1K1 Hg P3 R D	1	**7.626 542**
Combination filter	X-plore® Bayonet A1B1E1K1HgP3 R D	2	**9.005 617**

1



1 Half Mask, DUETTA

Tested to EN 140 standards and certificated according to PPE guideline 89/686/EWG. With double filter connection. Plastic mask body with soft, sealing surface. Elastic adjustment straps with head gear.

- One mask size fits all face shapes
- Excellent field of vision, unrestricted freedom of movement and outstanding comfort
- Superior balance through double filter technology
- Non-allergenic
- Optimal sealing provided by newly designed sealing rim
- Easily dismantled for cleaning and maintenance
- One-piece headband for optimal fit
- Simple and secure filter attachment with bayonet connection

Type	PK	Cat. No.
Half mask, DUETTA	1	**9.005 590**

2



2 3 Filters for DUETTA half mask

(According to EN 143 and EN 14387)

Filter 203 A2:	Painting, varnishing, stripping
Filter 203 P3R:	Asbestos fibres, dust
Filter 203 ABEK:	Chemical industry (escape device), livestock owners
Filter 205 A2P3:	Paint spraying, dioxin
Filter 205 ABEKP3:	Hydrochloric acid, formic acid, disinfection work

3



Type	Protection-level	PK	Cat. No.
Gas filter 203 A2	A2	4	**9.005 592**
Particle filter 203 P3R	P3 R	4	**9.005 593**
Gas filter 203 ABEK	ABEK1	4	**9.005 594**
Filter 205 A2P3	A2-P3 R	4	**9.005 595**
Combination filter 205 ABEKP3	ABEK1-P3 R	4	**9.005 596**

4



4 Half Mask Series 6000

NEW!

3M Deutschland

Economical and easy to care. The 3M ™ 6000 Series half masks convince by a good price - performance ratio . They are low-maintenance , easy to handle and extremely lightweight . Available in 3 sizes .

- Extremely lightweight mask body
- Unobstructed view due to compact design
- Double filter system for good weight distribution
- Wide range of filters for a variety of uses
- Compatible with 3M ™ goggles

Please order matching filters separately.

Type	Description	PK	Cat. No.
6100	Half mask, size S	1	**6.202 382**
6200	Half mask, size M	1	**6.303 898**
6300	Half mask, size L	1	**6.303 899**

5



5 Half Mask Series 6500QL

NEW!

3M Deutschland

The 3M™ Rugged Comfort Half Facepiece Reusable Respirator is designed with tough and dirty worksites in mind. Stay productive and protected - the 6500QL Series delivers comfort, durability and stability with a firm, lightly textured silicone faceseal and strong body construction.

- Optimum fit and comfort with three-size adjustable head cradle
- Bayonet Connection, Compatible with all bayonetstyle 3M™ cartridges and filters
- Overmolded/Low-Profile Design
- Cool Flow™ Valve
- Directs exhaled breath and moisture downward
- Easy positive pressure seal check
- Provides comfort and stability with a soft but firm faceseal
- Quick Latch - Drop-Down Mechanism

Please order matching filters separately.

Type	Description	PK	Cat. No.
6501QL	Half Mask, size S	1	**6.266 987**
6502QL	Half Mask, size M	1	**6.266 988**
6503QL	Half Mask, size L	1	**6.266 989**

E & OE.

1 Half Mask Series 7500

NEW!

3M Deutschland

The 3M ™ 7500 Series Half Masks are made of skin-friendly silicone and feature "Drop-down"-Ribbons. These encircling ribbons allow to take off the mask easily in short breaks and leave it hanging in front of the chest instead of having to take it off completely.
- "Drop-Down" ribbons
- Elastic, adjustable ribbons
- Patented 3M ™ Cool Flow ™ exhalation valve
- Perfect sealing fit by structured face sealing
- Double filter system for reduced breathing resistance and good weight distribution
- Wide range of spare parts and filters
- 3 sizes - fittting for every face shape
- Compatible with 3M ™ Goggles

Please order matching filter separately.

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Type	Description	PK	Cat. No.
7501	half mask size S	1	**6.225 803**
7502	half mask size M	1	**7.630 104**
7503	half mask size L	1	**6.230 881**

2 Full Face Mask Series 6000

NEW!

3M Deutschland

Easy to care and comfortable. The full face masks 6000 Series (Class 1) are low maintenance and impress with their easy handling and their high wearing comfort. All types of this series are equipped with a bayonet-click connection, this allows a quick and easy change of filters that you can choose from an extensive range to suit your application. The 6000 series is also characterized by an extensive range of spare parts and is easy to maintain. They are available in 3 sizes.

- Easy to maintain and economical
- Extremely lightweight mask body cares for fatigue-free work
- Compact design allows unobstructed view
- Double filter system for reduced breathing resistance and good weight distribution
- Wide range of filters for versatile applications

Please order matching filters separately.

2



Type	Description	Class	PK	Cat. No.
6700S	Full face mask, size S	1	1	**6.234 463**
6800M	Full face mask, size M	1	1	**6.200 316**
6900L	Full face mask, size L	1	1	**6.234 464**

Compatible Filter System for 3M Half and Full Masks

NEW!

3M Deutschland

All filters fit via bayonet-click connection to the mask series 6000 , 6500 , and 7500 and 7000. For every application the right filter - No matter which in working area using 3M™ Respirators , the comprehensive 3M™ Filter program gives optimum safety and provides versatile application possibilities. The compatible 3M™ range of filters includes combinable changeable filters against gases, vapors and/or particles and also combination filters .

Type	Protection-level	Description	PK	Cat. No.	
6051	A1	Gas and Vapour Cartridge against organic vapours	1	**6.072 757**	
6054	K1	Gas and Vapour Cartridge against ammonia	1	**7.971 006**	
6055	A2	Gas and Vapour Cartridge against organic vapours	1	**6.079 478**	4
6057	ABE1	Gas and Vapour Cartridge against organic, inorganic and acid vapours	1	**6.079 477**	3
6059	ABEK1	Gas and Vapour Cartridge against organic, inorganic and acid vapours, ammonia and particles	8	**7.620 305**	8
6075	A1+Formaldehyd	Gas and Vapour Cartridge against organic vapours and formaldehyde	1	**6.205 396**	
6096	A1HgP3NR	Gas and Vapour Cartridge against mercury vapours and particles	1	**6.261 639**	
6098*	AXP3NR	Gas and Vapour Cartridge against one-component organic vapours (boiling point below 65 ° C) and particles	1	**6.235 345**	
6099*	ABEK2P3R	Gas and Vapour Cartridge against organic, inorganic and acid vapours and ammonia	2	**7.072 310**	7
5911	P1R	Particulate Filters, for use in combination with Gas and Vapour Cartridges	1	**6.268 333**	
5925	P2R	Particulate Filters, for use in combination with Gas and Vapour Cartridges	1	**6.268 334**	
5935	P3R	Particulate Filters, for use in combination with Gas and Vapour Cartridges	1	**6.202 322**	5
501		Filter Retainer for combination of Gas and Vapour Cartridge with Particulate Filters	1	**6.205 383**	6

*only for Full Masks

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6.079 477

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6.079 478

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6.202 322

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6.205 383

7



7.072 310

8



7.620 305

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1 Full Face Mask BRK 820

Tested and approved to EN 136 and CE certified. With polycarbonate visor. Speech diaphragm and round thread connection according to EN 148-1.

- Maximum field of vision thanks to low position nosepiece with two exhalation valves
- Heat resistant polycarbonate visor, tested and approved for use by firefighters
- Carefully designed airway ensures non-misting visor
- 5-point headstrap attachment
- Optimal sealing to face, can be fitted to all head sizes
- Shock-absorbing device reduces the risk of injuries caused by impacts to the mask
- Resistant PE speech membrane in stainless steel casing
- Variable fastening headstrap
- No special tools required for maintenance
- Simple operation for changing sealing rings and ventilation panels

Full face mask BRK 820 G
As facemask BRK 820, but with a scratch- and solvent-resistant surface-hardened polycarbonate lens.

Type	Class	PK	Cat. No.
BRK 820	3	1	**9.005 555**
BRK 820 G	3	1	**6.401 235**
Wall box for 1 full face mask		1	**6.202 219**

2



2 Respiratory Protection - Screw-Type Filters for Full Face Mask BRK 820

The filters are tested and approved to EN143/EN 14387 and carry the CE mark. Offer very low breathing resistance. Their lifespan depends on the toxicity, humidity and air consumption of the user. Measurements differ with application so it is impossible to predict the working lifespan. Filter exhaustion can be detected as follows:
- Gas filters: appearance of odours, tastes or irritants in inhaled air.
- Particle filters: increase in breathing resistance.

Storage times for unused gas and combination filters (kept sealed in manufacturer's packaging) 6 years. Particle filters can be stored for 10 years.

Protection level A:	Vapours from organic compounds with boiling point >65°C
Protection level B:	Inorganic gases and vapours e.g. chlorine, hydrogen sulphide
Protection level E:	Sulphur oxide
Protection level K:	Ammonia
Protection level AX:	Gases and vapors from organic compounds with boiling point <65°C, low boilers in groups 1 and 2
Protection level Hg:	Mercury vapours
Protection level NOSt:	Nitrogen oxides, including nitric monoxide and particles P3
Protection level P 1:	Particles (fumes, smoke, dust) from inert substances
Protection level P 2:	Particles from non-toxic substances
Protection level P 3:	Particles from toxic substances

Type	Protection-level	PK	Cat. No.
Gas filter 66 A	A2	1	**9.005 558**
Gas filter 66 AB	AB2	1	**6.224 032**
Gas filter 66 B	B2	1	**9.005 559**
Gas filter 66 E	E2	1	**7.604 410**
Gas filter 66 K	K2	1	**9.005 561**
Gas filter 67 ABEK	ABE2K1	1	**9.005 563**
Gas filter 84 ABEK	ABEK2	1	**6.224 033**
Gas filter 84 AX	AX	1	**6.200 208**
Combination filter 80 ASt	A2-P2 R D	1	**9.005 565**
Combination filter 80 BSt	B2-P2 R D	1	**9.005 566**
Combination filter 81 ABEKSt	ABE2K1-P3 R D	1	**7.616 476**
Combination filter 81 ABSt	AB2-P3 R D	1	**6.228 471**
Combination filter 81 BSt	B2-P3 R D	1	**6.302 979**
Combination filter 86 ABEKSt	ABEK2-P3 R D	1	**9.005 570**
Combination filter 86 NOSt	NO-P3 R D	1	**6.201 023**
Combination filter 86 AXSt	AX-P3 R D	1	**6.227 097**
Combination filter 86 ABEKHgSt	ABEK2Hg-P3 R D	1	**6.232 031**

E & OE.

1 Ear Plugs



Non-allergenic, comfortable polyurethane. Smooth surface, dirt-repellent and hygienic. Conical shape expands to fill the ear canal. Meets EN 352-2 requirements. Available with, or without, connecting cord. *3M Deutschland*

Sound protection (SNR): 37 dB(A)

Type	PK	Cat. No.
Without cord	200	**9.005 046**
With cord	100	**9.005 047**

2 Ear Plugs with Headband, 1310



These ear protectors are suitable for intermittent use. The soft plugs are made of non-allergenic material. The headband is made of hard-wearing material. Meets EN 352-2 requirements. *3M Deutschland*

Sound protection (SNR): 26 dB(A)

Type	PK	Cat. No.
Ear protectors, each, 1310	10	**9.005 048**
Replacement plugs, pair	20	**9.005 049**

3 Ear Defender uvex 2



Uvex 2 is a foldable ear defender with the approved steel suspension headband system. The headband achieves perfect fitting to most facial profiles and is resistant against to bending and warping. Uvex 2 combines perfect protection, because of high attenuation, low weight and small volume with safe handling. The advantage lies in exceptional wearer comfort with the benefit of high wearer acceptance levels. *Uvex*

Sound protection (SNR): 27 dB(A)

Type	PK	Cat. No.
uvex 2	1	**9.005 061**

4 5 Safety Equipment Storage Boxes SecuBox Midi/ Maxi



Necessary for safe and sanitary storage of protective equipment at work. Also available on request with transparent lid.

Midi:
Overall dimensions: 23.6 x 22.5 x 12.5 cm
Internal dimensions: 23.0 x 21.8 x 11.8 cm
Maxi:
Overall dimensions: 23.6 x 31.5 x 20.0 cm
Internal dimensions: 23.0 x 29.9 x 19.2 cm



Type	Colour	Description	PK	Cat. No.
Midi	blue	Eye protection, without inlet	1	**9.005 500**
Midi	transparent	Eye protection, without inlet	1	**9.005 501**
Midi	blue	Ear protection	1	**9.005 502**
Midi	transparent	Ear protection	1	**9.005 503**
Midi	blue	Eye + ear protection	1	**9.005 504**
Midi	transparent	Eye + ear protection	1	**9.005 505**
Midi	blue	Breathing protection	1	**9.005 506**
Midi	transparent	Breathing protection	1	**9.005 507**
Midi	blue	Protection gloves	1	**9.005 508**
Midi	transparent	Protection gloves	1	**9.005 509**
Midi	blue	Protection gloves, long	1	**9.005 511**
Midi	transparent	Protection gloves, long	1	**9.005 512**
Midi	blue	Hair protection	1	**9.005 513**
Midi	transparent	Hair protection	1	**9.005 514**
Midi	blue	Protective overall	1	**9.005 515**
Midi	transparent	Protective overall	1	**9.005 516**
Midi	anthrazit	Inlet for Box	1	**9.005 531**
Maxi	blue	Eye protection with insert for 12 safety glasses	1	**9.005 549**
Maxi	blue	Eye and ear protection	1	**9.005 544**
Maxi	blue	Face shield	1	**9.005 547**
Maxi	blue	Helmet	1	**9.005 541**
Maxi	blue	Helmet and eye protection	1	**9.005 542**
Maxi	blue	Helmet and ear protection	1	**9.005 543**
Maxi	blue	Helmet and full face mask	1	**9.005 546**
Maxi	blue	Full face mask	1	**9.005 545**

Explanation of categories

Personal protective equipment (PPE), including protective gloves, is classified broadly in Categories I, II and III in accordance with the PPE Directive, 89/686/EEC. All chemical protective gloves are assigned to Category III. This necessitates type examination followed by regular surveillance:
Category I applies only to PPE for minimal risks the effects of which users are able to assess safely themselves. This includes, for example, PPE against superficial mechanical injury and against weakly aggressive cleaning agents the effects of which are easily reversed (gloves for protection against certain alkaline cleaning agents etc.), and protective gloves for the handling of hot parts with a temperature below 50°C. Pictograms do not apply.

Category II includes all other protective gloves. In order to document the protective properties of Category II protective gloves, manufacturers apply additional markings to these gloves in the form of pictograms and the numbers of the relevant test standards.

Category III applies to all complex PPE intended for protection against a risk of fatal or serious and irreversible injury. Besides chemical protective gloves, this category includes for example PPE for use in hot environments (atmospheric temperature over 100°C) and PPE for protection against electric current. In addition to the CE mark, the (four-digit) code of the notified body responsible for annual product surveillance/surveillance of the quality assurance system must also be stated.

All PPE, and therefore also protective gloves, must bear the CE mark. With this mark, the manufacturer certifies that the gloves satisfy the "essential health and safety requirements" of the EU directive. Equipment not bearing the CE mark may not be placed on the market as PPE.

Test principles
DIN EN 374 defines requirements applicable to gloves for protection against chemicals and/or micro-organisms. It applies in conjunction with the DIN EN 420 basic standard (general requirements) and makes reference to DIN EN 388, which sets out the requirements concerning protection against mechanical risks. (source: www.dguv.de)

Standards for safety gloves



EN 374	Protective hand gloves against chemicals and microorganisms;
EN 388	Protective hand gloves against mechanical risks
EN 407	Protective hand gloves against thermal risks (heat and/or fire)
EN 420	note instructions for use
EN 421	Protective hand gloves against ionising radiations and radioactive contamination
EN 511	Protective hand gloves against cold
	Not harmful to food stuffs
AQL-Value:	acceptable quality level for penetration

Explanation of levels

Test			**Power stage**		
	1	2	3	4	5
Abrasion resistance (number of cycles)	100	500	2000	8000	-
Cut resistance (factor)	1.2	2.5	5	10	20
Tear resistance N	10	25	50	75	-
Piercing power N	20	60	100	150	-



E & OE.

1 Disposable Gloves Polyclassic, LDPE

EN 420



The glove Polyclassic LDPE is made from transparent low density Polyethylene. The material is embossed and therefor has a high tear resistance. It is cost-saving and provides excellent protection for short-time work in food industies and for medical applications. Supplied in dispenser box containing 100 gloves. **Cat. I**



Size	Colour	PK	Cat. No.
Men	transparent	100	**9.262 605**
Women	transparent	100	**9.262 606**

2 Disposable Gloves Standard, Vinyl, Powdered

Unigloves



Non-sterile. With beaded cuff. AQL 1.5 EN 455 T 1-3, CE.
Supplied in dispenser box containing 100 gloves. **Cat. I**



Size	PK	Cat. No.
XS (5 to 6)	100	**9.405 154**
S (6 to 7)	100	**9.405 150**
M (7 to 8)	100	**9.405 151**
L (8 to 9)	100	**9.405 152**
XL (9 to 10)	100	**9.405 153**

3 Disposable Gloves Premium, Vinyl, Powder-Free

Unigloves



Non-sterile, hypoallergenic, with beaded cuff. EN 455 T 1-3, CE. Applied in dispenser box containing 100 gloves. Supplied in dispenser box containing 100 gloves. **Cat. I**



Size	PK	Cat. No.
XS (5 to 6)	100	**9.005 349**
S (6 to 7)	100	**9.005 350**
M (7 to 8)	100	**9.005 351**
L (8 to 9)	100	**9.005 352**
XL (9 to 10)	100	**9.005 353**



1



1 LLG-Disposable Gloves *classic*, Latex, Powder-Free

NEW!

EN 374 EN 374

The ideal glove for all applications which require a high tactile sensitivity.

- Skin-friendly
- Excellent tactile sensitivity
- High durability due to special formulation
- **Cat. III** for complex risks. AQL 1.5.

According to ASTM 1671 (ISO 16604) for protection against viral penetration.
According to EN 420. Suitable for food handling.

Glove shape:	flat with rolled edge (ambidextrous)
Material:	latex
Color:	Natural White
Outside:	textured fingers
Inside:	powder free
Size/Length:	S, M, L, XL/med. 240 mm
Thickness (measured in double layer):	0.22mm

Size	PK	Cat. No.
S	100	**9.006 383**
M	100	**9.006 384**
L	100	**9.006 385**
XL	100	**9.006 386**

2



2 Disposable Gloves, Vasco®, Latex, Powdered

EN 374 EN 374

B. Braun

Non-sterile, medical examination gloves in natural latex rubber. Guaranteed quality.
Ambidextrous, with beaded cuff. Free from Thiuram additives. Meet DIN EN
455 requirements. Supplied in dispenser box containing 100 gloves.
Personal protective equipment category III according to PPE 89/686/EEC and EN 420.
Cat. III Low Chemical resistant.

Size	PK	Cat. No.
S (6 to 7)	100	**9.405 286**
M (7 to 8)	100	**9.405 287**
L (8 to 9)	100	**9.405 288**

3



3 Disposable Gloves Vasco® Sensitive, Latex, Powder-Free

EN 374 EN 374

B. Braun

Non-sterile, medical examination gloves in natural latex rubber. Guaranteed quality. With
welt, fit left or right hand. Free from Thiuram additives. Meet DIN EN 455 requirements.
Supplied in dispenser box containing 100 gloves.
According to ASTM F1671-07 (no virus penetration). Personal protective equipment category III according to PPE 89/686/EEC and EN 420, tested according to EN 374. **Cat. III Low Chemical resistant.** Suitable for food processing.

Size	PK	Cat. No.
S (6 to 7)	100	**9.405 289**
M (7 to 8)	100	**9.405 290**
L (8 to 9)	100	**9.405 291**

E & OE.

1 Disposable Gloves Select Blue, Latex, Powder-Free

EN 374 EN 374

Unigloves



Non-sterile, with beaded cuff and micro-roughened surface. EN 455 T 1-4, CE. Type examination test acc. EN 374. Supplied in dispenser box containing 100 gloves. **Cat. III Low Chemical resistant.**

Size	PK	Cat. No.
S (6-7)	100	**6.238 376**
M (7-8)	100	**7.624 168**
L (8-9)	100	**7.624 167**
XL (9-10)	100	**6.238 377**

2 Disposable Gloves Select Plus, Latex, Powder-Free

EN 374 EN 374

Unigloves



Non-sterile, hypoallergenic, with beaded cuff and micro-roughened surface, Protein content <30µg/g. EN 455 T 1-3, CE. Type examination test acc. EN 374. Supplied in dispenser box containing 100 gloves. **Cat. III Low Chemical resistant.**

Size	PK	Cat. No.
XS (5 to 6)	100	**9.005 339**
S (6 to 7)	100	**9.005 340**
M (7 to 8)	100	**9.005 341**
L (8 to 9)	100	**9.005 342**
XL (9 to 10)	100	**9.005 343**

3 Disposable Gloves Comfort, Latex, Powder-Free

Non-sterile, hypoallergenic. With beaded cuff and micro-roughened surface. TÜV tested, AQL 1.5. Supplied in dispenser box containing 100 gloves. EN 455 T 1-3, CE. **Cat. I**

Unigloves



Size	PK	Cat. No.
XS (5 to 6)	100	**9.405 235**
S (6 to 7)	100	**9.405 236**
M (7 to 8)	100	**9.405 237**
L (8 to 9)	100	**9.405 238**
XL (9 to 10)	100	**9.405 239**

4 Disposable Gloves, Manufix® Sensitive und Powdered, Latex, Powder-Free and Powdered

EN 374 EN 374

B. Braun



Available either powder-free or powdered. Made of transparent latex. Non-sterile. For higher demands. Ambidextrous. Supplied in dispenser box containing 100 gloves.

Tested according to EN 374. Personal protective equipment category III according to PPE 89/686/EEC and EN 420. **Cat. III Low Chemical resistant.** Suitable for food processing.

Additionally: Manufix® Sensitive tested according to ASTM F1671 (no virus penetration).

Type	Size	Description	PK	Cat. No.
Sensitive	S (6 to 7)	powder free	100	**9.405 205**
Sensitive	M (7 to 8)	powder free	100	**9.405 206**
Sensitive	L (8 to 9)	powder free	100	**9.405 207**
Powdered	S (6 to 7)	powdered	100	**9.405 211**
Powdered	M (7 to 8)	powdered	100	**9.405 217**
Powdered	L (8 to 9)	powdered	100	**9.405 220**

1



1 2

Disposable Gloves KIMTECH SCIENCE*SATIN PLUS, Latex, Powder-Free

EN 374 EN 374 EN 420

LEVEL 2

Kimberly-Clark

Latex, powder free, non-sterile, disposable gloves, offering excellent finger sensitivity, DIN-EN-Standard approved and certified.
Supplied in dispenser box containing 100 or 90 gloves, as outlined below.

2



- natural rubber latex
- Beaded cuff
- smooth surface
- powder-free
- Ambidextrous

This product is classified by EC Council Directive 89/686/EWG. It is tested in accordance with the EN Norms EN 420:2003
Meets AQL of 1.5
Manufactured in accordance with Quality System ISO 9001.
Cat. III Low Chemical resistant.

Size	PK	Cat. No.
XS (5 to 6)	100	**9.005 390**
S (6 to 7)	100	**9.005 391**
M (7 to 8)	100	**9.005 392**
L (8 to 9)	100	**9.005 393**
XL (9 to 10)	90	**9.005 394**

3



3 4

Disposable Gloves KIMTECH SCIENCE*PFE, Latex, Powder-Free

EN 374 EN 374 EN 420

LEVEL 2

Kimberly-Clark

Latex, powder free, non-sterile, disposable gloves, with roughened surface providing optimal grip in wet conditions.
Supplied in dispenser box containing 100 or 90 gloves, as outlined below.

4



- Beaded cuff
- Ambidextrous
- Powder-free
- Available in all sizes and lengths of 240mm (XS - M), 250mm (L - XL)

Qualitiy standards:
- Classified by EC Council Directive 89/686/EWG. It is tested in accordance with the EN Norms EN 420:2003.
  Cat. III Low Chemical resistant.

- Meets AQL of 1.5.
- Manufactured in accordance with Quality System ISO 9001.

Size	Length cm	PK	Cat. No.
XS (5 to 6)	24	100	**9.005 405**
S (6 to 7)	24	100	**9.005 406**
M (7 to 8)	24	100	**9.005 407**
L (8 to 9)	25	100	**9.005 408**
XL (9 to 10)	25	90	**9.005 409**

1 2 LLG-Disposable Gloves *ergo*, Nitrile, Powder-Free

EN 374 EN 374 EN 420







Disposable protective glove in nitrile that when worn, combines the comfort and "feel" of latex as well as the physical and chemical endurance of nitrile. With no risk of allergies. The ideal glove for all applications requiring high tactile sensation and protection against chemicals.

- Thin - comfortable to wear
- Tried and tested quality product made of nitrile
- Excellent resistance to skin irritants in foodstuffs
- Specially formulated for a more resilient glove
- For single use in applications with an increased need for safety when handling chemicals
- Free from phthalates/softeners and allergenic latex proteins
- Easy to wear and particularly skin-friendly through special finishing process
- Colour lavender blue
- Suitable for areas subject to HACCP standards

- Cat. III Low Chemical resistant. AQL 1.5
According to ASTM F 1671 (ISO 16604) for protection against viral penetration.
According to EN 420 and DIN EN ISO /IEC 17025, DIN EN 45011. Suitable for food handling.

Glove shape:	flat with rolled edge (ambidextrous)
Material:	nitrile
Colour:	lavender blue
Outside:	textured fingers
Inside:	powder-free halogenated
Size/total length:	S, M, L, XL/med. 240mm
Thickness **(measured in double layer)**:	**0.14mm**

Size	PK	Cat. No.
S	200	**9.006 371**
M	200	**9.006 372**
L	200	**9.006 373**
XL	180	**9.006 374**

3 4 LLG-Disposable Gloves, *standard*, Nitrile, Powder-Free

NEW!

EN 374 EN 374 EN 420







Disposable protective glove in nitrile with enhanced comfort in use and greater chemical protection - the standard glove for the laboratory.

- Very comfortable to wear
- Tried and tested quality product made of nitrile - excellent resistance to skin irritants in foodstuffs
- More resilience through special formulation
- For single use in applications with an increased need for safety when handling chemicals
- Free from phthalates/softeners and allergenic latex proteins
- Easy to don and particularly skin-friendly through special finishing process
- Colour blue - suitable for areas subject to HACCP standards

- Cat. III Low Chemical resistant. AQL 1.5.
According to ASTM F 1671 (ISO 16604) for protection against viral penetration.
According to EN 420. Suitable for food handling.

Glove shape:	flat with rolled edge (ambidextrous)
Material:	nitrile
Colour:	blue
Outside:	textured
Inside:	powder-free halogenated
Size/total length:	S, M, L, XL/med. 240mm
Thickness **(measured in double layer)**:	**0.16mm**

Size	PK	Cat. No.
S	100	**9.006 375**
M	100	**9.006 376**
L	100	**9.006 377**
XL	90	**9.006 378**

1



2



1 2 LLG-Disposable Gloves *strong*, Nitrile, Powder-Free

NEW!

EN 374 EN 374 EN 420

Disposable, nitrile, heavy-walled, protective glove offering an enhanced resistance time against many chemicals. A protective glove for applications with higher safety requirements, but providing greater comfort in use than traditional chemical protective gloves.

- Very sturdy - higher material thickness
- Tried and tested quality product made of nitrile - excellent resistance to skin irritants in foodstuffs
- More resilience through special formulation
- For single use in applications with an increased need for safety when handling chemicals
- Free from phthalates/softeners and allergenic latex proteins
- Easy to don and particularly skin-friendly through special finishing process
- Colour blue - suitable for areas subject to HACCP standards

Cat. III Low Chemical resistant. AQL 1.5.
According to ASTM F 1671 (ISO 16604) for protection against viral penetration.
According to EN 420. Suitable for food handling.

Glove shape:	flat with rolled edge (ambidextrous)
Material:	nitrile
Colour:	blue
Outside:	textured
Inside:	powder-free halogenated
Size/total length:	S, M, L, XL/med. 240mm
Thickness **(measured in double layer)**:	**0.26mm**

Size	PK	Cat. No.
S	100	**9.006 379**
M	100	**9.006 380**
L	100	**9.006 381**
XL	90	**9.006 382**

3



4



3 4 Disposable Gloves Soft Nitril, Nitrile, Powder-Free

EN 374 EN 374

Unigloves

Blue, non-sterile, rolling edges.
Manufactured by EN 455, T. 1-3, AQL 1.5, CE.
Type examination test acc. EN 374 (for "Soft Nitril" blue only).
Suitable for handling food. Supplied in dispenser box containing 100 gloves. **Cat. III Low Chemical resistant** (for "Soft Nitril" blue only)**.**

Size	Colour	PK	Cat. No.
S (6-7)	blue	100	**9.005 312**
M (7-8)	blue	100	**9.005 313**
L (8-9)	blue	100	**9.005 314**
XL (9-10)	blue	100	**9.005 315**
S (6-7)	white	100	**9.005 362**
M (7-8)	white	100	**9.005 363**
L (8-9)	white	100	**9.005 364**
XL (9-10)	white	100	**9.005 365**



1 Disposable Gloves Format Blue, Nitrile, Powder-Free

EN 374 EN 374

Unigloves



Blue, non-sterile, rolled edges.
Manufactured by EN 455, T. 1-2, EN 374, AQL 1.5, CE.
Suitable for handling food. Supplied in dispenser box containing 100 gloves. **Cat. III Low Chemical resistant**

Size	PK	Cat. No.
S (6-7)	100	**9.005 395**
M (7-8)	100	**9.005 396**
L (8-9)	100	**9.005 397**
XL (9-10)	100	**9.005 398**

2 Disposable Gloves Format, Nitrile , Powder-Free

EN 374 EN 374

Unigloves



Non-sterile, hypoallergenic, with beaded cuff and microroughened surface.
Supplied in dispenser box containing 100 gloves. EN 455 T 1-3, CE. Type examination test acc. EN 374. **Cat. III Low Chemical resistant.**

Size	PK	Cat. No.
XS (5 to 6)	100	**9.005 344**
S (6 to 7)	100	**9.005 345**
M (7 to 8)	100	**9.005 346**
L (8 to 9)	100	**9.005 347**
XL (9 to 10)	100	**9.005 348**

3 Disposable Gloves Touch N Tuff®, Nitrile, Powder-Free

EN 374 EN 374

Ansell



- Manufactured from nitrile, TouchNTuff® offers up to four times the puncture resistance of comparable natural-latex gloves, and three times the resistance of similar neoprene gloves.
- It contains no natural rubber proteins, which means no risk of Type I allergies for the wearer. Primary skin irritation studies and Insult Patch tests have also shown no evidence of risk from irritation or allergic contact dermatitis.
- With a unique "Thin Nitrile Technology" formulation, this glove offers easy donning and strong grip in wet or dry conditions.
- The glove is highly versatile and suitable for many different uses.
- AQL 1.5 (EN374)
- 100% nitrile. 0.1mm thick.
- than gloves made of natural rubber or vinyl. Close fitting, and cause minimal hand fatigue.
- Supplied in dispenser box containing 100 gloves. **Cat. III Low Chemical resistant.**

TouchNTuff® is anti-staticity tested (EN 1149-1 & 1149-3) and meets the requirements defined in EN 1149-5

Size	PK	Cat. No.
S (6 to 7)	100	**9.005 400**
M (7 to 8)	100	**9.005 401**
L (8 to 9)	100	**9.005 402**
XL (9 to 10)	100	**9.005 403**

1



1 Disposable Gloves Touch N Tuff® Blue, Nitrile, Powder-Free

EN 374 EN 374

Ansell

- Made from an innovative nitrile compound which offers outstanding chemical and mechanical properties, comfort and dexterity.
- Three times the puncture resistance of latex or PVC disposable. Lighter and cooler, yet safer and more durable; better value for money.
- 100% nitrile; no waxes, silicone or plasticizers.
- Powder-free. No risk of contaminating food with corn starch used to powder gloves.
- Textured finish on fingertips. Improved grip.
- Rolled cuff. Provides added protection at wrist and ensures a secure fit.
- AQL 1.5 (EN374)
- **Cat. III Low Chemical resistant.**

Size	PK	Cat. No.
S	100	**6.090 788**
M	100	**6.090 366**
L	100	**6.091 887**
XL	100	**6.304 322**

2



2 Disposable Gloves KIMTECH SCIENCE*COMFORT NITRILE, Nitrile, Powder-Free

NEW!

EN 374 EN 374

Kimberly-Clark

The KIMTECH SCIENCE*COMFORT NITRILE Glove combines high comfort with quality while providing great protection for low risk applications in research.
- This is a PPE Category III product classified by EC Council Directive 89/686/EEC. Tested in accordance with the EN Norms EN420:2003
- Protection: EN374-1:2003 Chemical Splash and EN374-2:2003 Microbiological Hazards
- In compliance with medical device standards EN455-1, -2, -3, -4
- Virus protection according to ISO 16604:2004 Procedure B
- Antistatic tested - passes EN1149-5:2003
- Synthetic nitrile1 polymer (Acrylonitrile Butadiene), contains no natural rubber latex, powder free

Quality Standards
- Meets or exceeds AQL 0.65 G1 Inspection for freedom from pinholes
- Manufactured in accordance with ISO 9001:2008 and ISO 13485:2003
- Manufactured in compliance with FDA CFR 21 part 820
- **Cat. III Low Chemical resistant.**

Size	Length mm	PK	Cat. No.
XS	240	150	**6.267 319**
S	240	150	**6.267 320**
M	240	150	**6.267 321**
L	250	150	**6.267 322**
XL	250	150	**6.267 323**

E & OE.

1 Disposable Gloves KIMTECH SCIENCE*STERLING*, Nitrile, Powder-Free

EN 374 EN 374 EN 420



Kimberly-Clark

1



- Synthetic nitrile polymer
- Contains no natural rubber latex
- Beaded cuff
- Textured fingertip for more sensitivity
- Ambidextrous
- Reduced storage up to 33%
- Reduces package waste up to 39%
- Up to 50% more gloves in a box
- Certificate of Analysis available online
- Available in all sizes and lengths of 24cm (XS - M), 25cm (L - XL)

Quality Standards
- This is a PPE Category III product classified by EC Council Directive 89/686/EEC. It is tested in accordance with the EN Norms EN 420:2003
- Meets AQL level of 0.65 for pinholes
- Manufactured in accordance with Quality System ISO 9001
- Virus protection according to ISO 16604
- Food contact approved to BfR XXI recommendation
- Smallest thickness 0.07mm
- **Cat. III Low Chemical resistant.**

Size	Length cm	PK	Cat. No.
XS (5-6)	24	150	**9.005 275**
S (6-7)	24	150	**9.005 276**
M (7-8)	24	150	**9.005 277**
L (8-9)	25	150	**9.005 278**
XL (9-10)	25	140	**9.005 279**



1



2



1 2 Disposable Gloves KIMTECH SCIENCE*PURPLE NITRILE*, Nitrile, Powder-Free

EN 374 EN 374 EN 420



Kimberly-Clark

- Contains no natural rubber latex reducing the potential for TYPE I glove-associated reactions
- Textured fingertip, enhances wet and dry grip
- Powder-free
- Beaded cuff, for added strength and ease in donning
- Unique purple colour provides quick visual differentiation
- Ambidextrous
- Virus Protection
- Low AQL for pinholes

Quality Standards
- Meets or exceeds AQL 0.65 (level 3) G1 Inspection for water tightness
- This is a PPE Category III product classified by EC Council Directive 89/686/EEC. It is tested in accordance with the EN Norms EN 420:2003. **Cat. III Low Chemical resistant.**
- Manufactured in accordance with Quality System ISO 9001
- Virus protection according to ISO 16604 procedure B:2004
- Dexterity Classification (EN 420:2003) = 5

Size	Length cm	PK	Cat. No.
XS (5 to 6)	24	100	**9.005 420**
S (6 to 7)	24	100	**9.005 421**
M (7 to 8)	24	100	**9.005 422**
L (8 to 9)	25	100	**9.005 423**
XL (9 to 10)	25	90	**9.005 424**

3



4



3 4 Disposable Gloves KIMTECH SCIENCE*GREEN NITRILE*, Nitrile, Powder-Free

EN 374 EN 374 EN 420



Kimberly-Clark

KIMTECH SCIENCE*GREEN NITRILE gloves offer the fit and feel of latex with the protection of a Category III PPE glove.

- Reduces waste and disposal costs by at least 60%
- Reduced storage - 150% more gloves in the same sized box as conventional latex gloves
- Contains no natural rubber latex
- Textured fingertip, enhances wet and dry grip
- Powder-free
- Beaded cuff, for added strength and ease in donning
- Unique green colour provides quick visual differentiation
- Ambidextrous
- Virus Protection

Quality Standards
- Meets AQL 0.65, G1 Inspection for water tightness
- This is a PPE Category III product classified by EC Council Directive 89/686/EEC. It is tested in accordance with the EN Norms EN 420:2003. **Cat. III Low Chemical resistant.**
- Manufactured in accordance with Quality System ISO 9001
- Virus protection according to ISO 16604 procedure B:2004
- Dexterity Classification (EN 420:2003) = 5

Size	Length cm	PK	Cat. No.
XS (5-6)	24	250	**9.005 176**
S (6-7)	24	250	**7.970 224**
M (7-8)	24	250	**7.970 225**
L (8-9)	25	250	**7.970 226**
XL (9-10)	25	225	**9.005 177**

E & OE.

1 Disposable Gloves Kleenguard G 10, Nitrile, Powder-Free

EN 420

Kimberly-Clark



- Powder-free
- Latex-free
- Textured fingertips
- Designed for tasks requiring maximum dexterity without sacrificing protection
- Smallest thickness 0.05mm
- USDA and FDA approved for food handling
- 200 nitrile gloves per box (only size XS to L)
- **Cat. I**

Size	Length cm	PK	Cat. No.
XS (5-6)	24	200	**9.005 266**
S (6-7)	24	200	**9.005 267**
M (7-8)	24	200	**9.005 268**
L (8-9)	24	200	**9.005 269**
XL (9-10)	24	180	**9.005 270**

2 Disposable Gloves SEMPERCARE® nitrile Aloe, Nitrile, Powder-Free

NEW!

EN 374 EN 420

Semperit



- Powder-free, blue
- ALOE coated
- Latex-free
- Excellent tactile sense
- Thickness 0.14 mm
- **Cat. III Low Chemical resistant. AQL 1.5**

Size	Length cm	PK	Cat. No.
XS	24	200	**9.005 993**
S	24	200	**9.005 994**
M	24	200	**9.005 995**
L	24	200	**9.005 996**
XL	24	180	**9.005 997**

3 Disposable Gloves, SEMPERCARE® nitrile, Nitrile, sterile

NEW!

EN 374 EN 420

Semperit



The tried and tested safety of a nitrile glove - combined with wearing properties similar to latex - make the Sempercare® Nitrile the new generation for an optimum glove solution without natural latex.

- The higher puncture resistance and improved chemical resistance of nitrile - with the same thickness as natural latex - offer the user protection and the feeling of safety.
- The soft material increases wearing comfort and makes it comfortable and safe to work with, even for longer periods.
- The glove is powder free and does not contain any natural latex proteins. This makes it perfect for users with type I allergies who do not want to miss the greater comfort of elastic natural latex.
- Structured finger tips guarantee a good grip, even in moist conditions.
- Thickness 0.14 mm
- AQL 1.5
- 50 pairs in dispenser carton, gloves with turned up cuff in fibre-free internal pouch, sealed in medical peel pack in transport carton
- **Cat. III Low Chemical resistant.**

Size	Length cm	PK	Cat. No.
S	24	50	**6.267 129**
M	24	50	**6.267 130**
L	24	50	**6.267 131**



1 Disposable Gloves NeoTouch®, Neoprene, Powder-Free

EN 374 EN 374

Ansell

- With a latex-free formulation, NeoTouch® gloves are appropriate for the prevention of Type I allergies. Because they're powder-free, they also limit the risk of dermatitis for the wearer.
- They provide excellent resistance to acids, bases and alcohols. Thanks to an exclusive formulation, NeoTouch® gloves are convincingly the most comfortable synthetic single-use gloves available today.
- NeoTouch® gloves have a polyurethane inner-coating that ensures easy donning. Their textured fingertips provide a secure grip in both dry and wet conditions. The beaded cuff ensures a secure hold, and their green colour makes them easy to identify.
- NeoTouch® gloves are inspected to an AQL of 1.5 for pinholes, which matches the legal requirements for medical gloves.
- **Cat. III Low Chemical resistant.**

Size	Length cm	PK	Cat. No.
S	24	100	**6.229 608**
M	24	100	**6.229 607**
L	24	100	**6.229 606**
XL	24	100	**6.239 416**
S	28	100	**6.237 656**
M	28	100	**7.619 653**
L	28	100	**6.230 923**
XL	28	100	**6.237 684**



2 Skin Protection Gel PROGLOVE, for Glove-Work

Peter Greven

- PROGLOVE protects the skin against the undesirable effects of skin softening when wearing airtight gloves (e.g. latex or plastic)
- Crystal clear, alcohol-based gel without grease or perfumes, silicone-free, pH-neutral

Capacity ml	PK	Cat. No.
100	1	**9.191 150**



3 LLG-Glove Dispenser, Coated Wire

NEW!

Dispenser for 3 boxes (pict. 1), with top (left illustr.) or front insert (right illustr.). Mounting material included.
Dispenser for 1 box, with top or side slot. Mounting material included.

Description	For	Dimensions (W x D x H) mm	PK	Cat. No.
front insert	3 boxes	160 x 85 x 400	1	**9.405 369**
top insert	3 boxes	260 x 90 x 400	1	**9.405 370**
top/side insert	1 box	180 x 85 x 140	1	**9.405 371** 4
side insert	1 box	265 x 90 x 155	1	**9.405 372** 5

4



9.405 371

5



9.405 372

E & OE.

LLG-Glove Dispenser for 3 Boxes, Acrylic Glass

NEW!

Dispenser for 3 boxes, with front insert or side slot. High-quality, sturdy design.
Mounting material included.

Description	Dimensions (W x D x H) mm	PK	Cat. No.
front insert, flexible material	260 x 90 x 405 mm	1	**9.405 373** 1
side slot, sturdy material	280 x 87 x 460 mm	1	**9.405 374** 2

1



9.405 373

2



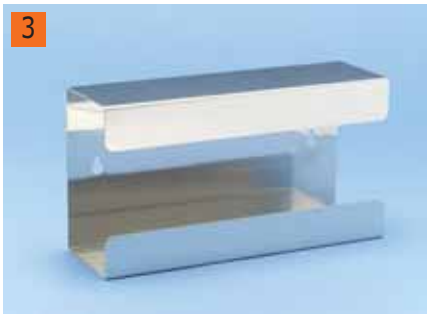
9.405 374

3 4 Glove Dispenser Box, Stainless Steel

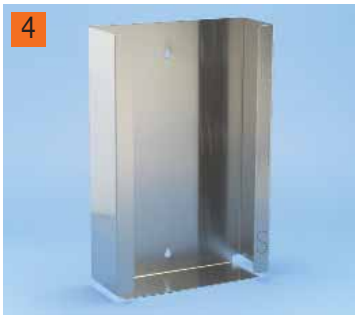
18/8-9 stainless steel, for wall mounting, incl. screws and wall plugs, suitable for 1 dispensing box or suitable for 3 dispensing boxes.

Dimensions (W x D x H) mm	Weight g	For	PK	Cat. No.
250 x 80 x 135	730	suitable for dispensing box 240 x 75 x 133mm	1	**6.232 327**
258 x 96 x 392	1550	suitable for 3 dispensing boxes 256 x 94 x 395mm	1	**6.228 502**

3



4



5 Glove Dispenser, PS, Stainless Steel, Anti-Microbial

Ideal for use in cleanroom, hospitals, and microbiological work areas. MICROBAN® additive prevents growth of moulds and bacteria. High impact, durable resin is resistant to harsh cleaning solutions. The versatile glove box holder can accommodate single box or adjoined together to hold multiple boxes. Modular design allows stacking horizontally. Screws and anchors provided. *Heathrow Scientific*

Dimensions (W x D x H) mm	PK	Cat. No.
254 x 156 x 97	1	**9.005 427**

5



Code letters of chemicals

The code letters of the chemicals against which the glove provides protection constitute part of the marking. The code letters and the corresponding test chemicals and their substance classes are indicated in the table.

Code letter	Test chemical	Substance class
A	Methanol	Primary alcohol
B	Acetone	Ketone
C	Acetonitrile	Nitrile
D	Dichloromethane	Chlorinated paraffin
E	Carbon disulphide	Organic compound containing sulphur
F	Toluene	Aromatic hydrocarbon
G	Diethylamine	Amine
H	Tetrahydrofuran	Heterocyclic or ether compounds
I	Ethyl acetate	Ester
J	n-Heptane	Aliphatic hydrocarbon
K	Sodium hydroxide, 40%	Inorganic base
L	Sulphuric acid, 96%	Inorganic acid

It is essential that the manufacturer's information be studied or the manufacturer consulted directly if appropriate with regard to whether the glove affords protection against the agent, and if so, for what duration.

Standards for safety gloves



EN 374	Protective hand gloves against chemicals and microorganisms;
EN 388	Protective hand gloves against mechanical risks
EN 407	Protective hand gloves against thermal risks (heat and/or fire)
EN 420	note instructions for use
EN 421	Protective hand gloves against ionising radiations and radioactive contamination
EN 511	Protective hand gloves against cold
	Not harmful to food stuffs
AQL-Value:	acceptable quality level for penetration

Explanation of levels

Test	Power stage				
	1	2	3	4	5
Abrasion resistance (number of cycles)	100	500	2000	8000	-
Cut resistance (factor)	1.2	2.5	5	10	20
Tear resistance N	10	25	50	75	-
Piercing power N	20	60	100	150	-

E & OE.

1 Chemical Protection Glove DermaShield®, Polychloroprene, Sterile

EN 374 EN 374 EN 421

Ansell



Made of poly-chloroprene, DermaShield® is free of latex, proteins and accelerators, it minimises both Type I and Type IV allergies associated with natural rubber. While DermaShield® has the comfort and flexibility of natural rubber gloves, at a similarly competitive price, its neoprene composition offers better chemical resistance. And the new beaded cuff prevents the glove from rolling down, providing increased protection. DermaShield®: for optimal product and worker protection. Pack size: 1 pair
- The DermaShield® is sterile and specifically adapted to critical environments ISO 5 (Class 100 & GMP AB).
- AQL 0.65 (EN374) - Ideal Application - Handling of cytostatics
- Cat. III

Length: 310 mm
Thickness: 0.175 mm
Colour: green

Size	PK	Cat. No.
6	1	**9.006 306**
6 ½	1	**7.635 086**
7	1	**7.635 087**
7 ½	1	**9.006 307**
8	1	**7.635 088**
8 ½	1	**9.006 308**
9	1	**7.635 089**

2 Chemical Protection Glove Duo-Mix 405, Neoprene/Latex

EN 388 EN 374 EN 374 EN 421
2 1 2 0

MAPA



Gloves made from a mix of natural rubber and neoprene for high chemical and mechanical resistance. Anatomical shape. Grip finish on palm and fingers. Cotton flock on the inner side for better comfort. Good tactile sensitivity and dexterity, due to the reduced thickness. Packing with 1 pair.

Length: 330 mm
Thickness: 0.7 mm
Colour: yellow/blue
CE: **Cat. III**

Size	PK	Cat. No.
XS (6)	1	**9.005 307**
S (7)	1	**9.005 308**
M (8)	1	**9.005 309**
L (9)	1	**9.005 310**
XL (10)	1	**9.005 311**



1



1 Latex gloves Pro-Fit 6240, super blue



- Super Blue Chemical resistant gloves
- Back and cuff with latex coating
- Cotton jersey lining
- Palm and back of the hand with a roughened surface
- Comfortable to wear, secure grip in humid conditions and handling of slippery objects
- Good abrasion and tear propagation data for a long service life
- Optimal touch, seamless grip surface
- Good cold and heat insulation
- Anatomical fit
- Food contact approved
- Liquid-tight

1 pair per pack . **Cat. III**
Length: approx. 300mm
Thickness: approx. 1.25mm

Size	PK	Cat. No.
7	1	**6.268 358**
8	1	**6.268 359**
9	1	**6.268 360**
10	1	**6.268 361**

2



2 Chemical Protection Glove uvex Profapren, Chloroprene/Latex



Uvex

High-quality unsupported chloroprene safety glove, inner side latex, for use in protecting against a broad spectrum of different chemicals. The silicone-free safety glove provides an excellent balance of properties against chemical and mechanical risks. 1 pair per pack.

Characteristics:
- good combination of flexibility and strength
- resistance against a large number of chemicals and solvents

Applications: chemical industry, metal processing (cleaning), painting/coating

Length: 330 mm
Thickness: 0.75 mm
Colour: dark blue
EN: 374, 388 **Cat. III**

Size	PK	Cat. No.
7	1	**6.228 856**
8	1	**9.414 600**
9	1	**9.414 601**
10	1	**9.414 602**



1 Chemical Protection Glove Profil™ Plus, Latex

NEW!

Ansell

EN 388 EN 374 EN 374 EN 420

A K L



Specially designed for chemical processing in wet conditions. 1 pair per pack.

- Medium weight glove with outstanding grip.
- Excellent resistance to mechanical hazards and enhanced chemical resistance.
- 100% cotton flocklining. Makes the glove softer and more comfortable to wear. Helps absorb perspiration.
- Specially treated to reduce the risk of allergy.
- AQL 0.65 (EN374)

Length: 300 mm
Material: Natural rubber latex
Thickness: 0.55 mm
Colour: yellow
CE: **Cat. III**

Size	PK	Cat. No.
6,5 - 7	1	**6.268 110**
7,5 - 8	1	**6.268 109**
8,5 - 9	1	**6.268 108**
9,5 - 10	1	**6.265 583**

2 Chemical Protection Glove Ultranitril 492, Nitrile

MAPA

EN 388 EN 374 EN 374 EN 420

4 1 0 1 A J K L



Green nitrile glove with cotton flock liner. Anatomical shape. Good grip finish on palm and fingers. High mechanical resistance. Excellent chemical protection against alcohols, oils, greases and hydrocarbons. Thin material for increased dexterity. Comfort, due to the quality of the flock-lining. Packing with 1 pair. **Cat. III**

Length: 320mm
Thickness: 0.38mm
Colour: green

Size	PK	Cat. No.
XS (6 - 6,5)	1	**6.224 148**
S (7)	1	**9.005 170**
M (8)	1	**9.005 180**
L (9)	1	**9.005 190**
XL (10)	1	**9.005 200**
XXL (11 - 11,5)	1	**6.223 413**

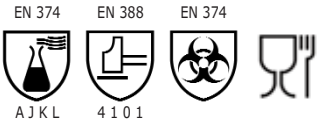


1



1 Chemical Protection Glove uvex Profastrong, Nitrile

Uvex



Nitrile safety gloves, proven in environments involving exposure to acids, grease and solvents.
Non-sterile EN 374, 388. Packaging with 12 pairs. **Cat. III**

Characteristics
- outstanding abrasion resistance
- good grip for wet surfaces
- anatomic shape
- good dexterity

Applications
- laboratories
- food industry
- chemical industry

Colour:	green
Length:	approx. 330 mm
Thickness:	approx. 0.38 mm
EN:	374, 388 (4101)

Size	PK	Cat. No.
7	12	**9.414 605**
8	12	**6.241 238**
9	12	**9.414 606**
10	12	**9.414 607**

2



2 Chemical Protection Glove Stansolv AK-22 381, Nitrile

MAPA



Nitrile glove with glued cotton liner for long term comfort. Due to the patented double layer technology, the glove offers enhanced security when handling chemicals.
Z-pattern-profile for safe grip of wet things. Comfort and thermal insulation, due to the cotton-knit lining. Excellent resistance against oils, greases and lubricants.
Packing with 1 pair. **Cat. III**

Length:	355 mm
Thickness:	0.85 mm
Colour:	green

Size	PK	Cat. No.
S (7)	1	**9.005 206**
M (8)	1	**9.005 207**
L (9)	1	**9.005 208**
XL (10)	1	**9.005 209**
XXL (11)	1	**9.005 199**



E & OE.

1 2 Chemical Protection Gloves uvex Rubiflex S/Rubiflex S, long, NBR

Uvex

EN 374 JKL

EN 388 2121

The comfortable NBR safety gloves, seamlessly coated in a reinforced design, with excellent chemical resistance and outstanding abrasion resistance. 1 pair per pack.

Characteristics:
- anatomic shape
- highly flexible
- very good mechanical characteristics
- excellent resistance to many chemicals, acids, alkalis, mineral oils and solvents
- good water vapour absorption due to the cotton lining

Applications: chemical industry, automotive industry, metal processing industry, mechanical industry, sandblasting

1



Thickness: 0.50 mm
Colour: green
EN: 374, 388, **Cat. III**

2



Size	Length mm	Type	PK	Cat. No.
8	350	Rubiflex S	1	**9.414 608**
9	350	Rubiflex S	1	**9.414 609**
10	350	Rubiflex S	1	**9.414 610**
11	350	Rubiflex S	1	**9.414 611**
8	400	Rubiflex S	1	**6.231 389**
9	400	Rubiflex S	1	**6.231 425**
10	400	Rubiflex S	1	**6.231 447**
9	600	Rubiflex S long	1	**6.301 526**
10	600	Rubiflex S long	1	**9.414 612**
11	600	Rubiflex S long	1	**9.414 613**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

uvex

1



1 Chemical Protection Glove uvex Rubiflex XG35B, NBR

EN 374 J K L

EN 388 3 1 2 1

Uvex

The new, lightweight chemical-resistant safety glove with innovative xtra grip technology combines protection and grip with exceptional comfort and flexibility. 1 pair per pack.
In addition to a comfortable fit, stockinet chemical-resistant safety gloves provide excellent protection against chemicals and mechanical hazards. **Cat. III**

Characteristics:
- Exceptional dry and wet grip
- Multilayer design for excellent resistance time
- Ergonomic fit
- High flexibility
- Excellent resistance to many chemicals
- Ultra lightweight design
- Cotton lining for superior water vapour absorption

Applications: Chemical industry, Automotive industry, Painting, Laboratory work

Length: 350 mm
Thickness: 0.40 mm
Colour: blue/black
EN: 374/388 (3 1 2 1), **Cat. III**

Size	PK	Cat. No.
8	1	**9.414 617**
9	1	**9.414 618**
10	1	**9.414 619**
11	1	**9.414 620**

2



2 Undergloves, Cotton

100% Cotton. Monofilament, ideal to wear under chemical protection gloves. 1 pair per pack. **Cat. I**

Size	Length mm	PK	Cat. No.
6	250	1	**6.235 155**
7	250	1	**7.623 809**
8	250	1	**9.005 222**
9	250	1	**7.625 555**
10	250	1	**7.623 881**
11	250	1	**7.623 810**
12	250	1	**9.005 223**
13	250	1	**6.224 187**



1 Cut-Protection Glove

NEW!

EN 388 EN 420

2 5 4 x

Cut protective, made of hybrid fibre (Kevlar, steel, nylon), cut level 5 (highest possible cut level). Certified EN 388 (mech. risk), Cat. II. Elastic, with Lycra, excellent fit and perfect tactility. Without uncomfortable stitching. Ambidextrous. Cellulose fibre lined, with seaweed extract and silver coating for maintaining good skin health. 1 pair per pack. **Cat. II**



Size	Colour	PK	Cat. No.
7 - 8	yellow	1	**9.005 246**
9 - 10	yellow	1	**9.005 247**

2 3 Cut-Protection Gloves uvex C500 dry/foam

Uvex

EN 388

2 5 4 x

The new uvex C500 range sets new standards in protection, comfort, flexibility, dexterity and economy. 1 pair per pack.

- Model C500 Foam : palm and fingertips coated with soft-grip foam, moisture-repellent
- Model C500 dry : palm with micro-nubs , for dry working areas

Characteristics:
- Patented uvex Profas Bamboo TwinFlex® technology
- innovative SoftGrip coating
- very high cut protection (Cut 5)
- highest wearing comfort due to uvex climazone
- outstanding tactile feel
- high abrasion-resistance
- flexible
- silicone-free according to imprint test



dry



foam

Length: 270mm
Colour: lime/anthracite
EN: 388 (254X)

Size	Type	PK	Cat. No.
7	dry	1	**9.414 650**
8	dry	1	**9.414 651**
9	dry	1	**9.414 652**
10	dry	1	**9.414 653**
11	dry	1	**9.414 654**
7	foam	1	**9.414 655**
8	foam	1	**9.414 656**
9	foam	1	**9.414 657**
10	foam	1	**9.414 658**
11	foam	1	**9.414 659**

4 Safety Gloves Clavies®, Heat Protection up to 232°C

Soft, pliant, all-cotton terry cloth gloves are superb for handling hot objects out of the autoclave or oven, or for other heat protection in the lab, school or industry. Note: Gloves are not waterproof and should not be used to handle dry ice. CE approved.

Bel-Art Products



Length gauntlet mm	Overall length mm	PK	Cat. No.
130	330	1	**9.005 271**
280	470	1	**9.005 272**

1



1 Safety Gloves Nomex, Heat Protection up to 250°C

EN 407 EN 388 EN 420



4 2 3 1 x x 1 2 x x

Very supple, offering excellent movement. Knitted construction, without seams. Temperature resistant up to 250°C.
1 pair per pack. **Cat. II**

Description	PK	Cat. No.
Gloves, standard	1	**9.005 250**
Gloves with forearm protection	1	**9.005 260**

2



2 Safety Gloves uvex K-Basic extra, Cut and Heat-Protection up to +250°C

Uvex

EN 388



1 3 4 x

This coarse-knitted glove made of 100% Kevlar® is lined with cotton, making it ideal for protecting the wearer against heat and cuts.
The combination of Kevlar® and cotton guarantees good heat insulation and enables the handling of objects up to +250°C without losing anything in terms of cut resistance. 1 pair per pack.

Characteristics:
- Very good protection against cut injuries
- Additional cotton cladding
- Comfortable to wear

Applications: metal processing, automotive industry, glass industry, foundries

Length: 220mm to 270mm
Colour: yellow
EN: 388 (1 3 4 X)

Size	PK	Cat. No.
8	1	**9.414 660**
10	1	**9.414 661**
12	1	**9.414 662**

3



3 Safety Gloves, Heat Protection up to 500°C

NEW!

Jutec

EN 388 EN 407



- 5-finger glove
- Protection against contact heat short term up to 500°C
- Made of aramide fabric with special insulation
- Usable on both sides
- Abrasion resistant

Length: 400mm
EN: 388, 407

Description	PK	Cat. No.
5 finger glove, heat protection	1	**9.006 893**

E & OE.

1 Safety Mittens, Heat Protection up to 500°C

NEW!

Jutec

EN 388 EN 407



- Mitten
- Up to 500°C contact heat short term
- Made of aramide fabric with special insulation
- Usable on both sides
- Abrasion resistant

Length: 400mm
EN: 388, 407

Description	PK	Cat. No.
Heat protection glove	1	**9.006 892**

1



2 Arm Protector, up to +500°C

NEW!

Jutec

- Arm protection sleeve made of Aramid
- Protection against short term radiation heat up to 500°C
- with elastic band at both ends

Length: 420 mm
EN: 388, 407

Description	PK	Cat. No.
Arm protector	1	**9.006 891**

2



3 Hand Protectors Hot Hand®

Made of thick-walled silicone.
Safe, non-slip protection against very hot or cold surfaces.
Measures 10cm x 19cm with durable silicone rubber construction that remains flexible from -57°C to +260°C. End pockets accept thumb and fingers to grasp objects.
Mitts have multiple studs with concave tips thus providing secure grip on virtually all hot/cold surfaces.

Type	PK	Cat. No.
Hot Hand®	1	**9.119 900**

3





1



Standard

2



Waterproof

1 2 Protection Gloves Cryo Gloves® Standard/Waterproof

EN 511 EN 388 EN 420



Developed to provide protection while working in deep-cold environments or handling ultra-cold objects and media (in the range of minus 160°C). Especially for secure handling dry ice (minus 79°C), sample handling (minus 86°C/minus 152°C) and handling ultra cold specimen - those stored in the vapour phase of liquid nitrogen. CE-marked, according normative EN 511, EN 420, EN 388, **CAT. III**
CAUTION: Not intended for immersion in liquid nitrogen or other liquid cryogens.
Cryo Gloves Waterproof : Additional seamless Teflon inner glove ; unsurpassed protection against the danger of longer stay in ultra - low temperatures down to -160°C .
1 pair per pack.

Size	Description	Type	PK	Cat. No.
S (8)	wrist length	Standard	1	**9.405 116**
M (9)	wrist length	Standard	1	**9.405 117**
L (10)	wrist length	Standard	1	**9.405 118**
XL (11)	wrist length	Standard	1	**9.405 119**
S (8)	forearm length	Standard	1	**9.405 120**
M (9)	forearm length	Standard	1	**9.005 446**
L (10)	forearm length	Standard	1	**9.005 447**
XL (11)	forearm length	Standard	1	**9.405 121**
M (9)	elbow length	Standard	1	**9.005 451**
L (10)	elbow length	Standard	1	**9.005 452**
XL (11)	elbow length	Standard	1	**9.405 122**
M (9)	shoulder length	Standard	1	**9.405 123**
L (10)	shoulder length	Standard	1	**9.405 124**
XL (11)	shoulder length	Standard	1	**9.405 125**
S (8)	wrist length	Waterproof	1	**9.405 126**
M (9)	wrist length	Waterproof	1	**9.405 127**
L (10)	wrist length	Waterproof	1	**9.405 128**
XL (11)	wrist length	Waterproof	1	**9.405 129**
S (8)	forearm length	Waterproof	1	**9.405 130**
M (9)	forearm length	Waterproof	1	**9.405 131**
L (10)	forearm length	Waterproof	1	**9.405 132**
XL (11)	forearm length	Waterproof	1	**9.405 133**
M (9)	elbow length	Waterproof	1	**9.405 134**
L (10)	elbow length	Waterproof	1	**9.405 135**
XL (11)	elbow length	Waterproof	1	**9.405 136**
M (9)	shoulder length	Waterproof	1	**9.405 137**
L (10)	shoulder length	Waterproof	1	**9.405 138**
XL (11)	shoulder length	Waterproof	1	**9.405 139**

3



3 Cryo-Temperature Protection Kit CRYO-TEMP-SHIELD®

Consisting of:
- 1 pair Cryo Gloves® Standard, size: optional, **see table**
- 1 x face protection shield with adjustable head mounting
- 2 x safety labels, 300mm diameter, entitled "Face protection" and "Wear gloves"
- 1 x protection apron, Cryo Apron®, width: 610mm, length: 1070mm

Type	Type	Size	PK	Cat. No.
1001-S	Gloves forearm length	S (8)	1	**9.405 140**
1001-M	Gloves forearm length	M (9)	1	**9.405 141**
1001-L	Gloves forearm length	L (10)	1	**9.405 142**
1001-XL	Gloves forearm length	XL (11)	1	**9.405 143**
1102-M	Gloves elbow length	M (9)	1	**9.405 144**
1102-L	Gloves elbow length	L (10)	1	**9.405 145**
1102-XL	Gloves elbow length	XL (11)	1	**9.405 146**
1103-M	Gloves shoulder length	M (9)	1	**9.405 147**
1103-L	Gloves shoulder length	L (10)	1	**9.405 148**
1103-XL	Gloves shoulder length	XL (11)	1	**9.405 149**

For our cryogenic product range, please have a look at page 709.

E & OE.

Cleansing Lotion Ivraxo® Soft V

NEW!

- mild skin cleansing lotion for lightly soiled hands
- good skin tolerance because of a balanced cleanser combination
- very skin-friendly
- adapted to the natural pH-value of human skin
- remoisturizing
- soap-free

Peter Greven

1



9.191 155

2



9.191 160

Description	PK	Cat. No.	
250ml	1	**9.191 155**	1
1000ml	1	**9.191 156**	
Dosing pump for 1000ml- hard bottle	1	**9.191 160**	2

3 Cleansing Lotion IVRAXO® ACTIVE PEARLS®

- hand cleansing paste with soft and smooth ACTIVE PEARLS® for heavy soiling
- good skin tolerance through ACTIVE PEARLS® (ASP), without sharp or hard abrasives
- skin-friendly, cleanser combination
- solvent-free and soap-free
- recommended for frequent washing

Peter Greven

3



Capacity ml	PK	Cat. No.
250	1	**9.191 158**

4 Skin Protection Cream LINDESA® with Beeswax

NEW!

Non-greasy, quickly absorbed. The cream strengthens the defensive functions of the skin, preventing skin damage from external pollution and soothes irritation. Smooths and cleans without leaving a residue. LINDESA® gives the skin elasticity and suppleness through its special caring agents. The sense of touch is not affected. For low levels of soiling it provides protection against weak acids, alkalis and organic substances.

Peter Greven

4



Capacity ml	PK	Cat. No.
50	1	**9.191 159**
100	1	**9.191 161**

5 Skin Protection Cream LINDESA® O with Beeswax

Moderately greasy. Particularly suitable for protecting the skin against varnishes, oils, petroleum spirit, resins, dyes, paints etc. as well as for after-work care for dry skin.

Peter Greven

5



Capacity ml	PK	Cat. No.
100	1	**9.191 148**

6 Skin Protection Cream LINDESA® K with Beeswax and Chamomile

Quickly absorbed. The cream strengthens the defensive functions of the skin, preventing skin damage from external pollution and soothes irritation. Smooths and cleans without leaving a residue. Using LINDESA® K avoids greasy smears on surfaces and is therefore suitable for workers involved with enamelling, electronics production, or final inspection.

Peter Greven

6



Capacity ml	PK	Cat. No.
100	1	**9.191 149**

1



1 Industrial Health and Safety Cream Chinosol

Medical skin ointment for protection against industrial skin allergies, e.g. caused by organic solvents, oils, varnishes, paints etc.
45ml tube.

Capacity ml	PK	Cat. No.
45	1	**9.191 010**

2



2 Tube Holder Tubenboy®

Clean, aesthetic and for optimal storage and handling of paste and grease tubes. Holds metal and plastic-bodied tubes in an upright position. 66mm length, white, ABS/SAN

Type	PK	Cat. No.
Tube holder Tubenboy®	1	**9.116 960**

3 Care Lotion Trixo® with Collagen

B. Braun

Hand and skin care lotion for normal skin
- Skin-neutral pH
- Free of colourants
- Low-allergenic perfumes and preservatives
- Dermatologically tested
- Fast absorbing, non greasy
- The skin retains its natural grip after the lotion is applied
- Soothes irritated skin and maintains the skin's moisture film

Type	Capacity ml	PK	Cat. No.
Tube	100	1	**9.191 231**
Dispenser	500	1	**9.191 233**

3



E & OE.

1 LLG-Laboratory coat, 100% cotton

NEW!

- very solid material, excellent wearing comfort
- snap fasteners (press buttons); easy and quick to open
- with fold-down collar
- one outside breast pocket and two side pockets
- washable up to 60°C
- lady's coat with stitched-down back belt

Material: 100% cotton
Colour: White
Weight: 220 g/m²

Size	Description	PK	Cat. No.
36/38	Ladies coat	1	**9.414 342**
40/42	Ladies coat	1	**9.414 343**
44/46	Ladies coat	1	**9.414 344**
44/46	Mens coat	1	**9.414 345**
48	Mens coat	1	**9.414 346**
50	Mens coat	1	**9.414 347**
52	Mens coat	1	**9.414 348**
54	Mens coat	1	**9.414 349**
56	Mens coat	1	**9.414 350**

1



2 Ladies laboratory coat Type 81509, 100% cotton

Uvex

With long sleeves and fitted waist.
Reversable collar, concealed buttons with press buttons, 1 outside breast pocket left,
2 side pockets with diagonal access, straight sleeve seam with press buttons for width adjustment with press buttons for width adjustment, Öko-Tex Standard 100.

Material: 100% cotton
Colour: White
Weight: approx. 210g/m²
Length: approx. 105cm

Size	PK	Cat. No.
36 (S)	1	**9.414 351**
38 (S)	1	**9.414 352**
40 (M)	1	**9.414 353**
42 (M)	1	**6.323 052**
44 (L)	1	**9.414 355**
46 (L)	1	**9.414 356**
48 (XL)	1	**9.414 357**

2



3 Mens laboratory coats Type 81996, 100% cotton

Uvex

Reversible collar, concealed buttons, 1 outside breast pocket left, 1 inside breast pocket right, 2 side pockets with diagonal access with light grey piping, 2 short side slits, straight, untapered back, straight sleeve seam, Öko-Tex Standard 100, UV-Standard 801

Material: 100% cotton
Colour: White
Weight: approx. 240g/m²
Length: approx. 96cm

Size	PK	Cat. No.
44/46	1	**9.414 371**
48/50	1	**9.414 373**
52/54	1	**9.414 375**
56/58	1	**9.414 377**
60/62	1	**9.414 379**

3



4 Visitors gown, PP

NEW!

Unigloves

- shirt collar
- without pockets
- 4 press studs
- weight: 34g
- size universal
- individually packed in polybag

Size	PK	Cat. No.
universal	50	**9.414 051**

4



1



1 Laboratory coat KIMTECH Science*A7 P+

NEW!

Kimberly-Clark

- Certified PPE Cat III directive 89/686/EEC
- Type 6 limited chemical splash protection
- Micro-organism protection tested
- EN1149-1:1995 Antistatic clothing
- High performance chemical resistant fabric
- Low lint fabric, Helmke Drum Category II
- 99% particle and bacterial filtration efficiency
- Individually packed, 15 p. in an outer package for ISO 7 Grade C areas
- Silicon-Free

Design Features
- Abrasion-resistant film-coated polypropylene
- Mandarin collar
- Elastic cuff, thumb-loops and extra-length arms
- High strength triple stitched seams

Size	PK	Cat. No.
S	15	**4.653 906**
M	15	**4.653 907**
L	15	**4.653 908**
XL	15	**4.653 909**
XXL	15	**4.653 910**

2



2 Laboratory Coat Tyvek® PL309

NEW!

DuPont de Nemours

Protective coat Dupont Tyvek® PL309, size S - XXL, 2 pockets, with zipper, white, PE-Spunbond nonwoven.
Tyvek® garments are composed of flash spun high density polyethylene, providing an ideal balance of protection, durability and comfort. Tyvek® is permeable to both air and water vapour, yet repels water-based liquids and aerosols. It offers an excellent barrier against fine particles and fibres (down to 1 micron in size), is ultra-low-linting and antistatically treated. Silicon non-added.

Size	PK	Cat. No.
S	50	**9.390 049**
M	50	**9.390 050**
L	50	**9.390 051**
XL	50	**9.390 052**
XXL	50	**9.390 053**

3



3 LLG-Working and Chemical Protective Apron Guttasyn®, PVC/PE

Made from PVC with reverse side made of PE. Material thickness: 0.5mm. Side and neck ribbons made of woven plastic fabric and securely attached to the apron with welded PVC eyelets. Easy to clean, hygienic and dirt-repellent PVC surface. Liquids will not be absorbed but drain off the surface. Machine wash at 60°C. Colour: white. Acc. to 89/686/EWG (Cat. III), EN 467 and EN 14605:2005.

Width mm	Length mm	PK	Cat. No.
800	1000	1	**9.414 415**
800	1200	1	**9.414 417**
1000	1200	1	**9.414 419**

1 Working and Chemical Protective Apron LDPE

NEW!

Apron, LDPE, 25µm, white, plain or 33µm, white embossed
- impermeable to moisture
- very hard-wearing
- high flexibility and tear proof

Width mm	Length mm	Thickness µm	Package contents	PK	Cat. No.
1250	700	25, plain	1 x 100, Flat pack, individually withdrawable	100	**6.265 697**
1250	750	33, embossed	1 x 50, Tear-off block	50	**6.265 698**

1



2 Cryogenic Apron Cryo Apron®

The Cryo-Apron® provides a high-level of thermal protection to the operater's torso and upper legs against cryogenic splashes and ultra-cold vapour in harsh cryogenic atmospheres, typically whilst transferring cryogens (in a range of minus 160°C). With adjustable straps at neck and waist. Also useable in cleanroom environments.
CE-marked, according normative EN 511, EN 420, EN 388, **CAT. III**

Width mm	Length mm	PK	Cat. No.
610	1210	1	**6.227 849**
610	1070	1	**6.228 898**

2



3 LLG-Overall tritex® pro White, Type 5/6

NEW!

Particle-tight, and to a limited extent spray-tight chemical protective clothing

The coverall made of 3-layer SMS material (spunbond-meltblown-spunbond) is robust and breathable. A meltblown filter membrane is embedded between two durable outer layers. Comfortable to wear, this coverall is a pleasant, protective companion in many work areas. Special features are the hood, the zipper cover strip, the back rubber element, and the arm and leg rubber elements.

Cat. III/CE0321/Type 5/6

Coverall individually packed!

Size	PK	Cat. No.
M	5	**6.266 640**
L	5	**6.266 641**
XL	5	**6.266 642**
XXL	5	**6.266 643**
XXXL	5	**6.266 644**

3



4 Disposable Protective Suits with Hood, PP

White, with hood. CE category I. Weight: 37g. Individually packed in polybag. *Unigloves*

Size	PK	Cat. No.
L	10	**9.414 047**
XL	10	**9.414 048**
XXL	10	**9.414 049**

4



1



1 Disposable Chemical Protection Coverall 4B

NEW!

Material: polyethylene-laminate

Uvex

- model no. 9878
- colour white/orange
- excellent wearer comfort due to the breathable, light and flexible material
- re-sealable zipper flap and taped seams ensure optimum protection against penetration by liquid aerosols and solid particles
- the hood is easily compatible with filtering face masks
- middle finger loops prevent sleeves from sliding up
- approved for protection against pesticides according to DIN 32781
- silicone free
- suitable for cleanroom environment (Class 7, ISO 14644-1)
- chemical protection: personal protective equipment category 3, EN 14605(Type 4), EN ISO 13982-1(Type 5), EN 13034(Type 6), EN 1149-5, EN 14126,

Size	PK	Cat. No.
S	5	**9.414 100**
M	5	**9.414 101**
L	5	**9.414 102**
XL	5	**9.414 103**
XXL	5	**9.414 104**
XXXL	5	**9.414 105**

2



2 Disposable Chemical Protection Coverall Tyvek® Classic Xpert, Type 5/6

NEW!

DuPont™ Tyvek® Classic Xpert, model CHF5. Hooded coverall available in white, in sizes S to XXXL. Robust yet lightweight (<180g per garment). 3-piece hood for optimal fit to head and face when turning. Elasticated face, wrists and ankles as well as glued-in waist elastic. Ample crotch area for freedom of movement. Large, easy-to-grasp zipper puller.

DuPont de Nemours

Tyvek® garments are composed of flash spun high density polyethylene, providing an ideal balance of protection, durability and comfort. Tyvek® is permeable to both air and water vapour, yet repels water-based liquids and aerosols. It offers an excellent barrier against fine particles and fibres (down to 1 micron in size), is ultra-low-linting and antistatically treated. Silicon non-added.
Applications for Tyvek® Classic Xpert garments include those found in pharmaceutical handling, chemical processing, the oil and gas industry, general maintenance and operations and many others.

- Chemical protective clothing, Category III, Type 5-B and 6-B
- EN 14126 (barrier to infective agents), EN 1073-2 (protection against radioactive contamination)
- Antistatic treatment (EN 1149-5) - on both sides
- Stitched external seams featuring patent-pending technology for enhanced liquid spray tightness
- Very low inward leakage thanks to optimised design
- Tyvek® auto-lock zipper and zipper flap for increased protection

Size	PK	Cat. No.
S	1	**9.390 055**
M	1	**9.390 056**
L	1	**9.390 057**
XL	1	**9.390 058**
XXL	1	**9.390 059**
XXXL	1	**9.390 054**

3



3 Bouffant Caps, PP

Unigloves

- polypropylene
- non-woven fabric
- soft with elastic band
- free from fibre-glass and breathable
- 52cm circumference.

Colour	PK	Cat. No.
Green	100	**9.414 040**
White	100	**9.414 041**
Blue	100	**9.414 042**

1 Protective Hood Tyvek® PH30L

NEW!

Protective hood Dupont Tyvek® PH30LO, white, PE-Spunbond nonwoven

DuPont de Nemours

Colour	PK	Cat. No.
white	100	**9.390 013**



2 Beard Mask, White, PP, Detectable

NEW!

This beard mask has a detectable strip on the inside. That's why it can be detected by a dector machine at any time- even if the beard mask gets into the production. Because of the comfortable PP-material the masks are very favorable.
- air-permeable and breathable
- ideal for special hygienc-sensitive areas

Colour	Description	PK	Cat. No.
white	Beard mask, detectable	1000	**6.260 903**



3 Sleeve Guard Tyvek®

NEW!

- 50 cm long sleeve, white and in one size.
- Adjustable arm opening.
- Stitched internal seams.
- Upper-arm in blue-coloured thread for identification purposes

DuPont de Nemours

Type	PK	Cat. No.
Sleeve guard Tyvek®, 50 cm	200	**6.263 193**



4 Disposable Overshoes, CPE

Blue Plastic CPE, PVC-free. Anti-static treated. Usage: Laboratory, clinical and food industries. Pack of 100.

Type	PK	Cat. No.
Disposable overshoes	100	**9.414 080**



5 Disposable Overshoes, PP,CPE

- white non-woven fabric
- blue CPE walking sole
- Length approx. 40cm

Unigloves

Type	PK	Cat. No.
Disposable overshoes	50	**9.414 050**



6 Disposable Overshoes Tyvek® Posa

NEW!

Disposable Overshoes Tyvek® Posa, bottom with antislip area, size Gr. 36-42 or size 42-46, white, PE-Spunbond nonwoven.

DuPont de Nemours

Description	PK	Cat. No.
Disposable overshoes Gr. 36 - 42	200	**9.390 022**
Disposable overshoes Gr. 42 - 46	200	**9.390 021**



1



2



GHS 01 / GHS 02 / GHS 03

3



GHS 04 / GHS 05 / GHS 06

4



GHS 07 / GHS 08 / GHS 09

1 2 3 4 LLG-GHS Warning Labels, Self-Adhesive, Roll in Dispenser Box

Dispenser box of 250 labels. These labels are produced using an extremely resistant 100µm PE film. Due to their special surface coating they are resistant to most solvents and excellent for indoor or outdoor use. The strong adhesive, although permanent, can be removed from glass containers without leaving any trace.
Trilingual signal word: German, English, French.
Available in 2 sizes.

Type	Description	Label	Dimensions mm	PK	Cat. No.
GHS 01	warning	exploding bomb	26 x 37	250	**9.105 700**
GHS 01	danger	exploding bomb	26 x 37	250	**9.105 701**
GHS 02	warning	flame	26 x 37	250	**9.105 702**
GHS 02	danger	flame	26 x 37	250	**9.105 703**
GHS 03	warning	flame over circle	26 x 37	250	**9.105 704**
GHS 03	danger	flame over circle	26 x 37	250	**9.105 705**
GHS 04	warning	gas cylinder	26 x 37	250	**9.105 706**
GHS 05	warning	corrosive	26 x 37	250	**9.105 707**
GHS 05	danger	corrosive	26 x 37	250	**9.105 708**
GHS 06	danger	skull and crossbones	26 x 37	250	**9.105 709**
GHS 07	warning	exclamation mark	26 x 37	250	**9.105 710**
GHS 08	warning	health hazard	26 x 37	250	**9.105 711**
GHS 08	danger	health hazard	26 x 37	250	**9.105 712**
GHS 09	warning	environment	26 x 37	250	**9.105 713**
GHS 01	warning	exploding bomb	37 x 52	250	**9.105 720**
GHS 01	danger	exploding bomb	37 x 52	250	**9.105 721**
GHS 02	warning	flame	37 x 52	250	**9.105 722**
GHS 02	danger	flame	37 x 52	250	**9.105 723**
GHS 03	warning	flame over circle	37 x 52	250	**9.105 724**
GHS 03	danger	flame over circle	37 x 52	250	**9.105 725**
GHS 04	warning	gas cylinder	37 x 52	250	**9.105 726**
GHS 05	warning	corrosive	37 x 52	250	**9.105 727**
GHS 05	danger	corrosive	37 x 52	250	**9.105 728**
GHS 06	danger	skull and crossbones	37 x 52	250	**9.105 729**
GHS 07	warning	exclamation mark	37 x 52	250	**9.105 730**
GHS 08	warning	health hazard	37 x 52	250	**9.105 731**
GHS 08	danger	health hazard	37 x 52	250	**9.105 732**
GHS 09	warning	environment	37 x 52	250	**9.105 733**

5



5 LLG-Labels with "Biohazard" Symbol

Ø 9.5mm. Self-adhesive. Printing protected. For labeling of 0.5 to 2.0ml microtubes that contains potentially hazardous substances. The labels have excellent heat resistance, chemical resistance and UV resistance and a very good adhesion to various materials, even on rough or non-polar surfaces such as on plastics with low surface energy. The material is UL certified. (File MH26760).
1000 labels per roll, in dispensing box.

Description	PK	Cat. No.
"biohazard" symbol	1000	**9.105 740**

6



7



6 7 Prohibitive warning labels

NEW!

Self-adhesive vinyl.

Type	Diam. mm	PK	Cat. No.
Food and drink prohibited	200	1	**9.105 451**
Food and drink prohibited	100	1	**9.105 450**
Smoking prohibited	100	1	**9.105 452**
Smoking prohibited	200	1	**9.105 453**
Fire, open flames and smoking	100	1	**7.661 153**
Minisymbol collecting sheet	20	20	**9.105 384**

E & OE.

Eye-Wash Bottle, Barikos

Barikos KS
Barikos KS and Mini Barikos KS are maintenance-free models of eye wash bottles. Containing water, they can be kept ready for use for at least two years in the sealed state. Both models are ideal for including within first aid boxes and sets. All above mentioned Barikos eyewash bottles comply with EN 15154-4. A protective cover clips onto the spray head of the eye wash bottle thus preventing any leakage. The tamper-evident seal guarantees proper function.

Barikos K
Barikos and Barikos K are designed to be filled with clear water. If the user is likely to be operating an eyewash bottle when standing, we recommend the Barikos. The user need only incline his head slightly downwards, ensuring good contact with the spray head of the bottle. The Barikos K eyewash bottle (vol.620 ml) can be used immediately, even when the injured person is lying down. As soon as the bottle is tilted downwards, a patented sliding valve opens and the washing fluid reaches the spray head unhindered. The Mini Barikos eyewash bottle (vol.175ml) is designed for persons who are frequently present in different working areas.

All bottles with sliding valve are suitable for use with upright and with the downward spray head.

Description	PK	Cat. No.	
Barikos KS, 620ml, filled	1	**9.005 009**	1
Mini Barikos KS, 175ml, filled	1	**9.005 008**	2
Barikos, 620ml, empty	1	**9.005 011**	
Mini Barikos, 175ml, empty	1	**9.005 020**	
Barikos K, 620ml, empty	1	**9.005 014**	
Barikos K / KS wall unit for 1 eye wash bottle, plastic coated steel wire	1	**9.005 015**	3
Barikos K / KS wall unit for 2 eye wash bottles, platic with transparent lid	1	**9.005 017**	4
Barikos K / KS wall unit for 1 eye wash bottle, platic with transparent lid	1	**6.076 057**	5

1

9.005 009

2

9.005 008

3

9.005 015

4

9.005 017

5

6.076 057

Eye Wash oculav Nit®

oculav NIT® Eye Wash
First aid eye wash sterile solution. 250ml of sterile solution for eye wash treatment at the accident scene. Especially effective against eye injuries stemming from acid and caustic burns as well as pepper, CS and tear gases.
- Easy to dispense, providing gentle removal of foreign bodies
- Temperature-resistant, no contamination, maintenance-free
- One handed use
- According to MPG (German Act on Medical Devices) DIN EN 15154-4.
- can be stored for at least 3 years

oculav NIT®-Box
Orange plastic box, size 260mm x 160mm x 80mm, with printed inscriptions and practical wall brackets. With 4 ready to use bottles oculav NIT® Eye Wash. The first-aid set for eye injuries contains DuOcul eye compresses, eye flaps, plaster strips, compress and disposable gloves.

Description	PK	Cat. No.	
oculav NIT® Eye Wash, 250ml bottle	1	**9.005 001**	6
oculav NIT®-Box with 4 x 250ml bottles	1	**9.005 002**	7

6


9.005 001

7

9.005 002

8 Eye Wash Ampoule QuickRinse, 0.9% NaCl, Sterile

NEW!

B-SAFETY

Sterile 20 ml eye wash ampoule for rinsing away dust and dirt. Contains 0.9 % sodium chloride solution, identical to the eye's natural salt content. For refilling the QuickSafe Box and for individual application. Shelf life: unopened 3 years

Description	PK	Cat. No.
QuickRinse Eye wash ampoules, 5 x 20ml sterile 0.9% NaCl	5	**9.733 826**

8


1



9.733 794

2



6.240 397

Eye Wash Bottle, 0.9% NaCl, Sterile

NEW!

B-SAFETY

- choice of 0.2 litre (washing time approx. 2 minutes) or 0.5 litre (washing time approx. 5 minutes) bottles
- Duo wash bottle for both eyes 1000 ml (washing time approx. 5 minutes)
- ergonomic eye cup - keeps the eyes open during application
- saline solution (0.9%)
- according to DIN EN 15154-4
- CE-marked
- shelf life: 3 years

Applications:
- mobile application
- transportation of dangerous goods acc. GGVS
- emergency medication
- First-aid boxes
- refill unit for eye wash emergency station
- NEW: eye wash bottle DUO for simultaneous washing of both eyes

Description	PK	Cat. No.	
Eye wash bottle 0,9% NaCl, 200ml	1	**9.733 794**	1
Spare eyewash bottle, 0,9% NaCl, 500ml	1	**9.733 793**	
Eye wash bottle 0,9% NaCl, DUO	1	**6.240 397**	2
Eye-wash bottle DUO 1000ml			

3



9.733 788

4



9.733 817

Eye Wash Bottle pH-Neutral

NEW!

A small, handy bottle containing 4.9% sterile phosphate buffer solution, that neutralises the eye's fluid after accidents involving acids and alkalies.
- shelf life: 3 years
- rinsing time: about 2 minutes
- according to DIN EN 15154-4

Applications:
- mobile application
- emergency medication
- First-aid boxes
- refill unit for eye wash emergency station

NEW: eye wash bottle DUO for simultaneous washing of both eyes.

Description	PK	Cat. No.	
Eye wash bottle, pH neutral, 200ml, single	1	**9.733 788**	3
Eye wash bottle pH neutral DUO, 500ml	1	**9.733 817**	4

5



5 Eye Wash Emergency Station DUO

NEW!

B-SAFETY

For parallel treatment of both eyes. With one pH neutral DUO eye wash bottle with 500ml sterile phosphate buffer solution (4.9%) and one DUO eye wash bottle with 1000ml sterile sodium chloride solution (0.9%). With wall mounting, enclosed piktogram and mirror. Instructions included. Especially suitable for workplaces where chemicals and contaminents can penetrate the eye. Advice: Also after treatment with pH neutral solution continued flushing until medical treatment with sodium chloride solution is recommeded. Shelf life: 3 years. According to DIN EN 15154-4:2009.

Description	PK	Cat. No.
Eye wash emergency station DUO	1	**9.733 816**
Eye wash bottle DUO, pH neutral , 500ml	1	**9.733 817**
Eye wash bottle sodium chloride solution DUO, 1000ml	1	**6.240 397**

3 Eye Wash Emergency Station, Wall-Mounting

NEW!

A dust-proof wall mounted station containing one bottle 200ml sterile phosphate buffer solution and one bottle 500ml sterile sodium chloride solution complete with instructions and a mirror or eye wash emergency station DUO with one bottle 500 ml sterile phosphate buffer solution and one bottle 1000 ml sterile sodium chloride solution. Especially suitable for workplaces where on the spot rinsing is required, smaller workplaces, and mobile workplaces. Bottles according to DIN EN 15154-4. *B-SAFETY*

Dimensions eye wash station (WxDxH):	227 x 110 x 265mm
Dimensions eye wash station DUO (WxDxH):	250 x 115 x 355mm
Durability:	3 years
Flush time:	about 7 minutes

Description	PK	Cat. No.	
Eye wash emergency station, wall-mounting	1	**9.733 787**	1
Eye wash emergency station DUO, for both eyes, wall-mounting	1	**6.253 311**	2
Eye wash bottle, pH-neutral, 200ml	1	**9.733 788**	
Eye wash bottle DUO, pH neutral , 500ml	1	**9.733 817**	
Eye wash bottle, 0,9% NaCl, 500ml	1	**9.733 793**	
Eye-wash bottle DUO, 0,9% NaCl, 1000ml	1	**6.240 397**	

1



9.733 787

2



6.253 311

3



4 5 Mini Eyewash Station EyesFresh

Ideal for the lab, filling stations or all work places where aggressive substances are used. *Bürkle*
"Eyes Fresh" can be attached to any standard cold water tap. For normal use of the tap, just press the button and the function changes back from the eye wash (returns automatically to eyewash-function when the tap is closed). Can be fitted onto taps with M22x1, 1/2" or 3/8" outer thread.

Description	PK	Cat. No.
Mini eyewash station EyesFresh	1	**6.076 887**

4



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9.733 779

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9.733 786

3

3 Hand-Held Drench Hoses

B-SAFETY

Two sprays in one. The hose can be used as a fixed eyewash when fitted into the mount. This allows the injured person to use both hands to hold open the eyes. The hose can also be removed from the mount so that other body parts and reclining patients can be treated.

- For wall and table mounting
- Wall-/ table mount included
- This drench hose meets EN 15154-2:2006 requirements
- DIN certification label included
- The spray heads ensure a wide distribution of water so that areas around the eyes are also covered and the exact positioning of the eyes is therefore not critical
- Large holes in the spray heads protect against limescale. The spray heads can be removed for cleaning purposes
- Rubber shrouds on the nozzles help prevent accidental injury
- Self-closing valve with squeeze lever operation
- Lightweight dust caps fall off automatically on operation
- Integral jet regulator keeps the water jet constant independent of the water pressure
- Built-in non-return valve prevents any backflow of contaminated water

Spray height: 250mm
Hose length: 1500mm
Connection: 1/2" swivel nut
Water output: 7 litres/min per spray head, regulated
Inlet fitting: M 28 x 80mm.

Description	Connection	PK	Cat. No.	
1 spray head, 45° angle	½" female	1	**9.733 778**	
2 spray heads, 45° angle	½" female	1	**9.733 779**	1
1 spray head, vertical	½" female	1	**9.733 786**	2

4 8 Safety Eye Showers

B-SAFETY

- With two high performance spray heads
- Dust caps, which open automatically on operation, protect against dirt inside the spray heads
- Rubber sleeves protect the person seeking help against further injuries
- Table and wall mounting bracket
- Stainless steel covered hose 1500 mm
- Flow rate: 7 liter/minute/spray head
- Integrated flow regulation which guarantees uniform jet of water independent from water pressure
- According to ANSI Z358.1-2004 and DIN EN 15154-2:2006
- DIN-DVGW tested and certified

Description	Connection	Attachment	PK	Cat. No.	
Safety eye shower with two spray heads 45°	½" female	Table mounted	1	**6.254 947**	5
Safety eye shower with two spray heads 45°	½" female	Wall mounted	1	**9.733 819**	6
Safety shower with stainless steel bowl	¾" female	Wall mounted, exposed pipework	1	**7.653 251**	7

4



5



6.254 947

6



9.733 819

7



7.653 251

8

E & OE.

3 Body Showers

B-SAFETY

Special showering heads ensure that large water quantities in gentle streams reaches the injured person without damaged the injured skin.
- The showers meet EN 15154-1:2006
- DIN-DVGW tested and certified
- Marked sign according to DIN is included
- Large dimensioned maintenance-free ball tap for large throughput quantities
- Throughput quantity: approx. 60 litres/min.
- Simple assembly
- Stable structure
- Chemical-resistant PE powder painting
- High speed showering heads made from plastic, with improved spray battern. Corrosion resistant, calcify- and maintenance free, very durable, even emptying.
- Large, easy-to-use release bar
- Comes with all mounting materials
- Connection 3/4"

Inlet	Attachment	Length mm	PK	Cat. No.	
Surface mount	Wall flange	625	1	**9.733 810**	1
Concealed mount	Wall/60 mm - ¾" pipe	625	1	**9.733 811**	
Surface mount	Over door wall flange	565	1	**9.733 812**	2

1



9.733 810

2



9.733 812

3



4 Safety Shower Test Cart, Tank Capacity 30 litres, Mobile

NEW!

B-SAFETY

With the safety shower test cart you can keep the monthly required functional test simple and easy.
- mobile collecting tray equipped with 4 roles made of black plastics
- two integrated grip recesses
- one drain screw
- funnel made of black plastics, diameter 440 mm, height 160 mm
- total height 2100 mm
- pipe material aluminium 47 mm, pluggable
- tank capacity 30 litre
- total weight 7 kg
- detachable in 3 parts for simple storage

Description	PK	Cat. No.
Safety shower test cart	1	**7.656 739**

4



GHS warning labels - please see page 234

1



6.263 279

2



6.263 280

Plasters Nexcare™

NEW!

Nexcare™ soft — *3M Deutschland*

Seals out dirt and germs to help prevent infection, easy to apply and remove, non-stick pad minimizes pain during removal, gentle on skin Nexcare™ universal

Elastics and sturdy textile plaster, very smooth, High Elasticity, good adhesion, Water-proof· For frequently moving body areas e.g. knee, elbows and fingers Colour: brown.

Type	PK	Cat. No.	
Nexcare™ Soft	1	**6.263 279**	1
Nexcare™ Universal	1	**6.263 280**	2

3



3 Extraset Plasters Refill

The most commonly occuring injuries are to the fingers and hands. The proportion of plasters in the average industrial first aid box is only limited. The Extraset plasters refill was created for precisely this reason and contains 116 plasters in high-grade, non-allergenic material in several formats and sizes.

Type	PK	Cat. No.
Extraset plasters refill	1	**9.264 165**

4



9.264 146

Plaster Dispenser aluderm®-aluplast

- Manufactured from highly tensile ABS
- Size 160 x 122 x 57mm
- With wall mounting
- Filled with five varieties of aluminium vaporised aluderm®-aluplast plasters. Sizes: 30 Strips 72 x 25mm, 30 Strips 72 x 19mm, 25 fingertip plasters, 20 finger dressings 120 x 20mm and 10 finger joint plasters.

Each plaster variety is stored independently in its own compartment and gives a clear product overview for the user.

Description	PK	Cat. No.	
Plaster Dispenser aluderm®-aluplast, filled with 115 plasters	1	**9.264 146**	4
Refill pack, complete for aluderm®-aluplast, with 115 plasters	1	**9.264 147**	

5



9.733 808

6



9.733 825

Plaster Dispenser QuickFix

Pull and you immediately have a plaster ready for use. Each plaster is individually packed. This provides great hygienic safety. Ready for use at critical workplaces. The plasters are made of protective, low-allergenic, PE material that allows the skin to breathe and are especially suitable for damp workplaces. The QuickFix dispenser is only 23cm wide and 13.5cm high. It contains 90 plasters in spite of its modest size so it can be installed precisely in those places where the need is greatest. Refilling of the dispenser is also possible with other types of the QuickFix range. *B-SAFETY*

QuickFix Elastic Long Refill, 30-parts finger dressing
Elastic plasters, conforming to the movements of the skin and therefore very comfortable to wear. The plasters allow the skin to breathe.
- Solves most accidents quickly, easily and hygienically

Description	PK	Cat. No.	
QuickFix plaster dispenser including two water-resistant plaster refills	1	**9.733 808**	5
QuickFix water resistant plaster refill containing 45 plasters	1	**9.733 809**	
QuickFix 30-parts finger dressing	1	**9.733 825**	6



1 First Aid Box Office

White with screen-printed lettering. Small first aid box made from high grade plastic with hinges and lid locking clip. With insert tray for easier visibility of contents. With wall bracket.
Contents according to DIN 13157.

Type	Width mm	Depth mm	Height mm	PK	Cat. No.
Office	260	80	160	1	**9.264 172**

First Aid Boxes QUICK-CD/MT-CD

Orange. ABS-plastic, high-impact, resistant to deformation, heat resistant.
With two large storage trays, rubber seal, rounded corners and edges. Sealing tag provided. Smooth-running turn-lock fasteners and stable handle. Wall bracket with 90° locking device to support box lid when opened, providing a tray platform. Tray partitions have spacers and transparent covers. With screen-printed sign and text in German. (Refill pack: 6.264 229 for QUICK-CD standard, Refill pack: 6.264 242 for MT-CD).

Type	DIN	Width mm	Depth mm	Height mm	PK	Cat. No.
QUICK-CD filled	13157	260	110	170	1	**9.264 160** 2
MT-CD filled	13169	400	150	300	1	**9.264 164** 3

2



9.264 160

3



9.264 164

4 First Aid Cabinet Heidelberg

Contents to DIN 13157. Steel plate 0.7 mm thick. White electrostatic powder coated. Single door with profile seal and safety lock with two keys. One-piece frame with rounded corners and edges. Additional support tableau for the hygienic storage of dressings for first aid service. Open interior, with single shelf adjustable for height and separate compartments. Screen-printed label in German.

4



Width mm	Depth mm	Height mm	PK	Cat. No.
302	140	362	1	**9.264 170**

5 First Aid Cabinet Rom

Contents to DIN 13169. Sheet steel 0.7mm thick. White electrostatic powder coated. With lockable double doors and two keys. The doors have profile seals made of synthetic coated wire mesh. One-piece frame with rounded corners and edges. Open interior, with two shelves adjustable for height intervals and two separate drawers. Each door with three compartments. Additional support table for the hygienic storage of dressings for first aid service. With screen-printed sign and text in German.

5



Width mm	Depth mm	Height mm	PK	Cat. No.
404	170	462	1	**9.264 171**

Refills For First Aid Boxes

High-quality dressing refills.

Description	For	PK	Cat. No.
Refill update set according to DIN 13157	Office, Heidelberg, QUICK-CD	1	**6.239 227** 1
Refill update set according to DIN 13169	Rom, MT-CD	1	**6.239 228**
High class refill according to DIN 13169	MT-CD, Rom	1	**6.239 242**
Standard refill according to DIN 13157	Office, Heidelberg, QUICK-CD	1	**9.264 174** 2
Standard refill according to DIN 13169	Rom, MT-CD	1	**9.264 175** 3

1



6.239 227

2



9.264 174

3



9.264 175

4



4 First Aid Kit Special for Laboratories and Chemistry

ABS plastic. Orange. Basic contents to DIN 13157. Additionally includes industrial risk equipment for laboratories and chemistry, medical, technical and chemical research institutes and laboratories. With wall bracket, handle and turn-lock fasteners. Sealing tag provided. With screen-printed label with text in German.

Dimensions (W x H x D): 400 x 300 x 150mm.

Type	PK	Cat. No.
Laboratory and Chemistry	1	**9.264 163**

5



5 Fire Blanket, Fibreglass

Jutec

The fire blanket is a small fire equipment principally used to extinguish small incipient (starting) fires by smothering the fire cutting off the oxygen supply from the fire.
- Made of texturized E-glass fabric
- Cut edges seamed
- Folded and packed in a red plastic bag with print "Löschdecke"

Description	Dimensions mm	PK	Cat. No.
Fire blanket, fibreglass	1800 x 1600	1	**9.006 902**

6



6 Container for Fire Blanket

Jutec

Fire blanket container made of galvanized welded steel sheet , to be opened upside, the blanket is removable. Cover is fixed with hinge, painted RAL 3000 red powder coating, with white
print "Löschdecke/Fire blanket"
- Opening upside
- Without fixing material
- Without fire blanket

Description	External dimensions (W x D x H) mm	PK	Cat. No.
Container for fire blanket, fibreglass	200 x 300 x 400	1	**9.006 903**

E & OE.

1 Holder for Waste Sacks

Steel wire. Epoxy resin coating. With rubber feet.
Supplied with 100 PP waste sacks, transparent, (l x w) 300 x 200mm.

Int. diam. mm	Height mm	PK	Cat. No.
120	250	1	**9.404 030**

Warning: Never place sharp objects such as hypodermic needles, etc., in plastic bags! Always steam-sterilize bags unsealed.
Injury hazard!



2 LLG-Disposal Bags, PP

Constructed from very strong PP film with a broad seam at the bottom. For the disposal of contaminated labware. When autoclaving, the neck of the bag must be left open. Film thickness: 50µm.

Size mm	auto-clavable at	Description	Package contents	PK	Cat. No.
200 x 300	134 °C	standard	Dispenser box of 100 bags	100	**9.404 099**
300 x 500	134 °C	standard	Box of 500 bags	500	**9.404 220**
400 x 780	134 °C	standard	Box of 250 bags	250	**9.404 221**
500 x 780	134 °C	standard	Box of 250 bags	250	**9.404 222**
600 x 800	134 °C	standard	Box of 100 bags	100	**9.404 103**
600 x 780	134 °C	standard	Box of 250 bags	250	**9.404 223**
700 x 1100	134 °C	standard	Box of 250 bags	250	**9.404 224**
700 x 1100	134 °C	standard	Box of 75 bags	75	**9.404 105**
200 x 300	121 °C	highly transparent	Dispenser box of 100 bags	100	**9.404 020**
300 x 500	121 °C	highly transparent	Box of 500 bags	500	**9.404 100**
400 x 780	121 °C	highly transparent	Box of 500 bags	500	**9.404 101**
600 x 800	121 °C	highly transparent	Box of 500 bags	500	**9.404 102**
700 x 1100	121 °C	highly transparent	Box of 350 bags	350	**9.404 104**



3 LLG-Autoclavable Bags, PP

Clear bags imprinted with blue biohazard labeling designed for safe disposal. Constructed of 50µm thick polypropylene, allowing for repeated autoclaving. Strong side seams for securely holding items. Front write-on panel. Autoclavable at 250°F (121°C).

Width mm	Length mm	PK	Cat. No.
310	660	50	**9.404 050**
415	600	50	**9.404 051**
610	810	50	**9.404 052**



4 Benchtop Holder for Biohazard Waste Bags

NEW!

Orange coated wire. For biohazard waste bags 220 x 280mm

Bel-Art Products

Description	Width mm	Length mm	Height mm	PK	Cat. No.
Benchtop holder	127	85	216	1	**9.404 071**
Biohazard waste bags	220	280		100	**9.404 070**



1



1 Biohazard Disposal Bags, PP, Red, 38µm

Bel-Art Products

- Thickness of film: 38 µm
- Material: polypropylene
- Color: red
- Print: standard biohazard warning symbol and precautionary protocols in four languages: English, French, German and Spanish
- With pre-printed sterilization indicator patch, which darkens when bag is autoclaved
- Can be autoclaved at 135°C

Dimensions (D x W) mm	PK	Cat. No.
360 x 480	200	**6.240 465**
480 x 580	200	**9.404 010**
640 x 890	200	**6.301 637**
790 x 970	200	**6.253 096**
970 x 1220	100	**9.404 011**

2



2 Biohazard Disposal Bags, Super Strength, PP, 50µm

Biohazard disposal bags, super strength. *Bel-Art Products*

- maximum protection against dangerous tears and leaks
- Thickness of film: 50 µm
- Material: blended polymer
- Color: red-orange
- Print: standard biohazard warning symbol and precautionary procedures in four languages: English, French, German and Spanish
- With pre-printed sterilization indicator patch, which darkens when bag is autoclaved
- Can be autoclaved at 135°C.

Dimensions (D x W) mm	PK	Cat. No.
360 x 480	200	**9.404 012**
480 x 580	200	**9.404 013**
640 x 890	200	**6.253 092**
790 x 960	200	**6.253 093**
940 x 1220	100	**9.404 014**

3



3 Waste Bags, PE

Capacity Litres	Width mm	Length mm	PK	Cat. No.
120	700	1100	10	**9.000 996**

4



4 Waste Sack Holder

Green. Consists of floor plate and lid with frame made of stable plastic. Assembled with two dismountable metal tubes.

Width mm	Depth mm	Height mm	PK	Cat. No.
360	395	770	1	**9.000 956**

1 Waste Bags, PE-HD

PE-HD. With adhesive strips. Can be fixed anywhere, e.g. walls and tables etc. Without holder. Autoclavable (121°C). Carrying weight approx. 1.36 kg.

Width mm	Length mm	PK	Cat. No.
203	254	50	**9.404 065**
305	406	50	**9.404 066**



2 Quick-Lock Ties

Basic colour: natural and red Polyethylene, round, can be reopened. Further colours available on request. *Württ. Allplastik*

Length mm	Diam. mm	PK	Cat. No.
120	3.5	1000	**9.404 182**
180	3.5	1000	**9.404 184**
240	3.9	1000	**9.404 186**
320	4.4	1000	**6.235 096**

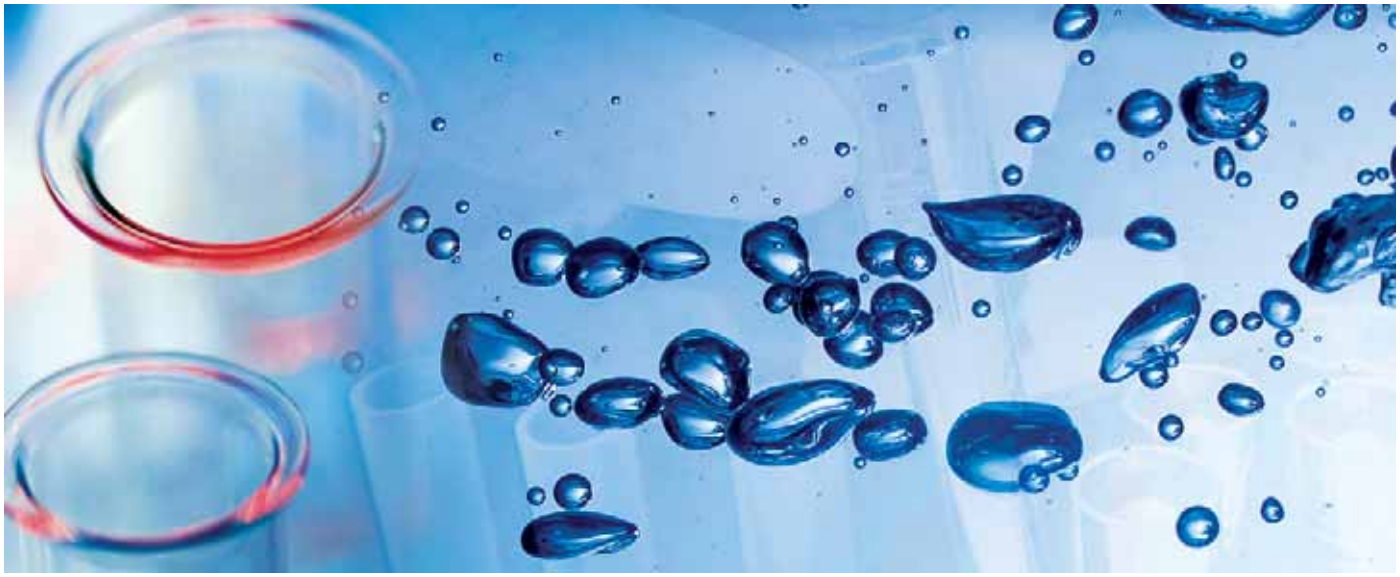


3 Cable Ties

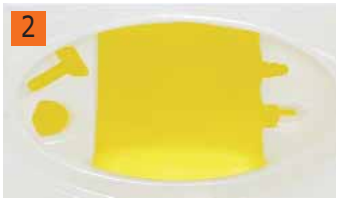
Nylon, flat, single use - cannot be reopened *Württ. Allplastik*

Length mm	Width mm	Colour	PK	Cat. No.
75	2.2	white	1000	**9.404 301**
98	2.5	white	1000	**9.404 303**
135	2.5	white	1000	**9.404 305**
160	2.6	white	1000	**9.404 306**
200	2.6	white	1000	**9.404 307**
140	3.5	white	1000	**9.404 309**
200	3.5	white	1000	**9.404 314**
290	3.5	white	500	**9.404 310**
160	4.5	white	1000	**9.404 311**
250	4.8	white	100	**9.404 316**
300	7.8	white	100	**9.404 326**









1 2 Disposal Container SHARPSAFE®, PP

NEW!

Sharpsafe® offers a convenient range of disposal containers and accessories that meet high requirements of hygiene and safety. The disposal of waste at its source is thus very convenient and easy.

- Container consists of 2 parts: yellow base with semi-transparent cover, safe and quick installation by simply pressing and hearing 4 clearly audible "clicks"
- The Sharpsafe® 0.6 l is a pocket container and is already pre-assembled
- The Sharpsafe® 9 l is also available with a height of 498 mm for the disposal of long items such as serological pipettes
- Equipped with a carrying handle
- Secure one-hand use possible with different mounting accessories
- Wide opening for the disposal of large objects
- Disconnection for all types of needles (2 l to 7 l), insulin pens (2 l to 7 l) and scalpel blades (2 l to 9 l)
- Opening with integrated safety flap for additional protection (2 l to 7 l)
- The closure cap can be locked in the open position if required
- 2 locking positions: provisional and final, open simply by pressing the tab
- Maximum filling level clearly visible by a black line on the lid
- Safety distance between the container opening and the clear marking line of maximum filling level
- Inscription on a label fused into the container, label will not be removed by moisture or autoclaving
- Information on the label in different languages (see table)
- The empty and open container is autoclavable up to 134°C for 18 minutes
- Sharpsafe® is conform to ADR, TRBA 250, ISO 23907: 2013, NFX30-500 and owner of the label NF302
- Country of origin: European Union

Type	Capacity ml	Dimensions (W x D x H) mm	Dimensions large opening mm	Features	PK	Cat. No.
SHARPSAFE® 0,6 L	580	108 x 52 x 224	40 x 30	FR/NL	1	**9.264 210**
SHARPSAFE® 1,0 L	1000	108 x 90 x 187	58 x 36	D/FR/IT/ES/EN	1	**9.264 211**
SHARPSAFE® 2,0 L	2000	195 x 20 x 178	55 x 50*	D/FR/IT/ES/EN	1	**9.264 212**
SHARPSAFE® 3,0 L	2600	197 x 120 x 205	55 x 50*	D/FR/IT/ES/EN	1	**9.264 213**
SHARPSAFE® 4,0 L	4000	175 x 175 x 245	55 x 50*	D/FR/IT/ES/EN	1	**9.264 214**
SHARPSAFE® 7,0 L	6700	175 x 175 x 380	55 x 50*	D/FR/IT/ES/EN	1	**9.264 215**
SHARPSAFE® 9,0 L	9000	292 x 195 x 291	210 x 60	FR/NL	1	**9.264 216**
SHARPSAFE® 9,0 L h	8200	175 x 175 x 498	55 x 77	FR/NL	1	**9.264 217**

* Picture cover









3 4 5 6 Accessories for SHARPSAFE®

NEW!

Reusable and disinfectable feet for horizontal surfaces
Increase the stability of the container and facilitate one-handed use to avoid injuries
At the bottom they are equipped with reusable adhesive strips for secure standing
- Colour: white/yellow
- Cleaning: wipe disinfection
- Autoclavable at 135°C for 20 minutes
- Material : Polypropylene
- Country of origin : European Union

Safe Clip for mounting on different surfaces : walls , round bars , square bars , cart bars
- Universal mounting for Sharpsafe® 2 - 3 - 4 - 7 - 9 - 9h liter
- Audible " click" when correctly locking and securing the container
- Thanks to the small required space , the Sharpsafe® containers can be mounted very safely
- Allows one-handed use of Sharpsafe® at any time
- Smooth, without bumps for optimal hygiene
- Cleaning: wipe disinfection or by soaking
- Material: Safe Clip : ABS , screws (included): Stainless Steel
- Country of origin : European Union

Description	PK	Cat. No.
Stand for Sharpsafe 1L	1	**9.264 218**
Stand forSharpsafe 2L / 3L	1	**9.264 219**
Stand for Sharpsafe 4L / 7L	1	**9.264 220**
Stand for Sharpsafe 9L / 13L	1	**9.264 221**
"Safe Clip" universal mounting bracket	10	**9.264 222**

1 2 Disposal Cartons for Broken Glass

When the carton is filled, the safety cap is moved into place and the complete unit is ready for disposal. *Bel-Art Products*
- Safe puncture resistant receptacles for broken glassware
- Reduces chances for accidents
- Clearly labeled, dedicated containers available in 2 sizes: floor model: 18kg of waste; bench top: 5.5kg
- Lined with a 50 micron, clear polypropylene bag to store
- Printed in four languages: English, German, French, Spanish

Reusable cover for floor model:
Reusable safety cover for glass disposal carton. Dishwasher-safe and autoclave-safe. The Disposal Carton Cover opens quickly and easily by pressing the built-in release tab. Please do not dispose but reuse for the next glass disposal carton.

Description	Dimensions (W x D x H) mm	PK	Cat. No.
Disposal cartons for broken glass, floor model	300 x 300 x 690	6	**6.236 025**
Disposal cartons for broken glass, benchtop	200 x 200 x 250	6	**9.264 190**
Cover for glass disposal cartons	-	1	**9.264 191**

1



2



Waste Containers

PP. With two nickel-plated handles for carrying and holding down the lid. Bin liners please order separately

Capacity litres	Dimensions (dia. x H) mm	Colour	PK	Cat. No.
23	350 x 450	dark green	1	**9.000 945**
46	430 x 570	dark green	1	**9.000 941** 3

3



9.000 941

Mercury collector

Bürkle's mercury collector enables the easy collection of spilt mercury, which can then be used again. The mercury collector is composed of a PE tub. Within the screw cap lid there is a special plastic foam insert. On pressing this foam gently on the spilt mercury, the foam's pores are opened and the mercury globules are absorbed. When raised, the foam's pores are sealed again, thus keeping hold of the mercury. The cap is then screwed on the tub, the globules are released again and fall through the perforated separation into the tub. *Bürkle*

Description	PK	Cat. No.
Mercury collector	1	**7.300 223** 4
Replacement foam insert	1	**7.300 224**

4



7.300 223

Chemical Sorbents

3M Deutschland

The sorbents have a high performance. Due to their new microfibre structure, they provide very high absorbing capacities. The light and absorbent material is easy to use and committed to absorb quickly and store the liquid. The absorbed liquid can be extracted, to be used again or to be disposed of separately. The optimal combination of features such as light weight, low volume, very high absorbance, easy handling and low sorbent disposal weight significantly reduces disposal costs in comparison to conventional binding materials. To reduce the final waste content, the used sorbets can be burnt.

Can be used to absorb a variety of lab chemicals:
- acids, such as acetic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, sulphuric acid
- alkalis, such as sodium hydroxide, potassium hydroxide
- hydrazine: N_2H_4
- hydrogen peroxide

Type	Description	Dimensions (W x D) mm	Absorption*	PK	Cat. No.	
PF 2001	Multi-Format	15.2m x 12cm	39 l	1	**9.264 101**	1
P 110	Wipes	33cm x 28cm	0.25 l	50	**9.264 102**	2
P 300	Pillows	28cm x 18cm	2 l	16	**9.264 103**	3

*Capacity per piece

1



9.264 101

2



9.264 102

3



9.264 103

Chemical Sorbents Emergency Kits

3M Deutschland

Each kit has the optimal combination of different sorbents. Ready to use.
Quick and safe aid for accidental spillages of almost all hazardous liquids.

Type	Size	Absorption*	Capacity	PK	Cat. No.	
SK5	7 x 40 x 28 cm	approx. 5	10 wipes, 1 pillow, 1 waste bag	1	**9.264 104**	4
SK26	40 x 63 cm	approx. 26	10 wipes, 5 pillows, 5 mini socks, 2 waste bags	1	**9.264 105**	5
SK75	53 x 78 x 32 cm	approx. 75	100 wipes, 12 pillows, 8 mini socks, 5 waste bags	1	**9.264 106**	6

*Capacity per kit

4



9.264 104

5



9.264 105

6

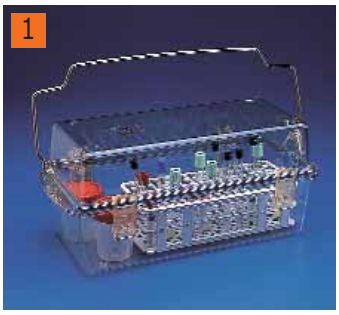


9.264 106

1 Safety Box

PC. Completely autoclavable. Used to carry tubes and containers under safe conditions. With silicone gasket and 4 sidelocks. Provided with a stainless steel handle and user sheet with instructions approved by WHO. With bio-hazard symbol printed on the box.

Kartell



Description	Width mm	Length mm	Height mm	PK	Cat. No.
Safety box	175	330	180	1	**9.301 567**
Safety box rack				1	**9.301 568**
Set 4 sidelocks				1	**6.235 082**
silicone gasket				1	**9.301 569**

2 3 Portable Desiccator DURAPorter™, PC

Ideal for transporting biological and clinical samples, as well as instruments and products that you want to keep clean and dry under testing environmental conditions.

Heathrow Scientific

Are light weight and easy to carry; they are ideal for moving samples that must be protected from humidity, dust and other environmental influence. The clarity of the DURAPorter™ enables the user to visibly check sample integrity, so that it can be opened using the right precautions.

- Polycarbonate construction are available in three colours for use/owner identification
- Silicone water-tight seal and three lid clasps provide secure closure
- Carry handle folds neatly into body space allowing the units to be stacked
- Lid opens a full 180°, allowing total access to contents and making it easier to clean
- Will accommodate 13 and 16 mm tubes in a 72-place one rack®, or similar sized/brand of rack
- Use the separators provided to create your own compartment sizes, or use empty to transport larger products and equipment
- Autoclavable
- Dimensions (WxDxH): 380 x 160 x 196 mm

Matching rack (e.g. Cat. No. 9193 997, 9193 998) please order separately. Further colours available on request.





Type	Colour	For tubes diam. mm	Array	Dimensions (l x w x h) mm	Material	PK	Cat. No.
DURAPorter™	Clear with blue handles			380 x 196 x 160	PC	1	**9.194 005**
DURAPorter™	Yellow with yellow handles			380 x 196 x 160	PC	1	**9.194 006**
DURAPorter™	Red with red handles			380 x 196 x 160	PC	1	**9.194 007**
one rack®	Blue	13 (5 - 10 ml)	72	104 x 202 x 59	POM	1	**6.266 916**
one rack®	Blue	16 (5 - 10 ml)	72	127 x 250 x 70	POM	1	**6.266 917**
one rack®	Blue	20 (10 - 18 ml)	40	100 x 252 x 83	POM	1	**6.266 918**
one rack®	Blue	25 (10 - 18 ml)	40	120 x 300 x 92	POM	1	**6.266 919**
one rack®	Blue	30 (15 - 50 ml)	24	110 x 282 x 85	POM	1	**6.266 920**



1



1 Waste Disposal Unit Standard, PE-HD

NEW!

Scat

Disposal unit for liquid waste, PE-HD, useful for the collection of solvent and sample waste. With funnel, hinged lid and removable sieve to collect magnetic stirrers and residues. The sieve is detachable for cleaning. Delivery with container and funnel, ready to use.

Capacity L	Dimensions (W x D x H) mm	PK	Cat. No.
2.5	115 x 150 x 305	1	**9.139 892**
5.0	150 x 195 x 345	1	**9.139 893**
10.0	190 x 230 x 395	1	**9.139 894**

2



2 Chemical Waste Disposal Unit, PE/PP

VITLAB

PE/PP. For the safe collection of liquid chemicals in the workplace. The PE-HD filling inlet contains a self-closing ball float, an overfill spout and a spray shield.

Capacity Litres	Height mm	Diam. mm	PK	Cat. No.
10	560	222	1	**9.032 845**

Safety Funnels with Hinged Lid, PE-HD

This compact funnel with lid is optimally suited for restricted space conditions in the laboratory. The hinged lid avoids evaporation of hazardous solvent vapours. With removable sieve to collect magnetic stirrers and residues.

- For almost all chemicals
- With removable sieve for easy cleaning
- Funnel diameter 135mm
- Different thread sizes with free rotatable cap
- Safety lance ensures clean outflow without contaminating the container opening
- Length of Safety lance 200mm
- Also available without safety lance
- Chromatography vials can be disposed completely
- Black Safety funnels are made of electro conductive PE-HD and are supplied with a ground wire.

Further thread sizes available on request.

3



3 Safety Funnels with Hinged Lid, White, PE-HD

Scat

Description	Thread	PK	Cat. No.
Funnel with safety lance	GL45	1	**6.248 077**
Funnel without safety lance	GL45	1	**6.241 723**
Funnel with safety lance	S50	1	**9.042 881**
Funnel without safety lance	S50	1	**9.042 882**
Funnel with safety lance	S51	1	**9.042 871**
Funnel without safety lance	S51	1	**9.042 872**
Funnel with safety lance	S55	1	**7.655 618**
Funnel without safety lance	S55	1	**9.042 873**
Funnel with safety lance	S60/61	1	**6.242 856**
Funnel without safety lance	S60/61	1	**6.242 855**
Funnel with safety lance	S65	1	**6.241 661**
Funnel without safety lance	S65	1	**9.042 874**
Replacement sieve, PE-HD, for funnel with hinged lid		1	**9.042 875**

E & OE.

Safety Funnels with Hinged Lid, Black, PE-HD, Electro Conductive

Scat

Description	Diam. mm	Thread	PK	Cat. No.
Funnel without Safety lance	130	GL45	1	**9.042 862**
Funnel with Safety lance	130	S55	1	**9.042 864**
Funnel without Safety lance	130	S55	1	**9.042 861**
Funnel with Safety lance	130	S60/61	1	**7.626 422** 1
Funnel without Safety lance	130	S60/61	1	**9.042 860** 2
Funnel with Safety lance	130	S65	1	**9.042 866**
Funnel without Safety lance	130	S65	1	**9.042 863**
Funnel without Safety lance	130	R2" BSP/G2" + 2" Tri-Sure	1	**9.042 880**
Funnel, without Safety lance	180	GL45	1	**4.653 858**
Funnel, without Safety lance	180	S60/61	1	**6.261 363**
Replacement sieve for funnels with lid			1	**9.042 867**

1



7.626 422

2



9.042 860

Safety Funnels with Ball Valve, PE-HD

The Safety funnel with ball valve closes automatically after the disposal of the liquid and avoids evaporation of hazardous solvent vapours. With removable sieve to collect magnetic stirrers and residues.
- For mostly all chemicals
- With removable sieve for easy cleaning
- Funnel diameter 180mm
- Different thread sizes with free rotatable cap
- Splash protection for safe discharge without splashes
- Safety lance ensures clean outflow without contaminating the container opening
- Length of Safety lance 200mm
- Black Safety funnels are made of electro conductive PE-HD and are supplied with a ground wire.

3 Safety Funnels with Ball Valve, White, PE-HD

Scat

Description	Thread	PK	Cat. No.
Funnel with safety lance	GL45	1	**6.248 078**
Funnel with safety lance	S50	1	**9.042 876**
Funnel with safety lance	S51	1	**6.252 181**
Funnel with safety lance	S55	1	**9.042 869**
Funnel with safety lance	S60/61	1	**9.042 868**
Replacement sieve, PE-HD for ball valve funnels		1	**6.241 673**

3



4 Safety Funnels with Ball Valve, Black, PE-HD, Electro Conductive

Scat

Description	Thread	PK	Cat. No.
Funnel with Safety lance	GL45	1	**9.042 852**
Funnel with Safety lance	S50	1	**9.042 859**
Funnel with Safety lance	S51	1	**9.042 854**
Funnel with Safety lance	S55	1	**9.042 855**
Funnel with Safety lance	S60/61	1	**9.042 851**
Funnel with Safety lance	S65	1	**9.042 856**
Funnel with Safety lance	S90	1	**9.042 853**
Funnel without Safety lance	R2" BSP/G2" + 2" Tri-Sure	1	**9.042 879**
Replacement sieve, PE-HD, black for ball valve funnels		1	**9.042 850**

4



1



1 Disposal Unit with Safety Funnel, PE-HD, Electro Conductive

Scat

This set contains a safety funnel with ball valve and a container both made of electro conductive PE-HD to prevent sparking hazards. The Safety funnel with ball valve closes automatically after the disposal of the liquid and avoids evaporation of hazardous solvent vapours. The built-in level control floater gives a warning in time to prevent overfilling of the container. With removable sieve to collect magnetic stirrers and residues.

- For mostly all chemicals
- Delivered with grounding cable
- With removable sieve for easy cleaning
- Funnel diameter 180mm
- Splash protection for safe discharge without splashes
- Safety lance ensures clean outflow without contaminating the container opening
- Length of Safety lance 200mm
- Container with 10L or 20L
- With level control floater to prevent from overfilling

Thread	Description	PK	Cat. No.
S60/61	with canister 10L and level control	1	**4.005 954**
S60/61	with canister 20L and level control	1	**4.005 955**

2



2 Waste Disposal Unit Set, PE-HD, Electro Conductive

NEW!

Scat

Ready-to -use complete set as collecting unit for liquid waste. Consisting of safety filter, canister and collecting reservoir. All components are made of electro conductive material.
Only one part number for the comprehensive safety system. No time consuming compilation of a configuration. Price advantage compared to ordering piece by piece. The delivery is made complete - the system is immediately ready for use

Funnel
- Hinged Lid
- Sieve
- PE-HD, electrically conductive
- Grounding cable

Container
- 10 Liter, S60/61 thread
- PE-HD, electrically conductive
- Float for level control
- With collecting tray

Type	PK	Cat. No.
Waste disposal unit Set	1	**6.255 403**

3



3 Safety Funnels

Rötzmeier

For plastic container. Fixed to container with screw cap from PE. With earthing, cap, overfill protection and flame trap. Funnel made of high quality and durable stainless steel.
In flat design available on request (height 70mm, for example labortory cupboard).

Type	DIN	Diam. mm	Height mm	Weight kg	PK	Cat. No.
TK 50	50	140	125	0.60	1	**9.042 978**
TK 51	51	140	125	0.60	1	**9.042 979**
TK 61	61	140	125	0.60	1	**9.042 980**
TK 71	71	140	125	0.60	1	**9.042 988**

1 Safety Container with Viewing Stripe, PE-HD, Electro Conductive, with UN-Approval

Scat

Electroconductive container for a safe collection and transportation of flammable solvents and solvent waste.
The clear viewing stripe allows a permanent control of the solvent level.
- weight 450g
- with UN-approval

Also available as set with safety funnel with ball valve.

Please order fitting earthing set separately.



Description	Capacity litres	Thread S	Dimensions (W x D x H) mm	PK	Cat. No.
Canister	10	90	195 x 380 x 195	1	**6.251 593**
Earthing set				1	**6.254 171**

2 Safety Cans

Rötzmeier

Polished, grade 1.4571, stainless steel, with PTFE gaskets, explosion-proofed by flame trap and pressure control valve. Metering devices are self-closing. For safe storage, distribution and internal plant transport of inflammable liquids, with ergonomic handgrip made of powder-coated aluminium.



Type	Description	Capacity Litres	Height mm	Diam. mm	Weight kg	PK	Cat. No.
01 D	with 1¼", self-closing, metering device	1	235	111	0.70	1	**9.042 900**
02 D	with 1¼", self-closing, metering device	2	295	131	0.80	1	**9.042 901**
05 D	with 1¼, self-closing, metering device	5	405	165	1.20	1	**9.042 902**
01 K	with 1¼ screw-cap	1	235	111	0.65	1	**9.042 905**
02 K	with 1¼" screw-cap	2	295	131	0.75	1	**9.042 906**
05 K	with 1¼" screw-cap	5	400	165	1.15	1	**9.042 907**
D 125	1¼", self-closing, metering device				0.13	1	**9.042 940**
TR 1	Plug-in funnel, tube dia. 23mm		120	120	0.30	1	**9.042 975**

3 Safety Barrels

Rötzmeier

Polished, grade 1.4571/1.4301, stainless steel, with PTFE gaskets, explosion-proofed by flame trap and pressure control valve in self-closing metering device or screw cap, for safe storage, distribution and internal plant transport of inflammable liquids.
Wall thickness: 10L with 0.8mm/25L with 1.2mm/50L with 1.5mm.

Type 10 D: with separate vent.



Type	Description	Capacity Litres	Height mm	Diam. mm	Weight kg	PK	Cat. No.
10 Z	with ¾", self-closing tap	10	330	260	2.48	1	**9.042 925**
25 Z	with ¾", self-closing tap	25	540	315	6.54	1	**9.042 926**
50 Z	with ¾", self-closing tap	50	600	365	12.20	1	**9.042 927**
10 K	with screw-cap 1½"	10	330	260	2.20	1	**9.042 930**
25 K	with 1½" screw-cap	25	540	315	6.40	1	**9.042 931**
50 K	with 2" screw-cap	50	600	365	12.10	1	**9.042 932**
10 ZI*	with ¾", self-closing tap	10	330	260	2.82	1	**9.042 934**
25 ZI*	with ¾", self-closing tap	25	540	315	7.52	1	**9.042 935**
50 ZI*	with ¾", self-closing tap	50	600	365	13.20	1	**9.042 936**
10 D	with 1½", self-closing, metering device	10	340	260	2.25	1	**9.042 937**
Z 34	with ¾", self-closing tap				0.22	1	**9.042 942**
TR 3	Plug-in funnel, straight-lined, tube dia. 34mm		120	120	0.35	1	**9.042 977**

* with PFA level indicator and with separate vent.

1



1 Safety Canisters

Rötzmeier

Polished, grade 1.4571, stainless steel, with PTFE gaskets, explosion-proofed by flame trap and pressure control valve, with self-closing tap for horizontal storage and filling, for safe storage, distribution and internal plant transport of inflammable liquids, with ergonomic handgrip made of stainless steel.

Type	Description	Capacity Litres	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
05 KD	with 1½", self-closing, metering device	5	130 x 200 x 310	1.65	1	**9.042 910**
10 KD	with 1½", self-closing, metering device	10	130 x 280 x 380	2.50	1	**9.042 911**
20 KDL*	with 1½", self-closing, metering device	20	175 x 345 x 470	3.70	1	**9.042 912**
05 KK	with 1½" screw-cap	5	130 x 200 x 310	1.65	1	**9.042 915**
10 KK	with 1½" screw-cap	10	130 x 280 x 380	2.50	1	**9.042 916**
20 KK	with 1½" screw-cap	20	175 x 345 x 470	3.70	1	**9.042 917**
05 KZ*	with 1½", self-closing tap	5	130 x 200 x 310	1.65	1	**9.042 920**
10 KZ*	with 1½", self-closing tap	10	230 x 280 x 380	2.50	1	**9.042 921**
20 KZ*	with 1½", self-closing tap	20	175 x 345 x 470	3.70	1	**9.042 922**
D 150	self-closing, 1½" metering device with vent for 5 + 10 L			0.17	1	**9.042 941**
Z 150	1½" self-closing tap			0.17	1	**9.042 943**
TR 2	Plug-in funnel, inclined, tube dia. 34mm		H: 120, dia. 120	0.35	1	**9.042 976**

* with separate ventilation.

2



2 Transportation Containers

NEW!

Rötzmeier

UN-approval acc. GGVSEB. grade 1.4571, stainless steel, with PTFE gaskets, screw cap, without pressure control valve. Approved for transportation of dangerous materials by road, sea and railway acc. to ADR, RID, IMDG, ICAO-TI).

Type	Description	Capacity Litres	Height mm	Dimensions mm	Weight kg	PK	Cat. No.
01 T	Safety transport can	1	230	dia. 111	0.65	1	**9.042 945**
02 T	Safety transport can	2	295	dia. 131	0.75	1	**9.042 946**
05 T	Safety transport can	5	400	dia. 165	1.15	1	**9.042 947**
05 KT	Safety transport canister	5	310	130 x 200	1.65	1	**9.042 950**
10 KT	Safety transport canister	10	380	130 x 280	2.50	1	**9.042 951**
20 KTL*	Safety transport canister	20	470	175 x 345	3.70	1	**6.241 199**
25 TZ*	Safety transport container	25	530	dia. 300	6.40	1	**9.042 956**
LB 2	2 x wooden support blocks for containers			280 x 80	1.10	1	**9.042 972**
Z 150	1½" self-closing tap for TZ 25				0.17	1	**9.042 943**

* with separate ventilation.



1 2 Laboratory Trolley clax Mobil comfort with Box

Stable, multi-use trolley with parking brake.
Push-button collapsing/unfolding.
Made in Germany.
Load capacity:

Total:	60kg
Upper shelf:	20kg
Lower shelf:	40kg
Dimensions	
unfolded (L x W x H):	900 x 580 x 1020mm
collapsed (L x W x H):	710 x 550 x 190mm
Folding box dimensions	
Inner dimensions (WxDxH):	335 x 495 x 258mm
Outer dimensions (WxDxH):	350 x 500 x 260mm

Type	PK	Cat. No.
Laboratory Trolley clax Mobil comfort, incl. 1 clax folding box, 46 litres	1	**9.148 100**
clax folding box single, 46 litres	1	**9.148 099**

1



2



3 Laboratory Trolleys, PE-HD

Hard-wearing, sturdy, PE-HD construction resists chemicals and routine knocks and scratches in use, ensuring a long working life.

Langkavel

Advantages:

- stable and high load bearing capacity
- long life
- not electrically conductive
- easy to clean
- hygienic
- high density polyethylene
- easy to assemble without screws
- legs and bases can be recycled
- top tray has integral handles

3



Type	Colour	Description	Width mm	Length mm	Height mm	PK	Cat. No.
WT 26	beige	2 trays	460	610	660	1	**9.148 200**
WT 34	beige	3 trays	460	610	860	1	**9.148 212**
WT 42	beige	3 trays	460	610	1060	1	**9.148 216**
Cabinet	beige	suitable for WT 26, 34 and 42	460	610	660	1	**9.148 203**

Further colours available on request.

4 Trolley, PP

NEW!

Safe and easy transport of Folding and Euronormboxes with external dimension of 60x40cm. Weight 3.3kg, load capacity 200kg . High quality, smooth running castors.

Colour	PK	Cat. No.
blue	1	**9.301 502**

4



Suitable euronormboxes please see page 50

Rollwagen fürs Labor und mehr...
Carts for laboratory and more...

Seit 1979
über 30 Jahre
Rollwagen-Kompetenz
langkavel
Office + Lab

zum Beispiel/*for example*



Der Klassiker in verschiedenen Farben
The classic cart in various colors



Oder mit abschließbarem Schrank
Or with lockable steel cabinet



Mit Wannen in schwarz oder grau
With tubs in black or grey



Für schwere Lasten bis 250 kg mit 2 oder 3 Böden
For heavy loads up to 250 kg with 2 or 3 shelves



Multifunktionswagen
Multi-purpose carts

weitere Rollwagen auf/*more carts at* www.langkavel.de



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1 Bowl Trolleys

Trolley *Gorr*

- Blue-grey solid rubber (non-marking) tyres
- Welded frame for 85 or 100 litres platic bowls
- Height with red bowl approx. 760mm, with white bowl approx. 840mm
- 4 swivel castors with 75mm diam.
- ball bearing mounted
- powder coated
- Carrying weight approx. 100kg

Bowl, red: PE, 85 litres
Bowl, white: PE, 100 litres

Description	Colour	Width mm	Length mm	Height mm	PK	Cat. No.
Trolley	black-silver	500	750	720	1	**9.148 300**
Bowl	red	540	765	350	1	**9.148 301**
Bowl	white	540	900	400	1	**9.148 302**



2 LLG Trolleys, Stainless Steel

Made of CNS 18/10, material no. 1.4301, with micro-polished surface. All shelves are produced with an all round raised profile edge. This prevents anything from slipping over the edge. The shelves are welded to the car. The load capacity per shelf is 80 kg. A noise-insulation mat is mounted on the bottom side of each shelf. The round tubes at the front edges are used as handgrips.
The trolleys are equipped with galvanized steel castors (4 swivel castors, 2 with brakes, castor diam. 125mm) which are inserted in the tubular frame. Wall bumpers made of plastic (polyamide) on all four corners protect against damage.

Description	Width mm	Depth mm	Height mm	PK	Cat. No.
2 shelves, vertical spacing 585mm	900	600	950	1	**9.148 101**
3 Shelves, vertical spacing 275mm	900	600	950	1	**9.148 104**

E & OE.

LLG Laboratory Stools, PU Foam

NEW!

According to EN 1728, EN 1021-1 and 1021-2, EN 61340-5-1. Surface enables easy cleaning and disinfecting. Revolving height adjustable seat. Seat depth and angle and height of the backrest can be adjusted which always guarantees an ergonomic seating position. Metal 5-star bar with castors or gliders. Chromed footring as outlined below.

Type	Seat height adjustment mm	Description	Dimensions Seat (L x W) mm	PK	Cat. No.	
PUR Special plus	525 - 770	5 gliders + footring	350 x 300	1	**9.732 204**	1
PUR Standard plus	525 - 770	5 gliders + footring	340 x 340	1	**9.732 208**	2
PUR Standard	425 - 540	5 hard castors for soft floors	340 x 340	1	**9.732 209**	3
PUR Standard	425 - 540	5 soft castors for hard floors	340 x 340	1	**9.732 212**	
Stop-and-go castors				5	**9.732 213**	

1



9.732 204

2



9.732 208

3



9.732 209

4 Swivel Stool with Castors

Comfortable swivel stool with black aluminium cross tube base and gas-strut height adjustment. Soft-wheeled castors.

Type	Seat height adjustment mm	PK	Cat. No.
Beech seat	420 to 540	1	**9.733 653**
PU foam seat	420 to 540	1	**9.733 644**
Artificial leather seat	420 to 540	1	**9.733 658**
Artificial leather seat	470 to 640	1	**9.733 654**

Further versions availlable on request.

4



5 Standing Aid

Black metal frame with glides.
With inclinable and rotatable seat, height adjustable via gas strut: 56 to 82cm. Polyurethane foam seat.

Type	PK	Cat. No.
54 S / GL / SH	1	**9.733 655**

5



LLG Laboratory Chairs, PU Fam

NEW!

According to EN 1728, EN 1021-1 and 1021-2, EN 61340-5-1. Surface enables easy cleaning and disinfecting. Revolving, height adjustable seat. Seat depth and angle and height of the backrest can be adjusted which always guarantees an ergonomic seating position. Metal 5-star bar with 5 castors for soft and 5 castors for hard floors or gliders. Armrests and chromed footring as outlined below.

Type	Seat height adjustment mm	Description	Dimensions Seat (L x W) mm	PK	Cat. No.	
LLG-Chair PUR Standard I	425 - 560	5 hard castors (soft floors) and 5 soft castors (hard floors)	420 x 400	1	**9.732 203**	4
LLG-Chair PUR Standard I plus	525 - 770	5 gliders + footring	420 x 400	1	**9.732 202**	3
LLG-Chair PUR Standard II plus	525 - 770	5 gliders + footring + armrests	440 x 460	1	**9.732 200**	1
LLG-Chair PUR Standard II	450 - 580	5 hard castors (soft floors) and 5 soft castors (hard floors)	440 x 460	1	**9.732 201**	2
Stop-and-go castors				5	**9.732 213**	

1



9.732 200

2



9.732 201

3



9.732 202

4



9.732 203

Laboratory Seating Furniture, GMP

NEW!

Werksitz

Due to their ergonomically correct design, WERKSITZ work chairs encourage "dynamic sitting" while simultaneously promoting proper posture in every position. Ergonomically designed seats and backrests provide beneficial pressure distribution and pleasant climate comfort. All materials are washable and disinfectant resistant.
Seat positions can be adjusted easily, with just a few quick motions. Adjusting elementsare functionally arranged and easy to use.
Chrome-plated cover tubes, height adjustment with safety gas spring, polished diecast aluminium five-star base with load-dependent braking castors

Klimastar
- Fully perforated seats and backrests
- Maximum air circulation
- Optimum seat climate
- removable cushions

WERKSITZ imitation leather is DIN 53160 certified to be:
- Disinfectant resistant
- Blood resistant
- Urine resistant
- Saliva resistant
- Sweat resistant

Type	Seat height adjustment mm	Description	Colour	PK	Cat. No.	
Klimastar, with armrests	450 - 620	seats, armrests and backrests from PUR integral foam	turquoise	1	**9.732 220**	5
Laboratory chair, high	640 - 880	seats and backrests from PUR integral foam	white	1	**9.732 221**	6
Laboratory chair with step-up rail	460 - 640	seats and backrests from imitation leather	turquoise	1	**9.732 222**	7
Saddle stool	510 - 660	seat from imitation leather	white	1	**9.732 223**	8
Standing help	700 - 910	seat from PUR integral foam	white	1	**9.732 224**	9

5



9.732 220

6



9.732 221

7



9.732 222

8



9 732 223

9



9.732 224

E & OE.

1 Workplace Mat, WERKSTEP

NEW!

Werksitz

The WERKSTEP workplace mat is an ergonomic floor covering that has been researched and tested to respond to the permanent stress of standing workstations. The elastic texture and knobbly surface of the WERKSTEP work mat reduce the stress placed on bones, joints and muscles. Pressure on the sensitive toe and ball sections of the foot is reduced considerably as the mats cushion the weight of the body. This helps keep the feet in motion, imperceptibly stimulating circulation. The WERKSTEP workplace mat promotes blood circulation in the legs.



Use:??	For dry and wet food preparation areas, OP, lab or hygiene areas
Material:	Nitrile, NBR
Colour:	grey
Weight:	5.8 kg
Dimension:	60 x 90 cm
thickness:	14.5 mm
Temperature resistance:	+96°C for 8 hours
Surface:	knobbly
Underside:	Textured underside for better adhesion, water-repellent effect

Description	PK	Cat. No.
Workplace mat, WERKSTEP	1	**9.732 225**

2 3 Roller Steps, WEDO-Step

Colour: blue or red. PP. Very easy to move on 3 castors. Easily assembled. Plastic material steps feature non-slip surface.

Colour	Height mm	Int. diam. mm	Ext. diam. mm	Max. load kg	PK	Cat. No.
Blue	430	290	440	150	1	**9.700 400**
Red	430	290	440	150	1	**9.700 401**

2



3

4 Folding Steps

Extra wide (31 x 23cm) treads allow the user to stand comfortably without tiring, even over prolonged periods. With automatic safety catch.

Number of steps	Height*	PK	Cat. No.
2	46	1	**9.704 403**
3	70	1	**9.704 404**

* Height of top step (cm)

4



1



1 Ductless Fume Hoods Type Ascent Opti™/Ascent Opti™ Basic

Compact, energy saving fume hood without ducting system. *Esco*

- Independent tested and complies with AFNOR NFX 15-211 standard
- Average Inflow Air Velocity: 0.5m/s
- Easy Filter change
- Sentinel-Microprocessor with LCD-Display, air velocity alarm and 24-hour-clock*
- Fluorescent lighting provides superior illumination of the work zone*
- Sloped polycarbonate front window
- Optional with transparent back wall
- Polycarbonate side walls
- ISOCIDE™ antimicrobial coating on all painted surfaces minimises contamination.
- Stainless steel spill-retaining work top.*
- Sampling port
- Pass-through ports in the back wall

Hood is delivered unassembled. On-site assembly can be completed in 60 mins. without special tools.

Please order filters separately

More options, support stands, installation on request.

Type	Size	External dimensions (W x D x H) mm	PK	Cat. No.
Ascent Opti™ Basic SBP-2A1	0.6 m	542 x 700 x 990	1	**7.939 153**
Ascent Opti™ SPD-3A1	0.9 m	840 x 700 x 1125	1	**7.939 161**
Ascent Opti™ SPD-4A1	1.2 m	1140 x 700 x 1125	1	**7.939 170**

* doesn´t apply to Ascent Opti Basic (SPB-2A1)

2



2 Fume Hood Workstations LABOPUR® H Series

Manipulation of liquid chemicals where and when needed.
Advantages: eliminates installation costs, saves substantially capital and running costs, mobile and easy to relocate wherever needed; protects the user and environment against toxic fumes.
- Low Energy consumption: less than 200KWh /year (for 2100 hours usage)

Choice of two activated charcoal filters (Please order separately!):
- „ORG" filter for flammables and organics
- „CORG" filter, suitable for the most common laboratory chemicals

Other specific filters (e.g. methanol, hexane, mercury) available on request

Standard equipment:
- Built in 15/10 steel, covered with white Epoxy (RAL 9010) with blue stripes
- HPL-Worktop (standard) laid on removable retention tank; or tempered glass worktop (optional)
- Transparent polycarbonate glazed walls on all four sides for confortable working or lectures
- Ergonomic hand traps for convenient manipulation of chemicals
- 2 or 4 protective caps for easy usage of external supplies (e.g. power cables, water, gas)
- Air velometer; sampling outlet for reactive tube measurement

Recirculating air filter system (CLASS 2) and coal filters Norm NFX 15-211
- Noiseless fan: 49dB(A), 220-240V, 50 Hz, 47W, 0.2 A
- Air flow: 203m³/h; face velocity: 0.4 to 0.6m/s
- Ventilation system with lighting control in case of system failure

Please choose fume hoods, charcoal filters, trolleys and accessories according to your needs. Delivered mounted.

Further dimensions available on request.

E & OE.

1 Fume Hoods LABOPUR® H Series

NEW!

ECOSAFE

Type	External dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
H 60	605 x 505 x 485	25	1	**6.264 730**
H 200	615 x 620 x 950	34	1	**4.007 810**
H 300	800 x 620 x 700	33	1	**4.007 812**
H 400	800 x 620 x 950	44	1	**4.007 814**
H 1300	1000 x 740 x 1170	60	1	**4.007 809**
H 2300	1300 x 740 x 1170	78	1	**4.007 811**
H 3500	1600 x 740 x 1170	97	1	**4.007 813**
H 201*	610 x 620 x 980	34	1	**6.264 731**
H 301*	800 x 620 x 750	33	1	**6.264 732**
H 401*	980 x 800 x 620	44	1	**6.252 312**
H 1301*	1000 x 740 x 1200	60	1	**6.264 733**
H 2301*	1300 x 740 x 1200	78	1	**6.264 734**
H 3501*	1600 x 740 x 1200	97	1	**6.264 735**

* HEPA Ready Particle filter

2 Charcoal Filters for Ductless Fume Hoods LABOPUR® H Series

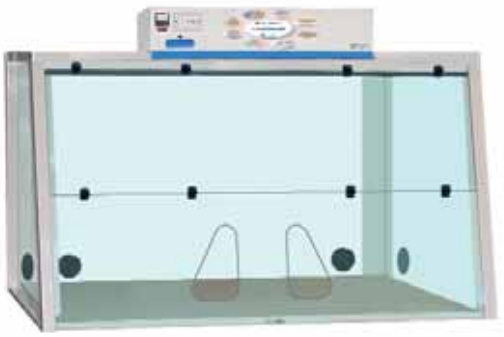
NEW!

Charcoal filter „ORG": for flammables and organics
Charcoal filter „CORG": suitable for the most common laboratory chemicals
HEPA filter „HEP": for Particle
Frame for HEPA filter „SH"

ECOSAFE

Type	For model	PK	Cat. No.
ORG50	Charcoal filter for flammable chemicals	1	**9.840 202**
CORG51	Charcoal filter for corrosive and flammable chemicals	1	**4.007 805**
ORG200	H 200, H 201	1	**4.007 817**
HEP200	H 200, H 201	1	**6.252 313**
SH200	H 200, H 201	1	**6.264 727**
CORG201	H 200, H 201	1	**4.007 802**
ORG1300	H 300, H 301, H 400, H 401, H 1300, H 1301, H 2300, H 2301	1	**4.007 816**
HEP1300	H 300, H 301, H 400, H 401, H 1300, H 1301, H 2300, H 2301	1	**6.252 246**
SH1300	H 300, H 301, H 400, H 401, H 1300, H 1301, H 2300, H 2301	1	**6.264 728**
CORG1301	H 300, H 301, H 400, H 401, H 1300, H 1301, H 2300, H 2301	1	**4.007 801**
ORG3500	H 3500, H 3501	1	**4.007 819**
SH3500	H 3500, H 3501	1	**6.264 729**
CORG3501	H 3500, H 3501	1	**4.007 804**

1



2



Accessories for Fume Hoods LABOPUR® H Series

ECOSAFE

Type	Description	PK	Cat. No.
LU20	Lighting for Fume hoods	1	**4.007 815**
SFA2	Filteralarm with acoustic / visual alarm	1	**4.007 832**

Worktops made from tempered glass available on request.

1



1 Workstation with Deaerated Storage Cabinet LABOPUR® H Series Package

Manipulation and storage in the laboratory: all in one. *ECOSAFE*

The storage cabinet is connected to the fume hood in order to extract and absorb the toxic fumes from both items. The self-contained system provides mobility, security and highly reduces running costs. No ductwork or exhaust system required, no discharge of toxic gases to the environment. No heating or cooling of air.

Technical specifications of the cabinet:
- Blue stripes built in steel 15/10, white Epoxy paint (RAL 9010) pictogram ISO 3864, EU 92/58/CEE
- Self-closing wing doors, locking system
- 1 height-adjustable retention shelf, 1 retention tank
- 4 castors (height of castors: 60mm)
- Vent grids in the lower part, connection element to the fume hood

LABOPUR® Workstation supplied with:
- Ventilated storage cabinet
- Fume hood with recirculating air filtration system CLASSE 2, certified Norm NF X 15-211, May 2009
- Charcoal filter „CORG": absorbs inorganic/organic acids vapors and organic preparations and solvents

Type	External dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
PMSF200	610 x 620 x 1880	68	1	**4.007 826**
PMSF300	800 x 620 x 1650	77	1	**4.007 827**
PMSF400	800 x 620 x 1880	88	1	**4.007 828**
PMSF500	900 x 740 x 2100	111	1	**4.007 829**
PMSF1300	1000 x 740 x 2100	123	1	**4.007 825**

2



2 Hazardous Material Workplace GAP.125.120

NEW!

asecos

- specified workplace limit values are maintained
- Ventilation test according to DIN EN 14175-3 (5.4.4)
- maximum user safety
- made of chemically resistant, anodised aluminium profiles
- glazed at the side made from 5mm ESG (tempered safety glass)
- highly effective pollutant capture through special, internally mounted fresh air curtain equipment
- connecting pieces (DN160) in the ceiling region for connecting to the customer's exhaust air plant

Standard equipment:
- integrated, workplace lighting mounted to avoid glare
- transparent side panels
- fold-away deflector
- melamine resin coated rear panel
- stainless steel (V2A/1.4301) work plate (vat sealed by welding)
- on and off function, exhaust air control and light switch at the lower right front side

Specifications
Dimensions (WxDxH): 1200 x 750 x 1400mm

Description	PK	Cat. No.
Hazardous material workplace GAP.125.120	1	**6.241 601**
Work plate, stainless steel for GAP.125.120	1	**6.243 195**
Under frame (H=865 mm)	1	**9.840 588**

Safety Cabinets please see page 1237.

E & OE.

1 Ductless Fume Hoods Type Ascent™ Max

1



Compact, energy saving fume hood without ducting system. *Esco*

- Independent tested and comply with AFNOR NFX 15-211 standard
- Easy Filter Change
- Average Inflow Air Velocity: 0.4m/s
- Sentinel-Microprocessor with LCD-Display, air velocity alarm and 24-hour-clock
- Fluorescent lighting provides superior illumination of the work zone
- Tempered glass sliding sash
- Tempered glass side panel
- ISOCIDE™ antimicrobial coating on all painted surfaces minimizes contamination.
- Stainless steel worktop
- Electrical outlets

Other units:
- Secondary Backup HEPA filter - suitable when the application involves the generation of biohazardous aerosols in the work zone
- Secondary Backup Carbon filter, offers a higher filtration efficiency against toxic fumes

Please order filters separately.

More options, support stands, installation on request

Type	Size	External dimensions (W x D x H) mm	PK	Cat. No.
Ascent™ Max ADC-2B1	0.6 m	730 x 735 x 1460	1	**7.939 174**
Ascent™ Max ADC-3B1	0.9 m	1035 x 714 x 1410	1	**7.939 193**
Ascent™ Max ADC-4B1	1.2 m	1340 x 714 x 1410	1	**7.939 195**
Ascent™ Max ADC-5B1	1.5 m	1645 x 714 x 1410	1	**7.939 204**
Ascent™ Max ADC-6B1	1.8 m	1959 x 714 x 1410	1	**7.939 213**
Ascent™ Max ADC-3C1*	0.9 m	1035 x 714 x 1460	1	**7.939 215**
Ascent™ Max ADC-4C1*	1.2 m	1340 x 714 x 1460	1	**7.939 223**
Ascent™ Max ADC-5C1*	1.5 m	1645 x 714 x 1460	1	**7.939 331**
Ascent™ Max ADC-6C1*	1.8 m	1950 x 714 x 1460	1	**7.939 339**
Ascent™ Max ADC-3E1**	0.9 m	1035 x 714 x 1485	1	**7.939 351**
Ascent™ Max ADC-4E1**	1.2 m	1340 x 714 x 1485	1	**7.939 352**
Ascent™ Max ADC-5E1**	1.5 m	1645 x 714 x 1485	1	**7.939 353**

*secondary filter, charcoal
**secondary filter, HEPA

2 Flow Monitor

2



For fume cupboards. *Buddeberg*
Indicates if the fume cupboard is switched on.

Type	PK	Cat. No.
Flow monitor	1	**9.003 890**

1



1 Underbench Cabinet with Refrigerating Unit

NEW!

asecos

- Safe and approved cooled storge of hazardous materials in workrooms
- Type proofed according to DIN EN 14470-1, fire resistance 90 minutes
- Mobile: integrated castors with plinth, easy moving of the cabinet
- Convenient handling: drawer can be opened with minimal effort
- Safe access to all containers: interior of the drawer is completely visible,
- Convenient: drawer remains open in any position, self-closing in the event of a fire
- No unauthorised use: drawer is lockable with cylinder locking and locking state indicator (red/green)
- Quickly put into operation: integrated technical recirculating air system with multi-stage filter system and power cord
- 7-Segment/LED-Display: function monitoring directly in view. Display shows the refrigeration temperature (TARGET/ ACTUAL), air exchange rate and filter saturation, easy setting of the required temperature
- High flexibility in choosing the installation location
- Active personal protection through safe capture of harmful vapours with retention in the filter system
- VDE tested electronic monitoring system with visual and audible alarm including potential-free alarm contact
- Safe, permanent min. 10-fold air exchange, no areas inside and outside of the cabinets are at risk of explosion
- Maximum refrigeration temperature of +2°C (with max. 25°C room temperature)

Scope of delivery: Model UB90.060.110.KU.S incl. drawer made of stainless steel, load capacity 50 kg

Specifications

Outer dimensions (WxDxH):	1108 x 574 x 631 mm
Inner dimensions (WxDxH):	770 x 440 x 484 mm
Drawer (WxDxH):	422 x 369 x 80 mm

Description	PK	Cat. No.
Underbench cabinet with refrigerating unit UB90.060.110.KU.S incl. drawer with stainless steel sump and castors with plinth H=30 mm	1	**6.267 271**
Perforated insert (stainless steel) for sump	1	**6.267 273**
Second level drawer (perforated plate) made of stainless steel	1	**6.267 272**

2



6.267 275

3 Underbench Cabinets

NEW!

asecos

- Safe and approved storage of hazardous materials in workrooms
- Type proofed according to DIN EN 14470-1, fire resistance 90 minutes, GS approved, CE conformal
- Mobile: integrated castors with plinth, easy moving of the cabinet
- Quickly put into operation: integrated air ducts ready for connection (NW 50) to a technical exhaust system
- Safe access to all containers: interior of the drawer is completely visible, 135° opening of the wing doors
- Convenient: doors and drawer remain open in any position
- Safety: drawer standard fitted with earthing wire incl. clamp and with seal welded sump, doors and drawer are self-closing in the event of a fire
- No unauthorised use: doors and drawer are lockable with cylinder locking and locking state indicator (red/green)

Scope of delivery: Models UB90.060.059.S and UB90.060.110.S incl. drawer with sump and perforated insert, Models UB90.060.059.T and UB90.060.110.2T incl. bottom collecting sump and perforated insert as a storage level

Further cabinet versions available on request.

3



Specifications

Outer dimensions (WxDxH)	
UB90.060.059.S/UB90.060.059.T:	593 x 574 x 600 mm
UB90.060.110.S/UB90.060.110.2T:	1102 x 574 x 600 mm
Inner dimensions (WxDxH)	
UB90.060.059.S/UB90.060.059.T:	470 x 450 x 500 mm
UB90.060.110.S/UB90.060.110.2T:	980 x 450 x 500 mm
Sump (WxDxH)	
UB90.060.059.S:	422 x 441 x 80 mm
UB90.060.110.S:	930 x 441 x 80 mm

Description	PK	Cat. No.
Underbench cabinet with drawer UB90.060.059.S	1	**6.267 275** 2
Underbench cabinet with door UB90.060.059.T	1	**7.671 305**
Underbench cabinet with drawer UB90.060.110.S	1	**6.263 207**
Castors with plinth H=30 mm for cabinet width 1102 mm	1	**6.240 343**
Additional shelf for model UB90.060.059.T	1	**6.267 277**
Additional shelf for model UB90.060.110.2T	1	**6.267 278**

Safety Storage Cabinets Q-PEGASUS-90 with Wing Doors

NEW!

asecos

- safe and approved storage of hazardous materials in workrooms
- type proved according to EN 14470-1, fire resistance 90 minutes
- GS-approved, CE confomal
- outer body made of sheet steel, interior with chemical resistant surface, colour: body anthracite grey RAL 7016, doors light grey (RAL 7035), door colour pure white(RAL 9010) available on request
- convenient handling: one-hand operation for double-door cabinets (AGT)
- standard door open arrest system holds doors open, safe and convenient storage and removal
- serial automatic door closing (TSA) releases arrested doors after approx. 60 seconds. Acoustic and visual signal before closing
- lockable doors with cylinder lock (integration into a locking system possible), integrated locking state indicator (red/green)
- integrated transport base with removable, optional base cover, easy indoor transport
- adjusting aids for compensation for uneven floor
- ventilation connection (NW 75)in the cabinet ceiling

Shelves, height adjustable (32 mm increments), load capacity 75 kg (evenly distributed load), bottom collecting sump with perforated insert as a first storage level. Capacity bottom collecting sump: 33 litre (model width 1200 mm), 22 litre (model width 600 mm)

Supplied with: Safety Storage Cabinet Q-PEGASUS-90 Model Q90.195.120.WDAC or Q90.195.060.WDAC incl. interior equipment with 3 shelves, bottom collecting sump with perforated insert

A wide variety of cabinet versions is available. Please enquire.

Specifications

Outer dimensions (WxDxH)	
Q90.195.120.WDAC:	1193 x 615 x 1953mm
Q90.195.060.WDAC:	599 x 615 x 1953mm
Inner dimensions (WxDxH)	
Q90.195.120.WDAC:	1050 x 522 x 1647mm
Q90.195.060.WDAC:	450 x 522 x 1647mm
Shelf dimensions (WxDxH)	
Q90.195.120.WDAC:	1040 x 432 x 30mm
Q90.195.060.WDAC:	440 x 432 x 30mm
Weight	
Q90.195.120.WDAC:	434kg
Q90.195.060.WDAC:	265kg

Description	PK	Cat. No.	
Safety storage cabinet Q90.195.120.WDAC	1	**9.840 681**	1
Safety storage cabinet Q90.195.060.WDAC	1	**9.840 682**	2
Recirculating air filter system (option)	1	**9.840 650**	3
Plinth panel for Safety storage cabinet Q90.195.120.WDAC	1	**9.840 700**	
Plinth panel for Safety storage cabinet Q90.195.60.WDAC	1	**9.840 699**	

1



9.840 681

2



9.840 682

3



9.840 650

1



9.840 696

Safety Storage Cabinets S-PHOENIX Vol. 2-90 with Folding Doors

NEW!

asecos

- safe and approved storage of hazardous materials in workrooms
- type proved according to EN 14470-2, fire resistance 90 minutes
- GS-approved, CE confomal
- outer body made of sheet steel in light grey (RAL 7035), interior with chemical resistant surface
- space saving folding doors, less required space in front of the cabinet while doors are open
- convenient handling - one-hand operation for double-door cabinets (AGT))
- standard door open arrest system holds doors open, safe and convenient storage and removal
- serial automatic door closing (TSA) releases arrested doors after approx. 60 seconds. Acoustic and visual signal before closing
- lockable doors with cylinder lock (integration into a locking system possible)
- adjusting aids for compensation for uneven floor
- ventilation connection (NW 75)in the cabinet ceiling

Model S90.196.120.FDAC and Model S90.196.060.FDAC with shelves:
Shelves, height adjustable (32 mm increments), load capacity 75 kg (evenly distributed load), bottom collecting sump with perforated insert as a first storage level
Capacity bottom collecting sump: 33 litre (model width 1200 mm), 22 litre (model width 600 mm)
Supplied with: Safety Storage Cabinet S-PHOENIX Vol. 2-90 Model S90.196.120.FDAC or S90.196.060.FDAC incl. interior equipment with 3 shelves, bottom collecting sump with perforated insert

Model S90.196.120.FDAC and Modell S90.196.060.FDAC with drawer:
Large storage capacity, optimal to maximize storage space, ideal for the storage of containers < 5 litre
Model width 1200 mm: self-closing in the event of fire, load capacity: 60 kg (evenly distributed), capacity 30 litre
Model width 600 mm: permanent self-closing, load capacity: 25 kg (evenly distributed), capacity 5 litre
Supplied with: Safety Storage Cabinet S-PHOENIX Vol. 2-90 Model S90.196.120.FDAC or S90.196.060.FDAC incl. interior equipment with 6 drawers

A wide variety of cabinet versions is available. Please enquire.

2



9.840 697

Specifications

Outer dimensions (WxDxH)	
S90.196.120.FDAC:	1196 x 616 x 1968mm
S90.196.060.FDAC:	596 x 616 x 1968 mm
Inner dimensions (WxDxH)	
S90.196.120.FDAC:	1050 x 524 x 1742mm
S90.196.060.FDAC:	450 x 524 x 1742mm
Shelf (WxDxH)	
S90.196.120.FDAC:	1040 x 432 x 30mm
S90.196.060.FDAC:	440 x 432 x 30 mm
Drawer (WxDxH)	
S90.196.120.FDAC:	844 x 488 x 90mm
S90.196.060.FDAC:	345 x 500 x 50mm
Weight	
S90.196.120.FDAC:	420kg
S90.196.060.FDAC:	260kg

Description	PK	Cat. No.	
Safety storage cabinet, S90.196.120FDAC, 3 shelves	1	**9.840 695**	
Safety storage cabinet, S90.196.120FDAC, 6 drawers	1	**9.840 696**	1
Safety storage cabinet, S90.196.60FDAC, 3 shelves	1	**9.840 697**	2
Safety storage cabinet, S90.196.60FDAC, 6 drawers	1	**9.840 698**	
Recirculating air filter system (option)	1	**9.840 650**	



E & OE.

Safety Storage Cabinets Q-CLASSIC-30 with Wing Doors

NEW!

asecos

- safe and approved storage of hazardous materials in workrooms
- type proved according to EN 14470-1, fire resistance 90 minutes
- GS-approved, CE confomal
- outer body made of flame retardant, melamine coated special plates, door front made of sheet steel with structured paint finish, colour: body anthracite grey (similar to RAL 7016), doors light grey (RAL 7035), door colour pure white (RAL 9010) available on request
- easy handling with comfort: doors stop in any position, self-closing in the event of fire
- standard door open arrest system holds doors open, safe and convenient storage and removal
- integrated transport base for an easy indoor transport
- removable base cover with integrated adjusting aids optional
- lockable doors with cylinder lock (integration into a locking system possible)
- ventilation connection (NW 75)in the cabinet ceiling

Shelves, height adjustable (32 mm increments), load capacity 75 kg (evenly distributed load), bottom collecting sump with perforated insert as a first storage level. Capacity bottom collecting sump: 33 litre (model width 1200 mm), 22 litre (model width 600 mm)
Supplied with: Safety Storage Cabinet Q-CLASSIC-30 Model Q30.195.116 or Q30.195.056 incl. interior equipment with 3 shelves, bottom collecting sump with perforated insert

A wide variety of cabinet versions is available. Please enquire.

1



9.840 693

2



9.840 694

Specifications

Outer dimensions (WxDxH)	
Q30.195.116:	1164 x 620 x 1947mm
Q30.195.056:	564 x 615 x 1947mm
Inner dimensions (WxDxH)	
Q30.195.116:	1050 x 519 x 1626mm
Q30.195.056:	450 x 519 x 1626mm
Shelf dimensions (WxDxH)	
Q30.195.116:	1040 x 432 x 30mm
Q30.195.056:	440 x 432 x 30mm
Weight	
Q30.195.116:	240kg
Q30.195.056:	146kg

Description	PK	Cat. No.	
Safety Storage Cabinet Q30.195.116	1	**9.840 693**	1
Safety Storage Cabinet Q30.195.056	1	**9.840 694**	2
Recirculating air filter system (option)	1	**9.840 650**	

3 4 Sump Liners for asecos Safety Storage Cabinets, PP, PE

asecos

- Increased protection of drawers when storing mildly aggressive liquids and in case of a leakage
- Removable for safe disposal of leakages and easy cleaning

For	Material	PK	Cat. No.
for drawers, for safety cabinet of width 1200mm	PP	1	**9.840 619**
for drawers, for safety cabinet of width 600mm	PP	1	**9.840 626**
for shelves, for safety cabinet of width 1200mm	PE	1	**9.840 612**
for shelves, for safety cabinet of width 600mm	PE	1	**9.840 614**

3



4



We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

asecos

1



9.840 690

Safety Storage Cabinets S-CLASSIC-90 with Wing Doors

NEW!

asecos

- safe and approved storage of hazardous materials in workrooms
- type proved according to EN 14470-2, fire resistance 90 minutes
- GS-approved, CE confomal
- outer body made of sheet steel, colour light grey (RAL 7035), interior with chemical resistant surface
- lockable doors with cylinder lock (integration into a locking system possible)
- adjusting aids for compensation for uneven floor
- ventilation connection (NW 75)in the cabinet ceiling
- standard door open arrest system holds doors open, safe and convenient storage and removal

Shelves, height adjustable (32 mm increments), load capacity 75 kg (evenly distributed load), bottom collecting sump with perforated insert as a first storage level. Capacity bottom collecting sump: 33 litre (model width 1200 mm), 22 litre (model width 600 mm).
Supplied with: Safety Storage Cabinet S-CLASSIC-90 Model S90.196.120.WDAS or S90.196.060.WDAS incl. interior equipment with 3 shelves, bottom collecting sump with perforated insert

A wide variety of cabinet versions is available. Please enquire.

Specifications

Outer dimensions (WxDxH)	
S90.196.120.WDAS:	1196 x 616 x 1968mm
S90.196.060.WDAS:	596 x 616 x 1968 mm
Inner dimensions (WxDxH)	
S90.196.120.WDAS:	1050 x 524 x 1742mm
S90.196.060.WDAS:	450 x 524 x 1742mm
Shelf dimensions (WxDxH)	
S90.196.120.WDAS:	1040 x 432 x 30mm
S90.196.060.WDAS:	440 x 432 x 30mm
Weight	
S90.196.120.WDAS:	420kg
S90.196.060.WDAS:	260kg

Description	PK	Cat. No.	
Safety Storage Cabinets S90.196.120.WDAS	1	**9.840 689**	
Safety Storage Cabinets S90.196.060.WDAS	1	**9.840 690**	1
Recirculating air filter system (option)	1	**9.840 650**	

2



9.840 691

Cabinets for Acids and Alkalis SL-CLASSIC with Wing Doors

NEW!

asecos

- safe and approved storage of aggressive, non-flammable hazardous materials in workrooms
- robust construction and longevity, safety elements assembled outside the storage compartment for increased protection against corrosion, easy to clean
- safe storage with two hermetically separated storage compartments
- doors lockable with cylinder locking (integration in locking system possible)
- integrated adjusting aids to compensate for uneven floor
- integrated metal-free air ducts ready for connection (NW 75) to a technical exhaust system with only one extraction air Inlet
- pull-out shelves: high quality and sturdy construction with removable plastic sump, load capacity 25 kg (evenly distributed load), capacity 15 litre

Supplied with: Cabinet for acids and alkalis SL-CLASSIC incl. interior equipment, Model SL.196.120.MV with 8 or 12 pull-out shelves, Model SL.196.060.MH with 4 or 6 pull-out shelves

3



9.840 692

A wide variety of cabinet versions is available. Please enquire.

Specifications

Outer dimensions (WxDxH)	
SL.196.120.MV:	1197 x 603 x 1965 mm
SL.196.60.MH:	597 x 603 x 1965 mm
Inner dimensions (WxDxH)	
SL.196.120.MV:	2 x 485 x 570 x 1869 mm
SL.196.60.MH:	2 x 485 x 570 x 914 mm
Weight	
SL.196.120.MV:	160 kg
SL.196.60.MH:	125 kg

Description	PK	Cat. No.	
Cabinets for acids and alkalis SL.196.120.MV, 8 pull-out shelves	1	**9.840 691**	2
Cabinets for acids and alkalis SL.196.120.MV, 12 pull-out shelves	1	**9.840 701**	
Cabinets for acids and alkalis SL.196.060.MH, 4 pull-out shelves	1	**9.840 692**	3
Cabinets for acids and alkalis SL.196.060.MH, 6 pull-out shelves	1	**9.840 702**	

E & OE.

Fire Resistant Gas Cylinder Cabinets G90 Series

NEW!

asecos

- colour: grey RAL 7035
- exhaust air connection (NW75) on top of the cabinet
- adjusting aids to compensate for uneven floor
- large interior height of 1858mm (Model for two 10 litre bottles interior height of 1246mm)
- lead-through points for pipes, sensors etc. in the ceiling of the cabinet
- complete with mounting rails, rolling ramp, bottle retainer with ratchet straps

Approved and safe
- labelling in accordance with EN 14470-2, fire resistance 90 minutes
- GS approved, CE compliant

Description	Weight kg	Dimensions (W x D x H) mm	PK	Cat. No.
for two 10 litre bottles	278	600 x 615 x 1450	1	**6.260 435**
for one 50 litre bottle	365	600 x 615 x 2050	1	**6.265 442**
for two 50 litre bottles	365	600 x 615 x 2050	1	**6.261 842**
for three 50 litre bottles	490	900 x 615 x 2050	1	**9.840 609**
for four 50 litre bottles	610	1200 x 615 x 2050	1	**9.840 608**
for four 50 litre bottles	690	1400 x 615 x 2050	1	**6.267 279**

1



6.261 842

2 Gas Cylinder Regulators

To EN ISO 2503. Valve body and cap made of high quality, hot-pressed brass. Provide sensitive adjustment of working pressure. Safety valve blows off upwards.

Type	Pressure bar	PK	Cat. No.
Oxygen	0 to 10 / 16	1	**9.223 701**
Acetylene	0 to 1.5 / 2.5	1	**9.223 705**
Argon/Carbon dioxide	0 to 10 / 16	1	**9.223 710**
Compressed air	0 to 10 / 16	1	**9.223 721**
Compressed air	0 to 20 / 40	1	**9.223 722**
Hydrogen	0 to 1.5 / 2.5	1	**9.223 730**
Hydrogen	0 to 10 / 16	1	**9.223 731**
Nitrogen	0 to 10 / 16	1	**9.223 741**
Nitrogen	0 to 20 / 40	1	**9.223 742**
Propane	0 to 1.5 / 2.5	1	**9.223 751**
Propane with 1 pressure gauge	0 to 1.5 / 2.5	1	**9.223 752**
Helium	0 to 10 / 16	1	**9.223 756**
Test gas	0 to 10 / 16	1	**9.223 771**
Nitrous oxide	0 to 10 / 16	1	**9.223 791**

2



3 Gas Cylinder Supports

For holding gas cylinders up to 230mm diameter in a vertical position.
For benches/worktops up to 65mm thick.
Rapid release, safety catch.

Type	PK	Cat. No.
Gas cylinder support	1	**7.605 462**

3



4 Steel Bottle Cart KKR-832/01 and KKR 820/1

NEW!

Gorr

Steel bottle cart with solid rubber tyres Ø 200 mm and powder coated black-silver.

Type	For	PK	Cat. No.
Steel bottle cart KKR-832/01 for 1 flask	50 l	1	**9.148 303**
Steel bottle cart KKR-820/01 for 1 flask	10 l	1	**9.148 304**

4



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1



9.129 800

LLG-Universal indicator paper, rolls

For the determination of pH values. Plastic dispensing reel with 1 roll of 5m.

Range pH	Description	PK	Cat. No.
1 - 11	Dispensing reel with 1 roll	1	**9.129 800** 1
1 - 14	Dispensing reel with 1 roll	1	**9.129 802**
1 - 11	Refill packs with 3 rolls	3	**9.129 801**
1 - 14	Refill packs with 3 rolls	3	**9.129 803**

2



2 LLG-Universal indicator paper, strips

NEW!

For determination of pH value. Box of 100 pre-cut indicator paper strips of 70mm length.

Range pH	Package contents	PK	Cat. No.
1 - 14	box of 100 strips	100	**9.129 805**

3



3 Universal indicator papers

For determination of pH- value. *MACHEREY-NAGEL*
Plastic dispensing reel with 1 roll of indicator paper and colour scale.

Range pH	Description	PK	Cat. No.
1 - 11	Dispensing reel with 1 roll	1	**9.130 200**
1 - 14	Dispensing reel with 1 roll	1	**9.130 210**
1 - 11	Refill packs with 3 rolls	3	**9.130 203**
1 - 14	Refill packs with 3 rolls	3	**9.130 213**

Further indicatorpapers available on request.

4



4 Special indicator papers

For determination of pH- value. *MACHEREY-NAGEL*
Plastic dispensing reel with 1 roll of indicator paper and colour scale.

Range pH	Description	PK	Cat. No.
0.5 - 5.5	Dispensing reel with 1 roll	1	**9.130 305**
5.5 - 9.0	Dispensing reel with 1 roll	1	**9.130 325**
0.5 - 5.5	Refill packs with 3 rolls	3	**9.130 306**
5.5 - 9.0	Refill packs with 3 rolls	3	**9.130 326**

Further indicator papers available on request.

5



5 Indicator paper, Duotest

Roll length 5m, 10mm width. With two colour zones. *MACHEREY-NAGEL*
Plastic box with 1 roll of indicator paper and colour scale.

Range pH	Description	PK	Cat. No.
1 - 12	Dispensing reel with 1 roll	1	**9.130 344**
1.0 - 4.3	Dispensing reel with 1 roll	1	**9.130 356**
3.5 - 6.8	Dispensing reel with 1 roll	1	**9.130 359**
5.0 - 8.0	Dispensing reel with 1 roll	1	**9.130 347**
7.0 - 10.0	Dispensing reel with 1 roll	1	**9.130 362**
9.5 - 14.0	Dispensing reel with 1 roll	1	**9.130 363**
1 - 12	Refill packs with 3 rolls	3	**9.130 355**
5.0 - 8.0	Refill packs with 3 rolls	3	**9.130 358**

6



6 Indicator paper, Tritest

For determination of pH-value. *MACHEREY-NAGEL*
Roll length 5M, 10mm width. With three colour zones, without hydrophobic zone.
Plastic container with 1 roll of indicator paper and colour scale.

Range pH	Description	PK	Cat. No.
1 - 11	Dispensing reel with 1 roll	1	**9.130 367**
1 - 11	Refill packs with 3 rolls	3	**9.130 368**

E & OE.

1 Universal indicator paper Tritest L

For determination of pH- value. *MACHEREY-NAGEL*
Roll length 6M, 14mm width. With 3 colour zones and 2 hydrophobic zones. The zones are separated by a hydrophobic barrier, which effectively prevents mixing of the reaction colours and increases mechanical stability.
Plastic container with 1 roll of indicator paper and colour scale.

Range pH	Description	PK	Cat. No.
1 - 11	Dispensing reel with 1 roll	1	**9.130 360**
1 - 11	Refill packs with 3 rolls	3	**9.130 361**

1



2 Litmus paper

Litmus paper, available in blue, red and neutral. Supplied in booklets of 100 strips, 10 x 70mm W x L. *MACHEREY-NAGEL*

Type	Measuring range	Colour change	PK	Cat. No.
Litmus paper, blue	8.0 to 5.0	blue - red	1	**9.130 112**
Litmus paper, red	5.0 to 8.0	red - blue	1	**9.130 116**
Litmus paper, neutral	5.0 to 8.0	red - violett - blue	1	**9.130 118**

Also available as reel. Refill packs available separately.

2



LLG-Indicator paper sticks

For pH determination.

Range pH	Package contents	PK	Cat. No.
0 - 14	50 sticks per pack	50	**9.129 806**
0 - 14	100 sticks per pack	100	**9.129 807** 3

3



9.129 807

4 5 LLG-Universal Indicator strips, in vial with snap lid "*Premium*"

NEW!

Flip-top vial easy to open and close with one hand. The new LLG pH strips offer the utmost in convenience and ease of use in laboratory grade testing. With a single colour match, and a 12mm reagent pad, these universal pH strips (0.0-14.0) belong in every lab.
- Single colour match - no more matching multiple pads
- 12mm matching area for quick matches,
- Flip-top vial stays closed when dropped, but is easy to open with one-hand.
- Vial keeps strips safe from the elements
- 1 pack (vial) of 100 strips

Range pH	Package contents	PK	Cat. No.
0 - 14	100 strips per vial with snap lid	100	**9.129 808**

4



5



6 Indicator paper, PEHANON®

For determination of pH-value in coloured solutions. *MACHEREY-NAGEL*
Supplied in packs of 200, 11 x 100mm W x L strips.

Range pH	PK	Cat. No.
1 - 12	200	**9.130 657**
0 - 1.8	200	**9.130 658**
1.0 - 2.8	200	**9.130 651**
1.8 - 3.8	200	**9.130 652**
2.8 - 4.6	200	**9.130 656**
3.8 - 5.5	200	**9.130 603**
4.0 - 9.0	200	**9.130 659**
5.2 - 6.8	200	**9.130 605**
6.0 - 8.1	200	**9.130 626**
7.2 - 8.8	200	**9.130 660**
8.0 - 9.7	200	**9.130 366**
9.5 - 12.0	200	**9.130 661**
10.5 - 13.0	200	**9.130 663**
12.0 - 14.0	200	**9.130 666**

6



1



1 pH-Fix indicator strips, universal

NEW!

For determination of pH- value. Permanent colour. Non bleeding. *MACHEREY-NAGEL*

Range pH	PK	Cat. No.
0.0 - 6.0	100	**9.130 382**
0 - 14	100	**9.130 381**
0 - 14 PT*	100	**9.130 379**
7.0 - 14.0	100	**9.130 384**

* PlopTop tube.

2



2 pH-Fix indicator strips, special

For determination of pH- value. Permanent colour. Non bleeding. *MACHEREY-NAGEL*

Range pH	PK	Cat. No.
0.3 - 2.3	100	**9.130 385**
1.7 - 3.8	100	**9.130 386**
2.0 - 9.0	100	**9.130 380**
3.1 - 8.3 CE**[1)]	100	**9.130 377**
3.6 - 6.1 PT* CE**[1) 2)]	100	**9.130 378**
3.6 - 6.1 CE**[1) 2)]	100	**9.130 387**
4.5 - 10.0 CE**[1)]	100	**9.130 383**
5.1 - 7.2	100	**9.130 388**
6.0 - 7.7	100	**9.130 389**
6.0 - 10.0	100	**9.130 392**
7.5 - 9.5	100	**9.130 390**
7.9 - 9.8	100	**9.130 391**

* PlopTop tube.

** CE-marked according to the [1)] IvD-directive 98/79/EG [2)] the directive for medical products 93/42/EWG.

3



3 pH indicator strips

Non-bleeding. Ranges as indicated. Supplied in packs of 100 strips. *Merck*

Type	Range pH	Increments pH units	PK	Cat. No.
Universal	0 - 14	1	100	**9.130 001**
Acilit	0 - 6	0.5	100	**9.130 016**
Neutralit	5 - 10	0.5	100	**9.130 017**
Alkalit	7,5 - 14	0.5	100	**9.130 018**

4



4 Special indicator strips

Non-bleeding. Supplied in packs of 100 strips. *Merck*

Range pH	PK	Cat. No.
0.0 - 2.5	100	**9.130 002**
2.0 - 9.0	100	**9.130 003**
2.5 - 4.5	100	**9.130 004**
4.0 - 7.0	100	**9.130 007**
5.2 - 7.2	100	**9.130 009**
6.5 - 10.0	100	**9.130 010**
11.0 - 13.0	100	**9.130 013**

1 pH tester Checker 1

Pocket pH tester with exchangeable electrode. Ideal for pH testing small amounts of liquid and in narrow vessels. *Hanna*

Specifications:

Measuring range:	0.00 to 14.00 pH
Accuracy:	±0.2 pH
Battery:	2 x 1.5V cells
Dimensions without probe:	66 x 50 x 25 mm
Weight:	63g

Type	PK	Cat. No.
Checker 1	1	**9.773 930**
Spare electrode HI1270	1	**9.773 931**
Calibration kit, 5 x 20 ml pH 4 and pH 7	1	**9.773 932**
Calibration kit, 10 x 20 ml pH 7	1	**9.773 933**

1



pH tester PHX 800

NEW!

- Housing made of ABS *ebro*
- Automatic switch-off after 15 minutes
- Hold-function
- Auto-lock-function
- Automatic deactivation
- Battery level indicator
- Exchangeable battery
- Robust
- Waterproof
- Adjustable

Specifications

Measuring range:	0 to 14pH
Accuracy:	±0.1pH
Resolution:	±0.2pH
Operating temperature:	0 to +50°C
Storage temperature:	-25 to +60°C
Battery:	4 x 1.5V A76/LR44
Battery lifetime:	approx. 150 hours
Dimensions (W x L x H):	170 x 32 x 15mm
Weight:	approx. 70 g

Type	Description	PK	Cat. No.
PHX 800	pH tester	1	**6.266 914** 2

2



6.266 914

3 pH/°C tester pHep®-4

NEW!

Recently developed waterproof pH and temperature tester (IP67). *Hanna*
This is the first pH tester with handheld measuring device features. Automatic two point calibration with 3 pre-programmed standard buffers (pH 7.01; pH 4.01; pH 10.01).
Stability indicator for high-precision measurements. Simultaneous display of pH value and temperature.
Optional automatic or manual temperature compensation. Includes exchangeable HI 73127 pH electrode.

Specifications:

Measuring range:	0.0 to 14.0 pH
	0.0 to 60.0°C
Accuracy:	±0.1 pH
	±0.5°C
Batteries:	4 x 1.5V
Environmental conditions:	0 to +50°C
Dimensions:	163 x 40 x 26mm
Weight:	100g

Type	PK	Cat. No.
pHep®-4	1	**9.773 920**
Spare electrode HI 73127	1	**9.773 921**
Calibration Kit pH 7.01 + 10.01, 5 x 20 ml	1	**9.773 934**
Calibration kit pH 4.00 + 7.01, 5 x 20 ml	1	**9.773 932**

3



1



6.262 991

pH meter PHT 810

NEW!

ebro

Portable pH meter with external electrode.
- BNC connection
- With automatic pH calibration
- Handy and robust
- Current value memory
- Simple calibration with keypad
- Electrodes for different applications
- Min/Max- and hold function

Plastic electrode AT 200: Housing material: Plastic, Diam.: 12mm, Length shaft: 120mm

Glass electrode AT 201: Housing material shaft: Glass, Diam. shaft: 12mm, Length shaft: 900mm

Penetration electrode AT 206 for measurements in semi-solid food stuff and other materials. Housing material: Glass, Diameter shaft/electrode: 25mm/5mm, Length shaft/electrode: 65mm/12mm, with 1m cable and BNC plug

pH meter set contains: pH meter PHT 810, penetration electrode AT 206, punching pin, buffer solutions pH4 and pH7, KCI solution, carrying case, 2-point calibration certificate

2



6.252 036

3



6.266 915

Specifications

Measuring range:	0 to 14pH
Accuracy:	±0.03pH
Resolution:	±0.01pH
Operating temperature:	0 to +50°C
Storage temperature:	-25 to +60°C
Battery:	Lithium 3V/1Ah
Battery lifetime:	approx.. 5 years
Dimensions (W x L x H):	54 x 110 x 22mm
Weight:	approx. 200g

Type	Description	PK	Cat. No.
PHT 810	pH meter (without electrode)	1	**6.262 991** 1
AT 200	Plastic electrode for PHT 810	1	**6.267 164**
AT 201	Glass electrode for PHT 810	1	**6.267 165**
AT 206	Penetration electrode for PHT 810	1	**6.252 036** 2
ST 1000	pH meter set	1	**6.266 915** 3

4



4 Pocket pH meters, PICCOLO

Hanna

Handy pocket pH meters with built-in amplifier electrode for greater measurement stability. Automatic temperature compensation via built-in temperature sensor.
Two point calibration.
Piccolo Plus model has additional temperature display.
Supplied complete with electrode, batteries and buffer solutions in ABS case.

Specifications:

Measuring range:	0.00 to 13.00pH
	0 to 70°C (Piccolo Plus only)
Accuracy:	±0.01pH
	±1°C (Piccolo Plus only)
Batteries:	3 x 1.5V cells giving up to 100 hours operation
Weight:	80g

Type	Dimensions (W x D x H) mm	PK	Cat. No.
PICCOLO I with electrode HI 1280	194 x 29 x 15	1	**9.773 946**
PICCOLO II with electrode HI 1280	265 x 29 x 15	1	**9.773 945**
PICCOLO Plus with electrode HI 1280	265 x 29 x 15	1	**9.773 944**
Spare electrode HI 1280 for PICCOLO I (length 90 mm)		1	**9.773 947**
Spare electrode HI 1290 for PICCOLO II (length 160 mm)		1	**9.773 948**
Spare electrode HI 1295 for PICCOLO Plus (length 160 mm)		1	**9.773 950**

E & OE.

1 pH/°C Meter HI 991001

Hanna

- Portable pH/°C -Meter for laboratory use
- Displays pH and temperature simultaneously
- Stability Indicator prevents unstable measurements
- Automatic 2 point calibration with pre-programmed standard buffers (pH 7.01; 4.01; 10.01)
- Automatic temperature compensation enables highest accuracy
- Supplied with amplified pH Electrode HI 1296D with integral temperature sensor

Specifications:

Measuring ranges:	-2.00 to 16.00 pH
	-5.0 to 105°C
Accuracy:	±0.02 pH
	±0.5°C
Battery:	1x 9 Volt
Operating temp. range:	0 to 50.0°C
Weight:	500g

Type	PK	Cat. No.
HI 991001	1	**9.733 998**
Spare electrode HI 1296D	1	**9.773 982**

1



2 pH/ mV/ °C Meters HI 8314N/HI 83141

NEW!

Hanna

HI 8314N: supplied complete with plastic-bodied pH electrode HI1217D with integral temperature sensor, calibration screwdriver, 9 Volt Battery.

HI 83141: supplied complete with plastic-bodied pH electrode HI1230B, separate temperature probe, calibration screwdriver, 9 Volt battery.

Measuring range/Accuracy:

pH:	0.00 to 14.00/±0.01
mV:	0 to ±1999 (ORP)/±1
°C:	0.0 to 100.0/±0.4
pH calibration:	manual, 2 point, through trimmers, (offset ±1 pH; slope 85 to 105%)
Temperature compensation:	automatic, 0 to 70°C (32 to 158°F) or fix at 25°C without temperature probe
Dimensions:	185mm x 82mm x 45mm
Battery type/operating life:	1 x 9V/approx. 100 hours of continuous use

Type	PK	Cat. No.
HI 8314N	1	**9.773 959**
HI 83141	1	**9.773 953**
Spare electrode HI 1217D for HI 8314N	1	**6.234 050**
Spare electrode HI 1230B for HI 83141	1	**6.050 012**

2



3 Waterproof pH-/mV-/°C- Meters HI 9125 and HI 9126

Hanna

- rugged waterproof pH Meters
- pH or mV value and temperature are displayed simultaneously
- graphical symbols guide the user through calibration and measurement
- automatic one or two point calibration with pre-programmed standard buffers (pH 4.01, 6.86, 7.01, 9.18, 10.01)
- automatic or manual temperature compensation
- additionally, HI 9126 displays the electrode status, 2 customs buffers can be programmed
- HI 9125 & HI 9126 are supplied with plastic pH electrode, temperature probe buffer solutions pH 4.01 and 7.01 (20ml each), 3 x 1.5V batteries all contained within a carrying case

Specifications

Range:	
pH	-2.00 to 16.00
mV	-1999 to +1999
°C	-20.0 to +120.0
Accuracy:	
pH	±0.01
mV	±1
°C	±0.4
Dimensions:	192 x 72 x 36mm
Weight:	525g

Type	PK	Cat. No.
HI 9125	1	**9.773 978**
HI 9126	1	**9.773 979**
Spare electrode HI 1230B	1	**6.050 012**

3



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1 Foodcare pH Meter HI 99161 with penetration electrode

Hanna

The FC202D electrode supplied is highly suitable for measurements in Food products like fruit juices, yoghurt, butter, cheese and meat, due to its conical profile. It has a built in temperature sensor. pH and temperature are displayed simultaneously. With Stability indicator. Automatic 1- or 2-point calibration with pre-programmed standard buffers (pH 4.01; 7.01; 10.01).

Instrument is supplied with Foodcare Electrode FC202D, pH 7.01 & pH 4.01 buffer solutions (one sachet of 20ml each), cleaning solutions (2 x 20ml) 4 x 1.5 Volt batteries, all contained in a carrying case.

Measuring range/Accuracy:

pH:	-2.00 to 16.00/±0.01
°C:	-5.0 to 105.0/±0.4
Battery type:	4 x 1.5 Volt AAA
Operating range:	0 to 50°C
Weight:	205g

Type	PK	Cat. No.
HI 99161	1	**6.233 767**
Spare electrode FC 202D	1	**6.235 596**

Pocket pH meters ProfiLine Series

WTW

The WTW ProfiLine, hand-held, pH/mV meters are robust and waterproof, according to IP67. They have LCD or graphics displays. The proven DIN socket for connecting pH electrodes permits pH measurement even in wet environments. The instruments can be operated by standard alkaline or rechargeable batteries.

2 3 pH meter pH 3110 ProfiLine

WTW

Make testing simple. Easy operation virtually eliminates errors. All function keys of the 3110 can be operated even when wearing gloves; automatic calibration and AutoRead functions ensure stable and reproducible results. The multifunctional display for pH, and temperature is always easy to read.

Measuring ranges

pH:	-2.0 ... +20.0
	-2.00 ... +20.0
	-2.000 ... +19.999
Accuracy:	±0.01 pH (±1 digit)
	±0.005 from +15°C to +35°C
mV/Accuracy:	±1200.0/±0.3
	±2000/±0.1
Temperature:	-5.0 to +105.0°C
Accuracy:	±0.1°C
Temperature compensation:	Automatic via pH electrodes with integral temperature probe, TFK 325 or Pt100

Type	Description	PK	Cat. No.
pH 3110	meter only	1	**9.774 367**
pH 3110 Set 1	case set including SenTix 21 and accessories	1	**9.774 376**
pH 3110 Set 2	case set including SenTix 41 and accessories	1	**9.774 354**
pH 3110 Set 3	case set including SenTix 81 and accessories	1	**9.774 317**

2



3



E & OE.

1 2 pH meter pH 3210/pH 3310 ProfiLine

pH meter pH 3210 *WTW*

Convenient and versatile pH/mV meter with backlit graphics display and menu controlled operation. Waterproof and robust. With 5 point calibration for WTW technical or DIN/NIST buffers. Additional 20 pre-programmed buffer sets. The new CMC function (Continuous Measurement Control) helps maintain the optimum measuring range and warns when limits are exceeded.

pH meter pH 3310

The pH/mV handheld meter with integral, time controlled, data logger and memory for 5000 GLP compliant records is ideal for extended data collection. With 1 to 5-point pH calibration. Menu controlled, with backlit graphics display for comfortable and safe operation. Unique CMC-function for controlling the optimum measuring range. 100% waterproof, USB interface for fast data transfer. Includes driver software and cable.

1



2



Measuring ranges

pH:	-2.0 ... +20.0
	-2.00 ... +20.00
	-2.000 ... +19.999
Accuracy:	±0.005 pH from +15°C to +35°C
mV/Accuracy:	±1200.0/±0.3 mV
	±2500/±0.1 mV
Temperature:	-5.0 to +105°C
Accuracy:	±0.1°C
Interface (pH3310 only):	Mini USB-B
Memory	
pH3210:	200 records (measured value, temperature, date, time, ID)
pH3310:	5000 records (measured value, temperature, date, time, ID)

Type	Description	PK	Cat. No.
pH 3210	meter only	1	**9.774 377**
pH 3210 Set 2	case set including SenTix 41 and accessories	1	**9.774 355**
pH 3210 Set 3	case set including SenTix 81 and accessories	1	**9.774 318**
pH 3210 Set 4	case set including SenTix 51 and accessories	1	**9.774 319**
pH 3310	meter only	1	**9.774 337**
pH 3310 Set 2	case set including SenTix 41 and accessories	1	**9.774 356**
pH 3310 Set 3	case set including SenTix 81 and accessories	1	**9.774 375**
pH 3310 Set 4	case set including SenTix 51 and accessories	1	**9.774 329**

Protective armouring SM Pro, for ProfiLine handheld meters

Soft rubber, shock absorbing cover for ProfiLine handheld meters *WTW*

Type	PK	Cat. No.
SM Pro	1	**9.774 118**

3 Storage and maintenance kit for pH meters

Kit with one pH storage sleeve, technical buffer solution pH 4 and pH 7, 30ml KCl, 50ml cleaning and 50ml storage solutions. *WTW*

Type	PK	Cat. No.
Safe Kit	1	**9.774 117**

3



1



1 Portable pH meter Education Line EL2

Experience science with portable pH meters. *Mettler-Toledo Online*

- Simple intuitive operation helps you save time during classes
- Ideally suited for classroom and field-based measurements alike
- Robust, low-maintenance, yet reliable electrodes available in kit version

EL2-Basic: pH instrument incl. electrode clip, wrist strap, operating manual, "Quick guide", 4 x batteries
EL2-Kit: Instrument and accessories as with EL2 Basic, also with LE407 pH electrode, IP54 connection caps, 2 x pH 4.01 and 2 x pH 7.00 buffer sachets
EL2-Fieldkit: Instrument and accessories as for EL2 Kit, also with carry bag incl. 4 sample bottles

Please note: These articles are only available for schools and universities.

Specifications

pH-range/accuracy:	0.00 to 14.00/±0.01
mV-range/accuracy:	-1999 to +1999/±1
Temperature range/accuracy:	0.0 to +100.0°C/±0.5°C
Calibration:	Max. 2 points, 3 predefined buffer groups
Free disk space:	30 datasets
Display:	LCD
Batteries:	4 AAA, 1.5V
Dimensions (WxDxH):	169 x 82 x 36mm
Weight:	180g (without batteries)

Type	PK	Cat. No.
EL2-Basic	1	**9.704 000**
EL2-Kit	1	**9.704 001**
EL2-Fieldkit	1	**9.704 002**
Spare electrode LE407	1	**9.041 619**
Additional electrode LE409	1	**9.041 620**

2



2 pH meter FiveGo™ pH FG2

FiveGo™ pH is a handy, portable meter ideal for those who require rapid and reliable results on the go. This meter is suitable for a wide range of applications in various areas such as food and beverage, agriculture, industry, water and environment *Mettler-Toledo Online*

- Outstanding functions including storage capacity for up to 30 measurements, mV/ORP measuring mode and IP54 protection against dust and water ingress are combined with useful features such as automatic endpoint recognition and calibration with automatic buffer recognition.
- Five self-explanatory operating and function buttons for easy measurement, menu access, saving and recalling results and calibration recall
- A big, well organised display that simultaneously shows readings, temperature and endpoint criteria along with helpful icons
- Useful accessories such as the electrode clip, wrist strap and laminated quick guide are enclosed with every FiveGo. The electrode kit version also includes the LE438 electrode (Food Kit with LE427 puncture electrode) and the Field Kit version comes in a handy carry bag with 4 sample bottles.

FG2-Basic: pH instrument incl. electrode clip, wrist strap, operating manual, "Quick guide", 4 x batteries
FG2-Kit: Instrument and accessories as with FG2-Basic, with LE438 pH electrode, IP54 connection caps, 2 x pH 4.01 and 2 x pH 7.00 buffer sachets
FG2-Fieldkit: Instrument and accessories as for FG2-Kit, with carry bag incl. 4 sample bottles
FG2-Food Kit: Instrument and accessories as with FG2-Basic, with LE427 puncture pH electrode, IP54 connection caps, 2 x pH 4.01 and 2 x pH 7.00 buffer sachets, with carry bag incl. 4 sample bottles

Specifications:

Measuring range (Accuracy)	
pH:	0.00 to 14.00pH (±0.01pH)
mV:	-1999 to +1999mV (±1mV)
Temperature:	0 to +100°C (±0.5°C)
Calibration:	2 points, 4 predefined buffer groups
Input:	BNC/Cinch (NTC)
Temperature compensation:	ATC and MTC
Memory:	30 measurements
Power supply:	4 x AAA
Protection class acc. to DIN EN 60529:	IP 54

Type	PK	Cat. No.
FG2-Basic	1	**9.972 060**
FG2-Kit	1	**7.619 615**
FG2-Fieldkit	1	**9.972 061**
FG2-Food Kit	1	**9.972 062**

E & OE.

pH-meter Seven2Go™ S2

NEW!

Portable routine model for pH measurement

Mettler-Toledo Online

- New, intuitive menu structure with fast and easy T-Pad navigation in 12 languages
- Robust design with IP67 protection for use in harsh and demanding environments
- Intelligent Sensor Management (ISM®) functionality reduces the risk of errors
- Up to 5 point calibration with automatic buffer recognition and temperature compensation
- 4 predefined buffer groups and 1 user defined buffer group
- Automatic, manual and time dependant endpoint recording
- Data memory storage for 200 data points
- Power requirements: 4 x 1.5V AA or 1.3V NiMH accumulators

Items supplied:
S2-Meter: Instrument, electrode clip, operating instructions, quick guide, test certificate, declaration of conformity and batteries.
S2-Standard kit: As S2-Meter, but also with InLab Expert Pro-ISM-IP67, buffer sachets for pH 4.01, 7.00, 9.21 and 10.00.
S2-Field kit: As S2-Standard kit, but also with bottles for calibration and uGo™ carrying case.
S2-Food kit: As S2-Field kit, but with InLab Solids Pro-IP67 instead of InLab Expert Pro-ISM-IP67.
S2-Light kit: As S2-Standard kit, but with InLab Versatile Pro instead of InLab Expert Pro-ISM-IP67.

1



6.265 415

Specifications

pH	
Measuring range:	-2 to 20 pH
Resolution:	0.01/0.1
Accuracy:	±0.01
mV	
Measuring range:	-1999 ... +1999mV
Resolution:	1
Accuracy:	±1
Relative mV-measurement:	yes
Temperature	
Measuring range:	-5.0 ... 105.0°C
Resolution:	0.1°C
Accuracy:	±0.5°C
Dimensions (WxDxH):	222 x 70 x 35mm

Type	PK	Cat. No.
S2-Meter	1	**6.265 414**
S2-Standard kit	1	**6.265 415** 1
S2-Field kit	1	**6.265 416**
S2-Food kit	1	**6.265 417**
S2-Light kit	1	**6.265 418**

partner of the LLG Lab Logistics Group

We can supply this manufacturer's whole product range !

METTLER TOLEDO

1



6.265 259

pH/Ion-Meter Seven2Go™ pro S8

NEW!

Portable professional model for pH measurement

Mettler-Toledo Online

- New, intuitive menu structure with fast and easy T-Pad navigation
- Robust design with IP67 protection for use in harsh and demanding environments
- Intelligent Sensor Management (ISM®) functionality reduces the risk of errors
- New sunlight-proof screen guarantees screen readability even in direct sunlight
- New StatusLight gives a fast, visual confirmation showing if the meter is ready to measure or not
- Operating support for 12 languages with information shown in complete words and sentences
- Up to 5 point calibration with automatic buffer recognition and temperature compensation
- 8 predefined buffer groups and 1 user defined buffer group (1 user defined ion-standard)
- Automatic, manual and time dependant endpoint recording
- Data memory storage for 2000 GLP data points with weatherproof Micro-USB connection for data export
- Power requirements: 4 x 1.5V AA or 1.3V NiMH accumulators

Items supplied:
S8-Meter: Instrument, LabX direct pH, USB cable, electrode clip, base accessory, operating instructions, quick guide, test certificate, declaration of conformity and batteries.
S8-Standard kit: As S8-Meter, but also with InLab Expert Pro-ISM-IP67 and buffer sachets for pH 4.01, 7.00, 9.21 and 10.00.
S8-Field kit: As S8-Standard kit, but also with bottles for calibration and uGo™ carrying case.
S8-Biotech kit: As S8-Field kit, but with InLab Routine Pro ISM (incl. cable) instead of InLab Expert Pro-ISM-IP67.
S8-Fluoride kit: As S8-Standard kit, but with perfectION Fluoride instead of InLab Expert Pro-ISM-IP67, without buffer sachets.

Specifications

pH	
Measuring range:	-2 to 20 pH
Resolution:	0.001/0.01/0.1
Accuracy:	±0.002
mV (rel. mV)	
Measuring range:	-2000 ... +2000 mV
Resolution:	0.1/1
Accuracy:	±0.1
Ion	
Measuring range:	1.00e-09 ... 9.99e+09
Resolution:	3 or 4 digits (auto-range)
Accuracy:	±0.5%
Temperature	
Measuring range:	-5.0 ... 130°C (ATC) -30.0 ... 130°C (MTC)
Resolution:	0.1°C
Accuracy:	±0.2°C if T = 0°C ... 105°C ±0.5°C if T < 0°C or T > 105°C
Dimensions (WxDxH):	222 x 70 x 35mm
Units:	mg/L, mmol/L, mol/L, %, ppm, pX

Type	PK	Cat. No.
S8-Meter	1	**6.265 258**
S8-Standard kit	1	**6.265 259** 1
S8-Field kit	1	**6.265 260**
S8-Biotech kit	1	**6.265 261**
S8-Fluoride kit	1	**6.265 262**



E & OE.

1 pH-meter HandyLab 100

NEW!

1

SI Analytics



The portable allrounder for pH/mV measurements. The HandyLab 100 increases the measuring speed and accuracy thanks to the AutoRead and the CMC function.
AutoRead displays when the measuring value is stable and eliminates the risk of a premature reading of the faulty measuring value. CMC (Continuous Measurement Control) visualizes whether the measuring value is still within the calibration limits. Having storage capacity for up to 200 data sets, stored data can be viewed. The Handylab 100 can process 1- to 5-point calibration with a choice of 22 stored buffer sets easily and comfortably.

Supplied with:

HL100Versatile: pH meter set Handylab 100 with pHT combination electrode A7780-NTC30-DIN-N for general applications

HL100Field: pH meter set Handylab 100 with pHT-electrode BlueLine 24 pH and reinforcement for on-site measurements

Specifications

pH

Measuring range:	-2 ... 20 pH
Resolution:	±0.1/±0.01/±0.001 pH
Accuracy:	±0.005 pH

mV

Measuring range:	-2500 ... +2500 mV
Resolution:	±1 mV
Accuracy:	±0.3 mV

Temperature

Measuring range:	-5.0 ... +105.0°C
Resolution:	±0.1°C
Accuracy:	±0.1°C

Type	PK	Cat. No.
HL100Versatile	1	**6.265 283**
HL100Field	1	**7.910 240**

2 pH meter HandyLab 600

NEW!

2

SI Analytics



- IDS technology (Intelligent Digital Sensor). The digitalization of the measuring signal eliminates interferences.
- AutoRead function. Autoread provides a stable, precise measuring value.
- CMC (Continuous Measurement Control) visualizes whether the measuring value is within the calibration range.
- QSC (Quality Sensor Control) informs about the actual condition of the electrode and therefore increases operation safety.
- IDS Technology. The secure allocation of the calibration data to the sensor eliminates any uncertainty about the date and results of its last calibration. This saves time and money while assuring the highest confidence in your measurements.
- Traceability of the measuring values by the digital and automatic capture of all sensor data.
- Transmission of all data in *.csv format via USB interface to the PC. Or as an alternative, formatted transfer into Excel via MultiLabImporter (included in the delivery).

Supplied with:

HL600Versatile: pH meter Set HandyLab 600 with pHT electrode A7780 IDS for generall applications

HL600Food: pH meter Set HandyLab 600 with pH electrode BlueLine 21 pH IDS. (with reinforcement and integrated temperature sensor) for penetration measurements in the food section.

Specifications

pH

Measuring range:	0.000 ... 14.000pH
Resolution:	±0.001pH
Accuracy:	±0.004pH

mV

Measuring range:	±1200.0 mV
Resolution:	±0.1mV
Accuracy:	±0.2mV
Relative mV-measurement:	

Temperature

Measuring range:	-5.0 ... +105.0°C
Resolution:	±0.1°C
Accuracy:	±0.2°C

Type	PK	Cat. No.
HL600Food	1	**6.265 288**
HL600Versatile	1	**6.265 296**

1



1 pH-meter HandyLab 680

NEW!

The HandyLab 680 increases the measuring accuracy via:
- IDS technology. The digitalization of the measuring signal eliminates interferences.
- AutoRead function. Autoread provides a stable, precise measuring value.
- CMC (Continuous Measurement Control) visualizes whether the measuring value is within the calibration range.
- QSC (Quality Sensor Control) informs about the actual condition of the electrode and therefore increases operation safety.

The HandyLab 680 increases the operator comfort via:
- IDS Technology. The secure allocation of the calibration data to the sensor eliminates any uncertainty about the date and results of its last calibration. This saves time and money while assuring the highest confidence in your measurements.
- Traceability of the measuring values by the digital and automatic capture of all sensor data.
- User administration can be activated to allow tiered access and capabilities ensuring security and confidence of your data.
- Transmission of all data in *.csv format via USB interface to the PC or the USB memory stick, or, as an alternative, formatted transfer to Excel by means of MultiLabImporter (included in the delivery).

Supplied with:
HL680pHVersatile: pH meter Set HandyLab 680 with pHT electrode A7780 IDS and Z389 for general applications
HL680pHField: pH meter Set HandyLab 680 with pHT electrode BlueLine 24 pH IDS and Z389 for on-site measurements
HL680pHFood: pH meter Set HandyLab 680 with pH electrode BlueLine 21 pH IDS (with reinforcement and integrated temperature sensor)and Z389 for penetration measurements in the food section

Specifications

pH	
Measuring range:	0.000 ... 14.000pH
Resolution:	±0.001pH
Accuracy:	±0.004pH
mV	
Measuring range:	±1200.0mV
Accuracy:	±0.02mV
Relative mV-measurement:	
Temperature	
Measuring range:	-5.0 ... +105.0°C
Resolution:	±0.1°C
Accuracy:	±0.2°C

Type	PK	Cat. No.
HL680pHVersatile	1	**6.265 612**
HL680pHField	1	**6.265 603**
HL680pHFood	1	**6.265 604**

Accessories for HandyLab

NEW!

For HandyLab 100/200/600/680. *SI Analytics*

Description	PK	Cat. No.
Protective reinforcement Z389	1	**6.265 613**
Case Z530 incl. reinforcement Z389, buffer solutions, conductivity testing solution	1	**6.265 614**

E & OE.

1 pH meter HandyLab 700/750

NEW!

SI Analytics

Portable pH measuring devices by SI Analytics with Memosens® technology offers increased safety and a user-friendly interface



- Durable design for daily measurements
- Connection: 2 x 4mm diam. for integrated or separate temperature sensor
- Contrast-rich and scratch-resistant clear glass LCD display
- Self-explanatory operation with one clear text line
- Display of the sensor status at one glance with Sensoface
- Calibration of up to 3 points with automatic buffer detection (from 10 buffers)
- Manual calibration by indicating random buffer values
- Real-time clock and display of battery charging status
- Extended operating time of more than 1.000 hours with standard batteries (4 x AA)

HandyLab 750 additional features:
- Store up to 5.000 data points.
- Micro-USB connection to communicate with the software HandyLab Pilot software for evaluation of data from digital Memosens® sensors.
- HandyLab Pilot software (included with delivery), allows easy management and evaluation of stored data and can be used for device configuration.

Supplied with: Set with pH meter, AquaLine 90pH, SKK K1A and DIN buffer solutions in ampoules

Specifications

pH measurement Memosens (also ISFET)	
Measuring range:	-2.000 ... +16.000pH
mV measurement Memosens Redox	
Messbereich:	-2000 ... +2000mV
pH/mV measurement (analog)	
pH measurement measuring range:	-2 ...16pH
mV measurement measuring range:	-1300 ... +1300mV
Temperature measurement	
Measuring range with sensor NTC 30kOhm:	-20 ... +120°C
Measuring range with sensor Pt 1000:	-40 ... +250°C

Type	PK	Cat. No.
HL700AL90pH	1	**6.266 645**
HL750AL90pH	1	**6.266 646**

2 3 pH/Redox-Meter SD300pH

AQUALYTIC

Rugged, water resistant (IP67) designed for field use
- Automatic buffer detection for calibration
- Data logger and alarm function (min./max.), Good Laboratory Practice (GLP-features)
- Clear, concise result reading: easy-to-read backlit LCD display
- Automatic temperature compensation
- PC interface for data download (USB/serial or analog)
- High resolution (0.001 pH/0.1 mV)

Supplied with:
SD300PH: Meter without electrode, incl. batteries and manual
SD300PH Set-1: Meter complete in case, incl. manual and batteries, pH electrode with temperature sensor plastic/gel-BNC plug, buffer solution 4/7/10 pH (90 ml each)
SD300PH Set-2: Meter complete in case, incl. manual and batteries, pH electrode with temperature sensor plastic/gel-BNC plug, temperature sensor PT 100, buffer solution 4/7/10 pH (90 ml each)





Specifications

pH:	-2.000 to 16.000
Accuracy:	±0.005
Temperature:	-5.0 to +150°C
Accuracy:	±0.2°C
Redox (ORP):	-2000.0 to 2000.0mV
Accuracy:	±0.05% FS (mV or mVH)
Dimensions (WxDxH):	86 x 160 x 37mm
Power supply:	2 x AAA battery
Power consumption:	< 1.0mA
Protection class acc. to:	IP 67

Type	PK	Cat. No.
SD300PH	1	**9.699 275**
SD300PH Set-1	1	**9.699 276**
SD300PH Set-2	1	**9.699 277**

1



1 Laboratory pH Meter with built in Magnetic Stirrer, HI 208-02

Hanna

Compact, easy to use pH Meter with built in Magnetic Stirrer, suitable for educational purposes.
- pH and temperature value are displayed together on the Dual Level LCD
- Automatic 1- /2- Point Calibration with pre-programmed buffers (pH 4.01, 7.01 and 10.01)
- Automatic temperature compensation from -5.0 to 105.0°C

HI 208-02 is supplied with pH Electrode HI 1291D (with internal temperature sensor), pH Electrode holder and plastic beaker, stirring bar, 9V battery, 12V adapter, pH buffer solutions (2 sachets of 20ml each)

Specifications

Measuring range/Accuracy:	-2.00 to 16.00pH/±0.01pH
Temperature range/Accuracy:	-5.0 to +105.0°C/±0.5°C (up to 60°C)
Power Supply:	12V Adapter or 9V battery (included)
Weight:	500g

Type	PK	Cat. No.
pH meter HI 208-02	1	**6.233 844**
Spare electrode HI 1291D	1	**6.235 794**
Measuring beaker HI 740036P, 50ml	10	**9.773 919**

2



2 pH/mV/°C meter HI 2211-02/HI 2215-02

Hanna

- Extra wide LCD, displays pH/mV value and temperature simultaneously
- The stability indicator makes the calibration procedure calibration error free
- Automatic calibration at two points with pre-programmed standard buffers (pH 7.01; 4.01; 10.01)
- Automatic temperature compensation from -10°C to +120°C
- Graphic symbols guide the user through calibration and measurement

Further specifications (HI 2215-02 only):
- Resolution: 0.01 or 0.001pH
- Automatic calibration at two points with 7 pre-programmed standard buffers (pH 1.68; 4.01; 6.86; 7.01; 9.18; 10.01; 12.45) and 2 selectable buffers.
- Recording of up to 100 values with date and time via keystroke
- Data transfer to PC via USB interface

Supplied with:
HI 2211-02 is supplied with pH glass electrode HI 1131B, temperature probe, pH 7.01 and pH 4.01 buffer solution (20ml each), electrolyte solution, electrode holder, 12V adapter

Measuring range/Accuracy:

pH:	-2.00 to 16.00/±0.01
mV:	±399.9 (ISE); ±2000 (ORP)/ ±0.2 (±699.9); ±1 (2000)
°C:	-9.9 to 120/±0.5 (0.0 to 100.0)
Resolution:	
pH:	0.01 0.01 or 0.001 (HI 2215-02 only)
mV:	0.1 (±399.9); ±1 (2000)
°C:	0.1
Power supply:	12V d.c. adapter (included)
Operating temp. range:	0 to 50°C
Weight:	2.5

Type	PK	Cat. No.
HI 2211-02	1	**9.773 981**
HI 2215-02	1	**9.773 994**
Spare electrode HI 1131B for HI 2211-2 / HI 2215-02	1	**9.040 993**



1 2 pH meter edge

NEW!

Hanna

Features tablet meter edge:
- thin and lightweight (approx. 280g only)
- large 140mm LCD display with clear full text readout capacitive touch screen
- ergonomic design, versatile, can be used as a benchtop docking station with electrode holder, as a portable meter or wall mounted (included in delivery)
- Rechargeable battery (about 8 hours of continuous use), battery charge via mains connection or USB cable, table station and wall mounting can also be used to charge the battery
- Integrated measured data storage for up to 1000 data records, manual storage or time-controlled by defining a storage interval
- Data transfer from device to PC via USB ports (no software needed)
- All electrodes are supplied with integrated temperature sensor and a 3.5mm plug with 1m cable

pH meter HI 2020-02:
- Sensor type, ID and calibration information are automatically recognized when connecting the electrode to the instrument
- GLP: data of last calibration (buffers, date, time, electrodes offset, slope) are stored and be checked at any time
- Calibration time out warns the user when set calibration time has been exceeded
- Instrument can be used in Basic or Standard mode: Basic mode ideally for routine measurements for a simplified screen and features. In Basic mode, resolution is 0.01 pH, calibration can be performed automatically at 1, 2, 3 points with pre-programmed buffer series (pH 4.01; 6.86; 7.01; 9.18; 10.01). The standard mode offers additional features. In Standard mode the resolution can be selected between 0.01 pH and 0.001 pH, calibration can be performed automatically at 3, 4 ,5 points with 7 standard buffers and 2 custom buffers for special applications.
- Calibration Check Function (pH electrode only): controlling of calibration process, displays electrode status after calibration

pH Kit supplied with: instrument incl. electrode HI 11310, buffer solution pH 4, pH 7 and pH 10 (2 sachets each), cleaning solution for electrodes, bench top docking station with electrode holder, wall mounting, USB cable, 5 V adapter

Specifications	**Measuring range // Resolution // Accuracy**
pH:	2.00 to 16.00 // 0.01 // ±0.01/±0.002
	-2.000 to 16.000 // 0.001 // ±0.01/±0.002
Temperature:	-20.0 to +120.0°C // 0.1°C // ±0.2°C

Type	Description	PK	Cat. No.
HI 2020-02	pH meter edge, kit with pH electrode and accessories	1	**6.261 874**
HI 11310	Refillable pH electrode, glass body, ceramic diaphragm, double junction	1	**6.261 876**

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1 pH Meters, Lab 850 and 860

NEW!

SI Analytics

CalClock function keeps your calibration under control: This unique combination of sensor evaluation and calibration timer monitors all calibration relevant parameters (buffer, electrode, curve slope, zero-point, time) and immediately indicates any errors.

Features:
- keypad
- clock
- large LCD display
- adjustable calibration interval
- alarm

Additional features Lab 850:
- bi-directional RS 232C interface
- memory: 800 data records
- GLP compliant
- 3 point calibration

Additional features Lab 860:
- USB (slave) connection
- 5 point calibration

Items supplied Lab 850/860 Set: pH meter Lab 850 or pH meter Lab 860, electrode BlueLine pH14 with temperature sensor, support, cover, power supply and DIN buffers 4.01 and 6.87.

Items supplied Lab 850/860 BNC Set: pH meter Lab 850 or pH meter Lab 860, electrode BlueLine pH15 with temperature sensor, support, cover, power supply and DIN buffers 4.01 and 6.87.

Specifications

Measuring range:	-2.00 to +19.999pH or -999.9 to +999.9mV and -1999 to +1999mV
Temperature range:	-5.0 to +120.0°C

Type	PK	Cat. No.
Lab 850 Set	1	**9.773 850**
Lab 860 Set	1	**9.773 855**
Lab 850 BNC Set	1	**6.260 750**
Lab 860 BNC Set	1	**6.260 751**

2



2 pH measuring instrument Lab 870

SI Analytics

ID electrodes and meters with automatic identification and data exchange and allocation.
- Reliable and precise measuring values due to perfect matching with the measuring system consisting of meter, electrode and buffer solutions.
- Fast pH measurement and calibration through advanced measuring algorithm.
- Maintains reliablity with "CalClock", sensor recognition and calibration timer.
- Fast and easy documentation complying with GLP through perfect communication via USB (slave) and RS232.
- Highest safety for measuring and calibrating through wireless sensor recognition.
- ID electrodes and meters with automatic identification and data exchange and allocation.
- The special stand - mounting with one click and the stand is positioned firmly and safely.

Items supplied in set:
- measuring instrument
- ID-electrode with integrated temperature sensor
- buffer solutions
- stand
- universal power supply unit
- cover

Specifications

pH measuring range:	-2.000pH to +19.999pH -2.00pH to +19.99pH
Accuracy (±1digit):	±0.005 ±0.01
mV measuring range:	-999.9mV to +999.9mV; -999mV to +999mV
Accuracy (±1digit)	±0.3mV ±1mV
Temperature measuring range:	-5.0°C to + 120.0°C
Accuracy (±1digit):	0.1°C

Type	PK	Cat. No.
Lab 870 DIN Set	1	**9.773 851**
Lab 870 BNC Set	1	**9.773 852**

1 Laboratory instrument inoLab® pH 7110

1



The new inoLab® pH 7110 is a basic pH/mV benchtop meter for fast and accurate results without efforts. A big LCD segment display makes readings easy; a well-arranged keypad provides convenient operation. The automatic AutoRead function supports correct and repeatable results. An adjustable built-in calibration timer reminds the user of periodical calibration. Each meter comes including stand and accessories. *WTW*

Specifications

Ranges	All values ±1 digit
pH:	-2.0 … 20.0 ±0.1 pH
	-2.00 … 20.00 ±0.01 pH
	-2.000 … 19.999 ±0.005 pH
mV:	±(1200.0 ±0.3) mV
	±(2000 ±1) mV
Calibration:	1-, 2- or 3 point WTW technical buffer or DIN/NIST
Temperature:	-5.0 … 105.0°C ±0.1°C
Power supply:	Universal power supply 100 to 240V, 50/60Hz, 4 x 1.5V AA or 4 x 1.2V NiMH rechargeable batteries

Type	Description	PK	Cat. No.
pH 7110	Single unit incl. accessories	1	**9.920 090**
pH 7110 SET 2	Meter incl. SenTix® 41 and accessories	1	**9.920 091**
pH 7110 SET 4	Meter incl. SenTix® 81 and accessories	1	**9.920 092**
pH 7110 BNC	Single instrument including accessories, BNC input	1	**9.920 093**
7110 BNC SET 7	Meter incl. SenTix® 42 and accessories	1	**9.920 094**
7110 BNC SET 9	Meter incl. SenTix® 82 and accessories	1	**9.920 095**

3 Laboratory instrument inoLab® pH 7310

3



Reliable Documentation for pH measurement, if desired also available with built-in printer: *WTW*
This is the new inoLab® pH 7310 or inoLab® pH 7310P. A modern backlit graphic display with menu controlled user interface allows easy and intuitive operation. The mini USB-B interface provides fast data transfer to a PC. The internal memory can record up to 5000 GLP complying data including ID, date and time. The housing and the keypad are easy-to-clean. Up to five calibration points cover almost the complete pH range. A calibration history of the 10 last calibrations allows conclusions on the state of the sensor. An integrated thermal printer (58mm width) is ready for printout of the measured data (option).
Supplied with: meter, power supply, stand and USB cable.

Specifications

Ranges	All values ±1 digit
pH:	-2.0 … 20.0 ±0.1 pH
	-2.00 … 20.00 ±0.01 pH
	-2.000 … 19.999 ±0.005 pH
mV:	±(1200.0 ±0.3) mV
	±(2500 ±1) mV
Temperature:	-5.0 … 105.0°C ±0.1°C
Calibration:	1-, 2-, 3-, 4-, 5 point WTW technical. DIN, NIST and 20 additional buffer sets
Calibration memory:	Up to 10 calibrations recallable
Display:	LCD Graphic, backlit
Memory:	manual 200/5000 automatic
Logger:	manual/time controlled
Interface:	Mini USB-B
Power supply:	Universal power supply, 100 to 240V, 50/60 Hz, 4 x 1.5V AA or 4 x 1.2V NiMH

Type	Description	PK	Cat. No.
pH 7310	Meter only incl. accessories	1	**9.920 100**
pH 7310 Set 2	Meter incl. SenTix® 41and accessories	1	**9.920 101**
pH 7310 Set 4	Meter incl. SenTix® 81 and accessories	1	**9.920 102**
pH 7310P	Meter incl. integrated printer	1	**9.920 104**
pH 7310P Set 2	Meter with integrated printer, incl. SenTix® 41and accessories	1	**9.920 105**
pH 7310P Set 4	Meter with integrated printer, incl. SenTix® 81 and accessories	1	**9.920 106**
pH 7310P BNC	Meter with integrated printer, incl. accessories, BNC input	1	**9.920 107**

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1 Benchtop pH meter Education Line EL20

NEW!

Experience science with pH bench meters

Mettler-Toledo Online

- Simple intuitive operation: helps you save time during classes
- Compact, robust benchtop instrument
- Robust, low-maintenance, yet reliable electrodes available in kit version
- Ideal for schools and universities

EL20-Basic: pH instrument incl. operating manual, "Quick guide", power adapter
EL20-Kit: Instrument and accessories as with EL20 Basic, also with LE407 pH electrode, electrode arm, 2 x pH 4.01 and 2 x pH 7.00 buffer sachets

Please note: These articles are only available for schools and universities.

Specifications

pH-range/accuracy:	0.00 to 14.00/±0.01
mV-range/accuracy:	-1999 to +1999/±1
Temperature range/accuracy:	0.0 to +100.0°C/±0.5°C
Calibration:	Max. 2 points, 3 predefined buffer groups
Display:	LCD
Power supply:	100-240V/50-60Hz, 9V DC
Dimensions (WxDxH):	200 x 175 x 52mm
Weight:	600g

Type	PK	Cat. No.
EL20-Basic	1	**9.704 147**
EL20-Kit	1	**9.704 148**
LE407	1	**9.041 619**
LE409	1	**9.041 620**

2



2 pH meter FiveEasy™ pH FE20/FiveEasy Plus™ pH FEP20

FiveEasy™ and FiveEasy Plus™ pH are compact, easy to use bench meters suitable for a wide range of applications in various areas such as food and beverage, agriculture, industry, water and environment.

Mettler-Toledo Online

- Outstanding functions include a separate reference electrode input, mV/ORP measuring mode and a self-test combined with useful features such as automatic endpoint recognition and calibration with automatic buffer recognition.
- Five self-explanatory operating and function buttons for easy measurement, menu access and calibration recall
- A big, well organised display that simultaneously shows readings, temperature and endpoint criteria along with helpful icons

FE20-Basic: pH instrument incl. operating manual, "Quick guide", power adapter
FE20-Kit: Instrument and accessories as with FE20-Basic, also with LE409 pH electrode, electrode arm, 2 x pH 4.01 and 2 x pH 7.00 buffer sachets
FE20 ATC Kit: Instrument and accessories as with FE20-Basic, also with LE438 "3-in-1" pH electrode, electrode arm, 2 x pH 4.01 and 2 x pH 7.00 buffer sachets
FEP20-Basic: pH instrument incl. operating manual, "Quick guide", power adapter
FEP20 ATC Kit: Instrument and accessories as with FEP20-Basic, also with LE438 "3-in-1" pH electrode, electrode arm, 2 x pH 4.01 and 2 x pH 7.00 buffer sachets

Specifications

Measuring range (Accuracy)	
pH:	0.00 to 14.00 pH (±0.01pH)
mV:	-1999 to 1999 (±1mV)
Temperature:	0°C to 100°C (±0.1°C)
Input:	BNC/RCA, Cinch (NTC)
Temperature compensation:	ATC and MTC
Power supply:	100-240V/50-60Hz/9V DC
Calibration FE20:	2 points, 4 predefined buffer groups
Calibration FEP20:	3 points, 4 predefined buffer groups
FEP20 only:	
Memory:	99 measurements
Interface FEP20:	RS232

Type	PK	Cat. No.
FE20-Basic	1	**6.234 716**
FE20-Kit	1	**6.232 715**
FE20 ATC Kit	1	**9.972 070**
FEP20-Basic	1	**9.773 702**
FEP20 ATC Kit	1	**9.773 703**
FiveEasy AC adaptor (incl. connectors) input 230V, output DC 9V	1	**7.900 515**
FiveEasy electrode arm (complete)	1	**6.235 935**

E & OE.

1 2 pH meter SevenCompact™ S210

NEW!

The SevenCompact™ pH meter S210 is the perfect choice for a wide range of applications. At the same time, working with the S210 is like child's play. Starting a measurement or calibration has never been easier, requiring only a single keypress. *Mettler-Toledo Online*

- Fast and accurate measurements
- User-friendly operation
- Menu guidance in 12 languages
- Clear, well arranged color display
- Many peripheral options
- GLP compliant

Supplied with:
S210-Basic: Instrument, electrode holder, protective cover, operating instructions, quick guide, declaration of conformity and test certificate
S210-Kit: As per S210-Basic, additionally with InLab® Expert Pro-ISM, guide to pH measurements and 2 buffer sachets for pH 4.01, 7.00, 9.21 and 10.00.
S210-Bio: As per S210-Kit, but with InLab® Routine Pro-ISM cable kit instead of InLab® Expert Pro-ISM.
S210-U: As per S210-Kit, but with InLab® Versatile Pro instead of InLab® Expert Pro-ISM.

Specifications:

pH-range:	-2.000 to 20.000
pH-relative accuracy:	±0.002
pH-resolution User-definable:	0.001/0.01/0.1
mV-range:	-2000.0 to 2000.0
mV-relative accuracy:	±0.2
mV-resolution User-definable:	0.1/1
Temperature range	
MTC:	-30.0 to 130.0°C
ATC:	-5.0 to 130.0°C
Temperature accuracy:	±0.1°C
Display:	4.3 inch, TFT color
Ext. power supply:	9-12V/10W
Protection class:	IP54

Type	PK	Cat. No.
S210-Basic	1	**9.704 156**
S210-Kit	1	**9.704 157**
S210-Bio	1	**9.704 158**
S210-U	1	**9.704 159**

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1 pH/Ion meter SevenCompact™ S220

Mettler-Toledo Online

The colour display with its well-designed icons and menu settings in 10 languages makes operation genuinely intuitive. Applications range from routine measurements through sample analysis, data handling and data archiving in compliance with GLP regulations. Simply innovative design that meets the requirements for a universal, easy-to-operate pH/Ion meter.

- User friendly instrument for demanding users
- Security and high reproducibility thanks to Intelligent Sensor Management (ISM®)
- Improved quality of measurements through professional calibration support
- Comprehensive service package including IQ/OQ
- Integrated USB and RS232 interfaces for data exchange

Supplied with:
S220-Basic: Instrument, electrode holder, protective cover, operating instructions, quick guide, declaration of conformity and test certificate
S220-Kit: As per S220-Basic, additionally with InLab® Expert Pro-ISM, guide to pH measurements and 2 buffer sachets for pH 4.01, 7.00, 9.21 and 10.00.
S220-Bio: As per S220-Kit, but with InLab® Routine Pro-ISM cable kit instead of InLab® Expert Pro-ISM.
S220-U: As per S220-Kit, but with InLab® Versatile Pro instead of InLab® Expert Pro-ISM.

Specifications:

pH-range:	-2.000 to 20.000
pH-relative accuracy:	±0.002
pH-resolution User-definable:	0.001/0.01/0.1
mV-range:	-2000.0 to 2000.0
mV-relative accuracy:	±0.2
mV-resolution User-definable:	0.1/1
Ion-Concentration range:	1.00E-9 to 9.99E+9
Ion-Concentration accuracy:	±0.5%
Temperature range	
MTC:	-30.0 to 130.0°C
ATC:	-5.0 to 130.0°C
Temperature accuracy:	±0.1°C
Display:	4.3 inch, TFT color
Ext. power supply:	9-12V/10W

Type	PK	Cat. No.
S220-Basic	1	**9.704 160**
S220-Kit	1	**9.704 161**
S220-Bio	1	**9.704 162**
S220-U	1	**9.704 163**

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6.252 178

3



9.773 710

Printers for Mettler Toledo instruments

NEW!

Mettler-Toledo Online

Suitable for the following Mettler Toledo instruments:
RS-P25, RS-P26, RS-P28: SevenExcellence™, SevenCompact™, FiveEasy Plus™, SevenMulti™
RS-P25/USB-P25: SevenExcellence™
RS-P26, RS-P28: SevenGo pro™, SevenGo pro Duo™, Densito, Refracto, SevenEasy™

Supplied with: Printer, power cable (country specific), interface cable, paper roll (1 pcs), ribbon cartridge (1 pcs)

Features	For model
Built-in real-time clock, Zero/Tare key:	RS-P26, RS-P28
Statistic application, totalling application:	RS-P28
RS232 Schnittstelle:	RS-P25, RS-P26, RS-P28
Printer unit:	Dot matrix printer
Ribbon cartridge:	Exchangeable, black ink
Paper roll:	Standard paper 57.5 mm (W), max. Ø 60 mm
Print quality:	Thermally stable and lightfast paper (GxP)
Interface:	RS232C, 9pin male connector or USB* (*SevenExcellence ONLY)
Dimensions (WxDxH):	120 x 203 x 73mm
Net weight:	740g (paper roll included)

Type	PK	Cat. No.
RS-P25/USB-P25	1	**6.252 178** 2
RS-P26	1	**6.251 155**
RS-P28	1	**9.773 710** 3

E & OE.

1 2 pH meter, SevenExcellence™ S400

Mettler-Toledo Online

Modular professional system for measurements of pH, redox potential, conductivity, salinity/TDS and ion concentration. Fits up to three modules in any composition and order, can be expanded with additional measurement parameters at any time.
- Large, high resolution 7" colour touch display (capacitive), very clear and easy to operate.
- Modularity and flexibility; up to 3 measuring modules can work in parallel, expansion to 2 or 3 channels possible.
- Universal communication via 2 x USB, Ethernet (LAN) and RS232.
- Plain text user interface in 10 languages with menu guidance in full sentences.
- OneClick™ operation concept to quickly start frequently used functions and preferred methods.
- Storage for user methods.
- Highest security and GxP support (ID protection, sophisticated user management, limits/alarms, integrated radio clock, etc.).
- Intelligent sensor management (ISM®).
- Connection of stirrer, sample changer, PC, barcode reader, keyboard, local or network printer possible.
- Storage up to 20000 data sets (measurements, calibrations, methods).
- 17 predefined, 60 user-defined methods
- 5 point calibration (pH), 8 pre-defined and 20 user-defined buffer groups, incl. temperature chart
- uPlace™ electrode arm with perfect vertical movement.
- Compatible with all METTLER TOLEDO electrodes (Recommended: ISM® electrodes).

S400-Basic: Includes instrument, 1 x pH/mV expansion unit, 2 x blank expansion units, uPlace™ electrode holder, semi-transparent cover, operating instructions, installation and quick guide, LabX® direct pH PC software, declaration of conformity and test certificate.
S400-Kit: As S400-Basic, but also with InLab® Expert Pro-ISM, guide to pH measurements and 2 buffer sachets for pH 4.01, 7.00, 9.21 and 10.00.
S400-Bio: As S400-Kit but with InLab® Routine Pro-ISM cable kit instead of InLab® Expert Pro-ISM.
S400-ISFET: As S400-Kit but with InLab® 490 instead of InLab® Expert Pro-ISM.

Specifications	**Measuring range // Resolution // Accuracy**
Temperature range MTC/ATC:	-30.0 to 130.0°C // 0.1°C // ±0.1°C
pH:	-2.000 to 20.000 // 0.001/0.01/0.1 // ±0.002
mV:	-2000.0 to 2000.0 // 0.1/1 // ±0.1
Rel. mV:	-2000.0 to 2000.0 // 0.1/1 // ±0.1
ISFET pH:	0.000 to 14.000 // 0.001/0.01/0.1 // ±0.05

Type	PK	Cat. No.
S400-Basic	1	**9.704 350**
S400-Kit	1	**9.704 351**
S400-Bio	1	**9.704 352**
S400-ISFET	1	**9.704 353**

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Accessories for Printers for Mettler Toledo instruments

NEW!

Mettler-Toledo Online

Description	PK	Cat. No.
Normal paper	5	**9.947 538**
Printer ribbon, black	1	**9.947 539**
Paper roll adhesive	1	**9.947 540**

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1 pH combination electrodes, gel electrolyte, SenTix®, refillable

Basic pH combination electrodes, with plastic body, gel reference system. SenTix® 20 with plug head (AS/DIN or AS/BNC cable combination please order separately). *WTW*

Specifications

Temperature range:	0 to 80°C
pH range:	0 to 14pH
Length/diam.:	120mm/12mm
Electrolyte:	Gel
Diaphragm:	Fibre
Membrane shape:	Cylindical
Membrane resistance at 25°C:	1 GΩ
Refill hole cover:	Slide

Type	Temperature sensor	Connector	Cable m	PK	Cat. No.
SenTix® 20	-	Plug-in head	-	1	**9.040 851**
SenTix® 21	-	DIN, waterproof	1	1	**9.040 872**
SenTix®21-3	-	DIN, waterproof	3	1	**9.040 873**
SenTix® 22	-	BNC	1	1	**9.040 840**
SenTix® 41	NTC 30 kΩ	DIN, waterproof	1	1	**9.040 876**
SenTix® 41-3	NTC 30 kΩ	DIN, waterproof	3	1	**9.040 877**
SenTix® 42	NTC 30 kΩ	BNC	1	1	**9.040 841**

2



6.232 743

pH combination electrodes, liquid electrolyte, SenTix® 51/SenTix® 52, refillable

NEW!

Standard pH combination electrodes with plastic shaft, non-solid electrolytes. With fixed cable (1m). *WTW*

Specifications

Temperature range:	0 to 80°C
pH range:	0 to 14pH
Length/diam.:	120/12mm
Electrolyte:	Liquid, KCl 3mol/l
Diaphragm:	Ceramic
Membrane shape:	Cylindrical
Membrane resistance at 25°C:	1 GΩ
Refill hole cover:	Slide

Type	Temperature sensor	Connector	PK	Cat. No.
SenTix® 51	NTC 30 kΩ	DIN + Banana	1	**6.223 092**
SenTix® 52	NTC 30 kΩ	BNC + Banana	1	**6.232 743** 2

3



3 pH combination electrodes, liquid electrolyte, SenTix®, refillable

Standard pH combination electrodes with glass shaft, non-solid electrolytes. With fixed cable (1m). SenTix® 60 with screw head (AS/DIN or AS/BNC cable combination please order separately). *WTW*

Specifications

Temperature range:	0 to 100°C
pH range:	0 to 14pH
Length/diam.:	120/12mm
Electrolyte:	Liquid, KCl 3mol/l
Diaphragm:	Platinum
Membrane shape:	Conical
Membrane resistance at 25°C:	600 MΩ
Refill hole cover:	Slide

Type	Temperature sensor	Connector	PK	Cat. No.
SenTix® 60	-	Plug head	1	**9.040 842**
SenTix® 61	-	DIN, watertight	1	**9.040 881**
SenTix® 62	-	BNC	1	**9.040 843**
SenTix® 81	NTC 30 kΩ	DIN, watertight	1	**9.040 886**
SenTix® 82	NTC 30 kΩ	BNC	1	**9.040 844**

E & OE.

1 pH combination electrode, SenTix® H, refillable

Precision pH combination electrodes with glass shaft and liquid electrolyte. *WTW*
With plug head (AS/DIN or AS/BNC cable combination please order separately).

Specifications

Temperature range:	0 to 80°C
pH range:	0 to 14pH
Length/diam.:	170/12mm
Electrolyte:	Liquid, KCl 3mol/l
Diaphragm:	Ground joint
Membrane shape:	Cylindical
Membrane resistance at 25°C:	2GΩ
Refill hole cover:	Slide

Type	Temperature sensor	Connector	PK	Cat. No.
SenTix® H	-	DIN + BNC	1	**9.040 845**

1



2 pH electrodes, SenTix®, not refillable

NEW!

pH electrodes with glass shaft and polymer electrolyte. *WTW*
With plug head (AS/DIN or AS/BNC cable combination (please order separately).
For surface measurements.

Specifications

Temperature range:	0 to 50°C
pH range:	2 to 13pH
Length/diam.:	120mm/12mm
Electrolyte:	Polymer
Diaphragm:	Split ring
Membrane shape:	Flat
Membrane resistance at 25°C:	<1GΩ

Type	Temperature sensor	Connector	PK	Cat. No.
SenTix® Sur	-	DIN + BNC	1	**9.040 891**

2



3 pH electrodes, SenTix® Mic, refillable

NEW!

pH micro combination electrode glass shaft and liquid electrolyte. With plug head *WTW*
(AS/DIN or AS/BNC cable combination please order separately).

Specifications

Temperature range:	0 to 100°C
pH range:	0 to 14pH
Length // diam.:	40/80mm // 12/5mm
Electrolyte:	Liquid, KCl 3mol/l
Diaphragm:	Ceramic
Membrane shape:	Cylindical
Membrane resistance at 25°C:	< 700MΩ

Type	Temperature sensor	Connector	PK	Cat. No.
SenTix® Mic	-	DIN + BNC	1	**9.040 892**

3



4 pH electrodes, SenTix® SP, not refillable

NEW!

pH electrodes with plastic shaft and liquide electrolyte. SenTix® SP with plug head *WTW*
(AS/DIN or AS/BNC cable combination please order separately). SenTix® SP-DIN with
1m-fixed cable.
For penetration measurements.

Specifications

Temperature range:	0 to 80°C
pH range:	2 to 13pH
Length // diam.:	65/25 mm // 15/5 mm
Electrolyte:	Polymer
Diaphragm:	Hole
Membrane shape:	Spear
Membrane resistance at 25°C:	400MΩ

Type	Temperature sensor	Connector	PK	Cat. No.
SenTix® SP	-	DIN + BNC	1	**9.040 890**
SenTix® SP-DIN	-	DIN	1	**7.655 158**

4



1



1 pH electrodes, SenTix® 940 digital IDS

NEW!

pH electrodes with plastic shaft and liquid gel electrolyte with built-in temperature sensor. Cable length 1.5m, SenTix® 940-3 with 3m cable. *WTW*

Specifications

Temperature range:	0 to 80°C
pH range:	0.000 to 14.000pH
Length // diam.:	120mm/12mm
Electrolyte:	Gel
Diaphragm:	Fibre
Membrane shape:	Cylinder
Membrane resistance at 25°C:	< 1GΩ

Type	PK	Cat. No.
SenTix® 940-3	1	**6.239 769**
SenTix® 940	1	**6.240 824**

2



2 pH electrodes, SenTix® 980 digital IDS

NEW!

pH electrodes with glass shaft and KCl electrolyte with built-in temperature sensor. Cable length 1.5m *WTW*

Specifications

Temperature range:	0 to 100°C
pH range:	0.000 to 14.000pH
Length // diam.:	120mm/12mm
Electrolyte:	3 mol/l KCL
Diaphragm:	Platinum wire
Membrane shape:	Cone
Membrane resistance at 25°C:	> 600MΩ

Type	PK	Cat. No.
SenTix® 980	1	**6.238 921**

3



9.040 895

Accessories for combination electrodes

Connection cable for pH electrodes with plug head connection to plugs as indicated. *WTW*

Type	Connector	Cable m	PK	Cat. No.
AS/DIN	DIN	1	1	**9.040 895** 3
AS/DIN-3	DIN	3	1	**9.040 896**
AS/BNC	BNC	1	1	**9.040 897**

4



4 Electrode stand

With flexible electrode holder for two electrodes and temperature sensor. *WTW*

Type	PK	Cat. No.
Electrode stand	1	**9.040 870**

Application table for the BlueLine pH electrodes

Application	Sample type	BlueLine Type-Nr.	Integrated temperature probe
General Laboratory	General purpose	**14/15 pH**	YES
		12 pH	NO
	Small sample volume	**16 pH**	NO
	High ionic strength - extreme pH Non-aqueous -solvents, alcohols	**13 pH**	NO
	Titration	**14/15 pH**	YES
		12 pH	NO
	Harsh environment, rugged use	**54 pH**	YES
	Low maintenance	**24-29 pH**	YES
		22/23 pH	NO
Food, Beverage and Dairy	Flat surface - cheese, meat, agar	**27 pH**	NO
	Semi solids - fruit, meat, cheese, jam	**21 pH**	NO
	Titration	**14/15 pH**	YES
		12 pH	NO
	Juices	**14/15 pH**	YES
		12 pH	NO
Cosmetics	General purpose	**14/15 pH**	YES
		12 pH	NO
	Emulsions - cosmetics, oil	**13 pH**	NO
Manufacturing	Flat surface - paper	**27 pH**	NO
	Harsh environment - rugged use, field or plant	**54 pH**	YES
	Emulsions - petroleum, paint	**13 pH**	NO
Education	Economic	**24-29 pH**	YES
		22/23 pH	NO
	Research Grade	**13 pH**	NO

pH electrodes BlueLine, refillable

NEW!

SI Analytics

pH combination electrode with glass body, Ag/AgCl reference system. With fixed cable, length 1m (BlueLine 14 pH IDS 1.5m).
BlueLine 11 pH and BlueLine13 pH with screw head (LB 1A or LB 1BNC cable combination please order separately).

Specifications

Temperature range:	-5 to 100°C
pH range:	0 to 14pH
Zero point:	pH=7.0 ±0.3
Length/diam.:	120/12mm
Blueline 13 pH:	170/12mm
Electrolyte:	Liquid, KCl 3mol/l
Diaphragm:	Platinum
Blueline 13 pH:	Ground joint
Membrane shape:	Conical
Blueline 13 pH:	Cylindical
Membrane resistance at 25°C:	250MΩ
Blueline 13 pH:	300MΩ
Refill hole cover:	Slide

Type	Temperature sensor	Connector	PK	Cat. No.
BlueLine 11 pH	-	Plug head	1	**9.041 140** 1
BlueLine 12 pH	-	DIN	1	**9.041 141**
BlueLine 13 pH	-	Plug head	1	**9.041 142** 2
BlueLine 14 pH	NTC 30 kΩ	DIN + Banana	1	**9.041 143**
BlueLine 14 pH ID	NTC 30 kΩ	DIN + 4-mm-banana, ID function	1	**6.233 381**
BlueLine 14 pH IDS	NTC 30 kΩ	Digital plug	1	**6.265 620**
BlueLine 15 pH	NTC 30 kΩ	BNC + Banana	1	**9.041 144**
BlueLine 15 pH ID	NTC 30 kΩ	BNC + 4-mm-banana, ID function	1	**9.041 155**
BlueLine 15 pH Cinch	NTC 30 kΩ	BNC + Cinch	1	**6.240 767**
BlueLine 17 pH	-	BNC	1	**7.608 144**
BlueLine 18 pH	Pt 1000	DIN + Banana	1	**7.054 864**
BlueLine 19 pH	Pt 1000	BNC + Banana	1	**7.658 006**

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9.041 140

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9.041 142

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1 pH-electrodes, BlueLine, not refillable

NEW!

SI Analytics

Low maintenance pH combination electrode with plastic body, Ag/AgCl reference system. With fixed cable, length 1m (BlueLine 24 pH IDS 1.5m). BlueLine 22 pH with plug head (LB 1A or LB 1BNC cable combination please order separately).

Specifications

Temperature range:	-5 to 80°C
pH range:	0 to 14pH
Zero point:	pH=7.0 ±0.3
Length/diam.:	120mm/12mm
Electrolyte:	Gel
Diaphragm:	Fibre
Membrane shape:	Cylindrical
Membrane resistance at 25°C:	400MΩ

Type	Temperature sensor	Connector	PK	Cat. No.
BlueLine 22 pH	-	Plug head	1	**9.041 147**
BlueLine 23 pH	-	DIN	1	**9.041 148**
BlueLine 24 pH	NTC 30 kΩ	DIN + Banana	1	**9.041 149**
BlueLine 24 pH IDS	NTC 30 kΩ	Digital plug	1	**6.265 622**
BlueLine 25 pH	-	BNC	1	**9.041 150**
BlueLine 26 pH	NTC 30 kΩ	BNC + Banana	1	**9.041 151**
BlueLine 26 pH-Cinch	NTC 30 kΩ	BNC + Cinch	1	**6.251 893**
BlueLine 28 pH	Pt 1000	DIN + Banana	1	**7.075 024**
BlueLine 28 pH-P	Pt 1000	DIN + 2-mm-pin	1	**6.204 522**
BlueLine 29 pH	Pt 1000	BNC + Banana	1	**6.261 445**
BlueLine 29 pH-P	Pt 1000	BNC + 2-mm-pin	1	**6.226 741**

2



2 Micro Electrode BlueLine 16 pH, refillable

SI Analytics

micro-pH-combination electrode with glass body, Ag/AgCl reference system and plug-in head. LB 1A or LB 1BNC cable combination please order separately.
Ideal for small sample volumes.

Specifications:

Temperature range:	-5 to 100°C
pH range:	0 to 14pH
Temperature sensor:	No
Length // Dia.:	40/80mm // 12/5mm
Electrolyte:	Fluid, KCl 3mol/l
Diaphragm:	Platinum
Membrane resistance at 25°C:	300MΩ
Refill hole cover:	Slide

Type	PK	Cat. No.
BlueLine 16 pH	1	**9.041 145**

3



3 Spear-tip electrode, BlueLine 21 pH, not refillable

NEW!

SI Analytics

pH combination electrode with plastic body, Ag/AgCl reference system and spear membrane tip. BlueLine 21 pH IDS mit 1.5 m fixed cable and digital plug. BlueLine 21 pH with plug head. LB 1 A or LB 1 BNC cable combination please order separately.
Particularly suitable for penetration measurements in semi-solid media.

Specifications

Temperature range:	-5 to + 80°C
pH range:	2 to 13 pH
Temperature sensor:	No
Taper length // Dia. max./min.	65/25mm // 12/5mm
Electrolyte:	Referid®
Diaphragm:	Hole
Membrane resistance at 25°C:	400 MΩ

Type	PK	Cat. No.
BlueLine 21 pH	1	**9.041 146**
BlueLine 21 pH IDS	1	**6.265 621**

E & OE.

1 pH electrode A 7780

NEW!

Glass shaft, Silamid®-reference system, with 1m or 1.5 m (A 7780 IDS) fixed cable. *SI Analytics*



Specifications

Temperature range:	-5 to + 80°C
pH range:	0 to 14pH
Zero point:	pH=7.0 ±0.3
Taper length/Dia.:	120mm/12mm
Electrolyte:	Gel
Diaphragm:	3 x ceramic
Membrane shape:	Sphere
Membrane resistance at 25°C:	250 MOhm

Type	Temperature sensor	Connector	PK	Cat. No.
A 7780 1M-DIN-ID	Pt 1000	DIN + 4-mm	1	**6.235 995**
A 7780 IDS	NTC 30 kΩ	Digital	1	**6.265 619**

2 pH electrode A 157

NEW!

Microelectrode, glass shaft, Silamid® reference system, with 1m or 1.5m (A 157 IDS) fixed cable. *SI Analytics*



Specifications

Temperature range:	-5 to +100°C
pH range:	0 to 14pH
Zero point:	pH=7.0 ±0.25
Temperature sensor:	NTC 30kOhm
Taper length // Dia. max./min.	200(70/130)mm/12/5mm
Electrolyte:	KCl 3mol/l
Diaphragm:	Platinum
Membrane shape:	Cylindrical
Membrane resistance at 25°C:	500MOhm

Type	Temperature sensor	Connector	PK	Cat. No.
A 157 1M-DIN-ID	Pt 1000	DIN+ 4 mm	1	**9.041 156**
A 157 IDS	NTC 30 kOhm	Digital	1	**6.265 615**

3 Electrode, BlueLine 27 pH, for surface measurements, not refillable

pH-combination electrode with glass body, Ag/AgCl reference system and plug head. *SI Analytics*
LB 1A or LB 1BNC cable combination please order separately. Specially suitable for surface measurements.



Specifications:

Temperature range:	-5 to 50°C
pH range:	2 to 13 pH
Temperature sensor:	no
Length/Dia.:	120mm/12mm
Electrolyte:	Referid®
Diaphragm:	Annular space
Membrane resistance at 25°C:	400 MΩ

Type	PK	Cat. No.
BlueLine 27 pH	1	**9.041 152**

4 Redox (ORP) electrodes, BlueLine 31 RX, refillable

Redox combination electrode with glass body, Ag/AgCl reference system and plug head. *SI Analytics*
LB 1A or LB 1BNC cable combination please order separately.
Application: Universal applications in chemical and food industries.

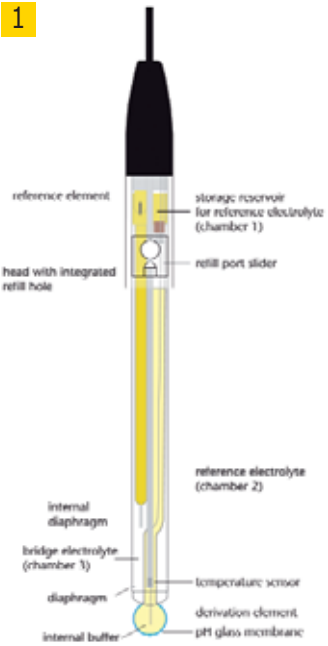


Specifications:

Temperaturbereich:	-5 to 100°C
Sensor:	Pt disc
Temperature sensor:	No
Length/Dia.:	120mm/12mm
Electrolyte:	liquid, KCl 3mol/l
Junction:	Ceramic
Membrane:	Platinum
Refill hole cover:	Slide

Type	PK	Cat. No.
BlueLine 31 RX	1	**9.041 153**

1



2



1 2 pH electrodes, IoLine

pH electrodes for the most demanding measuring tasks. *SI Analytics*

The IoLine electrode family with iodine/iodide reference system has been developed to meet the most demanding laboratory measurement tasks. These electrodes are metal ion free and hence ideally suited for measurements that may cause sample contamination by such ions (e.g. silver ions) and for pH measurements in Tris buffers too.

Advantages of IoLine Electrodes over classical Ag/AgCl reference systems are notably by:
- longer service life thanks to a patented three-chambers Iodine reservoir in the reference electrode.
- fast reaction, precise measurement and clearly improved stability of measurement values, especially with changing temperatures or at temperatures other than the calibration temperature. This is due to the lower temperature sensitivity of the iodine/iodide reference potential.
- free choice of the bridge electrolyte, hence optimum adaptation to the sample by double electrolyte system.

The electrodes are available in different membrane glass shapes and types and with different plugs to ensure that the user gets the instrument best suited to his needs. ID versions are available for use with Schott Instruments' ProLab line of high-end laboratory meters.

IoLine electrodes are the right choice for the most critical pH measurements in research and quality control in pharmacy, biotechnology or food industry.

Specifications:

Temp. range	-5 to +100°C
pH range	0 to 14
Zero point	pH = 7.00 ±0.25
Length/diam.	
IL-pHT-A 120:	120mm/12mm
IL-pHT-A 170:	170mm/12mm
Shaft material	Glass
Reference system:	Iodine/Iodide
Diaphragm:	Platinum
Membrane shape:	Sphere
Membrane resistance at 25°C:	200MΩ

Type	Temperature sensor	Connector	PK	Cat. No.
IoLine-pHT-A 120-MF	-	S7	1	**9.041 163**
IoLine-pHT-A 170-MF	-	S7	1	**9.041 164**
IoLine-pHT-A 120-MF-DIN	-	DIN	1	**9.041 165**
IoLine-pHT-A 120-MF-DIN N	Pt 1000	DIN + Banana	1	**9.041 166**
IoLine-pHT-A 170-MF-DIN N	Pt 1000	DIN + Banana	1	**9.041 167**

3



3 pH-electrode IL-Micro-pHT-IDS

NEW!

Micro electrode for measurements in tris buffers or protein-containing solutions with small sample volumes. *SI Analytics*
Glass shaft, 1.5 m cable with digital plug, iodine/iodide-reference system.

Specifications

Temperature range:	-5 to +100°C
pH range:	0 to 14pH
Zero point:	pH=7.00 ±0.25
Taper length // Dia. max./min.	70/130mm/12/5mm
Electrolyte:	KCl 3mol/l
Diaphragm:	Platinum
Membrane shape:	Cylindrical
Membrane resistance at 25°C:	500 MOhm

Type	Temperature sensor	Connector	PK	Cat. No.
IL-Micro-pHT-IDS	NTC 30 kOhm	Digital	1	**6.265 630**

4



4 Cable combinations, LB 1 A and LB 1 BNC

For BlueLine pH electrodes, ScienceLine and IoLine. *SI Analytics*

Type	PK	Cat. No.
LB1-A	1	**9.041 303**
LB1-BNC	1	**9.041 304**

Combination pH Electrodes

SI Analytics

Type	PK	Cat. No.
Combination electrode N 6000 A	1	**9.041 160** 1
Combination pH electrode N 1042 A	1	**9.041 217** 2

1



9.041 160

2



9.041 217

3 Metal (ORP) electrodes, ScienceLine

SI Analytics

Type	PK	Cat. No.
Redox electrode Pt 6280	1	**9.041 207**
Electrode Ag 6280	1	**9.041 211**

3



4 pH-Electrodes ScienceLine

With plug head, glass shaft, ceramic diaphragm, 3mol/l KCl electrolyte, 12mm dia, spherical membrane, pH range: 0 to 14.

SI Analytics

Type	Temp. range max. °C	Length mm	Membrane	PK	Cat. No.
N 6280, with plug head	-5 ... +100	120	N-glass	1	**9.041 117**
N 6180	-5 ... +100	170	N-glass	1	**9.041 180**
N 42 A	-5 ... +100	120	A-glass	1	**9.041 182**

4



5 pH-combination electrodes

With plug head, glass shaft, platinum diaphragm, 3mol/l KCl electrolyte, Silamid® reference system and 12mm dia. spherical membrane.

SI Analytics

Type	Temp. range max. °C	Length mm	Membrane	PK	Cat. No.
N 61	-5 ... +100	170	A-glass	1	**9.041 100**
H 61	+10 ... +100	170	H-glass	1	**9.041 105**
N 62	-5 ... +100	120	A-glass	1	**9.041 110**
H 62	+10 ... +100	120	H-glass	1	**9.041 112**
N 64	-5 ... +100	170	A-glass	1	**9.041 120**

5



6 Electrode vessel Z 453

NEW!

Free standing electrode vessel for storing electrodes with 12mm diam. shaft.

SI Analytics

Type	PK	Cat. No.
Z 453	1	**7.624 578**

6



Application table for Electrodes Mettler

Common Industries	Common Application(s)	InLab® Electrode Model	Electrode Cat. No.	Cable Cat. No.	Cables vailable for other manufacturers meters	Temp. Sensor
General, Cosmetic, Food, Beverage, Agriculture, Paint	Aqueous samples, TRIS, Gels/Soaps/Shampoo, Dairy, Soft Drinks, Beer & Wine, Fertilizer, Soil, Suspensions/Emulsions, Water Based Paint	Expert Pro	9.041 506	--	No	Yes
General, Cosmetic, Water, Food, Beverage, Chemical	Aqueous samples, TRIS, Gels/Soaps/Shampoo, Drinking Water, Soft Drinks, Beer & Wine, Jam/Preserves, Galvanic Baths, Corrosive/Hot Acids & bases,	Routine Pro	9.041 454	9.041 757	Yes	Yes
General, Cosmetic, Water, Food, Beverage, Chemical	Aqueous samples, TRIS, Gels/Soaps/Shampoo, Drinking Water, Soft Drinks, Beer & Wine, Jam/Preserves, Galvanic Baths, Corrosive/Hot Acids & bases,	Routine	9.041 450	9.041 759	Yes	No
Pharmaceutical/Biological, Cosmetic, Water, Food, Beverage, Paint, Chemical	Aqueous samples, TRIS, Serums/Gastric Juices, Medicinal formulas, Enzyme solutions, Gels/Soaps/Shampoo, Waste Water, Drinking Water, Dairy, Dough/Cocoa, Suspensions/Emulsions, Water Based Paint, Oily Samples, Varnish/Glue, Colorants/Dyes, Galvanic Baths, Corrosive/Hot Acids & bases, Hydrocarbons	Science Pro	9.041 471	9.041 757	Yes	Yes
Pharmaceutical/Biological, Cosmetic, Water, Food, Beverage, Paint, Chemical	Aqueous samples, TRIS, Serums/Gastric Juices, Medicinal formulas, Enzyme solutions, Gels/Soaps/Shampoo, Waste Water, Drinking Water, Dairy, Dough/Cocoa, Suspensions/Emulsions, Water Based Paint, Oily Samples, Varnish/Glue, Colorants/Dyes, Galvanic Baths, Corrosive/Hot Acids & bases, Hydrocarbons	Science	9.041 470	9.041 759	Yes	No
Pharmaceutical/Biological, Cosmetic	Aqueous samples, TRIS, Vials/NMR Samples, Serums/Gastric Juices, Samples in Test Tubes, Medicinal formulas, Enzyme solutions, Cosmetic Creams/Mascara	Micro Pro	9.041 562	9.041 757	Yes	Yes
Pharmaceutical/Biological, Cosmetic	Aqueous samples, TRIS, Vials/NMR Samples, Serums/Gastric Juices, Samples in Test Tubes, Medicinal formulas, Enzyme solutions, Cosmetic Creams/Mascara	Micro	9.041 560	9.041 759	Yes	No
Pharmaceutical/Biological, Cosmetic, Water, Food, Beverage, Paint	Aqueous samples, TRIS, Serums/Gastric Juices, Samples in Test Tubes, Medicinal formulas, Enzyme solutions, Gels/Soaps/Shampoo, Cosmetic Creams/Mascara, Natural/Synthetic Resins, Dairy, Water Based Paint, Oily Samples	Semi Micro	9.041 565	9.041 759	Yes	No
Pharmaceutical/Biological, Cosmetic, Food	Aqueous samples, TRIS, Medicinal formulas, Enzyme solutions, Cosmetic Creams/Mascara, Butter, Yoghurt, Cheese, Ice Cream, Meats, Fruit/Vegetables, Dough/Cocoa	Solids	9.041 553	9.041 759	Yes	No
Pharmaceutical/Biological, Cosmetic, Textile, Paper	Gelled Agars, Skin, Leather, Textiles/Prints, Paper, Laminates, Drop Size Samples	Surface	9.041 557	9.041 759	Yes	No

pH electrodes InLab® Routine Series

Combined pH electrode, glass shaft, ARGENTHAL™ reference with silver-ion trap, detachable cable. *Mettler-Toledo Online*

Specifications:

Temperature range:	0 to +100°C
pH range:	0 - 14
Electrode Dia.:	12 mm
Electrolyte:	Liquid, KCl 3 mol/l
Diaphragm:	ceramic
Membrane resistance at 25°C:	< 600 M Ω

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9.041 450

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9.041 456

Description	Shaft length min. mm	Temperature sensor	Electrode head	PK	Cat. No.
InLab®Routine	120	-	S7	1	**9.041 450** 1
Set InLab®Routine + DIN cable	120	-	S7	1	**9.041 451**
Set InLab®Routine + BNC cable	120	-	S7	1	**9.041 452**
InLab®Routine Pro	120	NTC 30 kΩ	MultiPin™	1	**9.041 454**
Set InLab®Routine Pro + BNC/Cinch cable	120	NTC 30 kΩ	MultiPin™	1	**9.041 455**
InLab®Routine Pt1000	120	Pt1000	MultiPin™	1	**9.041 456** 2
InLab®Routine Pro-L	170	Pt1000	MultiPin™	1	**9.041 457**
InLab®Routine Pro ISM	120	NTC 30 kΩ	MultiPin™	1	**7.629 195**
InLab®Routine Pro ISM Set	120	NTC 30 kΩ	MultiPin™	1	**9.041 458**

3 pH electrodes InLab® Expert Pro

pH-combination electrode with chemically resistant PEEK shaft, ARGENTAL™ reference system. Fixed BNC/RCA (Cinch) cable. *Mettler-Toledo Online*

InLab® Expert Pro ISM for SevenCompact and SevenExcellence.

3



Specifications

Temperature range:	0 to +100°C
pH range:	0 - 14
Temperature sensor:	NTC 30kΩ
Length/Diam.:	120mm/12mm
Electrolyte:	XEROLYT® polymer
Diaphragm:	open junction
Membrane resistance at 25°C:	< 250MΩ

Type	PK	Cat. No.
InLab® Expert Pro	1	**9.041 506**
InLab® Expert Pro ISM	1	**9.041 508**

4 pH electrode InLab® Science

pH-combination electrode with glass shaft, ARGENTAL™ reference system with Ag^+ trap and S7 electrode head. Cable - please order separately. *Mettler-Toledo Online*

4



Specifications

Temperature range:	0 to +100°C
pH range:	0 - 12
Temperature sensor:	no
Length/Diam.:	120mm/12mm
Electrolyte:	Fluid, KCl 3mol/l
Diaphragm:	movable glass sleeve
Membrane resistance at 25°C:	< 600MΩ

Type	PK	Cat. No.
InLab® Science	1	**9.041 470**

5 pH electrode InLab® Science Pro

pH-combination electrode with glass shaft, ARGENTAL™ reference system with Ag^+ trap and MultiPin™ electrode head. Cable - please order separately. *Mettler-Toledo Online*

InLab® Science Pro ISM for SevenCompact and SevenExcellence.

5



Specifications

Temperature range:	0 to +100°C
pH range:	0 - 12
Temperature sensor:	NTC 30kΩ
Length/Diam.:	170mm/12mm
Electrolyte:	Fluid, KCl 3mol/l
Diaphragm:	movable glass sleeve
Membrane resistance at 25°C:	< 600MΩ

Type	PK	Cat. No.
InLab® Science Pro	1	**9.041 471**
InLab® Science Pro ISM	1	**9.041 472**

1



1 pH electrode InLab® Micro

pH-combination electrode with glass shaft, ARGENTAL™ reference system with Ag^+ trap and S7 electrode head. Cable - please order separately.

Mettler-Toledo Online

Specifications

Temperature range:	0 to +80°C
pH range:	0 - 14
Temperature sensor:	no
Length/Diam.:	60mm/3mm
Electrolyte:	Fluid, KCl 3mol/l
Diaphragm:	Ceramic type Z (pore size 0.9µm)
Membrane resistance at 25°C:	< 1000MΩ

Type	PK	Cat. No.
InLab® Micro	1	**9.041 560**

2



2 pH electrode InLab® Semi-Micro

pH-combination electrode with glass shaft, ARGENTAL™ reference system and S7 electrode head. Cable - please order separately.

Mettler-Toledo Online

Specifications

Temperature range:	0 to +100°C
pH range:	0 - 12
Temperature sensor:	no
Length/Diam.:	100mm/6mm
Electrolyte:	XEROLYT®EXTRA Polymer
Diaphragm:	open junction
Membrane resistance at 25°C:	< 300MΩ

Type	PK	Cat. No.
InLab® Semi-Micro	1	**9.041 565**

3



3 pH electrode InLab® Micro Pro

pH-combination electrode with glass shaft, ARGENTAL™ reference system with Ag^+ trap and MultiPin™ electrode head. Cable - please order separately.
InLab® Micro Pro ISM for SevenCompact and SevenExcellence.

Mettler-Toledo Online

Specifications

Temperature range:	0 to +100°C
pH range:	0 - 14
Temperature sensor:	NTC 30kΩ
Length/Diam.:	130mm/5mm
Electrolyte:	Fluid, KCl 3mol/l
Diaphragm:	Ceramic
Membrane resistance at 25°C:	< 300MΩ

Type	PK	Cat. No.
InLab® Micro Pro	1	**9.041 562**
InLab® Micro Pro ISM	1	**6.243 633**

4



4 pH combination electrode InLab® Solids

With spear-tip membrane. With glass shaft, Argenthal™ reference system and S7 plug head. Cable - please order separately.

Mettler-Toledo Online

Specifications

Temperature range:	0 to +80°C
pH range:	0 - 11
Temperature sensor:	no
Length/Diam.:	25mm/6mm
Electrolyte:	XEROLYT® PLUS polymer electrolyte, non-refillable
Diaphragm:	open junction
Membrane resistance at 25°C:	< 250 MΩ

Type	PK	Cat. No.
InLab® Solids	1	**9.041 553**

E & OE.

1 pH electrode InLab® Surface

pH-combination electrode with polysulfone shaft, Ag/AgCl reference system and S7 electrode head. Cable - please order separately. *Mettler-Toledo Online*

Specifications

Temperature range:	0 to +50°C
pH range:	1 - 11
Temperature sensor:	no
Length/Diam.:	100mm/6mm
Electrolyte:	Fluid, KCl 3mol/l, AgCl saturated
Diaphragm:	Safelock™ ABS ring
Membrane resistance at 25°C:	< 800MΩ

Type	PK	Cat. No.
InLab® Surface	1	**9.041 557**

1



Connection cables

For connecting pH electrodes with built-in temperature sensors and MultiPin plug head or with S7 plug head (without temperature sensor) as indicated. *Mettler-Toledo Online*
Cables suitable for connection of Mettler Toledo electrodes to a variety of other manufacturers meters.
Cat. No. 9.041 757, 7.629 194 (ISM electrodes) and 9.041 759 should be used for connection to Mettler Toledo meters.

Length m	Connector	Electrode head	PK	Cat. No.
1.2	DIN + 4 mm	MultiPin™	1	**9.041 754**
1.2	BNC + 4 mm	MultiPin™	1	**9.041 755**
1.2	DIN + Cinch	MultiPin™	1	**9.041 756**
1.2	BNC + Cinch	MultiPin™	1	**9.041 757** 2
2.5	BNC + Cinch	MultiPin™	1	**9.041 765**
1.2	Lemo 00 + 2 x 4 (Metrohm)	MultiPin™	1	**9.041 760**
1.8	BNC + Cinch - ISM	ISM-MultiPin™	1	**7.629 194**
1.2	DIN	S7	1	**9.041 758** 3
1.2	BNC	S7	1	**9.041 759** 4
1.2	RM	S7	1	**9.041 761**
5.0	-	S7	1	**9.041 764**
1.2	-	S7	1	**6.700 357**

2



9.041 757

3



9.041 758

4



9.041 759



1



1 LLG-pH-Buffer solution

NEW!

Tested and certified at 20°C. Provided with label that gives the pH value at different temperatures. Tolerance ±0.02 pH. Supplied in PE-HD containers. Traceable to NIST (SRM). Temperature dependence data is printed on the label as well as batch numbers and expiry dates. Buffers have a 24 month shelf life from date of manufacture.

pH-value at 20 °C	Capacity ml	Buffer	PK	Cat. No.
pH 4.00	1000	citrate	1	**9.041 367**
pH 7.00	1000	phosphate	1	**9.041 368**
pH 9.00	1000	H_3BO_3-KCl-NaOH	1	**9.041 374**
pH 10.00	1000	borate	1	**9.041 369**

LLG-pH buffer solutions with colour coding

NEW!

The ready-to-use colour coded pH buffer solutions offer excellent quality, precision and are designed to suit all end user requirements.
Supplied in 1L bottles and conveniently colour coded to eliminate any risk of confusion between the 3 pH values.

Features
- Accuracy ±0.01 pH, tested and certified at 25°C
- Temperature dependence data table printed on the label
- Traceable to NIST
- Shelf-life: 24 months (pH 7 and 10) or 36 months (pH 4) from date of production
- Colour-coded

pH-value at 25 °C	Capacity ml	Colour	PK	Cat. No.
4.00	1000	red	1	**9.040 865**
7.00	1000	yellow	1	**9.040 866**
10.00	1000	blue	1	**9.040 867**

2



2 LLG-pH-Buffer solutions with colour coding in twin-neck dispensing bottles

NEW!

The ready-to-use buffer solutions offer excellent quality, precision and advantages in use. The calibration vessel, integrated into the twin-neck dispensing bottles, allows the particularly economical dispensing of solution and prevents contamination.

Features
- Accuracy ±0.01 pH, tested and certified at 25°C
- Temperature dependence data table printed on the label
- Traceable to NIST
- Shelf-life: 24 months (pH 7 and 10) or 36 months (pH 4) from date of production
- Colour-coded

pH-value at 25 °C	Capacity ml	Colour	PK	Cat. No.
4.00	250	red	1	**9.040 868**
7.00	250	yellow	1	**9.040 869**
10.00	250	blue	1	**9.040 871**

3



3 Technical pH buffer solutions

Colour coded. Tested and ISO 17025 Certified at 25°C. Uncertainty of measurement ±0.02pH. *Reagecon*
Temperature dependence data is printed on the label as are lot numbers and expiry dates.
These pH buffer solutions are suitable for use where very accurate measurements are required and are supplied with a detailed Certificate of Analysis which outlines traceability to N.I.S.T (the N.I.S.T SRM(s) Lot No. is stated on the certificate. This item has a 12 to 36 month shelf life from date of manufacture depending on pH value.

pH-value at 25 °C	Capacity ml	Colour	PK	Cat. No.
2.0	250	Red	1	**9.040 949**
4.01	250	Red	1	**9.040 950**
4.01	500	Red	1	**6.206 907**
4.01	1000	Red	1	**9.040 955**
7.02	250	Yellow	1	**6.240 744**
7.02	500	Yellow	1	**6.229 762**
7.02	1000	Yellow	1	**6.238 677**
9.21	250	Blue	1	**9.040 951**
10.00	250	Blue	1	**6.240 745**
10.00	1000	Blue	1	**6.238 676**

1 pH buffer solutions

Clear, Colourless pH Buffer Solutions. Tested and ISO17025 Certified at 20°C, supplied with a detailed Certificate of Analysis which outlines traceability to N.I.S.T. Temperature dependence data is printed on the label as are lot numbers and expiry dates. Available in 500ml or 1l HDPE containers. *Reagecon*



pH-value at 20 °C	Capacity ml	Accuracy (±)	PK	Cat. No.
pH 2.00	500	0.02	1	**6.228 059**
pH 3.50	1000	0.05	1	**7.632 597**
pH 4.00	500	0.01	1	**9.040 911**
pH 4.00	1000	0.01	1	**9.040 912**
pH 6.00	500	0.01	1	**6.203 561**
pH 6.00	1000	0.01	1	**6.321 027**
pH 6.80	500	0.01	1	**6.206 693**
pH 6.865*	500	0.01	1	**7.900 066**
pH 7.00	500	0.01	1	**9.040 913**
pH 7.00	1000	0.01	1	**9.040 914**
pH 9.00	500	0.01	1	**6.225 161**
pH 9.00	1000	0.01	1	**6.206 691**
pH 10.00	500	0.01	1	**9.040 915**
pH 10.00	1000	0.01	1	**9.040 916**
pH 12.00	500	0.05	1	**6.234 641**

*at 25°C

2 pH buffer solutions (Coloured)

Coloured pH Buffer Solutions solutions. Tested and ISO17025 Certified at 20°C. Uncertainty of measurement ±0.01pH. Supplied with a detailed Certificate of Analysis which outlines traceability to N.I.S.T. Temperature dependence data is printed on the label as are lot numbers and expiry dates. Supplied in 500ml, 1L or 5L *Reagecon*



pH-value at 20 °C	Capacity ml	Colour	PK	Cat. No.
pH 4.00	500	Red	1	**9.040 920**
pH 4.00	1000	Red	1	**9.040 921**
pH 4.00	5000	Red	1	**9.040 922**
pH 7.00	500	Yellow	1	**9.040 923**
pH 7.00	1000	Yellow	1	**9.040 924**
pH 7.00	5000	Yellow	1	**9.040 925**
pH 10.00	500	Blue	1	**9.040 926**
pH 10.00	1000	Blue	1	**9.040 927**
pH 10.00	5000	Blue	1	**9.040 928**

3 pH buffer solutions with colour code, with/without certificate

Colored buffer solutions, standardized against NIST references, accuracy ±0.01 pH at 25°C, 500ml bottles with label that indicates correlation between pH-value and temperature. *Hanna*



pH-value at 25 °C	Description	PK	Cat. No.
pH 7.01	with certificate	1	**6.225 206**
pH 4.01	with certificate	1	**6.225 208**
pH 10.01	with certificate	1	**6.225 207**
pH 7.01	without certificate	1	**6.053 384**
pH 4.01	without certificate	1	**6.053 383**
pH 10.01	without certificate	1	**6.090 412**

4 pH buffer solutions

Colour coded. pH values at 25°C. Provided with label that gives the pH value at different temperatures. Supplied in 250ml containers. Tolerance ±0.02 pH. *SI Analytics*



pH-value at 25 °C	Capacity ml	Colour	PK	Cat. No.
pH 4.01	250	yellow	1	**9.041 050**
pH 7.00	250	green	1	**9.041 051**
pH 10.01	250	orange	1	**9.041 052**

1



1 Buffer solutions, sterile

According to DIN 19 266. Values stated at 25°C. To be delivered in DURAN® glass bottles. Hot steam sterilized. Accuracy ±0.012pH. Comes with individual batch number and manufacturer certificate.

SI Analytics

pH-value at 25 °C	Capacity	PK	Cat. No.
pH 4.01	250ml DURAN® bottle	1	**9.041 004**
pH 6.87	250ml DURAN® bottle	1	**9.041 007**
pH 9.18	250ml DURAN® bottle	1	**9.041 009**

Other buffer solutions available on request.

2



2 pH buffer solutions, technical

Without colour coding, hot steam sterilized. Stated pH values at 25°C. Available in 250ml containers. Shelf life approx. 2 years, accuracy ±0.02 pH.
Calibration set for pH measurement.
Set contains 20 x 17ml ampoules filled with pH 4.00, 7.00 and 10.00 solutions (at 25°C).

SI Analytics

pH-value at 25 °C	Capacity ml	Colour	PK	Cat. No.
pH 4,00	250	clear	1	**9.041 043**
pH 7,00	250	clear	1	**9.041 045**
pH 10.01	250	clear	1	**9.041 048**
Set	17	3 x 20 x 17 ml ampoules	1	**9.041 081**

3



3 Technical buffer solutions

Identified by colour-coded labels. Tolerance ±0.02 pH.

WTW

pH-value at 25 °C	Capacity ml	PK	Cat. No.
4.01	50	1	**9.040 734**
4.01	1000	1	**9.040 722**
7.00	50	1	**9.040 735**
7.00	1000	1	**9.040 723**
10.00	1000	1	**9.040 724**
10.01*	1000	1	**9.040 725**
4.01	250	1	**9.040 727**
7.00	250	1	**9.040 728**
10.00	250	1	**9.040 729**

* For handheld meters 315i, 330i, 340i, 350i, 3110, 3210, 3310 and Inolab® versions from 2004 onwards

4



4 Standard buffer solutions

To DIN/NIST. Supplied in 250ml bottles. Tolerance ±0.02 pH.

WTW

pH-value at 25 °C	Capacity ml	PK	Cat. No.
4.01	250	1	**9.040 744**
6.87	250	1	**9.040 746**
9.18	250	1	**9.040 749**

5



5 Redox buffer solution

For testing ORP electrodes. 427mV, pH7.
Supplied in pack of 250ml.

WTW

Type	PK	Cat. No.
Redox	1	**9.040 782**

1 Calibration Kits for pH meters

NEW!

20ml sachets. Without certificate of analysis . *Hanna*

Description	PK	Cat. No.
Calibration Kit pH 7.01 & 4.01 (5 x 20ml each)	1	**9.773 932**
Calibration Kit pH 7,01 & 10,01 (5 x 20ml each)	1	**9.773 934**



2 pH buffer solutions in sachets with certificate of analysis

One 20ml sachet is sufficient for each calibration. Sachets are well sealed and protected against light. Single use only, so no risk of contamination. Accuracy: ±0.01 pH at 25°C. *Hanna*
The outer box contains a certificate of analysis, showing the date of production and Lot Nr. (Expiry date).
The solutions are produced again NIST standards.

pH-value at 25 °C	PK	Cat. No.
pH 4.01	25	**6.803 609**
pH 7.01	25	**6.803 610**
pH 10.01	25	**6.803 611**



3 LLG-Electrolyte solutions, KCL

NEW!

Potassium chloride electrolyte for pH electrodes - Filling solution for reference electrolyte.

Type	PK	Cat. No.
3mol/l, 1000ml	1	**9.041 370**
3mol/l, 250ml	1	**9.041 371**
3mol/l, (AgCl saturated.), 250ml	1	**9.041 372**



4 KCL electrolyte solutions

For refilling or replacing reference electrolyte. Supplied in 250ml DURAN® bottles. *SI Analytics*

Type	PK	Cat. No.
2mol/L KNO_3 + 0.001mol/l KCI for Ag-probes	1	**9.041 072**
3 mol/l KCl	1	**9.041 092**
3 mol/l KCI, Ag/AgCl saturated	1	**9.041 036**
4.2 mol/l KCl	1	**9.041 033**



5 Storage and cleaning solutions for electrodes

Hanna

Type	PK	Cat. No.
Storage Solution, 500ml	1	**9.773 987**
Cleaning solution, general purpose, 500ml	1	**6.080 217**
Cleaning solution for proteins, 500ml	1	**6.223 522**



6 Cleaning and storage solutions for pH-probes

Reagecon

Type	Capacity ml	PK	Cat. No.
Pepsin / HCL, for cleaning media containing protein	500	1	**9.040 940**
Thiourea / HCL, for cleaning media containing sulphide	500	1	**9.040 941**
Organic cleaning solution	500	1	**9.040 942**
Regeneration solution	100	1	**9.040 943**
Storage solution	100	1	**9.040 945**
Storage solution	500	1	**9.040 944**



1



1 Regeneration solution and storage solution

For pH-probes. *SI Analytics*

Type	Capacity ml	PK	Cat. No.
Regeneration solution / Storage solution	250	1	**9.041 034**

2



2 Pepsin cleaning solution PEP/pH

DIN. Supplied in bottles of 250ml. *WTW*

Type	PK	Cat. No.
Pepsin cleaning solution	3	**9.040 796**

Cleaning solution RL/G

NEW!

1 bottle with 30ml acetic acid, solution UN 2790, 8, III, (E) *WTW*

Capacity ml	PK	Cat. No.
30	1	**9.822 552**



E & OE.

1 Conductivity testers, DIST 3 and DIST 4

Pocket measuring device with digital display for testing the conductivity in drinking water and industry. *Hanna*

DIST 3: suitable for measuring drinking water, reverse osmosis monitoring and in the laboratory.
DIST 4: ideal for measurements required in industry, horticulture, sewage, cooling towers.



Specifications:

Measuring range:	DIST 3: 0 to 1990µS DIST 4: 0 to 19.90mS
Resolution:	DIST 3: 1µS/cm DIST 4: 0.01mS
Accuracy:	±2% measuring range
Batteries:	4 x 1.5V button cells (MP 675H)
Dimensions:	175 x 41 x 23mm

Type	PK	Cat. No.
DIST 3	1	**9.704 010**
DIST 4	1	**9.704 014**

2 Conductivity testers, Dist 5 and Dist 6

Watertight Conductivity-/ TDS- /°C-testers. Simultaneous display of conductivity and/or TDS and temperature values. Automatic temperature compensation for highest measuring accuracy. User selection of temperature coefficient enables use in alkaline and acidic media. Stability indicator prevents incorrect measurements *Hanna*



Specifications:

Measuring range:	DIST 5 : 0 to 3990mS (0 to 2000ppm) DIST 6 : 0 to 20.00mS (0 to 10.00ppm)
Temperature range:	0.0 to 60.0°C
Resolution EC/TDS:	±2% in each measuring range
Resolution:	±0.5°C
Batteries:	4 x 1.5V button cells
Operating temp. range:	0 to 50.0°C

Type	PK	Cat. No.
DIST 5	1	**9.704 012**
DIST 6	1	**9.704 013**

3 Conductivity meters HI 99300/HI 99301

- Waterproof conductivity meters with microprocessor *Hanna*
- Conductivity (or TDS value) and temperature are displayed simultaneously
- Automatic temperature compensation from 0 to 60.0°C
- Temperature compensation coefficient is adjustable from 0 to 2.4%/°C
- Automatic one point calibration with conductivity solution 1413µS (HI 99300) or 12.880µS (HI 99301)

Supplied with:
Conductivity probe with 1 meter cable, 4x 1.5V AAA alkaline batteries and transport case



Specifications:

Measuring range/Resolution EC:	
HI 99300:	0 to 3999µS/1µS
HI 99301:	0.00 to 20.00mS/0.01mS
Measuring range/Resolution TDS:	
HI 99300:	0 to 2000ppm (mg/l)/1ppm (mg/l)
HI 99301:	0.00 to 10.00ppt (g/l)/0.01ppt (g/l)
Accuracy:	±2% full scale
Measuring range/Resolution T:	0.0 to 60°C/±0.5°C
Battery:	4 x 1.5V
Dimensions (L x W x H):	143mm x 80mm x 38mm
Weight:	210g

Type	PK	Cat. No.
HI 99300	1	**7.618 482**
HI 99301	1	**6.240 795**
Spare electrode HI 76306 for HI 99300 / HI 99301	1	**6.241 639**

1



1 Conductivity meter HI 8733

Hanna

- Multi range conductivity meter for laboratory use
- Can be used for various applications from deionized water to brine
- Automatic temperature enables highest accuracy
- For various strong acids or bases the temperature coefficient can be adjusted between 0% and 2.5% per °C
- Instrument is supplied with 4-ring, potentiometric probe for all 4 ranges

Specifications:

Ranges/Resolution:	0.00 to 199µS/0.1 µS 0 to 1999µS/1 µS 0 to 19.99mS/0.01mS 0 to 199.9mS/ 0.1mS
Accuracy:	±1% Full Scale
Temperature compensation:	automatic from 0 to +50°C
Calibration:	manual single point trough trimmer
Battery:	1 x 9 Volt
Operating temp. range:	0 to +50°C
Dimensions:	164mm x 76mm x 45mm
Weight:	500g

Type	PK	Cat. No.
HI 8733	1	**9.704 016**
Spare probe HI 76302W	1	**6.200 643**

2



2 Conductivity meter HI 9033

NEW!

Waterproof housing, perfect for laboratory and field work.

Hanna

- 4 different ranges from 0 to199.9mS can be selected by simply pressing a button
- automatic temperature compensation grants highest accuracy
- manual calibration at 1 point trough trimmer

Supplied in a transport case, complete with 4 ring conductivity probe with 1 metre cable, calibration screwdriver and battery.

Specifications:

Measuring range/Resolution:	0.0 to 199.9µS/0.1µS 0 to 1999 µS/1 µS 0 to 19.99 mS/0.1 mS 0 to 199.9 mS/1 mS
Accuracy:	±1% full scale
Temperature compensation:	automatically from 0 to 50°C
Operating range:	0 to 50°C
Battery:	1 x 9V
Weight:	1kg (incl. transport case)

Type	PK	Cat. No.
HI 9033	1	**6.095 234**
Spare probe HI 76302W	1	**6.200 643**



E & OE.

Pocket conductivity meters ProfiLine

The new ProfiLine hand-held conductivity meters have a waterproof (IP 67) housing and a new, completely sealed silicone membrane keypad with tactile feedback. A separate battery compartment allows easy exchange of standard alkaline, or rechargeable, batteries.
The carefully laid out, large displays indicate the reading and other important information. 3210 and 3310 series meters have a backlit, graphics display and menu-controlled operation. A selection of application specific conductivity cells cover virtually all measurement tasks.

1 2 Portable conductivity meter ProfiLine Cond 3110

WTW

Easy to operate rugged conductivity meter for measurement of conductivity and salinity. Simplified keypad for clear and secure operation. Simultaneous display of measurement value and temperature. Large LCD display for easy reading. Automatic nlF compensation for all grades of natural water. Works with four-electrode cell TetraCon® 325 or two-electrode cell KLE 325.

Specifications

Measuring ranges/Resolution

Conductivity:	0.0µS/cm to 1000mS/cm with 5 measuring ranges in the Auto Range mode
Temperature:	-5.0°C to +105.0°C ±0.1°C
Salinity:	0.0 to 70.0
T_{ref}:	20°C/25°C switchable

Type	Description	PK	Cat. No.
Cond 3110	meter only	1	**9.774 372**
Cond 3110 Set 1	cased set including conductivity probe TetraCon 325 and accessories	1	**9.774 358**
Cond 3110 Set 2	cased set including conductivity probe TetraCon 325 (3m) and accessories	1	**9.774 403**
Cond 3110 Set 3	cased set including conductivity probe KLE 325 and accessories	1	**9.774 404**

1



2



3 Portable conductivity meter ProfiLine Cond 3210

WTW

Convenient and versatile, hand-held, conductivity meter with backlit graphics display and menu-controlled operation. Waterproof and robust. For the measurement of conductivity, specific resistivity, salinity and TDS. Includes a 200 x GLP-compliant record memory. Wide selection of different conductivity cells attachable. Automatic and manual temperature compensation with linear temperature function and non-linear function for ultra-pure water and natural water in accordance with EN 27888.

3



Specifications

Measuring ranges/Resolution:

Conductivity:	as Cond 3110, but additionally with 0.00µS/cm to 19.99µS/cm (when K=0.1cm^{-1}) 0.000µS/cm at 1.999µS/cm (when K=0.01 cm $^{-1}$)
TDS:	0 to 1999mg/l 0.0 to 199.9g/l
Spec. resistance:	0.0 to 999MΩ/cm
Memory:	200 data records (measured value, temperature, date, time, ID)

Type	Description	PK	Cat. No.
Cond 3210	meter only	1	**9.774 379**
Cond 3210 Set 1	cased set including conductivity probe TetraCon 325 and accessories	1	**9.774 398**
Cond 3210 Set 2	cased set including 4-pole conductivity probe TetraCon 325 (3m) and accessories	1	**9.774 405**
Cond 3210 Set 4	cased set including 2-pole conductivity probe LR 325 / 01and accessories	1	**9.774 399**

Conductivity cell probes please see page 324.

1



2



1 2 Conductivity meter ProfiLine Cond 3310

WTW

Comfortable and versatile conductivity meter with integral, time controlled, data logger and 5000 GLP-compliant record memory for extended data collection. Menu controlled, with backlit, graphics display for comfortable, safe operation. Wide range of conductivity cells attachable. GLP-supporting functions, enhanced choice of cell constants, automatic and manual temperature compensation (which can be switched off) with linear and non-linear functions for pure water and natural waters acc. to EN 27888.

Specifications:

Measuring ranges/Resolution:

Conductivity:	as Cond 3110, but additionally with 0.00µS/cm to 19.99µS/cm (when K=0.1cm^{-1}) 0.000µS/cm at 1.999µS/cm (when K=0.01 cm $^{-1}$)
TDS:	0 to 1999mg/l, 0.0 to 199.9g/l
Spec. resistance:	0.0 to 999MΩ/cm
Memory:	5000 records (measured value, temperature, date, time, ID)

Type	Description	PK	Cat. No.
Cond 3310	meter only	1	**9.774 409**
Cond 3310 Set 1	case set including conductivity probe TetraCon 325 and accessories	1	**9.774 400**
Cond 3310 Set 2	case set including 4-pole conductivity probe TetraCon 325 (3m) and accessories	1	**9.774 401**
Cond 3310 Set 4	case set including 2-pole conductivity probe LR 325 / 01 and accessories	1	**9.774 402**

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3 VARIO C_{ond} Set conductivity instrument

WTW

The VARIO C_{ond} has a lot to offer. This instrument was designed with ergonomic requirements in mind. It is ideal for service work and inspection measurements on process equipment.
The TetraCon® 325 measuring cell, recognised around the world, was shortened and modified especially for the VARIO C_{ond}. If that is not enough; an adapted ultra-pure water cell with plug-in head and flow-through vessel can also be used with the VARIO C_{ond}

Specifications:

Measurement range/Resolution

Conductivity:	0.0µS/cm to 200mS/cm
Temperature:	-0.5 to +105.0°C
Salinity:	0.0 to 70.0°C
TDS:	0 to 1999mg/l
Spec. resistance:	0.000 to 1999 Mohm/cm
Accuracy (±1 digit)	
Conductivity:	±0.5% of measurement
Temperature:	±0.1K
Reference temp. (T_{ref}):	selectable 20°C or 25°C
Cell constant:	fixed 0.475 cm^{-1}, 0.1 cm^{-1}
Temperature comp.:	automatic or switched off
Temperature coefficient:	- non-linear function of natural water (nLF) per EN 27888 and ultra-pure water function - linear compensation of 0.01 to 2.99%/K - no compensation

Type	Description	PK	Cat. No.
VARIO C_{ond} Set A	incl. transport case, TetraCon® 325 and KCL solution	1	**9.774 390**
VARIO C_{ond} Set B	incl. transport case and LR 01/V	1	**9.774 391**

E & OE.

1 Portable conductivity meter Education Line EL3



Experience science with portable conductivity meters *Mettler-Toledo Online*

- Simple intuitive operation helps you save time during classes
- Ideally suited for classroom and field-based measurements alike
- Robust, low-maintenance, yet reliable electrodes available in kit version

EL3-Basic: Conductivity instrument incl. electrode clip, wrist strap, operating manual, "Quick guide", 4 x batteries
EL3-Kit: Instrument and accessories as with EL3 Basic, also with LE703 conductivity sensor, IP54 connection caps, 2 x 1413 µS/cm and 2 x 12.88 mS/cm standard sachets
EL3-Fieldkit: Instrument and accessories as for EL3 Kit, also with carry bag incl. 4 sample bottles

Please note: These articles are only available for schools and universities.

Specifications

Measuring range/accuracy:	
Condictivity:	0.1µS/cm to 199.9mS/cm/±0.5%
Temperature:	0.0°C to +100°C/±0.3°C
Calibration:	1-point, 3 predefined standards
Free disk space:	30 data sets
Display:	LCD
Batteries:	4 x AAA
Dimensions (WxDxH):	169 x 82 x 36mm
Weight:	180g (without batteries)

Type	PK	Cat. No.
EL3-Basic	1	**9.704 003**
EL3-Kit	1	**9.704 004**
EL3-Fieldkit	1	**9.704 006**
Spare elektrode LE703	1	**9.041 621**

2 Conductivity meter FiveGo™ FG3



FiveGo Conductivity is a handy, portable meter ideal for those who require rapid and reliable results on the go. This meter is suitable for a wide range of applications in various areas such as food and beverage, agriculture, industry, water and environment *Mettler-Toledo Online*

- Outstanding functions such as storage capacity for 30 measurements, TDS and salinity modes and IP54 ingress protection combined with features such as automatic endpoint, 1 point calibration, linear temperature compensation and selectable reference temperatures
- Five self-explanatory buttons for starting and ending a measurement, for saving and accessing measurement results and for reviewing the latest calibration data.
- A big, well organised display simultaneously showing readings, temperature, endpoint criteria and various helpful icons

FG3-Basic: Conductivity instrument incl. electrode clip, wrist strap, operating manual, "Quick guide", 4 x batteries
FG3-Kit: Instrument and accessories as with FG3-Basic, with LE703 conductivity sensor, IP54 connection caps, 2 x 1413 ìS/cm and 2 x 12.88mS/cm standard sachets
FG3-Fieldkit: Instrument and accessories as for FG3-Kit, with carry bag incl. 4 sample bottles

Specifications:

Measuring range (Accuracy)	0.1µS/cm to 199.9mS/cm (±0.5% of measured value)
TDS:	0.1mg/L to 199.9g/L (±0.5% of measured value)
Salinity:	0.00 to 19.99psu (±0.5% of measured value)
Temperature:	0 to +100°C (±0.3°C)
Calibration:	1 point, 3 predefined standards
Input:	Mini-DIN
Temperature compensation:	Linear: 0.00%/°C to 10.00%/°C
Reference temperature:	20 and 25°C
Memory:	30 measurements
Power supply:	4 x AAA
Protection class acc. to DIN EN 60529:	IP 54

Type	PK	Cat. No.
FG3-Basic	1	**9.773 720**
FG3-Kit	1	**9.773 721**
FG3-Fieldkit	1	**7.652 924**

Conductivity meter Seven2Go™ S3

NEW!

Portable routine model for conductivity measurement.

Mettler-Toledo Online

- New, intuitive menu structure with fast and easy T-Pad navigation
- Robust design with IP67 protection for use in harsh and demanding environments
- Intelligent Sensor Management (ISM®) functionality reduces the risk of errors
- Easy 1 point calibration with option of manual cell constant entry
- 3 predefined standards and 1 user defined standard
- Automatic, manual and time dependant endpoint recording
- Data memory storage for 200 data points
- Power requirements: 4 x 1.5V AA or 1.3V NiMH accumulators

Supplied with:
S3-Meter: Includes instrument, electrode clip, operating instructions, quick guide, test certificate, declaration of conformity and batteries.
S3-Standard kit: As S3-Meter, but also with InLab 738-ISM and sachets of conductivity standards 1413 µS/cm and 12.88 mS/cm.
S3-Field kit: As S3-Standard kit, but also with bottles for calibration and uGo™ carrying case.
S3-Bioethanol kit: As S3-Field kit, but also with InLab 725 instead of InLab 738-ISM.

Specifications

Conductivity	
Measuring range:	0.010µS/cm ... 500mS/cm
Resolution:	0.001 ... 1 (auto-range)
Accuracy:	±0.5%
Temperature	
Measuring range:	-5.0 ... +105.0°C
Resolution:	0.1°C
Accuracy:	±0.2°C
TDS (Total Dissolved Solids)	
Measuring range:	0.01mg/l ... 300g/l
Resolution:	0.01 ... 1 (auto-range)
Accuracy:	±0.5%
Specific resistance	
Measuring range:	0.01 ... 100.0MΩcm
Salinity	
Measuring range:	0.01 ... 42psu
Conductivity Ash	
Measuring range:	0.01 ... 2022%
Dimensions (WxDxH):	222 x 70 x 35mm

Type	PK	Cat. No.	
S3-Meter	1	**6.265 247**	
S3-Standard kit	1	**6.265 248**	1
S3-Field kit	1	**6.265 249**	
S3-Bioethanol kit	1	**6.265 250**	

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6.265 248

E & OE.

Conductivity meters Seven2Go™ pro S7

NEW!

Portable professional model for conductivity measurement

Mettler-Toledo Online

- New, intuitive menu structure with fast and easy T-Pad navigation
- Robust design with IP67 protection for use in harsh and demanding environments
- Intelligent Sensor Management (ISM®) functionality reduces the risk of errors
- New sunlight-proof screen guarantees screen readability even in direct sunlight
- New StatusLight gives a fast, visual confirmation showing if the meter is ready to measure or not
- Operating support for 12 languages with information shown in complete words and sentences
- Easy 1 point calibration with option of manual cell constant entry
- 3 predefined standards and 1 user defined standard
- Automatic, manual and time dependant endpoint recording
- Data memory storage for 2000 GLP data points with weatherproof Micro-USB connection for data export
- Power requirements: 4 x 1.5V AA or 1.3V NiMH accumulators

Supplied with:
S7-Meter: Includes instrument, LabX direct pH, USB cable, electrode clip, base accessory, operating instructions, quick guide, test certificate, declaration of conformity and batteries.
S7-Standard kit: As S7-Meter, but also with InLab 738-ISM and sachets of conductivity standard 1413 µS/cm and 12.88 mS/cm.
S7-Field kit: As S7-Standard kit, but also with bottles for calibration and uGo™ carrying case.
S7-USP/EP kit: As S7-Field kit, but with InLab 742-ISM instead of InLab 738-ISM.

Specifications

Conductivity	
Measuring range:	0.010µS/cm ... 1000mS/cm
Resolution:	0.001 ... 1 (auto-range)
Accuracy:	±0.5%
Temperature	
Measuring range:	-5.0 ... +105°C
Resolution:	0.1°C
Accuracy:	±0.1°C
TDS	
Measuring range:	0.01 mg/l ... 600 g/l
Resolution:	0.01 ... 1 (auto-range)
Accuracy:	±0.5 %
Specific resistance	
Measuring range:	0.01 ... 100.0MΩcm
Salinity	
Measuring range:	0.01 ... 42psu
Conductivity Ash	
Measuring range:	0.01 ... 2022%
Dimensions (WxDxH):	222 x 70 x 35mm

Type	PK	Cat. No.	
S7-Meter	1	**6.265 254**	
S7-Standard kit	1	**6.265 255**	
S7-Field kit	1	**6.265 256**	
S7-USP/EP kit	1	**6.265 257**	1

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6.265 257

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1 Conductivity meters HandyLab 200

NEW!

The portable allrounder for conductivity measurements *SI Analytics*

Due to the wide selection of 2 and 4 pole measuring cells made by SI Analytics, the system consisting of a sensor and HandyLab 200 can be used for a variety of purposes such as conductivity, salinity, TDS and specific gravity. Autoread provides a stabile, precise measuring value. The backlit display and waterproof design make it especially ideal for field use. For easy reference, the HandyLab 200 has a storage capacity for up to 200 data sets, which can be put out on the display.

Supplied with:
HL200Versatile: Conductivity meter Set HandyLab 200 with conductivity probe LF413T for general applications

Specifications

Conductivity	
Measuring range:	0.0 ... 1000mS/cm
Resolution:	±0.1mS/cm, ±0.01µS/cm, ±0.001µS/cm
Accuracy:	±0.5% of mean value
Temperature	
Measuring range:	-5.0 ... +105.0°C
Resolution:	±0.1°C
Accuracy:	±0.1°C
TDS (Total Dissolved Solids)	
Measuring range:	0 ... 1999mg/l
Resolution:	1mg/l
Accuracy:	±0.5% of mean value
Specific resistance	
Measuring range:	1.000 ... 199.9MΩcm ±0.5 % of mean value
Salinity	
Measuring range:	0.0 ... 70.0 (acc. to IOT)

Type	PK	Cat. No.
HL200Versatile	1	**6.265 286**

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2 3 Conductivity meter SD320CON

Electrochemistry instrument for the determination of Conductivity, Resistance, Salinity and TDS. *AQUALYTIC*

- Rugged, water resistant (IP65), water proof plug connections
- Use of different electrodes
- Data Logger and alarm function
- GLP features (Good Laboratory Practice)
- Interface for Data transfer
- Large backlit display
- Low power consumption, long battery shelf life

Supplied with:
SD320CON (SET 1): Hand-held meter complete in case with 4-pol graphite electrode (diameter 12 mm) measuring range up to 200 ms/cm, batteries, instruction manual.
SD320CON (SET 2): Hand-held meter complete in case with 4-pol graphite electrode (diameter 16 mm) measuring range up to 1000 ms/cm, batteries, instruction manual.

Specifications

Conductivity:	0.0 ... 500.0µS/cm (cell constant 1/cm) 0.000 ... 5.000µS/cm (cell constant 0.01/cm) 0.0 ... 500.0mS/cm (cell constant 1/cm) 0 ... 5000µS/cm (cell constant 0.01/cm) 0 ... 1000mS/cm (cell constant 1/cm)
Temperature:	-5.0 ... +150.0°C
TDS:	0.000 ... 10000mg/l*
Resistance:	0.0010kOhm cm... 50.00MOhm cm*
Salinity:	0.0 ... 70.0g/kg (PSU)
Protection class:	IP65
Power supply:	2 x AAA batteries (incl.)

Type	PK	Cat. No.
SD320CON (SET 1)	1	**9.699 292**
SD320CON (SET 2)	1	**9.699 293**

*depends on cell constant

The new inoLab® series from WTW

The new inoLab® benchtops are perfectly designed for modern laboratory surroundings. *WTW*
The key pads are clearly outlined and easy-to-operate, their smooth surfaces are easy-to-clean and the operation is self-explanatory.
All meters include a universal power supply and a convenient stand with sensor support.
If desired they can be ordered in application oriented sets including sensors and accessories.

1 Laboratory instrument inoLab® Cond 7110

Modern conductivity measurement is east to do. the inoLab® Cond 7110 has all important functions for measuring conductivity like adjustable reference temperature and different methods of temperature compensation. A big LCD segment display makes readings easy and a well-arranged keypad provides convenient operation. The automatic AutoRead function supports correct and repeatable results. Each meter come with a stand and accessories. *WTW*

Specifications

Ranges:	All values ±1 digit
Conductivity:	0.00 ... 1000 mS/cm ±0.5 % v. Mw. 0.00 ... 19.99 µS/cm at K= 0.1 cm^{-1})
Salinity:	0.0 ... 70.0 (acc. IOT)
Temperature:	-5.0 ... 105.0°C ±0.1°C
AutoRead:	automatic
Power supply:	Universal power supply, 100V to 240V, 50/60Hz, 4 x 1.5V AA or 4 x 1.2V NiMH

Type	Description	PK	Cat. No.
Cond 7110	Meter only including accessories	1	**9.920 096**
Cond 7110 Set 1	Meter including TetraCon® 325 and accessories	1	**9.920 097**
Cond 7110 Set 3	Meter including KLE 325 and accessories	1	**9.920 098**

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Conductivity meter inoLab® Cond 7310

This is the new inoLab® Cond 7310 or inoLab® Cond 7310P. A modern backlit graphic display with menu controlled user interface allows easy and intuitive operation. The mini USB-B interface provides fast data transfer to a PC. The internal memory can record up to 5000 GLP complying data including ID, date and time. The housing and the keypad are easy-to-clean.
The inoLab® Cond 7310 has the possibility to connect different standard and special conductivity electrodes and has automatic and manual temperature compensation (can even be switched off for pure water measurements according pharmacopeia) for linear and non-linear function according EN 27 888. An integrated thermal printer (58mm width) is ready for printout of the measured data (option). The scope of delivery includes meter, stand, power supply and USB cable. *WTW*

Specifications

Ranges:	All values ±1 digit
Conductivity additional:	0.00 ... 1000 mS/cm ±0.5 % v. Mw. 0.000 ... 1.999 µS/cm, K= 0.01 cm^{-1} 0.00 ... 19.99 µS/cm, K= 0.1 cm^{-1}
Spcific resistance:	0.00 ... 20 MOhm cm
Salinity:	0.0 ... 70.0 (acc. IOT)
TDS:	1 ... 1999 mg/l, 0 to 199.9 g/l
Temperature:	-5.0 ... 105.0°C ±0.1°C
Calibration:	1 point
Calibration memory:	Up to 10 calibrations recallable
Display:	LCD Graphic, backlit
Memory:	manual 200/5000 automatic
Logger:	manual/time controlled
Interface:	Mini USB-B
Power supply:	Universal power supply, 100V to 240V, 50/60Hz, 4 x 1.5V AA or 4 x 1.2V NiMH

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9.920 114

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9.920 117

Type	Description	PK	Cat. No.	
Cond 7310	Meter incl. accessories	1	**9.920 114**	2
Cond 7310 Set 2	Meter incl. TetraCon® 325 and accessories	1	**9.920 115**	
Cond 7310 Set 6	Meter incl. USP Kit 1	1	**9.920 116**	
Cond 7310P	Meter with built-in printer and accessories	1	**9.920 117**	3
Cond 7310P Set 1	Meter with built-in printer, incl. TetraCon® 325 and accessories	1	**9.920 118**	
Cond 7310P Set 6	Meter incl. USP Kit 1	1	**9.920 119**	

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1 Conductivity meter Education Line EL30

NEW!

Experience science with conductivity bench meters

Mettler-Toledo Online

- Simple intuitive operation: helps you save time during classes
- Compact, robust benchtop instrument
- Robust, low-maintenance, yet reliable electrodes available in kit version
- Ideal for schools and universities

EL30-BASIC: Conductivity instrument incl. operating manual, "Quick guide", power adapter
EL30-KIT: Instrument and accessories as with EL30 Basic, also with LE703 conductivity sensor, electrode arm, 2 x 1413µS/cm and 2 x 12.88mS/cm standard sachets

Please note: These articles are only available for schools and universities.

Specifications

Measuring range/accuracy	
Condictivity:	0.1µS/cm to 199.9mS/cm/±0.5%
Temperature:	0.0°C to +100°C/±0.3°C
Calibration:	1-point, 3 predefined standards
Display:	LCD
Power supply:	100-240V/50-60Hz, 9V DC
Dimensions (WxDxH):	200 x 175 x 52mm
Weight:	600g

Type	PK	Cat. No.
EL30-Basic	1	**9.704 149**
EL30-Kit	1	**9.704 150**
LE703	1	**9.041 621**

2



2 Conductivity meters FiveEasy™/FiveEasy™ Plus

NEW!

FiveEasy and FiveEasy Plus Conductivity are compact, easy to use bench meters suitable for a wide range of applications in various areas such as food and beverage, agriculture, industry, water and environment.

Mettler-Toledo Online

- Outstanding functions such as TDS and salinity modes and meter self-test combined with features such as automatic endpoint, 1 point calibration, linear temperature compensation and selectable reference temperature
- Five self-explanatory buttons for starting and ending a measurement or calibration and for accessing the latest calibration data
- A big, well organised display simultaneously showing readings, temperature, endpoint criteria and various helpful icons

FE30-Basic: Conductivity instrument incl. operating manual, "Quick guide", power adapter
FE30-Kit: Instrument and accessories as with FE30-Basic, also with LE703 conductivity sensor, electrode arm, 2 x 1413µS/cm and 2 x 12.88mS/cm standard sachets
FEP30-Basic: Conductivity instrument incl. operating manual, "Quick guide", power adapter
FEP30-Kit: Instrument and accessories as with FEP30-Basic, also with LE703 conductivity sensor, electrode arm, 2 x 1413µS/cm and 2 x 12.88mS/cm standard sachets

Specifications:

Measuring range (Accuracy)	
Conductivity:	0.1µS/cm to 199.9mS/cm (±0.5% of measured value)
TDS:	0.1mg/L to 199.9g/L (±0.5% of measured value)
Salinity:	0.00 to 19.99psu (±0.5% of measured value)
Temperature:	0°C to +100°C (±0.3°C)
Calibration:	1 point, 3 predefined standards
Input:	Mini-DIN
Temperature compensation:	Linear: 0.00%/°C to 10.00%/°C
Reference temperature:	20°C and 25°C
Power supply:	100-240 V/50-60 Hz/9V DC
FEP30 only:	
Memory:	99 measurements
Output:	RS232 interface

Type	PK	Cat. No.
FE30-Basic	1	**9.773 701**
FE30-Kit	1	**6.251 347**
FEP30-Basic	1	**9.773 711**
FEP30-Kit	1	**9.773 712**
FiveEasy AC adaptor (incl. connectors) input 230V, output DC 9V	1	**7.900 515**
FiveEasy electrode arm (complete)	1	**6.235 935**

E & OE.

1 Conductivity meter SevenCompact™

Mettler-Toledo Online

The colour display with its well-designed icons and menu settings in 10 languages makes operation genuinely intuitive. Applications range from routine measurements through sample analysis, data handling and data archiving in compliance with GLP regulations. Simply innovative design that meets the requirements for a universal, easy-to-operate conductivity meter.

- User friendly instrument for demanding users
- Security and high reproducibility thanks to Intelligent Sensor Management (ISM®)
- Improved quality of measurements through professional calibration support
- Comprehensive service package including IQ/OQ
- Integrated USB and RS232 interfaces for data exchange

Supplied with:
S230-Basic: Instrument, electrode holder, protective cover, operating instructions, quick guide, declaration of conformity and test certificate
S230-Kit: As per S230-Basic, additionally with InLab® 731-ISM, guide to conductivity measurements and 2 calibraton sachets for 1413µS/cm and 12.88mS/cm.
S230-USP/EP: As per S230-Kit, but with InLab® 741-ISM instead of InLab® 731-ISM and without calibration sachets for 12.88mS/cm.

Specifications:

Calibration:	13 pre-defined and 1 user-defined standard
Conductivity range:	0.001µS/cm to 1000mS/cm, autoscaling
Conductivity accuracy:	±0.5%
Salinity range:	0.00 to 80.00psu
TDS range:	0.00mg/L to 1000g/L, autoscaling
Resistivity range:	0.00 to 100MOhm*cm, autoscaling
Conductivity ash range:	0.000 to 2022%, autoscaling
Temperature range	
MTC:	-30.0 to 130.0°C
ATC:	-5.0 to 130.0°C
Temperature accuracy:	±0.1°C
Display:	4.3 inch, TFT color
Ext. power supply:	9-12V/10W

Type	PK	Cat. No.
S230-Basic	1	**9.704 164**
S230-Kit	1	**9.704 165**
S230-USP/EP	1	**9.704 166**

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1 2 Conductivity meter SevenExcellence™ S700

Mettler-Toledo Online

Modular professional system for measurements of pH, redox potential, conductivity, salinity/TDS and ion concentration. Fits up to three modules in any composition and order, can be expanded with additional measurement parameters at any time.

- Large, high resolution 7" colour touch display (capacitive), very clear and easy to operate
- Modularity and flexibility; up to 3 measuring modules can work in parallel, expansion to 2 or 3 channels possible
- Universal communication via 2 x USB, Ethernet (LAN) and RS232
- Plain text user interface in 10 languages with menu guidance in full sentences
- OneClick™ operation concept to quickly start frequently used functions and preferred methods
- Storage for user methods
- Highest security and GxP support (ID protection, sophisticated user management, limits/alarms, integrated radio clock, etc.)
- Intelligent sensor management (ISM®)
- Connection of stirrer, sample changer, PC, barcode reader, keyboard, local or network printer possible
- Storage up to 20000 data sets (measurements, calibrations, methods)
- 17 predefined, 60 user-defined methods
- Calibration: 13 pre-defined and 20 user-defined standards
- uPlace™ electrode arm with perfect vertical movement
- Compatible with all METTLER TOLEDO electrodes (Recommended: ISM® electrodes)

S700-Basic: Includes instrument, 1 x conductivity expansion unit, 2 x blank expansion units, uPlace™ electrode holder, semi-transparent cover, operating instructions, installation and quick guide, LabX® direct pH PC software, declaration of conformity and test certificate.
S700-Kit: As S700-Basic, but also with InLab® 731-ISM, guide to conductivity measurements and 2 calibration sachets for 1413 µS/cm and 12.88 mS/cm.
S700-Trace: As S700-Kit but with InLab® Trace instead of InLab® 731-ISM, with Flow-Cell and without calibration sachets.

Specifications	**Measuring range // Resolution // Accuracy**
Temperature MTC/ATC:	-30.0 to 130.0°C // 0.1°C // ±0.1°C
Conductivity:	0.001 to 999999 µS/cm // 0.001 to 1 // ±0.5%
	0.001 to 2000 mS/cm // 0.001 to 1 // ±0.5%
	0.001 to 200 S/m // 0.0001 to 1 // ±0.5%
	0.001 to 200000 mS/m // 0.0001 to 1 // ±0.5%
	0.1 to 999999 µS/m // 0.001 to 1 // ±0.5%
TDS:	0.001 to 1000 g/L , ppt // 0.001 to 1 // ±0.5%
	0.001 to 999999 mg/L , ppm // 0.001 to 1 // ±0.5%
Salinity:	0.01 to 80.0 psu , ppt // 0.01 to 0.1 // ±0.5%
Resistivity:	0.01 to 100.0 MΩxcm // 0.0001 to 1 // ±0.5%
	0.01 to 999999 Ωxcm // 0.01 to 1 // ±0.5%
Conductivity Ash:	0.000 to 2022% // 0.001 to 1 // ±0.5%

Type	PK	Cat. No.
S700-Basic	1	**9.704 354**
S700-Kit	1	**9.704 355**
S700-Trace	1	**9.704 356**

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9.704 081

Conductivity cell probes

WTW

TetraCon® 325 standard conductivity cell probe:
4-pole cell with integral temperature sensor. Cable length 1.5 metres. Measuring range: 1µS/cm to 2S/cm.

LR 325/01 ultra-pure water conductivity cell probe:
With integral temperature sensor and flowthrough vessel D 01/T for measuring very low conductivity ranges (<1 µS/cm) e.g. boiler feed water or deionised water. Cable length 1.5 metres. Min./max. insertion depth 35/110mm and flowthrough, measuring range: 0.001µS/cm to 200µS/cm.

4



9.704 078

TetraCon® DU/T conductivity flowthrough cell:
4-pole conductivity cell with integral temperature sensor for standard applications. Connection via 10mm diameter tubing nozzles (the adapter cable KKDU with 1 metre cable is required for connection). Filling volume 7ml. Measuring range: 1µS/cm to 1000mS/cm.

Type	Electrode	Shaft	Length mm	Cell constant	PK	Cat. No.
TetraCon® 325	Graphite	Epoxy resin	120	K =0,475	1	**9.704 081** 3
LR 325/01	V4A steel	V4A steel	121	K = 0.1	1	**9.704 083**
TetraCon® DU/T	Graphite	Epoxy resin	155	K approx. 0.8	1	**9.704 078** 4
KKDU 325	Connection cable	-	100	-	1	**9.704 079**

E & OE.

1 Conductivity measuring cell LF413TIDS

NEW!

For versatile applications. IDS® 4-pole cell, plastic shaft, 1.5m cable with digital plug, sensor material graphite, temperature sensor NTC 30 kOhm.

SI Analytics

Specifications

Temperature range: -5 to +80°C
Conductivity range: 1µS/cm to 2000mS/cm
Taper length/Dia.: 120mm/15.3mm

Type	Electrode	Shaft	Length mm	Cell constant	PK	Cat. No.
LF413TIDS	Graphite	Plastic	120	K=0.475	1	**6.265 636**

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Conductivity sensors for Mettler Toledo conductivity meters

NEW!

Mettler-Toledo Online

InLab® 731
4 graphite pole cell with integral temperature sensor. Cable length 1.2 metres.
Measuring range: 0.01 to 1000mS/cm.

InLab® 741
2 steel pole cell with integral temperature sensor. Cable length 1.2 metres. Measuring range: 0.001 to 500µS/cm

InLab® 710
4 platinum pole cell with integral temperature sensor. Cable length 1 metres. Measuring range: 0.01 to 500mS/cm

InLab® 720
2 platinum pole cell with integral temperature sensor. Cable length 1 metres. Measuring range: 0.1 to 500µS/cm

InLab® 751-4mm
2 platinum pole micro cell with integral temperature sensor. Cable length 1 meter.
Measuring Range: 0.01 to 100mS/cm

InLab® 752-6mm
2 platinum pole semi-micro cell with integral temperature sensor. Cable length 1 meter.
Measuring Range: 0.01 to 112mS/cm

2



9.041 443

Type	Material shaft	Shaft diameter mm	Length mm	Cell constant	PK	Cat. No.
InLab® 731	Graphite	12	120	K=0.57	1	**9.041 447**
InLab® 731-ISM	Graphite	12	120	K=0.57	1	**9.041 448**
InLab® 741	V4A steel	12	120	K=0.105	1	**6.242 844**
InLab® 741-ISM	V4A steel	12	120	K=0.105	1	**9.041 442**
InLab® 710	Glass	12	120	K=0.80	1	**9.041 443** 2
InLab® 720	Glass	12	120	K=0.06	1	**9.041 446**
InLab® 751-4mm	Glass	4	120	K=1.0	1	**9.041 475**
InLab® 752-6mm	Glass	6	120	K=1.0	1	**9.041 476**

3 LLG-Conductivity Solutions

NEW!

- Directly traceable to NIST
- ISO17025 Certificate including actual value, expiration date and uncertainty of measurement
- Actual expiry and temperature dependence data on label.
- All standards are aqueous based and non-hazardous.
- Supplied in unbreakable PE-HD bottle.
- Values stated at 25°C: Accuracy ±1%

3



Type	Capacity ml	PK	Cat. No.
84 µS/cm	500	1	**9.040 861**
147 µS/cm	500	1	**9.040 862**
1.413 µS/cm	500	1	**9.040 863**
12.880 µS/cm	500	1	**9.040 864**

4 Conductivity solutions for Conductivity meters

Bottle with 500ml.

Hanna

Type	PK	Cat. No.
12880 µS	1	**9.704 017**
1413 µS	1	**9.704 018**
84 µS	1	**9.773 992**
80.000 µS	1	**9.773 993**

4



1



1 Conductivity Solutions

NEW!

Reagecon

Conductivity standards, aqueous based and non-hazardous for handling and transport.
Tested and ISO17025 certified at 25°C with an uncertainty of measurement of ±1%.
Directly traceable to N.I.S.T. Temperature dependence data is printed on the label as are lot numbers and expiry dates.
Supplied in 500ml and HDPE bottle (1.3µS/cm single use in 250ml bottle)

Type	Capacity ml	PK	Cat. No.
1.3µS/cm*	250	1	**6.225 059**
5µS/cm	500	1	**6.901 629**
10µS/cm	500	1	**6.901 622**
20µS/cm	500	1	**6.802 901**
50µS/cm	500	1	**6.074 754**
84µS/cm	500	1	**9.040 904**
100µS/cm	500	1	**6.234 859**
147µS/cm	500	1	**9.040 905**
200µS/cm	500	1	**6.802 902**
500µS/cm	500	1	**6.205 415**
1000µS/cm	500	1	**6.901 670**
1413µS/cm	500	1	**9.040 906**
5000µS/cm	500	1	**6.205 412**
10000µS/cm	500	1	**6.901 671**
12880µS/cm	500	1	**9.040 907**
50000µS/cm	500	1	**6.210 129**
100000µS/cm	500	1	**6.205 413**
350000µS/cm	500	1	**9.040 987**

*Accuracy ±1%

Conductivity solutions with Certificate of Analysis

Bottles with 500ml. *Hanna*

Type	PK	Cat. No.
84 µS	1	**6.230 626**
1413 µS	1	**7.970 290**

2



2 Conductivity testing solutions

Values stated at 25°C. Supplied in containers as indicated. Accuracy ±2%. *SI Analytics*

Type	Capacity ml	PK	Cat. No.
147µS/cm*	17	18	**9.041 053**
12.9mS/cm*	17	18	**9.041 055**
1413µS/cm	250	1	**9.041 056**

* Supplied in vials!

3



3 Waterproof Oxygen Meter HI9146

Hanna

DO measurements can be displayed in ppm (mg/l) or in % saturation, together with temperature value. Automatic calibration in the air, at 100%. Automatic temperature compensation from 0 to 50°C. Instrument allows manual compensation of altitude and salinity. Hold-Function allows the user to "freeze" the reading on the LCD. Auto-off after 4 hours of inactivity, input for 12V d.c. adapter.

Waterproof Oxygen Meter supplied complete with Oxygen Probe, electrolyte solution for DO probe (30 ml), 2 membranes, 4 batteries and a hard carrying case.

Measuring range/Accuracy:

O_2 concentration:	0.00 to 45.00mg/l
	±1.5% of Measuring range
O_2 saturation:	0.0 to 300.0%
	±1.5% of Measuring range
Temperature:	0.0 to 50.0°C/±0.5°C

Resolution:

O_2 concentration:	0.01mg/l
O_2 saturation:	0.1%
Temperature:	0.1°C
Temperature compensation:	automatic from 0 to 50°C
Height compensation:	0 to 4km/resolution 0.1km
Salinity compensation:	0 to 80g/l/resolution 1g
Environment:	0 to 50°C
Dimensions:	196 x 80 x 60mm
Weight:	500g

Type	Description	PK	Cat. No.
HI 9146-04	incl. Oxygen Probe with 4m cable	1	**9.773 997**
HI 9146-10	incl. Oxygen Probe with 10m cable	1	**9.773 999**

E & OE.

1 Portable dissolved oxygen meter Oxi 3205

Robust and easy to use dissolved oxygen meter for standard alkaline, or rechargeable, batteries. *WTW*
Menu-controlled with backlit graphics display for ease of use under all lighting conditions. Suitable for use in harsh environments.

Measuring ranges:

O2 concentration:	0.00 to 20.0mg/l (19.9mg/l*)
	0.0 to 90.0mg/l (90mg/l*)
O2 saturation:	0.0 to 200.0% (200%*)
	0 to 600%
Temperature:	0.0 to +50°C, ±0.1°C
	* when using DurOx oxygen sensor probes

Accuracy:

O2 concentration:	±0.5% of reading
O2 saturation:	±0.5% of reading

Type	Description	PK	Cat. No.
Oxi 3205	meter only	1	**9.774 378**
Oxi 3205 Set 1	case set including DO sensor CellOx 325 and accessories	1	**9.774 340**
Oxi 3205 Set 2	case set including DO sensor CellOx 325 (3m) and accessories	1	**9.774 406**
Oxi 3205 Set 3	case set including DO sensor DurOx 325 (3m) and accessories	1	**9.774 343**

2 Portable dissolved oxygen meter Oxi 3210

Convenient and versatile dissolved oxygen meter. Menu controlled, with backlit, graphics display. Memory, including GLP supporting functions, temperature compensation, barometric pressure and salinity. Powered by standard alkaline, or rechargeable, batteries. *WTW*

Measuring ranges:

O2 concentration:	0.00 to 20.00mg/l (19.9mg/l*)
	0.0 to 90.0mg/l (90mg/l*)
O2 saturation:	0.0 to 200.0% (199%*)
	0 to 600%
Partial pressure:	0.0 to 200.0mbar (199 mbar*)
	0 to 1250mbar
Temperature:	0.0 to +50.0°C, ±0.1°C
	* when using DurOx oxygen sensor probes

Accuracy:

O2 concentration:	±0.5% of reading
O2 saturation:	±0.5% of reading
Partial pressure:	±0.5% of reading
Datalogger:	200 records (Reading, Temperature, Date, Time, ID)

Type	Description	PK	Cat. No.
Oxi 3210	meter only	1	**9.774 350**
Oxi 3210 Set 1	cased set including DO sensor CellOx 325 and accessories	1	**9.774 351**
Oxi 3210 Set 2	cased set including DO sensor CellOx 325 (3m) and accessories	1	**9.774 407**
Oxi 3210 Set 3	cased set including DO sensor DurOx 325 (3m) and accessories	1	**9.774 357**

1



2



StirrOx®, CellOx® and DurOx® electrodes please see page 331.

The new inoLab® series from WTW

The new inoLab® benchtops are perfectly designed for modern laboratory surroundings. *WTW*
The key pads are clearly outlined and easy-to-operate, their smooth surfaces are
easy-to-clean and the operation is self-explanatory. All meters include a universal power supply and a convenient stand with sensor support.
If desired they can be ordered in application oriented sets including sensors and accessories.

1



1 Oxygen meter inoLab® Oxi 7310

Reliable Documentation for dissolved oxygen measurement, if desired also available with built-in printer. This is the inoLab® Oxi 7310 or inoLab® Oxi 7310P. A modern backlit graphic display with menu controlled user interface allows easy and intuitive operation. *WTW*
The mini USB-B interface provides fast data transfer to a PC. The internal memory can record up to 5000 GLP complying data including ID, date and time. The housing and the keypad are easy-to-clean.
The inoLab® Oxi 7310 supports the long proven WTW galvanic sensors, CellOx® 325 and StirrOx® G.
A calibration history of the 10 last calibrations allows conclusions on the state of the sensor.
Calibrations versus external standards e.g. Winkler titration, are possible, too.
The meter includes automatic barometric pressure and temperature compensation. An integrated thermal printer (58 mm width) is ready for printout of the measured data (option). The scope of delivery includes meter, stand, power supply and USB cable.

Specifications

Ranges:	All values±1 digit
Dissolved oxygen concentration:	0.00 ... 20.00 mg/l ±0.5 % Mw.
	0 ... 90 mg/L ±0.5 %
Saturation:	0.0 ...200.0 % ±0.5 % v. Mw.
	0 ... 600 % ±0.5 v Mw.
Partial pressure:	0 ... 200.0 hPa, 0 ...1250 hPa
Temperature:	-5.0 ... 105.0°C ±0.1°C
Calibration:	1-point air calibration (water vapour saturated air) or versus external standard
Calibration memory:	Up to 10 calibrations recallable
Display:	Backlit graphic LCD
Memory:	manual 5/5000 automatic
Logger:	manual/time controlled
Interface	Mini USB-B
Power supply	Universal power supply, 100 to 240 V, 50/60 Hz, 4 x 1.5 V AA

Type	Description	PK	Cat. No.
Oxi 7310	Meter only including accessories	1	**9.920 108**
Oxi 7310 Set 1	Meter including CellOx® 325 and accessories	1	**9.920 109**
Oxi 7310 Set 4	Meter including StirrOx® G and accessories	1	**9.920 110**
Oxi 7310P	Meter including integrated printer	1	**9.920 111**
Oxi 7310P Set 1	Meter including integrated printer, incl. CellOx® 325 and accessories	1	**9.920 112**
Oxi 7310P Set 4	Meter including integrated printer, incl. StirrOx® G and accessories	1	**9.920 113**



E & OE.

1 Portable dissolved oxygen meter FiveGo™ DO

Mettler-Toledo Online

FiveGo™ DO is a handy, portable meter ideal for those who require rapid and reliable results on the go. This meter is suitable for a wide range of applications in various areas such as food and beverage, agriculture, industry, water and environment

- Outstanding functions such as storage capacity for 30 measurements, %, mg/L and ppm measuring modes plus IP54 ingress protection combined with features such as automatic endpoint recognition, calibration in air and automatic temperature compensation when a temperature sensor is connected
- Five self-explanatory buttons for starting and ending a measurement, for saving and accessing measurement results and for reviewing the latest calibration data.
- A big, well organised display simultaneously showing readings, temperature, endpoint criteria and various helpful icons

FG4-Basic: Dissolved oxygen meter incl. electrode clip, wrist strap, operating manual, "Quick guide", 4 x batteries
FG4-Kit: Instrument and accessories as for FG4-Basic, but with LE621 sensor, NTC 30 kΩ temperature sensor, IP54 connection caps
FG4-Fieldkit: Instrument and accessories as for FG4-Kit, with carry bag incl. 4 sample bottles

Measuring range (Accuracy) DO:	0.0 to 199.9% and 200 to 400% (±1%) 0.0 to 45.0mg/L (±1%) 0.0 to 45.0ppm (±1%)
Temperature:	0 to +50°C (±0.3%)
Salinity (Resolution):	0.0 to 50.0ppt (0.1ppt)
Barometic pressure (Resolution):	500 to 1100mbar (1mbar) 500 to 1100hPa (1hPa)
Calibration:	2 points, 100% and 0%
Input:	BNC, Cinch, NTC 30 kΩ
Temperature compensation:	ATC and MTC
Memory:	30 measurements
Power supply:	4 x AAA
Protection class acc. to DIN EN 60529:	IP 54

Type	PK	Cat. No.
FG4-Basic	1	**9.773 722**
FG4-Kit	1	**9.773 723**
FG4-Fieldkit	1	**9.773 724**

1



Dissolved oxygen meter Seven2Go™ S4

NEW!

Mettler-Toledo Online

Portable routine model for dissolved oxygen measurement

- New, intuitive menu structure with fast and easy T-Pad navigation
- Robust design with IP67 protection for use in harsh and demanding environments
- Intelligent Sensor Management (ISM®) functionality reduces the risk of errors
- Up to 2 calibration points and a choice of 2 predefined oxygen standards
- Automatic, manual and time dependant endpoint recording
- Data memory storage for 200 data points
- Power requirements: 4 x 1.5V AA or 1.3V NiMH accumulators

Supplied with:
S4-Meter: Includes instrument, electrode clip, operating instructions, quick guide, test certificate, declaration of conformity and batteries.
S4-Standard kit: As S4-Meter, but also with InLab 605-ISM and zero oxygen tablets.
S4-Field kit: As S4-Standard kit, but also with bottles for calibration, uGo™ carrying case.

Specifications

Measuring range (O_2 Saturation):	0.1 ... 600.0%
Resolution:	0.1
Accuracy:	±10%
Measuring range (Temperature):	0.0 ... 60.0°C
Resolution:	0.1°C
Accuracy:	±0.2°C
Measuring range (O_2 concentration):	0.01 ... 99.99mg/L (ppm)
Accuracy (display):	±0.2mg/L in range 0 ... 15mg/L ±10% in range 15 ... 60mg/L
Measuring range (Pressure):	500 ... 1100mbar
Resolution:	1
Accuracy:	±2%
Dimensions (WxDxH):	222 x 70 x 35mm

Type	PK	Cat. No.
S4-Meter	1	**6.265 251**
S4-Standard kit	1	**6.265 252** 2
S4-Field kit	1	**6.265 253**

2



6.265 252

1



6.265 264

Dissolved oxygen meter Seven2Go™ pro S9

NEW!

Portable professional model for dissolved oxygen measurement *Mettler-Toledo Online*

- New, intuitive menu structure with fast and easy T-Pad navigation
- Robust design with IP67 protection for use in harsh and demanding environments
- Intelligent Sensor Management (ISM®) functionality reduces the risk of errors
- New sunlight-proof screen guarantees screen readability even in direct sunlight
- New StatusLight gives a fast, visual confirmation showing if the meter is ready to measure or not
- Operating support for 12 languages with information shown in complete words and sentence
- Up to 2 calibration points and a choice of 2 predefined oxygen standards
- Automatic, manual and time dependant endpoint recording
- Data memory storage for 2000 GLP data points with weatherproof Micro-USB connection for data export
- Power requirements: 4 x 1.5V AA or 1.3V NiMH accumulators

Supplied with:
S9-Meter: Includes instrument, LabX direct pH, USB cable, electrode clip, base accessory, operating instructions, quick guide, test certificate, declaration of conformity and batteries.
S9-Standard kit: As S9-Meter, but also with InLab OptiOx and zero oxygen tablets.
S9-Field kit: As S9-Standard kit, but also with bottles for calibration, uGo™ carrying case and InLab OptiOx with protective guard.
S9-BOD kit: As S9-Field kit, but including InLab OptiOx (without protective guard), BOD adapter and BOD application note.

Specifications

DO Saturation	
Measuring range:	0.1 ... 500.0%
Resolution:	0.1
Accuracy:	±10%
Temperature	
Measuring range:	0.0 ... 50.0°C
Resolution:	0.1°C
Accuracy:	±0.1°C
Dissolved Oxygen	0.01 ... 50.00mg/L (ppm)
Measuring range:	0.01
Resolution:	
Accuracy:	±0.1mg/L in range 0 ... 8mg/L ±0.2mg/L in range 8 ... 20mg/L ±10% in range 20 ... 50mg/L
Pressure	
Measuring range:	500 ... 1100mbar
Resolution:	1
Accuracy:	±2%
Dimensions (WxDxH):	222 x 70 x 35mm

Type	PK	Cat. No.	
S9-Meter	1	**6.265 263**	
S9-Standard kit	1	**6.265 264**	1
S9-Field kit	1	**6.265 265**	
S9-BOD kit	1	**6.265 266**	



E & OE.

1 Accessories for Oxygen meters

StirrOx® G: *WTW*

For inoLab® Oxi 730, ProfiLine 197i/1970i, inoLab® 740 Oxi, inolab Oxi 7310
Self-stirring oxygen sensor.
- single-handed use
- high reproducibility
- ready for immediate use, no polarisation period necessary
- extremely low internal consumption of oxygen by the electrode
- no zero point calibration necessary
- OxiCal®-SL calibration and storage vessel included
- 6 months operation with one electrolyte filling
- IMT function compensation
- membrane leakage monitoring, damaged membranes are indicated.

Supplied with case, spare parts and maintenance solutions.

CellOx® 325:

For Oxi 3xx, Oxi 3xxi, ProfiLine Oxi 197, ProfiLine Oxi 197i, ProfiLine Multi 197i, Multi 340i, Oxi 3205, Oxi 3210, Oxi 3310, ProfiLine Oxi 1970i, ProfiLIne Multi 1970i, inoLab®
Membrane-covered, galvanic oxygen sensor.
- ready for immediate use, no polarisation period necessary
- IMT function compensation
- 6 months operation with one electrolyte filling
- stable zero point
- 1.5 metre cable and waterproof plug (to IP 67) (other cable lengths available on request)
- OxiCal®-SL calibration and storage vessel included

1



Type	PK	Cat. No.
StirrOx® G	1	**9.822 560**
CellOx® 325	1	**9.822 551**

2 Oxygen sensor DurOx® 325

For use with Oxi 3xxi, ProfiLine Oxi 1970i, ProfiLine 3205, 3210, 3310. *WTW*
Membrane-covered oxygen sensor with low flow requirement and removable cage guard, for field applications (fish farm revival pools) and for educational purposes.

- ready to measure - no polarisation time
- IMT compensation via two integral temperature sensors
- service life with one electrolyte filling approx. 6 months
- minimal flow requirement
- no zero current
- sensor is watertight (IP 68 - 2)
- standard with 3m cable and watertight plug
- standard with calibration/storage vessel OxiCal® -D
- standard with cage guard SK-D

2



Type	PK	Cat. No.
DurOx® 325	1	**9.920 045**

3 Dissolved oxygen electrode FDO1100IDS

NEW!

For versatile applications. IDS® optical oxygen sensor (photoluminescence), plastic shaft, temperature sensor NTC30kOhm, 1.5 m fixed cable with digital plug. *SI Analytics*

Specifications

Temperature range:	0 to +50°C
DO range:	0 to 20.00mg/l (0 to 20.00ppm)
Resolution:	0.01mg/l (0.01ppm)
DO saturation:	0 to 200.0%
Resolution:	0.1%
Taper length/Dia.:	150mm/15.3mm

3



Type	Temperature sensor	Connector	PK	Cat. No.
FDO1100IDS	NTC 30 kOhm	Digital	1	**6.265 629**

Electrolyte solution ELY/G for dissolved oxygen electrodes

NEW!

WTW

Capacity ml	PK	Cat. No.
50	1	**9.822 553**

BOD (Karlsruher) bottles - please see page 1144.

1



1 Combined pH/conductivity/temperature testers

NEW!

Hanna

Simultaneous display of pH- and/or conductivity measurement value and temperature. Automatic temperature compensation of pH- and/or conductivity measurement gives enhanced accuracy. User selection of temperature coefficient enables use in alkaline and acidic media. Easy calibration with pre-programmed pH and conductivity solution values. Integral, robust, carbon conductivity probe. Exchangeable pH electrode HI 73127. Model HI 98130 features a very wide measuring range of 0 to 19.99 mS

Measuring ranges:

pH:	0.0 to 14.0
EC:	0 to 3999µS (HI 98129)
	0 to 19.99mS (only HI 98130)
TDS:	0 to 2000mg/l (HI 98129)
°C:	0 to 10.00g/l (HI 98130)

Accuracy:

pH:	±0.05
EC/TDS:	±2% of the upper range value
°C:	±0.5
Batteries:	4 x 1.5 Volt
Ambient conditions:	
	0 to 50.0°C
Weight:	100g

Type	PK	Cat. No.
HI 98129	1	**9.773 995**
Spare electrode HI 73127	1	**9.773 921**
HI 98130	1	**9.773 996**

2



2 Waterproof Multimeters HI991300/HI991301 N

Hanna

pH or conductivity (TDS) values are displayed together with temperature. Supplied with multi-parameter probe, all measurements can be taken without changing the probe. Automatic temperature compensation ensures high accuracy of the measurements. Automatic calibration with pre-programmed pH buffer (pH 7.01, pH 4.01, pH 10.01) and conductivity solutions 1413µS (for HI 991300) or 12880µS (for HI 991301 N). Graphic symbols guide the user through calibration and measurements.

HI991300 and HI991301 are supplied complete with multi-parameter probe with 1metre cable, 4 x 1.5 Volt batteries, altogether in a carrying case.

Measurement range/Accuracy:

pH:	0.00 to 14.00/±0.01
EC:	0 to 3999µS/cm (HI991300)
	0 to 20.00mS (HI991301 N)/
	±2 % of the measurement range
TDS:	0 to 2000 mg/l (HI991300)
	0 to 10.00 g/l (HI991301 N)/
	±2 % of the measurement range
°C:	0.0 to 60.0

Resolution:

pH:	0.01
EC:	1µS/cm (HI991300)
	0.01mS/cm (HI991301 N)
TDS:	1mg/l (HI991300)
	0.01g/l (HI991301 N)
°C:	0.1°C
Batteries:	4 x 1.5 Volt AAA
Dimension:	145 x 80 x 36mm
Weight:	210g

Type	PK	Cat. No.
HI 991300	1	**6.231 448**
HI 991301 N	1	**6.241 705**
Spare probe HI 1288	1	**6.901 328**

E & OE.

1 2 Multiparameter meter edge

NEW!

Hanna

Features tablet meter edge:
- Single-channel instrument for measuring pH, conductivity and TDS
- thin and lightweight (approx. 280g only)
- large 140mm LCD display with clear full text readout capacitive touch screen
- ergonomic design, versatile, can be used as a benchtop docking station with electrode holder, as a portable meter or wall mounted (included in delivery)
- Rechargeable battery (about 8 hours of continuous use), battery charge via mains connection or USB cable, table station and wall mounting can also be used to charge the battery
- Integrated measured data storage for up to 1000 data records, manual storage or time-controlled by defining a storage interval
- Data transfer from device to PC via USB ports (no software needed)
- All electrodes are supplied with integrated temperature sensor and a 3.5mm plug with 1m cable

pH meter HI 2020-02:
- Sensor type, ID and calibration information are automatically recognized when connecting the electrode to the instrument
- GLP: data of last calibration (buffers, date, time, electrodes offset, slope) are stored and can be checked at any time
- Calibration time out warns the user when set calibration time has been exceeded
- Instrument can be used in Basic or Standard mode: Basic mode ideally for routine measurements for a simplified screen and features. In Basic mode, resolution is 0.01 pH, calibration can be performed automatically at 1, 2, 3 points with pre-programmed buffer series (pH 4.01; 6.86; 7.01; 9.18; 10.01). The standard mode offers additional features. In Standard mode the resolution can be selected between 0.01 pH and 0.001 pH, calibration can be performed automatically at 3, 4 ,5 points with 7 standard buffers and 2 custom buffers for special applications.
- Calibration Check Funktion (pH electrode only): controlling of calibration process, displays electrode status after calibration

Conductivity meter HI 2030-02:
- Conductivity or TDS and temperature are displayed simultaneously
- Auto ranging or manual range selection
- Automatic Temperature compensation, or no temperature compensation for measurement of absolute EC
- Selectable reference temperature (20 or 25°C), adjustable temperature correction coefficient
- 1 point offset calibration, 1 point slope in EC standards (84µS; 1413µS; 12.88mS)

pH Kit supplied with: instrument incl. electrode HI 11310, buffer solution pH 4, pH 7 and pH 10 (2 sachets each), cleaning solution for electrodes, bench top docking station with electrode holder, wall mounting, USB cable, 5 V adapter

Conductivity Kit supplied with: instrument incl. digital 4-Ring conductivity probe HI 763100, conductivity solution 1413 µS/cm and 12880µS/cm (3 sachets each), bench top docking station with electrode holder, wall mounting, USB cable, 5 V adapter

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2



Specifications	**Measuring range // Resolution // Accuracy**
pH:	2.00 to 16.00 // 0.01 // ±0.01/±0.002 -2.000 to 16.000 // 0.001 // ±0.01/±0.002
Conductivity:	0.00µS to 200.0mS/cm // 0.01µS to 0.1mS (depending on measuring range) // ±1% of measured value ±1 digit 0.00µS to 500.0mS/cm (absolute conductivity) // 0.01µS to 0.1mS (depending on measuring range) // ±1% of measured value ±1 digit
TDS:	0.00 to 100.00g/l // 0.01mg/l to 0.1g/l (depending on measuring range) // ±1% of measured value ±1 digit 0.00 to 400.0g/l (absolute TDS) // 0.01mg/l to 0.1g/l (depending on measuring range) // ±1% of measured value ±1 digit
Temperature:	-20.0 to +120.0°C // 0.1°C // ±0.2°C

Type	Description	PK	Cat. No.
HI 2020-02	pH meter edge, kit with pH electrode and accessories	1	**6.261 874**
HI 2030-02	Conductivity meter edge, kit with conductivity probe and accessories	1	**6.261 875**
HI 11310	Refillable pH electrode, glass body, ceramic diaphragm, double junction	1	**6.261 876**
HI 11311	Refillable pH electrode, matching pin, glass body, ceramic diaphragm, double junction	1	**6.261 877**
HI 12301	pH electrode, matching pin, gel-filled, plastic body, double junction	1	**6.261 878**
HI 10530	Refillable pH electrode, conical tip, glass body, triple diaphragm, single junction	1	**6.261 879**
HI 12300	pH electrode, gel-filled, plastic body, double junction	1	**6.261 880**
HI 10430	Refillable pH electrode, glass body, ceramic diaphragm, double junction	1	**6.261 881**
HI 763100	Digital 4-ring-conductivity probe	1	**6.261 882**

1



9.773 857

Multiparametermeters ProLab 3000/ProLab 4000

SI Analytics

- "Windows" interface and operation
- In ISE measuring mode controll of Titronic® burettes for dosing of TISAB, standards or sample.
- Flexible display of measuring values on a high resolution, bright, backlit, colour-graphics display (320x240 pixels)
- 2-channel pH/mV (galvanically isolated) inputs and dU differential measurement
- ID electrodes with automatic identification and data exchange or allocation with the meter
- Automatic user identification with electronic identity card including password entry
- Recorder functions: display of measurement against time, scalable coordinate axis
- Numerical display of measurement value via mouse click (time, data, measurement value, temperature)
- Interfaces: RS232C interface (bi-directional), USB connection (slave, bi-directional), USB master connection with direct connection (without configuration) to: USB-hub, USB-printer, USB-memory, keyboard, mouse, USB-stick

Specifications

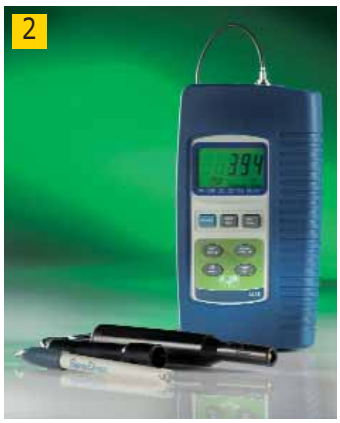
pH measuring range:	-2.000 pH to +20.000pH
	-2.00 pH to +20.00pH
	-2.0 pH to +20.0pH
Accuracy (±1digit):	±0.002
	±0.01
mV measuring range:	-2200.0mV to +2200.0mV;
	-2200mV to +2200mV
Accuracy (±1digit)	±0.1mV
	±1mV
ISE measuring range:	$1.0E^{-40}$ to $9.9E^{39}$ mg/l
Temperature measuring range:	-35.0°C to + 150.0°C
Accuracy (±1digit):	0.1°C

ProLab 4000 only:

Conductivity measuring range:	0.000µS/cm to 2000mS/cm
Accuracy (±1digit):	0.5% from measurment value at an ambient temperature of 5°C to 30°C

Type	PK	Cat. No.
ProLab 3000 DIN Set	1	**9.773 857** 1
ProLab 3000 BNC Set	1	**9.773 859**
ProLab 4000 DIN Set	1	**9.773 861**
ProLab 4000 BNC Set	1	**9.773 863**

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2 Multiparameter meters AL15

AQUALYTIC

Dissolved Oxygen/O2-concentraion in mg/l/Conductivity/TDS/pH/Redox/Temperature
The AL15 combines the features of several electrochemistry meters. It is designed for multi purpose operation and measures pH/Redox, dissolved oxygen and conductivity/TDS. The AL15 incorporates an intuitive user interface, large, easy to read display and is supplied with a sturdy handy case with electrodes, buffer solution and accessories.

Specifications
Measuring range

pH:	0 - 14pH
ORP:	-1999 to +1999mV
Conductivity:	0 to 200.0µS
	0.2 to 2.000mS
	2 to 200.0mS
TDS:	0 to 132.000 ppm
Temperature:	0 to +60°C or +32 to +140°F
Oxygen:	0 to 20.0mg/l
	0 to 100.0% in Air
Display:	Large LCD with contrast adjustment
Interface:	USB, RS232
Power supply:	DC 1.5V battery (UM3, AA) x 4 PCs or DC 9V Adapter

Type	PK	Cat. No.
AL15 pH/Con/Oxi	1	**6.241 474**
AL15 pH/Con	1	**6.241 983**
AL15 pH/Oxi	1	**6.256 805**
AL15 pH/Redox	1	**9.699 295**

LLG LABWARE

Good quality! Great value!



www.llg-labware.com

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1 Multi parameter HandyLab 680

NEW!

SI Analytics

The HandyLab 680 increases the measuring accuracy via:
- IDS technology. The digitalization of the measuring signal eliminates interferences.
- AutoRead function. Autoread provides a stable, precise measuring value.
- CMC (Continuous Measurement Control) visualizes whether the measuring value is within the calibration range.
- QSC (Quality Sensor Control) informs about the actual condition of the electrode and therefore increases operation safety.

The HandyLab 680 increases the operator comfort via:
- IDS Technology. The secure allocation of the calibration data to the sensor eliminates any uncertainty about the date and results of its last calibration. This saves time and money while assuring the highest confidence in your measurements.
- Traceability of the measuring values by the digital and automatic capture of all sensor data.
- User administration can be activated to allow tiered access and capabilities ensuring security and confidence of your data.
- Transmission of all data in *.csv format via USB interface to the PC or the USB memory stick, or, as an alternative, formatted transfer to Excel by means of MultiLabImporter (included in the delivery).

Supplied with:
HL680pH/CondVersat: pH/Cond meter Set HandyLab 680 with conductivity electrode LF413T IDS, pHTelectrode A7780 IDS, Z530 and Z389 for generall applications
HL680pH/Cond/OxVer: pH/Cond/OX meter Set HandyLab 680 with oxygen electrode FDO1100 IDS, conductivity electrode LF413T IDS, pHT electrode A7780 IDS, Z530 and Z389 for generall applications

Specifications

pH	
Measuring range:	0.000 ... 14.000pH
Resolution:	±0.001pH
Accuracy:	±0.004pH
mV	
Measuring range:	±1200.0 mV
Resolution:	±0.1mV
Accuracy:	±0.2mV
Temperature	
Measuring range:	-5.0 ... +105.0°C
Resolution:	±0.1°C
Accuracy:	±0.2°C
Conductivity	
Measuring range:	0.00 ... 2000mS/cm
Resolution:	±0.1mS/cm, ±0.01S/cm, ±0.001µS/cm
Accuracy:	±0.5% of mean value
Specific resistance:	0.00 Ωcm ... 100 MΩcm ±0.5% of mean value
Salinity:	0.0 ... 70.0 (acc. to IOT)
TDS:	0 ... 1999 mg/l, 0 ... 199.9g/l ±0.5% of mean value
Oxygen measurement	
DO concentration:	0.00 ... 20.00mg/l ±0.5% of mean value
DO saturation:	0.0 ...200.0 % ±0.5% of mean value
DO partial pressure:	0 ... 400 hPa ±0.5% of mean value

Type	PK	Cat. No.
HL680pH/CondVersat	1	**6.265 601**
HL680pH/Cond/OxVer	1	**6.265 299**

E & OE.

1 Multiparameter meter HandyLab 780

NEW!

Portable pH measuring devices by SI Analytics with Memosens® technology offers increased safety and a userfriendly interface *SI Analytics*

- With Memosens® sensor measurement of pH, conductivity and dissolved oxygen by simple sensor exchange
- Automatic detection of the measuring parameter with Memosens® sensors
- Automatic compensation of the ambient pressure for oxygen measurement
- Storage of up to 10.000 data points
- Micro-USB connection to communicate with the HandyLab Pilot software for evaluation of data from digital Memosens® sensors. HandyLab Pilot software (included with delivery), allows for easy management and evaluation of stored data and can be used for device configuration.
- Contrast-rich and scratch-resistant clear glass display
- Self-explanatory operation with extensive information and help text
- Display of the sensor status at one glance with Sensoface
- Calibration of up to 3 points with automatic buffer detection
- Manual calibration by indicating random buffer values
- Real-time clock and display of battery charging status
- Extended operating time of more than 1.000 hours with standard batteries (4 x AA) or Li-Ion accumulators, even with very high or low operating temperatures. The batteries are charged via the USB interface.

Supplied with: Set pH-Meter HandyLab 780 incl. AquaLine 90pH, SKK K1A and DIN buffer solutions in ampoules

Specifications

pH measurement Memosens (also ISFET)	
Measuring range:	-2.000 ... +16.000pH
mV measurement Memosens Redox	
Messbereich:	-2000 ... +2000mV
pH/mV measurement (analog)	
pH measurement measuring range:	-2 ...16pH
mV measurement measuring range:	-1300 ... +1300mV
Temperature measurement	
Measuring range with sensor NTC 30kOhm:	-20 ... +120°C
Measuring range with sensor Pt 1000:	-40 ... +250°C
Conductivity measurement (only Memosens®)	
Measuring range:	0.001 µS/cm (c < 0.05 cm^{-1}) 0.01µS/cm (c = 0.05 ... 0.2cm^{-1}) 0.1µS/cm (c > 0.2cm^{-1})
Specific resistance:	00.00 ... 99.99MΩcm
Salinity:	0.0 ... 45.0g/kg (0 ... 30°C)
TDS:	0 ... 1999mg/l (10 ... 40°C)
Oxygen measurement (only Memosens®)	
DO concentration:	000 µg/l ... 20.00 mg/l
DO saturation:	0.000 ...200.0 %
DO partial pressure:	0.0 ... 1000mbar

Type	PK	Cat. No.
HL780AL90pH	1	**6.266 647**

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1 2 3 4 MultiLine® IDS

WTW

Multiparameter measurement new defined. The new MultiLine® handhelds with intelligent digital IDS sensors are perfectly suited for all multiparameter applications. The biggest advantage - signals are directly processed in the sensor. Each sensor logs onto the instrument and transfers its ID data including calibration records. There is no danger of confusion, the digital signal transfer allows the use of long cables for all parameters. The unique QSC functionality for IDS pH sensors gives a realistic rating of the current sensor condition. The pH CMC indicates the optimum pH measuring range. A wide range of IDS pH, conductivity and DO probes covers almost any application. Universal waterproof quick-locks secure the sensor against loss. The robust and waterproof (IP67) MultiLine® handhelds are equipped with a colour graphic display for optimum information. A special silicone keypad provides excellent handling comfort.
Two USB host interfaces are provided for data transfer to USB sticks or the user's PC. The latest software updates are provided via the internet.
NiMH-rechargeable batteries provide an energy-efficient operation. Available as field case sets including sensors and accessories.

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MultiLine®

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5 6 Multiparameter meters, ProfiLine Multi 3410/3420/3430

There are 3 different models available:

Multi 3410: A single channel meter for pH, ORP, conductivity and DO measurement. It is particularly aimed at those users measuring one parameter but occasionally having requirements for measuring a second or third.

Multi 3420: A dual channel instrument for simultaneous measurement of two equal or different parameters

Multi 3430: A triple channel instrument for simultaneous measurement of up to three equal or different parameters

Selected IDS-Sensors:

SenTix® 940: Low maintenance combined pH electrode with ATC, QSC suitable, memory for 10 calibrations, stored serial number, pH 0.000 to 14.000 (±0.004pH), temperature range 0.0 to 80.0°C, ±0.2°C

SensoLyt® 900: Low maintenance polymer electrolyte pH electrode with built-in temperature sensor, pressure resistant up to 10 bar, QSC suitable, memory for 10 calibrations, saved serial number, pH 2.000 to 12.000 (±0.004pH), temperature range from 0.0 to 60.0°C, ±0.2°C

SenTix® 950: Combined pH-electrode with plastic shaft, 3 mol/l KCl, ATC, QSC-suitable, memory for 10 calibrations, stored serial number, pH 0.000 to 14.000 (±0.004pH), temperature range 0.0 to 80.0°C, ±0.2°C

SenTix® 980: Combined pH-electrode with plastic shaft, 3 mol/l KCl, ATC, platinum wire junction, QSC-suitable, memory for 10 calibrations, stored serial number, pH 0.000 to 14.000 (±0.004pH), temperature range 0.0 to 100.0°C, ±0.2°C

TetraCon® 925: Robust, general purpose 4-electrode conductivity cell with graphite electrodes incorporating integral temperature sensor. Memory for 10 calibrations, stored serial number, measuring range 10 µS/cm to 2000 mS/cm ±0.5% of value, 0.0 to 100.0°C, ±0.2°C

LR 925/01: 2-electrode stainless steel conductivity cell for low conductivities, integrated temperature sensor, flow through vessel, memory for 10 calibrations, stored serial number, measuring range 0.01 µS/cm to 200µS/cm ±0.5% of value, 0.0 to 100.0°C, ±0.2°C

FDO® 925: Extremely fast (T99< 60 s) and precise optical DO sensor for field and laboratory applications. Handy, suits in different BOD bottles. Waterproof for depth measurement to 100m. Bevelled, air bubble repelling membrane, Green light technology for extended operation time. Insensitive against H_2S. O_2 concentration: 0.00 to 20.00mg/l, O_2 saturation: 0.0 to 200.0% O_2 partial pressure: 0.0 to 400hPa. Accuracy: ±0.5% of value.
The information for meter precision refers to the sensors' built-in, electronic, measuring technology.

Multiparameter meters, ProfiLine Multi 3410/3420/3430

WTW

Measurement ranges

pH:	-2.000 to 20.000
mV:	-2.00 to +20.00 ±2500, ±1250

Oxygen measurement

O2 concentration:	0.00 to 20.00 mg/l
O2 saturation:	0.0 to 200.0%
O2 partial pressure:	0.0 to 400%
Conductivity measurement:	0.0mS/cm to 2000mS/cm in 5 mode 0.00µS/cm to 19.99µS/cm (at K=0.1cm-1) 0.000µS/cm to 2.000µS/cm (at K=0.01cm-1)
Temp.:	-5.0°C to +105°C
Memory:	manual or time controlled logger, 10000 records
Power supply:	4 x 1.2V NiMH, A-Type, battery charger

Type	Description	PK	Cat. No.
Multi 3410	meter only	1	**9.920 051**
Multi 3410 Set 1	incl. SenTix®940	1	**9.920 052**
Multi 3410 Set 2	incl. SenTix®940-3	1	**9.920 053**
Multi 3410 Set 3	incl. SensoLyt®900-P incl. 6m cable	1	**9.920 054**
Multi 3410 Set 4	incl. FDO® 925	1	**9.920 055**
Multi 3410 Set 5	incl. FDO® 925-3 m	1	**9.920 046**
Multi 3410 Set 6	incl. FDO® 925-P incl. 6m cable	1	**9.920 056**
Multi 3410 Set 7	incl. TetraCon® 925	1	**9.920 057**
Multi 3410 Set 8	incl. TetraCon® 925-3	1	**9.920 058**
Multi 3410 Set 9	incl. TetraCon® 925-6	1	**9.920 059**
Multi 3410 Set A	incl. LR 925/01	1	**9.920 060**
Multi 3410 Set B	incl. SenTix® 940-3, FDO® 925-3	1	**9.920 061**
Multi 3410 Set C	incl. SenTix® 940, TetraCon® 925	1	**9.920 062**
Multi 3410 Set D	incl. SenTix® 940-3, TetraCon® 925-3	1	**9.920 063**
Multi 3410 Set E	incl. SenTix® 980, LR 925/01	1	**9.920 047** 1
Multi 3420	meter only	1	**9.920 064**
Multi 3420 Set B	incl. SenTix® 940-3, FDO 925-3	1	**9.920 065**
Multi 3420 Set C	incl. SenTix® 940, TetraCon® 925	1	**9.920 066**
Multi 3420 Set D	incl. SenTix® 940-3, TetraCon® 925-3	1	**9.920 067**
Multi 3420 Set E	incl. SenTix®980, LR 925/01	1	**9.920 068**
Multi 3420 Set H	incl. SenTix® 950, TetraCon® 925	1	**9.920 048** 2
Multi 3420 Set G	incl. SenTix® 940-3, FDO® 925-3,TetraCon® 925-3	1	**9.920 049**
Multi 3430	meter only	1	**9.920 069**
Multi 3430 Set C	incl. SenTix®940, TetraCon® 925	1	**9.920 070**
Multi 3430 Set D	incl. SenTix®940-3, TetraCon® 925-3	1	**9.920 071**
Multi 3430 Set E	incl. SenTix®980, LR 925/01	1	**9.920 072**
Multi 3430 Set F	incl. SenTix®940, FDO 925, TetraCon® 925	1	**9.920 073**
Multi 3430 Set G	incl. SenTix® 940-3,FDO® 925-3, TetraCon® 925-3	1	**9.920 050** 3
Multi 3430 Set K	incl. SenTix® 980, FDO® 925, TetraCon® 925	1	**6.241 477**

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9.920 047

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9.920 048

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9.920 050

The new inoLab® series from WTW

The new inoLab® benchtops are perfectly designed for modern laboratory surroundings.The key pads are clearly outlined and easy-to-operate, their smooth surfaces are easy-to-clean and the operation is self-explanatory. All meters include a universal power supply and a convenient stand with sensor support.
If desired they can be ordered in application oriented sets including sensors and accessories. *WTW*

1 2 Laboratory instrument inoLab® Multi 9310 IDS pH

The Multi 9310 IDS features a new technology: No longer is the meter determining the parameter but only the sensor. Intelligent, digital IDS sensors promotes the inoLab® Multi 9310 IDS to a perfect all-rounder. The universal digital input is ready for all available laboratory IDS sensors. No matter whether pH, conductivity or dissolved oxygen, when plugged into a suitable sensor the inoLab® Multi 9310 becomes either a pH, conductivity or dissolved oxygen meter. Of course it has a modern backlit graphic display with menu-controlled user interface for easy and intuitive operation. The mini USB-B interface provides fast data transfer to a PC. The internal memory can record up to 5000 GLP complying data including ID, date and time. The housing and the keypad are easy-to-clean. An integrated thermal printer (58mm width) is ready for printout of the measured data (option). Includes meter, power supply, stand and USB cable. *WTW*

Specifications

Display:	backlit graphic LCD
Memory:	manual: 500/automatic: 5000
Logger:	manual/time controlled
Interface:	Mini USB-B
Power supply:	Universal power supply, 100 to 240 V, 50/60 Hz, 4 x 1.5 V AA or 4 x 1.2 V NiMH

Type	Description	PK	Cat. No.
Multi 9310	Single instrument	1	**9.920 120**
Multi 9310 Set 1	Incl. SenTix® 940	1	**9.920 121**
Multi 9310 Set 2	Incl. SenTix® 980	1	**9.920 122**
Multi 9310 Set 3	Incl. TetraCon®925	1	**9.920 123**
Multi 9310 Set 4	Incl. FDO® 925	1	**9.920 124**
Multi 9310 Set C	Incl. SenTix® 940, TetraCon® 925	1	**9.920 125**
Multi 9310 Set K	Incl. SenTix® 980, FDO® 925 and TetraCon® 925	1	**9.920 126**
Multi 9310P*	Single instrument	1	**9.920 127**
Multi 9310P Set 1*	Incl. SenTix® 940	1	**9.920 128**
Multi 9310P Set 2*	Incl. SenTix® 980	1	**9.920 129**
Multi 9310P Set 3*	Incl. TetraCon®925	1	**9.920 130**
Multi 9310P Set 4*	Incl. FDO® 925	1	**9.920 131**
Multi 9310P Set C*	Incl. SenTix® 940, TetraCon® 925	1	**9.920 132**
Multi 9310P Set K*	Incl. SenTix® 980, FDO® 925 and TetraCon® 925	1	**9.920 133**

*Meter with integrated printer

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E & OE.

Laboratory instruments inoLab® Multi 9420 IDS/9430 IDS

Securely traceable with the cutting edge inoLab® Multi 9430 IDS and inoLab® Multi 9420 IDS *WTW*

- Secure measurement data
- Digital sensor recognition
- Complete documentation

High-tech made by WTW for challenging applications. Two digital inoLab® multi parameter instruments for IDS sensors for simultaneous measurement of equal or different parameters and sensors. Two (inoLab® Multi 9420 IDS) or three sensors (inoLab Multi 9430 IDS) could be connected. A large color graphic display protected by a glass plate supports the representation of readings and information, The anti-bacterial keypad minimizes the danger of microbiological contaminations. The robust lower case made of zinc diecast provides proper stand and perfect shielding against interferences. A high quality stand for alternative left or right mounting allows easy adaptation to the requirements at the working place. By end of 2013 firmware packages for ISE applications will be available.

Secure measurements
- Digital data transfer eliminates interferences, provide secure calibration data and makes documentation of sensor data easy.
- The smart sensor rating (QSC) gives information about the true condition of an IDS pH electrode and increases safety of operation
- The CMC function for pH visualizes the optimum measuring range and supports correct measurements.
- Visual display for the channel in order to provide correct allocation of channel and sensor.

Documentation according GLP/AQA
- Automatic digital recording of all sensor data for distinct documentation
- Optional user administration for clear allocation of user and measurement results
- Transfer of data as *.csv format via USB to PC, if desired transfer direct to Excel (MultiLab Importer, part of scope of delivery or as download from internet)
- Additional transfer to USB memory drive or selected printer

Compatible to conventional pH measurement
- pH module (accessory) capable of being integrated for pH, ISE and ORP electrodes with DIN or BNC plug and 4 mm banana plug. For temperature sensor.

Specifications

Measuring channels	
inoLab® Multi 9420 IDS:	2
inoLab® Multi 9430 IDS:	3
Display:	Color graphic, glass plate protected
Memory:	manual: 500/automatic: 10000
Logger:	manual/time controlled
Interface:	USB-A, Mini USB-B
Power supply:	Universal power supply, 100 to 240 V, 50/60 Hz

Type	Description	PK	Cat. No.
Multi 9420	Single instrument	1	**6.257 359** 1
Multi 9420 Set C	Incl. SenTix® 980 and TetraCon® 925	1	**7.656 860**
Multi 9430	Single instrument	1	**9.920 134** 2
Multi 9430 Set C	Incl. SenTix® 980 and TetraCon® 925	1	**6.254 755**

Separate IDS electrodes available on request.

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6.257 359

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9.920 134

1 2 pH/Ion meter SevenExcellence™ S500

Mettler-Toledo Online

Modular professional system for measurements of pH, redox potential, conductivity, salinity/TDS and ion concentration. Fits up to three modules in any composition and order, can be expanded with additional measurement parameters at any time.

- Large, high resolution 7" colour touch display (capacitive), very clear and easy to operate
- Modularity and flexibility; up to 3 measuring modules can work in parallel, expansion to 2 or 3 channels possible
- Universal communication via 2 x USB, Ethernet (LAN) and RS232
- Plain text user interface in 10 languages with menu guidance in full sentences
- OneClick™ operation concept to quickly start frequently used functions and preferred methods
- Storage for user methods
- Highest security and GxP support (ID protection, sophisticated user management, limits/alarms, integrated radio clock, etc.)
- Intelligent sensor management (ISM®)
- Connection of stirrer, sample changer, PC, barcode reader, keyboard, local or network printer possible
- Storage up to 20000 data sets (measurements, calibrations, methods)
- 17 predefined and 60 user-defined methods
- 12 most commonly used ion types pre-programmed for convenience
- 5 point calibration (pH), 8 pre-defined and 20 user-defined buffer groups, incl. temperature chart
- uPlace™ electrode arm with perfect vertical movement
- Compatible with all METTLER TOLEDO electrodes (Recommended: ISM® electrodes)
- Capable of ion concentration measurements using a suitable Ion Selective Electrode
- Methods included for the most common incremental ion measurement techniques

S500-Basic: Includes instrument, 1 x pH/Ion expansion unit, 2 x blank expansion units, uPlace™ electrode holder, semi-transparent cover, operating instructions, installation and quick guide, LabX® direct pH PC software, declaration of conformity and test certificate.
S500-Kit: As S500-Basic, but also with InLab® Expert Pro-ISM, guide to pH measurements and 2 buffer sachetsfor pH 4.01, 7.00, 9.21 and 10.00.
S500-Bio: As S500-Kit but with InLab® Routine Pro-ISM cable kit instead of InLab® Expert Pro-ISM.
S500-F: As S500-Kit but with PerfectION™ Fluoride instead of InLab® Expert Pro-ISM.

Specifications	**Measuring range // Resolution // Accuracy**
Temperature MTC/ATC:	-30.0 to 130.0°C // 0.1°C // ±0.1°C
pH:	-2.000 to 20.000 // 0.001/0.01/0.1 // ±0.002
mV:	-2000.0 to 2000.0 // 0.1/1 // ±0.1
Rel. mV:	-2000.0 to 2000.0 // 0.1/1 // ±0.1
Ion concentration:	0 to 999 999 mg/L, ppm // 0.001to 1 // ±0.5%
	0 to 100 mol/L, % // 0.0001 to 1 // ±0.5%
	0 to 100 000 mmol/L // 0.001 to 1 // ±0.5%
	-2 to 20 pX // 0.001 to 1 // ±0.5%

Type	PK	Cat. No.
S500-Basic	1	**9.704 357**
S500-Kit	1	**9.704 358**
S500-Bio	1	**9.704 359**
S500-F	1	**9.704 360**

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E & OE.

1 2 pH/mV, pH/Ion, Conductivity meter, SevenExcellence™ S475

Mettler-Toledo Online

Modular professional system for measurements of pH, redox potential, conductivity, salinity/TDS and ion concentration. Fits up to three modules in any composition and order, can be expanded with additional measurement parameters at any time.

- Large, high resolution 7" colour touch display (capacitive), very clear and easy to operate
- Modularity and flexibility; up to 3 measuring modules can work in parallel
- Universal communication via 2 x USB, Ethernet (LAN) and RS232
- Plain text user interface in 10 languages with menu guidance in full sentences
- OneClick™ operation concept to quickly start frequently used functions and preferred methods
- Storage for user methods
- Highest security and GxP support (ID protection, sophisticated user management, limits/alarms, integrated radio clock, etc.)
- Intelligent sensor management (ISM®)
- Connection of stirrer, sample changer, PC, barcode reader, keyboard, local or network printer possible
- Storage up to 20000 data sets (measurements, calibrations, methods)
- 17 predefined, 60 user-defined methods
- 5 point calibration (pH), 13 pre-defined and 20 user-defined buffer groups, incl. temperature chart
- uPlace™ electrode arm with perfect vertical movement
- Compatible with all METTLER TOLEDO electrodes (Recommended: ISM® electrodes)
- Measurement of the ion concentration with the corresponding electrode

S475-Basic: Includes 1 x pH/Ion expansion unit, 1 x pH/mV expansion unit, 1 x conductivity expansion unit, uPlace™ electrode holder, semi-transparent cover, operating instructions, installation and quick guide, LabX® direct pH PC software, declaration of conformity and test certificate.

Specifications	**Measuring range // Resolution // Accuracy**
Temperature range MTC/ATC:	-30.0 to 130.0°C // 0.1°C // ±0.1°C
pH:	-2.000 to 20.000 // 0.001/0.01/0.1 // ±0.002
mV:	-2000.0 to 2000.0 // 0.1/1 // ±0.1
Rel. mV:	-2000.0 to 2000.0 // 0.1/1 // ±0.1
ISFET pH:	0.000 to 14.000 // 0.001/0.01/0.1 // ±0.05
Ion concentration:	0 to 999 999 mg/L, ppm // 0.001to 1 // ±0.5%
	0 to 100 mol/L, % // 0.0001 to 1 // ±0.5%
	0 to 100 000 mmol/L // 0.001 to 1 // ±0.5%
	-2 to 20 pX // 0.001 to 1 // ±0.5%
Conductivity:	0.001 to 999999 µS/cm // 0.001 to 1 // ±0.5%
	0.001 to 2000 mS/cm // 0.001 to 1 // ±0.5%
	0.001 to 200 S/m // 0.0001 to 1 // ±0.5%
	0.001 to 200000 mS/m // 0.0001 to 1 // ±0.5%
	0.1 to 999999 µS/m // 0.001 to 1 // ±0.5%
TDS:	0.001 to 1000 g/L , ppt // 0.001 to 1 // ±0.5%
	0.001 to 999999 mg/L , ppm // 0.001 to 1 // ±0.5%
Salinity:	0.01 to 80.0 psu , ppt // 0.01 to 0.1 // ±0.5%
Resistivity:	0.01 to 100.0 MΩxcm // 0.0001 to 1 // ±0.5%
	0.01 to 999999 Ωxcm // 0.01 to 1 // ±0.5%
Conductivity Ash:	0.000 to 2022% // 0.001 to 1 // ±0.5%

Type	PK	Cat. No.
S475	1	**9.704 364**

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7.633 920

Hanging Scales HDB-N

NEW!

Convenient for hanging loads. *Kern & Sohn*

- Ideal for quick checking in goods receiving and shipping, also suitable for cases.
- Data hold function: For easy reading of the weight, the display can be "frozen" in different ways. Either automatically when the weighing value remains unchanged or manually by pressing the Hold key
- Hook (stainless steel), can be hinged
- Batteries included, 2 x 1.5 V AAA, operating time approx. 180 h, AUTOOFF function to preserve the battery (can be switched off)

Type	Capacity kg	Readability g	Weight g	Dimensions (W x D x H) mm	PK	Cat. No.
HDB 5K5N	5	5	150	70 x 25 x 105	1	**6.231 173**
HDB 10K10N	10	10	150	70 x 25 x 105	1	**7.633 920** 1

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2 Hanging Scale HCB

NEW!

The handy scales for higher loads. *Kern & Sohn*

- Ideal for quick checking in goods receiving and shipping
- Data hold function: For easy reading of the weight, the display can be "frozen" in different ways. Either automatically when the weighing value remains unchanged or manually by pressing the Hold key
- Peak load display (peak hold), measuring frequency 5 Hz
- LCD display, digit height 12 mm
- Ready for use: 3 x 1.5 V AA standard, operating time approx. 300 h

Dimensions (WxDxH): 80 x 45 x 150mm
Weight: 400g

Type	Capacity kg	Readability g	PK	Cat. No.
HCB 20K10	20	10	1	**6.206 835**
HCB 50K20	50	20	1	**6.225 876**
HCB 50K100	50	100	1	**7.616 709**
HCB 100K200	100	200	1	**7.650 037**
HCB 200K100	200	100	1	**6.230 356**
HCB 200K500	200	500	1	**6.201 752**

3



3 Pocket Balances Type JE

Simple, compact and handy. Ideal for precise weighing in the field. *OHAUS*

- Automatic calibration, using external weight
- Large, high-contrast, liquid crystal display with back light
- Robust plastic housing
- Auto-off function prolongs battery life
- Includes protective cover and batteries
- Dimensions (WxDxH): 136 x 83 x 20mm

Type	Capacity g	Readability g	Plate dimensions mm	PK	Cat. No.
JE120	120	0.1	83 x 76	1	**9.902 413**
JE250	250	0.1	83 x 76	1	**9.902 414**
JE500	500	0.1	83 x 76	1	**9.902 415**

4



4 Portable electronic balances, CS series

Compact and practical with choice of weighing ranges from 200g to 5000g *OHAUS*

- Sleek, low-profile housing
- Stainless steel weighing pan
- Large, 11mm high digital display
- Energy-saving, automatic switch-off
- Robust plastic construction
- Battery or mains operation

Supplied with 3 x 1.5V AAA batteries and mains adapter.

Dimensions WxDxH: 135 x 193 x 39mm
Accessories: 1050ml plastic container

Type	Capacity g	Readability g	Plate dimensions mm	PK	Cat. No.
CS200	200	0.1	146 x 133	1	**9.950 222**
CS2000	2000	1.0	146 x 133	1	**9.950 223**
CS5000	5000	1.0	146 x 133	1	**9.950 224**

E & OE.

Accessories for Portable electronic balances, CS series

OHAUS

Description	PK	Cat. No.
Plastic container, 1050ml	1	**9.947 300**
Stainless steel weighing pan cover	1	**9.947 302**

1 Compact balances Type EMB

Kern & Sohn

Economically priced, battery-operated models. Large LCD readout with 15mm high digits."Weigh-in" function simplifies mixing.
Supplied with 4 x 1.5V AA batteries. With d.c. power connection socket (accessory mains adapter Cat. No. 6.082 721 available at extra cost).
Auto-off function activates after 3 minutes without use for saving battery power.

Dimensions WxDxH: 170 x 240 x 38mm
Net weight: approx. 600g

Type	Capacity g	Readability g	Reproducibility ± g	Linearity ± g	Plate diam. mm	PK	Cat. No.
EMB 100-3	100	0.001	0.001	0.003	82	1	**6.238 426**
EMB 200-2	200	0.01	0.01	0.02	105	1	**9.901 320**
EMB 600-2	600	0.01	0.01	0.03	105	1	**9.901 321**
EMB 1000-2	1000	0.01	0.01	0.03	150	1	**6.235 728**
EMB 500-1	500	0.1	0.1	0.2	150	1	**9.901 322**
EMB 1200-1	1200	0.1	0.1	0.3	150	1	**9.901 323**
EMB 5.2K1	5200	1.0	1.0	3.0	150	1	**9.901 324**
EMB 2200-0	2200	1.0	1.0	2.0	150	1	**9.901 371**
EMB 5.2 K 5	5200	5.0	5.0	10.0	150	1	**9.901 372**

2 3 Portable Balances, Scout® Pro series

OHAUS

The Scout® Pro offers simple operation and higher resolution to accommodate more applications than ever before:
- High contrast, LCD display.
- Parts counting, percentage weighing, check weighing, totalisation, weigh-below facility, display-hold-function
- Simple, two-button operation
- Density determination kit for automatic specific gravity calculations (optional accessory)
- Optional USB or RS232 interface accessories (cable included)
- Battery or AC operation (AC adapter included)
- 1 mg readability model supplied with draught shield
- Energy saving, auto switch-off
- Below-balance weighing (weighing hook included)

Type	Capacity g	Readability g	Plate dimensions mm	PK	Cat. No.
SPU123	120	0.001	90 dia.	1	**9.902 420**
SPU202	200	0.01	120 dia.	1	**9.902 421**
SPU402	400	0.01	120 dia.	1	**9.902 422**
SPU401	400	0.1	120 dia.	1	**9.902 423**
SPU602	600	0,01	120 dia.	1	**9.902 428**
SPU601	600	0.1	165 x 142	1	**9.902 424**
SPU2001	2000	0.1	165 x 142	1	**9.902 425**
SPU4001	4000	0.1	165 x 142	1	**9.902 426**
SPU6000	6000	1	165 x 142	1	**9.902 427**
SPU6001	6000	0,1	165 x 142	1	**9.902 429**

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3



Precision balances Entris®

NEW!

Sartorius Lab Instruments

Get the reliability and quality of a Sartorius balance and pay only for the features you really need. The new Entris ® was specially designed for effective and reliable every day weighing. The simple and clearly structured user surface, with its logical key assignment and last but not least the very good readability, are ideal conditions for safe working.

- Easy-to-use: Excellent readability by the backlit and high-contrast display , navigation with the function keys and the easy-to-read water level on the front allows for easy and fast operation.
- Basic applications : Entris® supports you in your daily weighing with integrated basic applications like animal weighing, density determination, counting, percent weighing or convert.
- High accuracy: The monolithic weighing system guarantees a permanently high measurement accuracy and represents the reliability and quality of a Sartorius balance.
- i-Type balances have internal calibration, balances without i in Type designation have external calibration
- Dimensions (WxDxH): 230 x 303 x 91mm (height of balances with windshield 136mm), Height weighing space: 46mm

Supplied with: Universal power adapter, installations and operation manual, windshield as indicated

Type	Capacity g	Readability g	Reproducibility ± g	Linearity ± g	Plate dimensions mm	PK	Cat. No.	
ENTRIS153i-1S*	150	0.001	0.001	0.002	Ø 115	1	**6.262 582**	
ENTRIS153-1S*	150	0.001	0.001	0.002	Ø 115	1	**6.262 583**	
ENTRIS323i-1S*	320	0.001	0.001	0.002	Ø 115	1	**6.262 580**	
ENTRIS323-1S*	320	0.001	0.001	0.002	Ø 115	1	**6.262 581**	
ENTRIS423i-1S*	420	0.001	0.001	0.002	Ø 115	1	**6.262 578**	
ENTRIS423-1S*	420	0.001	0.001	0.002	Ø 115	1	**6.262 579**	
ENTRIS623i-1S*	620	0.001	0.001	0.002	Ø 115	1	**6.262 576**	1
ENTRIS623-1S*	620	0.001	0.001	0.002	Ø 115	1	**6.262 577**	
ENTRIS822i-1S	820	0.01	0.01	0.03	Ø 150	1	**6.262 591**	3
ENTRIS822-1S	820	0.01	0.01	0.03	Ø 150	1	**6.262 592**	
ENTRIS2202i-1S	2200	0.01	0.01	0.03	180 x 180	1	**6.262 589**	
ENTRIS2202-1S	2200	0.01	0.01	0.03	180 x 180	1	**6.262 590**	
ENTRIS2201i-1S	2200	0.1	0.1	0.3	180 x 180	1	**6.262 597**	
ENTRIS2201-1S	2200	0.1	0.1	0.3	180 x 180	1	**6.262 598**	
ENTRIS3202i-1S	3200	0.01	0.01	0.03	180 x 180	1	**6.262 587**	
ENTRIS3202-1S	3200	0.01	0.01	0.03	180 x 180	1	**6.262 588**	
ENTRIS4202i-1S	4200	0.01	0.01	0.03	180 x 180	1	**6.262 585**	
ENTRIS4202-1S	4200	0.01	0.01	0.03	180 x 180	1	**6.262 586**	
ENTRIS5201i-1S	5200	0.1	0.1	0.3	180 x 180	1	**6.262 595**	
ENTRIS5201-1S	5200	0.1	0.1	0.3	180 x 180	1	**6.262 596**	
ENTRIS6202i-1S	6200	0.01	0.01	0.03	180 x 180	1	**7.940 261**	2
ENTRIS6202-1S	6200	0.01	0.01	0.03	180 x 180	1	**6.262 584**	
ENTRIS8201i-1S	8200	0.1	0.1	0.3	180 x 180	1	**6.262 593**	
ENTRIS8201-1S	8200	0.1	0.1	0.3	180 x 180	1	**6.262 594**	

*with windshield

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6.262 576

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7.940 261

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6.262 591

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6.262 321

Precision balances Practum®

NEW!

Unmatched reliability with the world-class weighing instrument. Made in Germany. *Sartorius Lab Instruments*

- Overload protection for years of reliability
- Supervisor lock for protection against unintentional changes
- Coloured Touchscreen-Display
- Simple data transfer to printer or PC ("Plug & Work" Technology). Direct data transfer to Microsoft® Windows programs without further software
- Integrated underfloor weighing
- External calibration, weights are included in delivery
- Practum® 213/313/513: For cleaning of the windshield, the side windows, the sliding cover and all stainless steel parts are easily removable.
- Extra large adjustable feet for easy levelling

2



6.262 323

Specifications

Overall dimensions (WxDxH):	360 x 216 x 95mm
PRACTUM213/313/513:	360 x 216 x 320mm
Height weighing space PRACTUM213/313/513:	209mm
Permissible ambient temperature:	+10 to+30°C
Mains adapter:	100 - 240V, 50/60Hz

Type	Capacity g	Readability g	Plate diam. mm	Reproducibility ± g	Linearity ± g	PK	Cat. No.
PRACTUM213-1S*	210	0.001	120	0.001	0.002	1	**6.262 322**
PRACTUM313-1S*	310	0.001	120	0.001	0.002	1	**6.262 321** 1
PRACTUM412-1S	410	0.01	180	0.01	0.03	1	**6.262 836**
PRACTUM513-1S*	510	0.001	120	0.001	0.002	1	**6.262 835**
PRACTUM612-1S	610	0.01	180	0.01	0.03	1	**6.262 325**
PRACTUM1102-1S	1100	0.01	180	0.01	0.03	1	**6.262 324**
PRACTUM2101-1S	2100	0.1	180	0.1	0.3	1	**6.262 838**
PRACTUM2102-1S	2100	0.01	180	0.01	0.03	1	**6.262 323** 2
PRACTUM3102-1S	3100	0.01	180	0.01	0.03	1	**6.262 837**
PRACTUM5101-1S	5100	0.1	180	0.1	0.3	1	**7.671 426**
PRACTUM5100-1S	5100	1.0	180	0.5	1.0	1	**6.262 326**
PRACTUM6101-1S	6100	0.1	180	0.1	0.3	1	**6.262 839**
PRACTUM6100-1S	6100	1.0	180	0.5	1.0	1	**6.262 840**

*with windshield

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6.262 430

Precision balances Quintix®

NEW!

Intuitive application guidance, start of applications with only one keystroke. Maximum accuracy at all times. Made in Germany. *Sartorius Lab Instruments*

- The balance automatically adjusts istself when the pre-set temperature and time is exceeded
- Coloured Touchscreen-Display
- Easy cleaning
- "Plug & Work" connectivity to printer or computer via USB port for simple GLP-compliant logging, direct data transfer to Microsoft® Windows programs without further software
- Password protection and supervisor lock for protection against unintentional changes
- Integrated underfloor weighing
- Quintix® 213/313/513/613: For cleaning of the windshield, the side windows, the sliding cover and all stainless steel parts are easily removable.
- Extra large adjustable feet for easy levelling

4



6.262 429

Specifications

Overall dimensions (WxDxH):	216 x 360 x 95mm
QUINTIX213/313/513/613:	216 x 360 x 320mm
Height weighing space QUINTIX213/313/513/613:	209mm
Permissible ambient temperature:	+10 to+30°C
Mains adapter:	100 - 240V, 50/60Hz

Type	Capacity g	Readability g	Plate diam. mm	Reproducibility ± g	Linearity ± g	PK	Cat. No.
QUINTIX213-1S*	210	0.001	120	0.001	0.002	1	**6.262 423**
QUINTIX313-1S*	310	0.001	120	0.001	0.002	1	**6.262 426**
QUINTIX412-1S	410	0.01	180	0.01	0.03	1	**6.262 842**
QUINTIX513-1S*	510	0.001	120	0.001	0.002	1	**6.262 430** 3
QUINTIX612-1S	610	0.01	180	0.01	0.03	1	**6.262 431**
QUINTIX613-1S*	610	0.001	120	0.001	0.002	1	**6.262 841**
QUINTIX1102-1S	1100	0.01	180	0.01	0.03	1	**6.262 420**
QUINTIX2102-1S	2100	0.01	180	0.01	0.03	1	**6.262 422**
QUINTIX2101-1S	2100	0.1	180	0.1	0.3	1	**6.262 844**
QUINTIX3102-1S	3100	0.01	180	0.01	0.02	1	**6.262 425**
QUINTIX5102-1S	5100	0.01	180	0.01	0.02	1	**6.262 429** 4
QUINTIX5101-1S	5100	0.1	180	0.1	0.3	1	**6.262 428**
QUINTIX5100-1S	5100	1.0	180	0.5	1.0	1	**6.262 427**
QUINTIX6102-1S	6100	0.01	180	0.01	0.02	1	**6.262 843**
QUINTIX6101-1S	6100	0.1	180	0.1	0.3	1	**6.262 845**
QUINTIX6100-1S	6100	1.0	180	0.5	1.0	1	**6.262 846**

*with windshield

1 Balances, electronic, precision, 572 series

Weighing speed adjustable in two stages. Unit transfer to bullion and non-metric units of weight. *Kern & Sohn*
With calibration adjustment programme. With net/total weighing. Piece counting: 1, 5, 10 or 20 reference pieces.
Percentage weighing. Bi-directional RS232C data output supplied. Ultra low-profile, metal casing (WxDxH): 150 x 310 x 60mm. Supplied with mains adapter for 230V 50/60Hz.
Balances can be alternatively operated by accessory batteries.
Also available with DKD certified calibration weight, thermal printer, statistic printer, rechargeable battery pack or label printer at additional cost.

Type	Capacity g	Readability g	Reproducibility ± g	Linearity ± g	Plate dimensions mm	PK	Cat. No.
572-31*	300	0.001	0.001	0.005	106 diam.	1	**9.900 990**
572-32*	420	0.001	0.001	0.005	106 diam.	1	**6.229 315**
572-33	1600	0.01	0.01	0.03	150 diam.	1	**9.901 333**
572-35	2400	0.01	0.01	0.03	150 diam.	1	**9.901 335**
572-37	3000	0.01	0,01	0.05	150 diam.	1	**6.227 789**
572-45	12000	0.05	0.05	0.15	160 x 200	1	**9.900 991**
572-49	16000	0.1	0.1	0.3	160 x 200	1	**9.901 336**
572-57	24000	0.1	0.1	0.3	160 x 200	1	**9.901 354**

*with removable draught shield

1



WE FOCUS ON PRECISION – SINCE 1844

KERN



Laboratory balances | Analytical balances | Moisture analysers | Microscopes | Refractometers

www.kern-sohn.com

E & OE.

1 Precision Balances Pioneer™

1



OHAUS

Designed to meet simple weighing needs at best price
- Weighing (18 units + 1 custom unit), parts counting, percentage weighing
- LCD readout
- Mains power
- RS232 for sending balance ID and weight
- Solid, diecast, metal housing, stainless steel pan
- Fixed, integral, weigh-below hook, all-glass draught shield with 3 sliding doors for 1mg models, front levelling bubble, menu and calibration locks
- EC Type approved versions also available (models ending in M)

Type	Capacity g	Readability	Plate diam. mm	Description	PK	Cat. No.
PA213	210	1mg	120	external calibration	1	**9.902 130**
PA213C	210	1mg	120	internal calibration	1	**9.902 131**
PA213CM	210	1mg	120	internal calibration	1	**9.902 132**
PA413	410	1mg	120	external calibration	1	**9.902 133**
PA413C	410	1mg	120	internal calibration	1	**9.902 134**
PA413CM	410	1mg	120	internal calibration	1	**9.902 135**
PA512	510	0.01g	180	external calibration	1	**9.902 136**
PA512C	510	0.01g	180	internal calibration	1	**9.902 137**
PA512CM	510	0.01g	180	internal calibration	1	**9.902 138**
PA2102	2100	0.01g	180	external calibration	1	**9.902 139**
PA2102C	2100	0.01g	180	internal calibration	1	**6.234 850**
PA2102CM	2100	0.01g	180	internal calibration	1	**9.902 141**
PA4102	4100	0.01g	180	external calibration	1	**9.902 142**
PA4102C	4100	0.01g	180	internal calibration	1	**9.902 143**
PA4102CM	4100	0.01g	180	internal calibration	1	**9.902 144**
PA4101	4100	0.1g	180	external calibration	1	**9.902 145**
PA4101C	4100	0.1g	180	internal calibration	1	**9.902 146**
PA4101CM	4100	0.1g	180	internal calibration	1	**9.902 147**

2 Precision Balances Adventurer®

NEW!

2



OHAUS

- Fast stabilization and reliable operation to ensure solid weighing performance and accurate, repeatable results.
- Two USB ports with GLP/GMP tracking capabilities assist the monitoring and reporting of the data.
- The wide viewing angle 4.3" colour touchscreen provides access to all applications.
- Reduced footprint due to two piece, top-mounted draft shield doors
- The 0.01g models feature large weighing pans
- AutoCal™ automatic internal calibration system or traditional external calibration (external calibration models -/E)
- EC Type Approved models available

Applications: Weighing (17 units + custom unit), parts counting, percentage weighing, check weighing, dynamic weighing, totalization/statistics, formulation, density determination, display hold.
Display: 4.3" (109 mm) Full-colour VGA graphic touchscreen with user-controlled brightness,
Operation: Mains operation.
Communication: RS232, USB Host, USB Device (included). GLP/GMP compliant data output with real-time clock
Construction: Die-cast metal base, ABS top housing, stainless steel pan, glass draft shield with two piece top mounted side doors and sliding top door (0.1 and 1mg models only), illuminated up-front level indicator, integral weigh below hook, security bracket, calibration lock, full housing in-use cover
Design features: Two-piece, top mounted, space-saving draft shield with removable panels on 0.1mg and 0.001g models. AutoCal™ automatic internal calibration or external calibration. Level assist feature with illuminated level indicator. Selectable environmental and auto-print settings. Integral weigh below hook. Protective full housing in-use cover. Software lock switch.

Type	Readability g	Weighing range g	Plate dimensions mm	PK	Cat. No.
AX223	0.001	220	Ø 130	1	**6.268 208**
AX223/E	0.001	220	Ø 130	1	**6.266 893**
AX423	0.001	420	Ø 130	1	**6.268 210**
AX423/E	0.001	420	Ø 130	1	**6.268 212**
AX523	0.001	520	Ø 130	1	**6.268 213**
AX523/E	0.001	520	Ø 130	1	**6.268 215**
AX622	0.01	620	175 x 195	1	**6.268 216**
AX622/E	0.01	620	175 x 195	1	**6.268 217**
AX1502	0.01	620	175 x 195	1	**6.268 218**
AX1502/E	0.01	1520	175 x 195	1	**6.268 220**
AX2202	0.01	1520	175 x 195	1	**6.267 263**
AX2202/E	0.01	2200	175 x 195	1	**6.268 222**
AX4202	0.01	2200	175 x 195	1	**6.268 223**
AX4202/E	0.01	4200	175 x 195	1	**6.268 225**
AX5202	0.01	5200	175 x 195	1	**6.268 226**

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9.901 403

Precision balance KB

Convenience model at an economical price *Kern & Sohn*

- for applications that require verification, please order verification at the same time, verification at a later date is not possible.
- user guidance step by step in the display
- freely programmable weighing units, e.g. display directly in special units such as the length of thread g/m, paper weight g/m², or similar
- precise counting. The automatic reference optimization gradually improves the average value of the piece weighing
- numerical tare deduction for container weighing. Useful when checking loads
- ring-shaped draft shield standard, 90 x 40mm dia. x ht. for models with readability d = 0.001g

also available with DKD certified calibration weight, thermal printer, statistics printer at additional cost.

Type	Capacity g	Readability g	Reproducibility ± g	Linearity ± g	Plate dimensions mm	PK	Cat. No.	
KB 120-3N	120	0.001	0.001	0.003	81 diam.	1	**6.234 511**	
KB 240-3N	240	0.001	0.001	0.003	81 diam.	1	**6.235 214**	
KB 360-3N	360	0.001	0.002	0.005	81 diam.	1	**9.901 402**	
KB 1200-2N	1200	0.01	0.01	0.03	130 x 130	1	**6.233 613**	
KB 2000-2N	2000	0.01	0.01	0.03	130 x 130	1	**6.231 607**	
KB 2400-2N	2400	0.01	0.01	0.03	130 x 130	1	**9.901 403**	1
KB 3600-2N	3600	0.01	0.02	0.05	130 x 130	1	**9.901 404**	
KB 10K0.05N	10000	0.05	0.05	0.15	150 x 170	1	**9.901 405**	
KB 10000-1N	10000	0.1	0.1	0.3	150 x 170	1	**9.901 406**	
KB 650-2NM	650	0.01	0.01	0.03	130 x 130	1	**9.901 407**	
KB 6500-1NM	6500	0.1	0.1	0.2	150 x 170	1	**9.901 409**	

Precision balance PLE-N

Low-cost precision balance with wide range of functions *Kern & Sohn*

- Compact size, practical for small spaces
- Percentage determination: makes it possible to store a given weight value (100%) and to determine deviations from this target value
- Weighing with tolerance range (checkweighing): Input of an upper/lower limit value. A visual signal assists with portion division, dispensing or grading
- Weighing sum memory adds individual weighing results
- Ring-shaped draft shield standard, only for models with weighing plate sizes dia. 80mm. Removable metal cover with pipette opening. Weighing space (Ø x H): 125 x 70mm

Specifications

Overall dimensions, without draft shield (WxDxH):	185 x 250 x 80mm
Dimensions weighing space (Ø x H):	125 x 70mm
Weight:	approx: 2.5kg

Type	Capacity g	Readability g	Reproducibility ± g	Linearity ± g	Plate diam. mm	PK	Cat. No.	
PLE 420-3N	420	0.001	0.002	0.004	80	1	**9.901 329**	2
PLE 4200-2N	4200	0.01	0.02	0.04	135	1	**9.901 356**	3
ALT-A02 Density set						1	**9.900 968**	

2



9.901 329

3



9.901 356

1 Precision balances type EW-N and EG-N

Kern & Sohn

High quality laboratory balances, housed in a robust and stable plastic casing.
With bar graph capacity display which shows the current available weighing range remaining.
Fitted with protective working cover for casing and keyboard. Suitable for EC verification (factory option at additional cost - details on request). Convenient, internal automatic calibration (only type EG-N) as well as extensive configuration and a menu of applications.
Draught shield supplied with all 0.001g readability models.
Additionally supplied with parts counting facility, percentage weighing function, flush-mounted platform. Optional available: Thermal printer, statistics printer, internal Akku-Pack, DKD calibration certificate for balance and optional test weight.

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Type	Capacity	Readability	Reproducibility	Linearity	Plate dimensions	External dimensions (W x D x H)	PK	Cat. No.
	g	g	± g	± g	mm	mm		
EW220-3NM	220	0.001	0.001	0.002	Ø 118	182 x 235 x 75	1	**9.901 007**
EW420-3NM	420	0.001	0.001	0.003	Ø 118	182 x 235 x 75	1	**9.901 008**
EW620-3NM	620	0.001	0.001	0.003	Ø 118	182 x 235 x 75	1	**9.901 009**
EW820-2NM	820	0.01	0.01	0.01	170 x 142	182 x 235 x 75	1	**9.901 010**
EW2200-2NM	2200	0.01	0.01	0.01	180 x 160	192 x 265 x 87	1	**9.901 011**
EW4200-2NM	4200	0.01	0.01	0.02	180 x 160	192 x 265 x 87	1	**9.901 012**
EW6200-2NM	6200	0.01	0.01	0.03	180 x 160	192 x 265 x 87	1	**9.901 013**
EW12000-1NM	12000	0.1	0.1	0.2	180 x 160	192 x 265 x 87	1	**9.901 014**
EG220-3NM*	220	0.001	0.001	0.002	Ø 118	182 x 235 x 75	1	**9.901 018**
EG420-3NM*	420	0.001	0.001	0.003	Ø 118	182 x 235 x 75	1	**9.901 019**
EG620-3NM*	620	0.001	0.001	0.004	Ø 118	182 x 235 x 75	1	**9.901 015**
EG2200-2NM*	2200	0.01	0.01	0.01	180 x 160	192 x 265 x 87	1	**9.901 016**
EG4200-2NM*	4200	0.01	0.01	0.02	180 x 160	192 x 265 x 87	1	**9.901 017**

*calibratable
Outer dimensions without wind shield.

2 Precision balance PKT

Kern & Sohn

Touchscreen laboratory balance with extensive range of functions

- Large touch-sensitive, backlit screen with very good contrast for easy operation and convenient reading, digit height 15mm, screen diagonal 4.3" (approx. 109mm): Easy input of text and values, clear menu structure, weighing with tolerance range (checkweighing), 40 memories for each mode
- Robust metal housing, ensures stability, protects the weighing technology elements and is robust enough to cope with everyday use
- Ring-shaped draft shield standard for models with weighing plate sizes of 106mm , weighing space (Ø x H): 157mm x 57mm

Modes: weighing, counting, dispensing, recipe weighing, checkweighing, totalising with daily total, percentage determination, animal weighing, surface weight
Functions: capacity display, dispensing assistance (subtractive, additive), Net/Gross display, permanently on, variable reference quantity, automatic reference optimisation, tare deduction numerical or from the memory unit, input of item or batch description, operator etc., freely programmable weighing unit, e.g. display directly in special units such as length of thread g/m, paper weight g/m2, or similar, date/time, statistical function, GLP printout, individual printout configuration

2



Specifications

Overall dimensions, without draught shield (WxDxH):	180 x 310 x 90 mm
Dimensions weighing space (Ø x H):	157 x 57 mm
Permissible ambient temperature:	10°C/40°C

Type	Capacity	Readability	Reproducibility	Linearity	Plate dimensions	PK	Cat. No.
	g	g	± g	± g	mm		
PKT 300-3	300	0.001	0.002	0,005	Ø 106	1	**9.901 423**
PKT 420-3	420	0.001	0.002	0,005	Ø 106	1	**9.901 424**
PKT 3000-2	3000	0.01	0.02	0.05	Ø 150	1	**9.901 425**
PKT 12K0.05	12000	0.05	0.05	0.15	160 x 200	1	**9.901 426**
PKT 16K0.1	16000	0.1	0.1	0.3	160 x 200	1	**9.901 427**
PKT 24K0.1	24000	0.1	0.1	0.3	160 x 200	1	**9.901 428**

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2



1 2 Precision balance EWJ

NEW!

Verifiable entry level model in the upper laboratory class with EC type approval *Kern & Sohn*

- Concept of easy use: All primary functions have their own key on the keypad
- Automatic internal adjustment time-controlled every 4 hours. Guarantees high degree of accuracy and makes the location irrelevant
- Ideal for mobile applications which require verification, such as ambulatory gold and jewellery purchasing
- Compact size, practical for small spaces
- Capacity display: A bar lights up to show how much of the weighing range is still available
- Draft shield with removable cover and opening for using a pipette standard on all models 80mm and 135mm plate diameter. Weighing space (WxDxH): 145 x 160 x 80mm
- RS-232 and USB interfaces for transferring weighing data to the PC, printer, USB sticks etc.

Type	Weighing range g	Readability g	Reproducibility ± g	Linearity ± g	Plate dimensions mm	PK	Cat. No.
EWJ 300-3	300	0.001	0.001	0.003	Ø 80	1	**9.900 938**
EWJ 600-2M	600	0.01	0.01	0.03	Ø 135	1	**9.900 939**
EWJ 6000-1M	6000	0.1	0.1	0.2	155 x 145	1	**9.900 940**

Precision balance Type PLS

Kern & Sohn

- ergonomically optimised keypad for left and right-handed users
- ring-shaped glass draught shield standard for all models with 0.001g resolution.
  Removable metal cover with pipette opening. Weighing space 150mm dia., height 60mm
- count/weight switchover at the press of a button
- precise counting. The automatic optimisation of reference weight gradually improves the average value of the piece weight. The automatic optimisation of reference weight gradually improves the average value of the piece weight
- weighing with tolerance range Input of an upper/lower limit value. A visual signal assists with portion division, dispensing or grading
- percentage determination makes it possible to store a given weight value (100%) and to determine deviations from this target value in %
- density determination of liquids and solids with immediate display of the density on the display
- pre-Tare function for manual deduction of a known container weight. Useful for checking fill-levels

Type	Weighing range g	Readability g	Reproducibility ± g	Linearity ± g	Plate dimensions mm	PK	Cat. No.
PLS 420-3F	420	0.001	0.001	0.004	Ø 110	1	**9.901 442** 3
PLS 720-3A	720	0.001	0.001	0.002	Ø 110	1	**9.901 413**
PLS 1200-3A	1200	0.001	0.001	0.002	Ø 110	1	**9.901 414**
PLS 4200-2F	4200	0.01	0.01	0.04	Ø 160	1	**9.901 422**
PLS 6200-2A	6200	0.01	0.01	0.03	Ø 160	1	**9.901 418** 4
PLS 8000-2A	8000	0.01	0.01	0.03	Ø 160	1	**9.901 443**
PLS 20000-1F	20000	0.1	0.1	0.4	200 x 175	1	**9.901 444** 5

3



9.901 442

4



9.901 418

5



9.901 444

Brushes please see page 1072.

Precision balance Type PCB

NEW!

Kern & Sohn

Compact scale for your laboratory. Due to the Recipe and piece counting function, as well as the grand precision this scale is perfect for the daily use in the Laboratory.
- Protective working cover over keyboard and housing is enclosed o standard.
- Modern, backlit LCD display, digit height 15 mm
- Optional battery operation, 9V Block, not included.
- AUTO-OFF funktion to preserve the battery, can be switched off
- Stainless steel weighing plate

Overall (WxDxH): 163 x 245 x 79mm
Weight: approx. 1kg

Type	Capacity g	Readability g	Reproducibility ± g	Linearity ± g	Plate dimensions mm	PK	Cat. No.	
PCB 100-3	100	0.001	0.001	0.003	Ø 81	1	**7.619 757**	1
PCB 250-3	250	0.001	0.001	0.005	Ø 81	1	**6.238 044**	
PCB 350-3	350	0.001	0,002	0.005	Ø 81	1	**6.241 856**	
PCB 200-2	200	0.01	0.01	0.02	Ø 105	1	**7.635 868**	2
PCB 1000-2	1000	0.01	0.01	0.03	130 x 130	1	**6.228 513**	3
PCB 2500-2	2500	0.01	0.01	0.05	130 x 130	1	**6.235 556**	
PCB 3500-2	3500	0.01	0.02	0.05	130 x 130	1	**6.240 408**	
PCB 1000-1	1000	0.1	0.1	0.2	130 x 130	1	**6.235 098**	
PCB 2000-1	2000	0.1	0.1	0.2	130 x 130	1	**6.229 399**	
PCB 6000-1	6000	0.1	0.1	0.3	150 x 170	1	**6.231 685**	4
PCB 10000-1	10000	0.1	0.1	0.3	150 x 170	1	**7.625 237**	
PCB 6000-0	6000	1	1	2	150 x 170	1	**9.901 300**	

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7.619 757

2



7.635 868

3



6.228 513

4



6.231 685

Precision balance Type PFB

NEW!

Kern & Sohn

Low-cost model based on a concept of easy use: All primary functions have their own key on the keypad
- Calibratable
- Compact size, practical for small spaces
- Capacity display: A bar lights up to show how much of the weighing range is still available
- Level indicator and foot screws to level the balance precisely, fitted as standard, to give the most accurate weighing results
- Draft shield standard for models with weighing plate sizes diam. 120mm. Removable metal cover with pipette opening.
- Separate second display standard for models PFB 600-1M and PFB 6000-0M. Suitable for direct sales to the public when the verification value is the same as the readout. Large backlit LCDdisplay, Digit height 15 mm. Interface cable to the balance, Cable length approx. 1 m, and Mains adapter external standard.

Dimensions (WxDxH): 250 x 180 x 105mm

5



9.901 357

Specifications

Overall dimensions, without draft shield (WxDxH): 200 x 260 x 87mm
Dimensions weighing space (WxDxH): 158 x 143 x 64mm
Weight: approx: 2kg

6



7.658 057

Type	Capacity g	Readability g	Reproducibility ± g	Linearity ± g	Verifiable readability g	Plate dimensions mm	PK	Cat. No.	
PFB 600-2M	600	0.01	0.01	0.02	0.1	Ø 120	1	**9.901 357**	5
PFB 600-1M	600	0.1	0.1	0.1	0.1	Ø 120	1	**9.901 358**	
PFB 6000-1M	6000	0.1	0.1	0.3	1	155 x 145	1	**7.658 057**	6
PFB 6000-0M	6000	1	1	1	1	155 x 145	1	**9.901 359**	

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6.264 386

Precision balance PLJ-C/PLJ-GM

NEW!

Kern & Sohn

- Automatic internal adjustment in the case of a change in temperature ≥3°C and time-controlled every 3 hours
- Draft shield standard (on all models with readout d = 0.001g). Dimensions weighing space (WxDxH): 140 x 140 x 65mm
- Large backlit LCD display, PLJ-C: Digit height 17mm, PLJ-GM: Digit height 19mm
- For applications that require verification, please order verification at the same time, initial verification at a later date is not possible. PLJ 700-3C without verification.

Characteristics KERN PLJ-C:
- Weighing principle: Force compensation
- Alibi memory: paperless form of the archive of weighing results
- Internal memory for up to 999 weighing results, 1000 items, 100 container weights, 100 users
- USB interface for transferring weighing data to the PC, printer, USB sticks etc.

2



6.253 037

Characteristics KERN PLJ-GM:
- Weighing principle: Strain gauge
- Rechargeable battery pack internal, standard, operating time up to 45h without backlight, charging time approx. 12h

Specifications

Overall dimensions, without draft shield (WxDxH):	206 x 335 x 85mm
Overall dimensions, with draft shield (WxDxH):	206 x 335 x 157mm
Permissible ambient temperature:	15°C/30°C
Net weight:	approx. 3.6kg
Weight with draft shield:	approx. 4kg

Type	Capacity g	Readability g	Reproducibility ± g	Linearity ± g	Plate dimensions mm	PK	Cat. No.
PLJ 700-3C	750	0.001	0.002	0.003	128 x 128	1	**6.264 742**
PLJ 300-3CM	360	0.001	0.001	0.004	128 x 128	1	**6.264 743**
PLJ 600-3CM	600	0.001	0.002	0.004	128 x 128	1	**7.671 919**
PLJ 600-2GM	600	0.01	0.02	0.02	128 x 128	1	**6.238 826**
PLJ 3000-2CM	3500	0.01	0.01	0.04	195 x 195	1	**6.264 386** 1
PLJ 6000-1GM	6000	0.1	0.2	0.2	195 x 195	1	**6.253 037** 2

3 Analytical balance Entris®

NEW!

Sartorius Lab Instruments

Get the reliability and quality of a Sartorius balance and only pay for the features you really need. The new Entris ® was specially designed for effective and reliable every day weighing. The simple and clearly structured user surface, with its logical key assignment and last but not least the very good readability, are ideal conditions for safe working.

3



- Easy-to-use: Excellent readability by the backlit and high-contrast display , navigation with the function keys and the easy-to-read water level on the front allows for easy and fast operation.
- Basic applications : Entris® supports you in your daily weighing with integrated basic applications like animal weighing, density determination, counting, percent weighing or convert.
- Easy cleaning: For cleaning of the windshield, the side windows, the sliding cover and all stainless steel parts are easily removable.
- High accuracy: The monolithic weighing system guarantees a permanently high measurement accuracy and represents the reliability and quality of a Sartorius balance.
- i-Type balances have internal calibration, balances without i in Type designation have external calibration
- Dimensions (WxDxH): 230 x 303 x 330mm), Height weighing space: 240mm

Supplied with: Universal power adapter, installations and operation manual, windshield as indicated

Type	Weighing range g	Readability mg	Reproducibility ± mg	Linearity ± mg	Plate diam. mm	Calibration	PK	Cat. No.
ENTRIS64i-1S	60	0.1	0.1	0.2	90	internal	1	**6.262 574**
ENTRIS64-1S	60	0.1	0.1	0.2	90	external	1	**6.262 575**
ENTRIS124i-1S	120	0.1	0.1	0.2	90	internal	1	**6.262 327**
ENTRIS124-1S	120	0.1	0.1	0.2	90	external	1	**6.262 573**
ENTRIS224i-1S	220	0.1	0.1	0.2	90	internal	1	**6.262 468**
ENTRIS224-1S	220	0.1	0.1	0.2	90	external	1	**6.262 572**

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6.260 896

Analytical balances Practum®

NEW!

Unmatched reliability with the world-class weighing instrument. Made in Germany. *Sartorius Lab Instruments*

- Overload protection for years of reliability
- Supervisor lock for protection against unintentional changes
- Coloured Touchscreen Display
- Simple data transfer to printer or PC ("Plug & Work" Technology). Direct data transfer to Microsoft® Windows programs without further software
- Integrated underfloor weighing
- External calibration, weights are included in delivery
- Easy cleaning: For cleaning of the windshield, the side windows, the sliding cover and all stainless steel parts are easily removable.
- Extra large adjustable feet for easy levelling

Specifications

Overall dimensions (WxDxH):	216 x 360 x 320mm
Height weighing space:	209mm
Permissible ambient temperature:	+10 to+30°C
Mains adapter:	100 - 240V, 50/60Hz

Type	Weighing range g	Readability mg	Reproducibility ± mg	Linearity ± mg	Plate diam. mm	PK	Cat. No.
PRACTUM64-1S	60	0.1	0.1	0.2	90	1	**6.262 847**
PRACTUM124-1S	120	0.1	0.1	0.2	90	1	**6.262 320**
PRACTUM224-1S	220	0.1	0.1	0.2	90	1	**6.260 896** 1

Analytical balances Quintix®

NEW!

Intuitive application guideance, start of applications with only one keystroke. *Sartorius Lab Instruments*
Maximum accuracy at all times. Made in Germany.

- The balance automatically adjusts istself when the pre-set temperature and time is exceeded
- Coloured Touchscreen Display
- Easy cleaning
- "Plug & Work" connectivity to printer or computer via USB port for simple GLP-compliant logging, direct data transfer to Microsoft® Windows programs without further software
- Password protection and supervisor lock for protection against unintentional changes
- Integrated underfloor weighing
- Easy cleaning: For cleaning of the windshield, the side windows, the sliding cover and all stainless steel parts are easily removable.
- Extra large adjustable feet for easy levelling

2



6.262 424

Specifications

Overall dimensions (WxDxH):	216 x 360 x 320mm
Height weighing space:	209mm
Permissible ambient temperature:	+10 to+30°C
Mains adapter:	100 - 240V, 50/60Hz

Type	Weighing range g	Readability mg	Reproducibility ± mg	Linearity ± mg	Plate diam. mm	PK	Cat. No.
QUINTIX64-1S	60	0.1	0.1	0.2	90	1	**6.262 848**
QUINTIX124-1S	120	0.1	0.1	0.2	90	1	**6.262 421**
QUINTIX224-1S	220	0.1	0.1	0.2	90	1	**6.262 424** 2



1



1 Analytical balance KERN ABS-N/ABJ-NM

Kern & Sohn

The bestseller in analytical balances, now with high-quality single-cell weighing system and EC type approval (Type ending M)
- Only ABJ-N: Automatic internal adjustment in the case of a change in temperature >2°C or time-controlled every 4 hours
- Only ABS-N: Adjusting program CAL, external test weights at an additional price
- Dosage aid: High-stability mode and other filter settings can be selected
- Simple recipeweighing and documenting with a combined tare/print function. In addition, the mixing ingredients for the recipe are numbered automatically and printed out with their corresponding number and weight value
- Identification number: 4 numeric positions, printed on calibration protocol
- Automatic data output to the PC/printer each time the balance reaches a steady state

Single-cell advanced technology:
- Fully automatic manufactured weighing cell from one piece of material
- Stable temperature behaviour
- Short stabilisation time: Steady weight values within approx. 3sec under laboratory conditions
- Shock proof construction
- High corner load performance

Specifications

Overall dimensions (WxDxH):	210 x 340 x 325mm
Dimensions weighing space (WxDxH):	174 x 162 x 227mm
Permissible ambient temperature:	10°C/30°C
Net weight:	approx. 6kg

Type	Capacity	Readability	Reproducibility	Linearity	Plate diam.	PK	Cat. No.
	g	mg	± mg	± mg	mm		
ABS 80-4N	82	0.1	0.2	0.3	91	1	**9.901 451**
ABS 120-4N	120	0.1	0.2	0.3	91	1	**9.901 452**
ABS 220-4N	220	0.1	0.2	0.3	91	1	**9.901 453**
ABS 320-4N	320	0.1	0.2	0.3	91	1	**9.901 454**
ABJ 80-4NM	82	0.1	0.2	0.3	91	1	**9.901 455**
ABJ 120-4NM	120	0.1	0.2	0.3	91	1	**9.901 456**
ABJ 220-4NM	220	0.1	0.2	0.3	91	1	**6.257 572**
ABJ 320-4NM	320	0.1	0.2	0.3	91	1	**9.901 457**

2



2 Analytical balances AES-C/AEJ-CM

NEW!

Kern & Sohn

- Only AEJ-CM: Automatic internal adjustment in the case of a change in temperature >0.8°C and time-controlled every 3 hours. For applications that require verification, please order verification at the same time, initial verification at a later date is not possible.
- Intuitive pipette calibration function to ensure data integrity and to minimise the risks in the daily work with your pipettes
- Higher weighing speed by switching off the last digit
- Modern all glass draft wind shield for optimal visibility of the weighing object
- Large backlit LCD display, digit height 17 mm
- Dispensing mode: By pressing one key you can set all relevant parameters for this dispensing process
- Alibi memory: Paperless archiving of up to 100 000 weighing results.
- Internal memory for up to 999 weighing results, 1000 items or recipe ingredients, 100 container weights, 100 users

Specifications

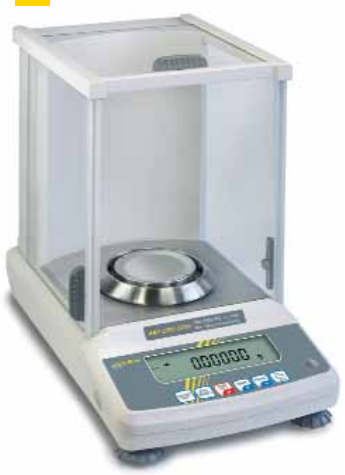
Overall dimensions (WxDxH):	206 x 335 x 335mm
Dimensions weighing space (WxDxH):	168 x 160 x 225mm
Permissible ambient temperature:	18°C/30°C
Net weight:	approx. 5.4kg

Type	Weighing range	Readability	Reproducibility	Linearity	Plate diam.	PK	Cat. No.
	g	mg	± mg	± mg	mm		
AES 100-4C	160	0.1	0.2	0.2	85	1	**6.264 740**
AES 200-4C	220	0.1	0.2	0.2	85	1	**6.263 805**
AEJ 200-5CM	80 / 220	0.01 / 0.1	0.04 / 0.1	0.1 / 0.2	85	1	**6.264 836**
AEJ 100-4CM	160	0.1	0.2	0.3	85	1	**6.264 741**
AEJ 200-4CM	220	0.1	0.2	0.3	85	1	**7.671 856**

E & OE.

1 Balances, electronic, analytical, "Precise" ABT series

1



Kern & Sohn

Analytical and semi-microbalances which are suitable for verification.
All models have automatic calibration adjustment function by internal, motor-driven, calibration weight. It is possible to log ISO/GLP-compliant weighing or calibration data at any time via an accessory printer (not supplied) or data interface (bi-directional RS232-C).
Additionally, the balances have formulation, piece counting and percentage determination functions, as well as a flush-mounted weighing platform. All models are supplied with a modern, all-glass draught shield with sliding doors to the left, right and top.
Also available with DKD certified, calibration weight, ionizer, thermal printer, statistic printer at additional cost.

Single-cell advanced technology:
- Fully automatic manufactured weighing cell from one piece of material
- Stable temperature behaviour
- Short stabilisation time: Steady weight values within approx. 5 sec under laboratory conditions
- Shock proof construction
- High corner load performance

Weighing pan, stainless steel:	80mm dia.
Weighing chamber (WxDxH):	168 x 172 x 223mm
Dimensions (WxDxH):	217 x 356 x 338mm
Mains adapter:	220V

Type	Weighing range g	Readability mg	Reproducibility ± mg	Linearity ± mg	Plate diam. mm	PK	Cat. No.
ABT 120-4M	120	0.1	0.1	0.2	80	1	**9.900 955**
ABT 220-4M	220	0.1	0.1	0.2	80	1	**9.900 956**
ABT 320-4M	320	0.1	0.1	0.3	80	1	**9.900 957**
ABT 100-5M	101	0.01	0.05	0.15	80	1	**6.241 274**
ABT 120-5DM	42 / 120	0.01 / 0.1	0.02 / 0.1	0.05 / 0.2	80	1	**9.900 958**
ABT 220-5DM	82 / 220	0.01 / 0.1	0.05 / 0.1	0.1 / 0.2	80	1	**9.900 959**

2 Analytical balance Pioneer™

2



OHAUS

Designed to meet simple weighing needs at the best price
- Weighing (18 units + 1 custom unit), parts counting, percentage weighing
- LCD readout
- Mains power
- RS232 for outputting balance ID and weight
- Solid, diecast, metal housing, stainless steel pan
- Fixed, integral, weigh-below hook, all-glass draught shield with 3 sliding doors, front levelling bubble, menu and calibration locks
- EC Type approved versions also available (models ending in M)

Type	Weighing range g	Readability mg	Plate diam. mm	PK	Cat. No.
PA64	65	0.1	90	1	**6.234 827**
PA64C	65	0.1	90	1	**9.902 151**
PA64CM	65	0.1	90	1	**9.902 152**
PA114	110	0.1	90	1	**6.233 682**
PA114C	110	0.1	90	1	**9.902 154**
PA114CM	110	0.1	90	1	**9.902 155**
PA214	210	0.1	90	1	**9.902 156**
PA214C	210	0.1	90	1	**6.233 795**
PA214CM	210	0.1	90	1	**9.902 158**

1 Analytical and Precision Balances Explorer®

OHAUS

Highest performance, most technically advanced balance from OHAUS
- High resolution multi-lingual colour VGA touch display with icons for simple operation
- Programmable multi-functional touch-free sensors for cleanliness, speed and safety
- Multiple application modes plus library for storage of personal application settings
- External calibration, High capacity and EC type approved models also available

Application: Weighing (17 units + custom units), Parts Counting, % weighing, Animal/Dynamic Weighing, Checkweighing, Filling, Totalization, Formulation, Differential weighing, Density determination, Peak hold, Ingredient costing, Pipette adjustment, Gross/Net/Tare Weighing
Display: High resolution full-color VGA graphic display (5.7" diagonal), 4-wire resistive touch screen. QWERTY keyboard and numeric keypad to quickly input GLP and GMP data and other application data.
Operation: Mains Operation
Communication: Easy access communication ports including USB host, USB device, RS232 and an optional 4th port for either RS232 or Ethernet. GLP/GMP Data Output with Real Time Clock. Direct Data Transfer Function.
Construction: Metal base, ABS top housing, stainless steel pan, anti-static glass draftshield with flip-top door, replaceable in-use cover, automatic draftshield doors on selected models
Design features: 3-door frameless draftshield with removable panels on 0.1mg and 1mg models. Optional automatic draftshield doors on 0.1mg and 0.01mg models, with built in ionizer on 0.01mg automatic draftshield door models. Modular display design with adjustable angle (attach to base, wall or optional tower). AutoCal™ fully-automatic internal calibration system. Level assist feature with illuminated level indicator. Selectable environmental and auto-print settings. Integral weigh below hook. Protective in-use cover. Software lock switch.

Type	Weighing range g	Readability	Plate dimensions mm	PK	Cat. No.
EX125D	52 / 120**	0.01 / 0.1 mg	Ø 80	1	**6.268 201**
EX124	120	0.1 mg	Ø 90	1	**9.902 370**
EX124/AD*	120	0.1 mg	Ø 90	1	**6.268 206**
EX125	120	0.01 mg	Ø 80	1	**6.268 202**
EX223	220	1 mg	Ø 130	1	**9.902 375**
EX224	220	0.1 mg	Ø 90	1	**9.902 371**
EX224/AD*	220	0.1 mg	Ø 90	1	**6.266 074**
EX225D	120 / 220**	0.01 / 0.1 mg	Ø 80	1	**6.268 203**
EX225D/AD*	120 / 220**	0.01 / 0.1 mg	Ø 80	1	**6.268 204**
EX225/AD*	220	0.1 mg	Ø 80	1	**6.268 205**
EX324	320	0.1 mg	Ø 90	1	**9.902 373**
EX324/AD*	320	0.1 mg	Ø 90	1	**6.268 207**
EX423	420	1 mg	Ø 130	1	**9.902 376**
EX623	620	1 mg	Ø 130	1	**9.902 378**
EX1103	1100	1 mg	Ø 130	1	**9.902 379**
EX2202	2200	0.01 g	190 x 200	1	**9.902 381**
EX4202	4200	0.01 g	190 x 200	1	**9.902 382**
EX6201	6200	0.1 g	190 x 200	1	**9.902 387**
EX6202	6200	0.01 g	190 x 200	1	**9.902 384**
EX10202	10200	0.01 g	190 x 200	1	**9.902 385**
EX10201	10200	0.1 g	190 x 200	1	**9.902 388**

*Automatic door
**Dual range

1



Accessories for analytical balance Explorer®

NEW!

OHAUS

Type	PK	Cat. No.
Second RS232 interface	1	**9.902 360**
Ethernet interface	1	**9.902 361**
Terminal extension cable	1	**9.902 362**
Density determination kit	1	**9.902 363**
Tower kit	1	**9.902 364**
Foot switch	1	**9.902 365**
Draft Shield Kit	1	**9.902 366**
USB Interface Cable (Type A to B)	1	**9.902 368**
Theft protection clamp	1	**9.947 316**

E & OE.

1 Analytical balances Adventurer®

NEW!

OHAUS



- Fast stabilization and reliable operation to ensure solid weighing performance and accurate, repeatable results.
- Two USB ports with GLP/GMP tracking capabilities assist the monitoring and reporting of the data.
- The wide viewing angle colour touchscreen provides access to all applications.
- Reduced footprint due to two pieces, top-mounted draft shield doors
- AutoCal™ automatic internal calibration system or traditional external calibration (external calibration models -/E)
- EC Type Approved models available

Applications: Weighing (17 units + custom unit), parts counting, percentage weighing, check weighing, dynamic weighing, totalization/statistics, formulation, density determination, display hold.
Display: 4.3" (109 mm) Full-colour VGA graphic touchscreen with user-controlled brightness,
Operation: Mains operation.
Communication: RS232, USB Host, USB Device (included). GLP/GMP compliant data output
Construction: Die-cast metal base, ABS top housing, stainless steel pan, glass draft shield with two piece top mounted side doors and sliding top door, replaceable in-use cover
Design features: Two-piece, top mounted, space-saving draftshield with removable panels on 0.1mg and 0.001g models. AutoCal™ automatic internal calibration or external calibration. Level assist feature with illuminated level indicator. Selectable environmental and auto-print settings. Integral weigh below hook. Protective full housing in-use cover. Software lock switch.

Type	Readability mg	Weighing range g	Plate diam. mm	PK	Cat. No.
AX124	0.1	120	90	1	**6.268 193**
AX124/E	0.1	120	90	1	**6.268 195**
AX224	0.1	220	90	1	**6.268 196**
AX224/E	0.1	220	90	1	**6.268 198**
AX324	0.1	320	90	1	**6.268 199**

2 Platform balance "Precise" Type IKT

NEW!

Kern & Sohn



- Innovative touchscreen: Large touch-sensitive, backlit screen (digit height 18mm) with very good contrast for easy operation and convenient reading
- Maximum transparency: All function keys are labelled with plain text which ensures that they are easily understood. The menu tree overlay in the info bar allows you to see at a glance which function is currently in use
- No more errors or lost time through keys which have several functions or unclear markings
- Large keys, which can also be operated while wearing gloves
- Convenient recipe weighing: 5 recipes each with 7 components can be stored in plain text
- Permissible ambient temperature 10°C/40°C
- only IKT-M: with EC type approval

Standard Data interfaces:
- Data interface RS-232 to connect the balance to a printer, PC or network
- Control outputs (optocoupler, digital I/O) to connect relays, signal lamps, valves etc. (35V/80mA)

Type	Readability g	Capacity g	Min. piece weight (PW min) g/piece	Plate dimensions mm	PK	Cat. No.
IKT 3K0.01S	0.01	3000	0.01	228 x 228	1	**9.901 460**
IKT 8K0.05	0.05	8000	0.05	305 x 315	1	**9.901 461**
IKT 10K0.1S	0.1	10000	0.1	228 x 228	1	**9.901 462**
IKT 30K0.1	0.1	30000	0.1	305 x 315	1	**9.901 463**
IKT 60K0.2L	0.2	60000	0.2	450 x 350	1	**9.901 464**
IKT 6K1M	1.0	6000	1	305 x 315	1	**9.901 465**
IKT 12K2M	2.0	12000	2	305 x 315	1	**9.901 466**
IKT 30K5M	5.0	30000	5	305 x 315	1	**9.901 467**
IKT 60K10LM	10.0	60000	10	450 x 350	1	**9.901 468**

1 Halogen Moisture Analyser MLB 50-3C

NEW!

Kern & Sohn

- Halogen quartz glass heater, 400W
- 10 sample dishes included
- 3 displays for temperature, drying in %, drying time
- Application table. Various examples in the user manual
- CAL adjustment programme. External calibration weights are available at additional cost
- The last value measured remains on the display until it is replaced by a new measurement
- RS 232 interface

Optional accessories: aluminum sample plates , round fiber-glass filter, temperature calibration set, thermo-printer, DKD-calibration certificate for analyzer and optional test weight.

Specifications

Readability:	0.01%/0.001g
Weighing range, max:	50g
Reproducibility, weight of sample 2 g:	0.24%
Reproducibility, weight of sample 10 g:	0.04%
Linearity:	±0.003g
Temperature range:	+40 to +160°C
Dimensions (WxDxH):	206 x 333 x 195mm

Type	PK	Cat. No.
MLB 50-3C	1	**7.940 273**

2 Halogen Moisture Analyser DBS 60-3

Modern moisture analyser with 10 memories and graphic display

Kern & Sohn

- Halogen quartz glass heater 400 W
- Backlit LCD display, digit height 15 mm: Previous drying time, current temperature, unit for displaying the results, current moisture content in %, drying mode/Status display drying
- Observation window over the sample, useful during initial adjustment
- Internal memory for automatic sequence of 10 drying programs and 100 drying processes carried out
- The last value measured remains on the display until it is replaced by a new measurement
- Sample description for up to 99 samples, 2 digits, freely programmable, and is printed in the measuring protocol
- Date and time display as standard
- 10 sample plates included
- Table of applications: There are many practical examples in the operating instructions

Specifications

Readability:	0.01 %/0.001g
Weighing range, max:	60g
Reproducibility, weight of sample 2 g:	0.15%
Reproducibility, weight of sample 10 g:	0.02%
Temperature range:	+50 to +200°C
Dimensions (WxDxH):	202 x 336 x 157mm

Type	PK	Cat. No.
DBS 60-3	1	**9.901 441**

1



2



Sample dishes - please see page 366

E & OE.

1 Moisture analyser DLT 100-3N

NEW!

Kern & Sohn



- Halogen quartz glass heater 400 W
- Innovative touchscreen: Touch-sensitive, backlit LCD touch tablet with very good contrast for easy operation and convenient reading
- Clear menu structure with plain text captions on the display. The menu and processes are self-explanatory. This reduces training times, avoids operating errors and in this way, ensures a more efficient functionality
- High mobility thanks to tablet operation, data is available any time, anywhere
- High-performance Android® operating system
- Lots of memory for your applications
- Memory for automatic run of 300 complete drying processes (12 free digits per memory) and 100 drying processes already executed, which can be called up individually
- Practical weighing assistance to arrive at a defined target value (g) with an adjustable tolerance range of 1 to 25% of the target value
- 10 sample plates included
- Wireless connection to a Bluetooth printer allows for the printing of weighing data and drying curves for archiving purposes
- Colour LCD Display, digit height 12 mm, screen diagonal 7" (approx. 178 mm),

Specifications

Readability:	0.01 %/0.001g
Weighing range, max:	160g
Reproducibility, weight of sample 10 g:	0.001g
Temperature range:	35°C to 160°C in steps of 1°C
Dimensions (WxDxH):	210 x 340 x 225mm

Type	PK	Cat. No.
DLT 100-3N	1	**9.901 439**

2 Moisture balances MB23 and MB25

OHAUS



The Ohaus MB Series Moisture Analyzers MB-23 and MB-25 provide stable results with 0.1% or 0.05% moisture resolution because of precision weighing technology. They are supplied with either an infra-red, or halogen, heating system. Applicable for most applications. Graphical interface control. No programming necessary.

- Halogen (MB-25) or infra-red (MB23) technology
- 110g capacity
- Operating temperature 50^C to 160°C, set in 5°C
- Displayed data: 0.005g/0.05% (MB25) and 0.001g/0.1% (MB23)
- Sample holder included in MB25 but as option in MB23
- Delivered with 50 x 90mm aluminium sample dishes and protective cover

Specifications

Capacity (g):	110
Electricity supply:	100 to 240V 50/60 Hz a.c.
Dimensions (WxHxD):	17 x 13 x 28cm
Net weight (kg):	2.3

Type	Heating	Reproducibility ± g	Readability mg	PK	Cat. No.
MB23	Infra-red heating (no glass)	0.2% (10g sample)	10	1	**9.947 604**
MB25	Halogen heating	0.05% (10g sample)	5	1	**9.947 605**

Halogen moisture balances MB35 and MB45

OHAUS



9.947 500

- Halogen heating technology
- 35g capacity (MB35)/45g capacity (MB45) with 0.01%/0.001g readability
- Temperature range: 50°C to 160°C (5°C increments) MB35/50 to 200°C (1°C stages) MB45
- Large, back-lit graphical LCD display
- One automatic shutoff mode (MB35)/three selectable automatic shutoff modes (MB45)
- 50 User defined drying programs (MB45 Only)
- RS232 Interface

Type	Readability	Weighing range g	Plate diam. mm	PK	Cat. No.
MB35	0.01% / 0.001 g	35	90	1	**9.947 500** 3
MB45	0.01% / 0.001 g	45	90	1	**9.950 065**

Sample dishes - please see page 366

1



1 Moisture Analyser MA35

NEW!

Sartorius Lab Instruments

- Fully automatic heating of a sample by two powerful metal tubular-shaped heating elements (also called dark radiators)
- Ideally suited for robust production applications
- Particularly simple operator guidance using self-explanatory pictograms
- Sample quantity 5-15g
- % moisture content, % dry weight , ATRO value, g residue, mg weight loss
- Temperature range and settings: 40 to 160°C, in increments of 1 degree
- Standard drying
- Shutoff criteria (optional): fully automatic, timer setting (0.1-99min.), manual
- Access to sample chamber through hinged cover with large opening angle
- 1 program saved in a non-volatile memory (freely selectable parameters)
- Data storage results are saved until the start of the next measurement
- Printout using an optional, external printer (Cat. No. 6.238 838)
- Fixed standard configuration GLP report for measuring results, calibration, adjustment (5 languages selectable)
- External calibration using optional weight sets
- Data interface RS232 C-S/V24-V28, 7 data bits (ASCII) 1 parity bit

Specifications

Readability:	1mg, 0.01%
Weighing range, max:	35g
Reproducibility, weight of sample 1g:	±0.2%
Reproducibility, weight of sample 5g:	±0.05%
Power consumption:	400VA
Dimensions (WxDxH):	224 x 366 x 191mm

Type	Description	PK	Cat. No.
MA35	Moisture Analyser with metal tubular-shaped heating element	1	**6.235 500**
YDP20-0CE	Data printer (external)	1	**6.238 838**
6965542	Disposable sample dishes, aluminium, round	80	**9.902 612**
6906940	Glass fibre filter, hard quality	80	**9.601 426**
6906941	Glass fibre filter, soft quality	200	**6.232 716**

2



2 Moisture Analyser MA150C/MA150Q

NEW!

Sartorius Lab Instruments

- Sample heating Infrared heating using a round ceramic heating element (MA150C) or a coiled quartz (CQR) heating element (MA150Q)
- 20 program memory modules for quick method changing
- Very even heat distribution, ideally suited for thermally sensitive samples
- Optional version without glass, for use in food production applications
- Sample quantity 5-15g
- Reading display: % moisture content, % dry weight, RATIO value, mg weight loss, g residue, g/kg residue, g/l residue
- Temperature range and settings: 40 to 220°C, stand-by temperature selectable from 40 to100°C in increments of 1 degree
- Heating programs: standard drying and gentle drying
- Shutoff criteria (optional): fully automatic, semi-automatic (1-50mg/5-300sec.), semi-automatic (0.1-5.0%/5-300sec.), timer setting (0.1-99.9 min.), manual
- Access to sample chamber through hinged cover
- 20 programs saved in a non-volatile memory (freely selectable parameters)
- Results are saved until the start of the next measurement
- Printout using an optional, external printer (Cat. No. 6.238 838), configurable GLP-report for measuring results, calibration, adjustment (5 languages selectable)
- External calibration using optional weight sets, automatic temperature calibration with optional temperature adjustment set (Cat. No. 6.264 042)
- Safety Parameter settings password-protected against unauthorized access

Specifications

Readability:	1 mg, 0.01%
Weighing range, max:	150g
Reproducibility, weight of sample 1g:	±0.2%
Reproducibility, weight of sample 5g:	±0.05%
Power consumption:	700VA
Dimensions (WxDxH):	213 x 320 x 181mm

Type	Description	PK	Cat. No.
MA150C	Moisture Analyser with ceramic heater	1	**6.231 903**
MA150Q	Moisture Analyser with quarz heater	1	**6.227 492**
YDP20-0CE	Data printer (external)	1	**6.238 838**
YTM03MA	Temperature adjustment set	1	**6.264 042**
YDB05MA	Carrying case	1	**9.902 607**
6965542	Disposable sample dishes, aluminium, round	80	**9.902 612**
6906940	Glass fibre filter, hard quality	80	**9.601 426**
6906941	Glass fibre filter, soft quality	200	**6.232 716**

E & OE.

OIML classes

Classes of Accuracy Nominal value	(Tolerance ±)						
	E1	E2	F1	F2	M1	M 2	M 3
1mg	± 0.003 mg	± 0.006 mg	± 0.020 mg	± 0.006 mg	± 0.20 mg		
2mg	± 0.003 mg	± 0.006 mg	± 0.020 mg	± 0.006 mg	± 0.20 mg		
5mg	± 0.003 mg	± 0.006 mg	± 0.020 mg	± 0.006 mg	± 0.20 mg		
10mg	± 0.003 mg	± 0.008 mg	± 0.025 mg	± 0.008 mg	± 0.25 mg		
20mg	± 0.003 mg	± 0.010 mg	± 0.03 mg	± 0.10 mg	± 0.3 mg		
50mg	± 0.004 mg	± 0.012 mg	± 0.04 mg	± 0.12 mg	± 0.4 mg		
100mg	± 0.005 mg	± 0.016 mg	± 0.05 mg	± 0.16 mg	± 0.5 mg	± 1.6 mg	
200mg	± 0.006 mg	± 0.020 mg	± 0.06 mg	± 0.20 mg	± 0.6 mg	± 2.0 mg	
500mg	± 0.008 mg	± 0.025 mg	± 0.08 mg	± 0.25 mg	± 0.8 mg	± 2.5 mg	
1g	± 0.010 mg	± 0.03 mg	± 0.10 mg	± 0.3 mg	± 1.0 mg	± 3.0 mg	± 10 mg
2g	± 0.012 mg	± 0.04 mg	± 0.12 mg	± 0.4 mg	± 1.2 mg	± 4.0 mg	± 12 mg
5g	± 0.016 mg	± 0.05 mg	± 0.16 mg	± 0.5 mg	± 1.6 mg	± 5.0 mg	± 16 mg
10g	± 0.020 mg	± 0.06 mg	± 0.20 mg	± 0.6 mg	± 2.0 mg	± 6.0 mg	± 20 mg
20g	± 0.025 mg	± 0.08 mg	± 0.25 mg	± 0.8 mg	± 2.5 mg	± 8.0 mg	± 25 mg
50g	± 0.03 mg	± 0.10 mg	± 0.3 mg	± 1.0 mg	± 3.0 mg	± 10 mg	± 30 mg
100g	± 0.05 mg	± 0.16 mg	± 0.5 mg	± 1.6 mg	± 5.0 mg	± 16 mg	± 50 mg
200g	± 0.10 mg	± 0.3 mg	± 1.0 mg	± 3.0 mg	± 10 mg	± 30 mg	± 100 mg
500g	± 0.25 mg	± 0.8 mg	± 2.5 mg	± 8.0 mg	± 25 mg	± 80 mg	± 250 mg
1kg	± 0.5 mg	± 1.6 mg	± 5.0 mg	± 16 mg	± 50 mg	± 160 mg	± 500 mg
2kg	± 1.0 mg	± 3.0 mg	± 10 mg	± 30 mg	± 100 mg	± 300 mg	± 1000 mg
5kg	± 2.5 mg	± 8.0 mg	± 25 mg	± 80 mg	± 250 mg	± 800 mg	± 2500 mg
10kg	± 5.0 mg	± 16 mg	± 50 mg	± 160 mg	± 500 mg	± 1600 mg	± 5000 mg
20kg	± 10 mg	± 30 mg	± 100 mg	± 300 mg	± 1000 mg	± 3000 mg	± 10 g
50kg	± 25 mg	± 80 mg	± 250 mg	± 800 mg	± 2500 mg	± 8000 mg	± 25 g
100kg		± 160 mg	± 500 mg	± 1600 mg	± 5000 mg	± 16 g	± 50 g
200kg		± 300 mg	± 1000 mg	± 3000 mg	± 10 g	± 30 g	± 100 g
500kg		± 800 mg	± 2500 mg	± 8000 mg	± 25 g	± 80 g	± 250 g
1000kg		± 1600 mg	± 5000 mg	± 16 g	± 50 g	± 160 g	± 500 g
2000kg			± 10 g	± 30 g	± 100 g	± 300 g	± 1000 g
5000kg			± 25 g	± 80 g	± 250 g	± 800 g	± 2500 g

1 Calibration weights, class M1

NEW!

Kern & Sohn

Brass, finely turned (also available in stainless steel). Plastic box with internal foam support available on request. Also available with internationally recognised DKD calibration certification on request.

1



Weight g	Accuracy ± mg	PK	Cat. No.
1	1.0	1	**9.900 501**
2	1.2	1	**9.900 502**
5	1.5	1	**9.900 505**
10	2.0	1	**9.900 510**
20	2.5	1	**9.900 512**
50	3.0	1	**9.900 515**
100	5.0	1	**9.900 520**
200	10	1	**9.900 522**
500	25	1	**9.900 525**
1000	50	1	**9.900 531**
2000	100	1	**9.900 532**
5000	250	1	**9.900 535**
10000	500	1	**9.900 540**

Also available: Single weights from 1mg - 2000 kg or complete weight sets from 1mg - 10kg in OIML-classes E1, E2, F1, F2, M1, M2, M3.

2 Calibration weights, class F1

NEW!

Kern & Sohn

Nickel plated brass (also available in stainless steel).
Plastic box with internal foam support available on request. Also available with internationally recognised DKD calibration certification on request.

2



Weight g	Accuracy ± mg	PK	Cat. No.
1	0.1	1	**9.900 566**
2	0.12	1	**9.900 567**
5	0.15	1	**9.900 568**
10	0.2	1	**9.900 569**
20	0.25	1	**9.900 570**
50	0.3	1	**9.900 571**
100	0.5	1	**9.900 572**
200	1.0	1	**9.900 573**
500	2.5	1	**9.900 574**
1000	5.0	1	**9.900 575**
2000	10.0	1	**9.900 576**
5000	25.0	1	**9.900 577**
10000	50.0	1	**9.900 578**

Also available: Single weights from 1mg to 2000 kg or complete weight sets from 1 mg to 10 kg in OIML-classes E1, E2, F1, F2, M1, M2, M3



1 Undergloves, Cotton

100% Cotton. Monofilament, ideal to wear under chemical protection gloves. 1 pair per pack. **Cat. I**

Size	Length mm	PK	Cat. No.
6	250	1	**6.235 155**
7	250	1	**7.623 809**
8	250	1	**9.005 222**
9	250	1	**7.625 555**
10	250	1	**7.623 881**
11	250	1	**7.623 810**
12	250	1	**9.005 223**
13	250	1	**6.224 187**



2 Balance brush

NEW!

Oval. Size 2/6mm, size 4/9mm and size 6/12mm

Type	Size	Diam. mm	PK	Cat. No.
Brush	2	6	1	**6.266 807**
Brush	4	9	1	**6.074 169**
Brush	6	12	1	**6.266 808**
Brush set*			1	**6.266 825**

*consisting of one brush each size 2/6mm, size 4/9mm and size 6/12mm



9.900 790

Forceps with silicone-coated tips, stainless steel

NEW!

Kern & Sohn

Length mm	Type	PK	Cat. No.
105	for weights 1mg to 200g, for E1 to F1	1	**9.900 790** 3
250	for weights 500g to 2kg, for E1 to F1	1	**6.054 809**



4 LLG weighing scoops, porcelain

Length mm	PK	Cat. No.
37	1	**9.115 350**
53	1	**6.241 255**
64	1	**9.115 351**



5 Weighing scoops, stainless steel 18/10

Capacity ml	PK	Cat. No.
3	1	**6.238 169**
6	1	**6.238 170**
10	1	**6.238 171**



6 Weighing scoops, aluminium

Without counterweight.

Length mm	Material	PK	Cat. No.
70	Aluminium	1	**9.301 006**
90	Aluminium	1	**9.301 008**
105	Aluminium	1	**9.301 010**

Weighing scoops, glass

NEW!

Without counterweight.

Length mm	Material	PK	Cat. No.
60	Glass	1	**9.301 026**
80	Glass	1	**9.301 028**
100	Glass	1	**9.301 030**

E & OE.

1 Weighing scoops, glass

Glass. Ideal for powders or granules which are dispensed via the tubular stem.



Capacity ml	PK	Cat. No.
3	1	**9.301 066**
6	1	**9.301 067**
10	1	**9.301 068**

2 Kjeldahl weighing boat 609, parchment paper, nitrogen-free

GE Healthcare

Ideal for weighing and transporting all types of sample. Especially for determination of nitrogen according to Kjeldahl (e.g. determination of total protein content in foodstuff).
Made of nitrogen-free parchment paper. Can be dropped into the Kjeldahl flask and be dissolved together with the sample.



Width mm	Length mm	Height mm	PK	Cat. No.
10	55	10	100	**9.069 011**

3 Weighing boats MN 808, Paper, nitrogen-free

MACHEREY-NAGEL

Pack of 100 pieces.

Paper
Dimensions: 58mm x 10mm x 10mm



Type	PK	Cat. No.
MN 808	100	**9.301 069**

Other sizes and weighing aids available on request.

4 Weighing paper MN 226

MACHEREY-NAGEL

Transparent, smooth.
Block of 100 sheets.



Type	Width mm	Length mm	PK	Cat. No.
MN 226	90	115	100	**9.058 975**

Further weighing aids available on request.

5 Weighing Papers

Heathrow Scientific

- Especially suitable for Kjeldahl digestion
- Nitrogen free for a very smooth surface and good sample recovery
- Strong enough to support dense material



Dimensions (D x W) mm	PK	Cat. No.
76 x 76	500	**9.059 016**
102 x 102	500	**9.059 017**
152 x 152	500	**9.059 018**

6 Playing card rejects

Standard size for use as disposable sample carriers or spatulas. Printed and laminated on both sides .
Pack size: 1kg, not sorted.



Type	PK	Cat. No.
Playing card rejects	1	**9.190 940**



1 LLG-Weighing bottles with NS lid, Borosilicate glass 3.3

With writing area.
Available in tall or low shape.

Form	Capacity ml	Diam. mm	Height mm	NS	PK	Cat. No.
low	6	25	25	19/12	1	**9.300 151**
low	15	35	30	29/12	1	**9.300 152**
low	15	40	25	34.5/12	1	**9.300 150**
low	30	50	30	45/12	1	**9.300 153**
low	45	60	30	50/12	1	**9.300 154**
low	80	80	30	80/12	1	**9.300 155**
tall	10	25	40	19/12	1	**9.300 160**
tall	20	30	50	24/12	1	**9.300 161**
tall	45	35	70	29/12	1	**9.300 162**
tall	70	40	80	34.5/12	1	**9.300 163**
tall	110	50	80	45/12	1	**9.300 164**



2 Weighing bottles DURAN® with NS lid

DURAN®. DIN 12605. With interchangeable NS lid. With white inscription label.
Burned-in imprint of capacity and size.
Available in high or low shape.

Form	Capacity ml	Diam. mm	Height mm	NS	PK	Cat. No.
low	6	25	25	24/12	1	**9.300 022**
low	15	40	25	40/12	1	**9.300 021**
low	15	35	30	34/12	1	**9.300 023**
low	30	50	30	50/12	1	**9.300 032**
low	45	60	30	60/12	1	**9.300 037**
low	80	80	30	80/12	1	**9.300 041**
high	10	25	40	24/12	1	**9.300 113**
high	45	35	70	34/12	1	**9.300 123**
high	70	40	80	40/12	1	**9.300 124**
high	110	50	80	50/12	1	**9.300 127**



3 LLG- Sample dishes, Aluminium

NEW!

High quality aluminium sample dishes,for moisture determination.

Diam. mm	Height mm	PK	Cat. No.
100	7	80	**6.265 408**



4 LLG-Aluminium weighing dish

Aluminium foil, for sample handling. With a flanged, crimped wall for rigidity. Finger-tab handle can be etched for identification prior to weighing (Not included on Cat. No. 6.236 854). Made from oil-free, lightweight aluminium.

Diam. mm	Height mm	PK	Cat. No.
43	12	100	**6.238 138**
57	14	100	**6.238 139**
70	16	100	**6.238 140**
101	8	50	**6.236 854**



5 LLG-Weighing boats, antistatic, PS

Biologically inert and resistant to dilute and weak acids, aqueous solutions, alcohols, and bases.
Temperature range -10 to +70°C. Can be used with microwave moisture analysers.
Features a diamond shape that easily flexes for accurate pouring and a wide, flat bottom to resist tipping.

Capacity ml	Dimensions mm	Colour	PK	Cat. No.
5	55 x 35 x 6	white	1000	**9.900 788**
30	78 x 56 x 14	white	500	**9.950 194**
100	119 x 90 x 19	white	250	**9.950 195**
5	55 x 35 x 6	black	1000	**9.900 801**
30	78 x 56 x 14	black	500	**9.950 196**
100	119 x 90 x 19	black	250	**9.950 197**

E & OE.

1 LLG-Hexagonal weighing boats, antistatic, PS

Biologically inert and resistant to dilute and weak acids, aqueous solutions, alcohols, and bases.
Temperature range -10 to +70°C. Can be used with microwave moisture analyzers. Bend flexible boats at points to form pour spouts. Flat bottoms to resist tipping. Sloping sides provide accurate transfer.

Size	Dimensions mm	Colour	PK	Cat. No.
Small	38 x 25 x 9	white	500	**9.900 893**
Medium	64 x 51 x 19	white	500	**9.900 894**
Large	102 x 76 x 22	white	500	**9.900 895**
X-Large	127 x 89 x 31	white	500	**9.900 896**

1



2 LLG-Square weighing boats, antistatic, PS

Biologically inert and resistant to dilute and weak acids, aqueous solutions, alcohols, and bases.
Temperature range -10 to +70°C. Can be used with microwave moisture analysers.
Boats are shallow with a wide, flat bottom to resist tipping. Rounded corners simplify transfer.

Capacity ml	Dimensions (W x D x H) mm	Colour	PK	Cat. No.
7	46 x 46 x 8	White	1000	**9.900 785**
100	85 x 85 x 24	White	1000	**9.900 786**
250	140 x 140 x 22	White	1000	**9.900 787**
7	46 x 46 x 8	Black	1000	**9.900 789**
100	85 x 85 x 24	Black	1000	**9.900 791**
250	140 x 140 x 22	Black	1000	**9.900 800**

2



3 Weighing bottles, PP

PP. Transparent. with push-on lid. *Kartell*

Capacity Litres	Diam. mm	Height mm	PK	Cat. No.
30	30	50	1	**9.300 805**
25	40	30	1	**9.300 810**
65	40	60	1	**9.300 815**
65	60	35	1	**9.300 820**
50	50	30	1	**9.300 825**
200	60	90	1	**9.300 830**
400	70	120	1	**9.300 835**

3



4 Planar weighing apparatus

Glass. For all weighing procedures involving the dispersal of material into a thin layer.

Type	PK	Cat. No.
Planar weighing apparatus	1	**9.300 500**

4



5 Anti-vibration platform, Vibrasorb

For absorbing and damping vibrations down to 16Hz. Comprises of a moulded terazzo slab supported on four vibration absorbers with non-slip feet. Suitable for isolating sensitive analytical instruments such as balances and microscopes. Will support up to 16kg. *Bel-Art Products*

Width mm	Depth mm	Height mm	Weight kg	PK	Cat. No.
350	350	76	19	1	**9.941 600**
450	560	76	39	1	**9.951 600**

5



6 Weighing tables TWK I and TWK II

NEW!

High quality, robust weighing table. Proven to avoid impact and touch vibrations. *MAXLABO*
For use with analytical instruments. Cast stone balance plate insert 450 x 450mm mounted shock absorbing. Stable wood-panelled steel tube construction (TWK1) or solid stone (TWK 2).
Damping ratio TWK 1: 7.5% at 5.5 to 16Hz vertical and horizontal natural frequency
Damping ratio TWK 2: 7.5% at 13 to 29Hz vertical and horizontal natural frequency

Type	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
TWK I	900 x 600 x 750	120	1	**9.733 060**
TWK II	900 x 600 x 750	260	1	**9.733 070**

6



1



1 LLG-General purpose thermometer, red filling

NEW!

Graduation resistant against acids and alkalies.
Breakage protected versions with FEP-coating available on request.

Measuring range °C	Length mm	Graduations °C	Diam. mm	Immersion depth	Capillary	PK	Cat. No.
-35 ... +50	300	1	6 ±1	total	white enameled, round	1	**9.236 720**
-20 ... +110	300	1	6 ±1	total	white enameled, round	1	**6.206 594**
-20 ... +150	300	1	6 ±1	total	white enameled, round	1	**9.236 723**
-20 ... +150	300	1	6 ±1	76 mm	white enameled, round	1	**9.236 731**
-10 ... +110	260	1	6 ±1	total	yellow enameled, round	1	**9.236 721**
-10 ... +110	270	1	6 ±1	76 mm	yellow enameled, round	1	**9.236 727**
-10 ... +150	260	1	6 ±1	total	yellow enameled, round	1	**9.236 722**
-10 ... +200	300	1	6 ±1	total	yellow enameled, round	1	**9.236 724**
-10 ... +200	300	1	6 ±1	total	white enameled, round	1	**9.236 725**
-10 ... +200	300	1	6 ±1	76mm	white enameled, round	1	**9.236 730**
-10 ... +250	300	1	6 ±1	total	yellow enameled, round	1	**9.236 726**

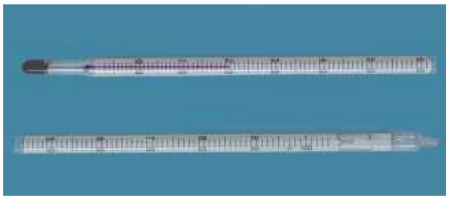
2 LLG- General-purpose thermometers, red filling

Enclosed-scale type, with eyelet. With uncoated, prismatic measuring capillary. Red spirit filling (except 9.235 265: blue).

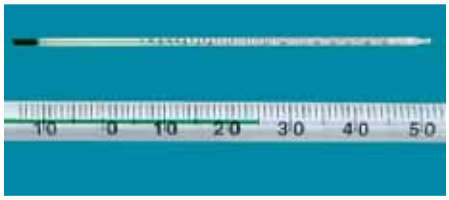
Measuring range °C	Length mm	Graduations °C	Diam. mm	Immersion depth	PK	Cat. No.
-10/0 ... +50	200	1	7 - 8	total	1	**9.235 245**
-10/0 ... +100	260	1	7 - 8	total	1	**9.235 250**
-10/0 ... +150	260	1	7 - 8	total	1	**9.235 255**
-10/0 ... +200*	300	1	7 - 8	total	1	**9.235 260**
-10/0 ... +250*	300	1	7 - 8	total	1	**9.235 265**

* Note: With these types the colour can fade after extended periods of use at higher temperatures.

2



3



3 LLG- General-purpose thermometers, green filling

Glass, solid stem, with loop, white backed. Environmentally friendly thermometer, with biodegradable, green spirit filling.

Measuring range °C	Length mm	Graduations °C	Diam. mm	Immersion depth mm	PK	Cat. No.
-10/0 ... +110	300	1.0	6-7	76	1	**9.235 275**
-10/0 ... +110	300	0.5	6-7	76	1	**9.235 276**
-10/0 ... +150	300	1.0	6-7	76	1	**9.235 277**
-10 ... +250	300	2.0	6-7	76	1	**9.235 278**
-10 ... +360	300	2.0	6-7	76	1	**9.235 279**

4



4 LLG-Precision thermometer, calibratable, red filling

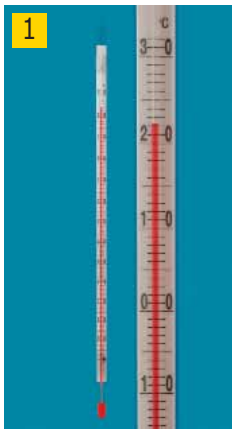
NEW!

Capillary: yellow enameled, round. Optional available with official calibration certificate, works certificate or DKD-calibation certificate. Please specify with order.
Breakage protected versions with FEP-coating available on request.

Measuring range °C	Length mm	Graduations °C	Diam. mm	PK	Cat. No.
-100 ... +30	300	1.0	6 ±1	1	**6.259 873**
-50 ... +50	280	1.0	6 ±1	1	**9.236 800**
-10 ... +100	305	1.0	6 ±1	1	**9.236 783**
-10 ... +150	305	1.0	6 ±1	1	**9.236 784**
-10 ... +200	350	1.0	6 ±1	1	**9.236 788**
-50 ... +50	300	0.5	6 ±1	1	**9.236 801**
-10 ... +100	270	0.5	6 ±1	1	**9.236 785**
-10 ... +150	350	0.5	6 ±1	1	**9.236 786**
-1 ... +101	610	0.1	6 ±1	1	**9.236 790**
-0 ... +50	420	0.1	6 ±1	1	**9.236 787**

1 LLG-Low temperature thermometers, -200 to +30°C

Suitable for official calibration. Enclosed scale type, 8 to 9mm diameter, with translucent glass scale and Richter seal. Prismatic, uncoated measuring capillary. The -200 to +30°C thermometer has a luminous blue measuring capillary, and is pentane filled. Further thermometers are available, red toluene filled with uncoated measuring capillary. Graduated every 1°C.



Measuring range °C	Length mm	PK	Cat. No.
-50 ... +50	300	1	**9.235 705**
-80 ... +30	300	1	**9.235 708**
-100 ... +30	300	1	**9.235 710**
-200 ... +30	300	1	**9.235 720**

2 Laboratory thermometers

To DIN standards as indicated. Calibrated with state certificate. Enclosed scale type, 8 to 9 mm diameter. Prismatic measuring capillary, uncoated. Mercury filled.



Measuring range °C	Resolution °C	Length mm	DIN	PK	Cat. No.
0 to +50	1 / 2	220	12775	1	**9.235 505**
0 to +50	1 / 10	420	12775	1	**9.235 545**
0 to +50	1 / 5	350	12775	1	**9.235 546**
0 to +100	1 / 2	270	12775	1	**9.235 510**
0 to +100	1 / 1	305	12775	1	**9.235 547**
0 to +100	1 / 5	420	12775	1	**9.235 548**
0 to +100	1 / 10	550	12775	1	**9.235 549**
0 to +150	1 / 1	305	12775	1	**9.235 550**
0 to +250	1 / 1	350	12778	1	**9.235 525**
0 to +360	1 / 1	380	12778	1	**9.235 536**

3 ASTM-Thermometers "ACCU-SAFE"

NEW!

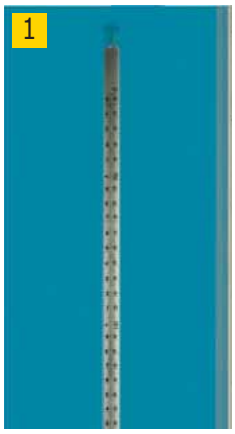
Schneider

High precision and mercury free. ASTM-Thermometers with blue, environmental safety filling, suitable for calibration, immersion total. With DAkkS-calibration or works calibration certificate on request.

Further types available on request, also in °F.



Measuring range °C	Resolution °C	Tolerance ± °C	Length mm	PK	Cat. No.
-38 ... +50	1	0.5	300	1	**9.236 850**
-20 ... +102	0.2	0.2	435	1	**9.236 852**
-2 ... +80	0.2	0.2	415	1	**9.236 854**
+34 ... +42	0.1	0.1	300	1	**9.236 936**
+95 ... +103	0.1	0.1	300	1	**9.236 858**
+19 ... +35	0.1	0.1	610	1	**9.236 860**
-34 ... +49	0.3	0.3	300	1	**9.236 862**
-18 ... +82	0.3	0.3	300	1	**9.236 864**
-32 ... +2	0.1	0.1	401	1	**9.236 866**
-8 ... +32	0.1	0.1	401	1	**9.236 868**
+25 ... +55	0.1	0.1	401	1	**9.236 870**
+50 ...+80	0.1	0.1	401	1	**9.236 872**
+75 ... +105	0.1	0.1	401	1	**9.236 874**
+95 ... +155	0.2	0.2	401	1	**9.236 876**
+18,9 ...25,1	0.1	0.1	615	1	**9.236 879**
23,9 ... 30,1	0.1	0.1	615	1	**9.236 880**
38,6 ... 41,4	0.1	0.1	300	1	**9.236 881**
-7 ... 105	0.1	0.1	300	1	**9.236 882**



1 Thermometers, ground glass joint

With NS14.5/23 cone. With fixed immersion (immersion length = lower section + ground joint). Enclosed-scale type, NS 14.5/23. Translucent glass scale. Upper section approx. 11mm diameter, lower section 7.5mm diameter. Richter-top finish seal without button. Suitable for official calibration. Graduated every 1°C.

Measuring range °C	Corpus mm	Immersion length mm	Charge colour	PK	Cat. No.
-10 to +150:1	250	75	red	1	**9.236 021**
-10 to +150:0.5	350	75	red	1	**9.236 022**
-10 to +250:1	300	75	blue	1	**9.236 023**
-10 to +360:1	350	75	green	1	**9.236 024**
-10 to +150:1	250	100	red	1	**9.236 025**
-10 to +150:0.5	350	100	red	1	**9.236 026**
-10 to +250:1	300	100	blue	1	**9.236 027**
-10 to +360:1	350	100	green	1	**9.236 028**



2 Support Labo-Clip

Stable support for clamping test tubes, thermometers, pH electrodes and other laboratory instruments onto laboratory containers (e.g. beakers). Extensive chemical resistance, with strong flexible foam rubber plate perforated with 5 apertures of varying diameters. Metal components are corrosion-resistant. Applicable from -40°C to +120°C. *Amarell*

Type	PK	Cat. No.
Labo-Clip	1	**9.234 990**



3 Adapter for thermometer, borosilicate glass 3.3

Manufactured from borosilicate glass 3.3 according to DIN 12257 standard, ideal to use for thermometers with Ø 6 - 8 mm. Screw joint provides easy depth adjustment of thermometer. Seal material: NBR *Isolab*

Neck thread GL	Cone NS	Adapter bore diam. mm	PK	Cat. No.
14	14/23	6 - 8	1	**4.008 360**
14	29/32	6 - 8	1	**6.244 589**



4 Contact thermometers

NEW!

With MS 121st2 flat plug or MS 121st3 diode plug as indicated. *Heju*

Further contact thermometers available on request.

Measuring range °C	Grad. °C	Length*	Connector	PK	Cat. No.
0 ... +100	1	50	Flat	1	**9.233 010**
-20 ... +150	1	50	Flat	1	**9.233 015**
0 ... +100	1	150	Flat	1	**9.233 210**
0 ... +250	2	200	Flat	1	**9.233 325**
-20 ... +150	1	300	Flat	1	**9.233 365**
0 ... +250	1	300	Flat	1	**6.090 811**
0 ... +250	2	300	Flat	1	**9.233 367**
0 ... +360	1	300	Flat	1	**9.233 369**
-20 ... +150	1	100	Diode	1	**9.233 116**
0 ... +250	2	100	Diode	1	**9.233 126**
-20 ... +150	1	150	Diode	1	**9.233 216**
0 .... +250	2	150	Diode	1	**9.233 226**
0 .... +250	2	200	Diode	1	**9.233 326**
-20 .... +150	1	300	Diode	1	**6.072 628**
0 .... +250	1	300	Diode	1	**9.233 372**
0 .... +360	1	300	Diode	1	**6.085 906**

* Probe length (mm)

Contact thermometers, accessory connecting cable

With flat coupling and diode connection for relay. *Heju*

For	Cable m	PK	Cat. No.
Contact thermometers with flat plug MS 121st2	0.8	1	**9.233 400**
Contact thermometers with diode plug MS 121st3	1.5	1	**6.091 756**

Temperature controllers - please see page 784.

E & OE.

1 LLG-Exact-Temp thermometers



For monitoring critical temperature conditions in
- deep freezes
- refrigerators
- cold rooms
- blood bank refrigerators
- incubators, warming chambers

Characteristics:
- thermometer certifiable to National Standards
- supplied with works test certificate
- thermometer stem safely encapsulated in PTFE
- each thermometer is mounted in a square-shaped shatter-proof plastic bottle filled with a liquid to ensure accurate readings despite the opening and closing of instrument doors.
- each thermometer has an individual serial number.

LLG-Exact-Temp Standard thermometers, red spirit-filled

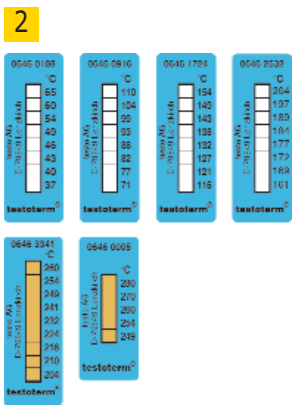
For	Measuring range °C	Grad. °C	Length mm	Bottle filling	PK	Cat. No.
Ultra Low Freezers	-90 ... +20	1.0	145	Sand	1	**9.235 663**
Freezers	-30 ... 0	0.5	125	Ethylene Glycol	1	**9.235 664**
Blood banks	-5 ... +20	0.5	145	Ethylene Glycol	1	**9.235 665**
Coolers	-5 ... +15	0.5	125	Ethylene Glycol	1	**9.235 666**
Incubators	+18 ... +50	0.5	135	Ethylene Glycol	1	**9.235 667**
Warming rooms, ovens	+20 ... +130	1.0	135	Vermiculite	1	**9.235 668**
Warming rooms, ovens	+35 ... +200	1.0	145	Vermiculite	1	**9.235 669**

LLG-Precision thermometers Exact-Temp, blue spirit-filled

For	Measuring range °C	Grad. °C	Length mm	Bottle filling	PK	Cat. No.
Freezers	-25 ... -5	0.1	210	Ethylene Glycol	1	**9.235 675**
Refrigerators	-2 ... +10	0.1	180	Ethylene Glycol	1	**9.235 676**
Blood banks	-2 ... +10	0.1	180	Ethylene Glycol	1	**9.235 677**
Incubators	+15 ... +30	0.1	180	Ethylene Glycol	1	**9.235 678**
Incubators	+25 ... +45	0.1	190	Ethylene Glycol	1	**9.235 679**
Warming rooms, ovens	+50 ... +115	0.1	200	Vermiculite	1	**9.235 680**

2 8-step irreversible temperature strips testoterm®

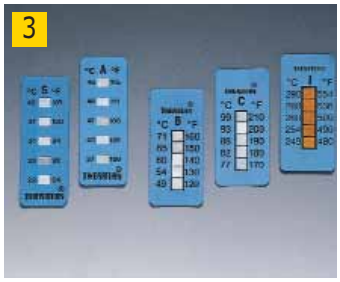
Testo



Strips for 8 temperatures. 5 types cover the measuring range +37 to +280°C, each strip displays 8 different temperatures. Each strip measures 50 x 18mm.

Type	Measuring range °C	Description	PK	Cat. No.
06460108	+37 ... +65	8 temperature changing points	10	**9.246 002**
06460916	+71 ... +110	8 temperature changing points	10	**9.246 003**
06461724	+116 ... +154	8 temperature changing points	10	**9.246 004**
06462532	+160 ... +199	8 temperature changing points	10	**9.246 005**
06463341	+204 ... +260	8 temperature changing points	10	**9.246 006**

3 5-step irreversible temperature strips Thermax®



5-step irreversible temperature measuring strips covering the temperature range 29 to 290°C.
Each strip measures 35 x 15mm.

Type	Measuring range °C	PK	Cat. No.
S	+29 ... +40	10	**9.246 310**
A	+37 ... +46	10	**9.246 311**
B	+49 ... +71	10	**9.246 312**
C	+77 ... +99	10	**9.246 313**
D	+104 ... +127	10	**9.246 314**
E	+132 ... +154	10	**9.246 315**
F	+160 ... +182	10	**9.246 316**
G	+188 ... +210	10	**9.246 317**
H	+ 216 ... +249	10	**9.246 318**
I	+249 ... +290	10	**9.246 319**

1



1 Refrigerator thermometer

Plastic, with loop or hook clip mountings. Measuring range -40 to +40°C. Graduated every 1°C.
Dimensions (L x dia.) 185 x 20mm.

Type	PK	Cat. No.
Refrigerator thermometer	1	**9.242 340**

2



2 Maxima-Minima-Thermometer

TFA Dostmann

- ivory plastic
- beige
- with push button
- mercury-free

Dimensions: 230 x 60mm
Weight: 120g

Type	PK	Cat. No.
Maxima-Minima-Thermometer	1	**9.241 134**

3



3 LLG Min/Max Thermometer with outdoor sensor

Digital thermometer with outdoor sensor.
- Two-tier LCD display
- Measuring temperature range -50°C to +70°C
- Display resolution 0.1°C
- Accuracy ±1°C
- Dimensions 110 x 70 x 20mm
- Display size 40 x 30mm
- AAA 1.5V battery included
- Length of the cable 190cm

Type	PK	Cat. No.
LLG Min/Max Thermometer with outdoor sensor	1	**9.243 165**

4



4 Maximum/Minimum Indoor/outdoor thermometer

Optimal for controlling of refrigerator and freezer temperatures. Measuring range - 50 to +70°C, accuracy 0.1°C. External remote sensor cable, length 3m, with stand and accessories for wall mounting. Dimensions: approx. 80 x 55 x 20mm, with battery. *Amarell*

Official calibration certificate with one or two test points available on request.

Type	PK	Cat. No.
Maximum/Minimum indoor/outdoor thermometer	1	**9.235 120**

5



5 Digital Maxima-Minima-Thermometer

Digital thermometer, wall hanging, for indoor or outdoor use. With blue, splash-proof casing, selectable °C/°F ranges and battery. *TFA Dostmann*
weight: 161g

Measuring range °C	Width mm	Depth mm	Height mm	PK	Cat. No.
-20 ... +50	75	44	115	1	**9.241 131**

6



6 Laboratory Max./Min. thermometer

Display of current, highest and lowest temperature, hold function, alarm at freely adjustable temperature values (upper/lower limit), measuring range -50 to +70°C, accuracy ±0.5°C at -20 to +25°C, otherwise ±1°C, selectable °C/°F readout. Supplied with table stand and magnet, probe with 3m cable and 3V Lithium CR2032 button cell (acc. to EN 13485).

Type	PK	Cat. No.
Laboratory Max./Min. thermometer	1	**9.851 022**

E & OE.

1 Thermometer Checkfridge

1



Hanna

- specially designed to monitor the internal temperature of freezers and refrigeration units
- magnetic backing provides an easy way to attach the thermometer to all metal refrigerators and freezers
- the sensor with 1 metre cable can be easily placed within the freezer/fridge cabinet
- Very high accuracy
- The unique Cal Check Function enables the user to check the internal electronics of the thermometer

Specifications

Measuring range/Resolution:	-50 to +150°C/ 0.1°C
Accuracy:	±0.3°C (-50 to +90°C)
Probe:	40 x 5mm, with 1 metre cable
Battery type:	1 x 1.5V
Dimensions (B x T x H):	93 x 39 x 31 mm
Weight:	100g

Type	PK	Cat. No.
Checkfridge	1	**9.851 098**

2 Digital Maxima-Minima-Thermometers Exact-Temp

2



Schneider

High-precision instruments to monitor freezers, blood bank freezers, incubators, climate chambers and ovens.
The unbreakable plastic bottle is filled with a special medium to ensure accurate measurments even at open doors.

- Thermometers traceable to international standards (with certificate of conformance and accuracy)
- Accuracy: ±0.5°C, resolution 0.1°C
- Temperature units: °C or °F
- 3 display modes: maximum, minimum and ambient temperature
- Alarm function
- 3 m long cable (diameter: 1mm)
- Alkaline battery (AAA) included
- Breakage protected PETG plastic bottles (with 30ml ethylene glycol mixture)
- Bottles with magnets attached for easy wall or door mounting
- Individual serial numbers
- The instruments are available with works certificate on request.

Application	Measuring range °C	Certified Temperature °C	PK	Cat. No.
Freezers	-50 to 70	-20	1	**9.236 710**
Freezing point	-50 to 70	0	1	**9.236 711**
Refrigerators	-50 to 70	4	1	**9.236 712**
Incubators/Water baths	-50 to 70	37	1	**9.236 713**
Climate chambers	-50 to 70	21	1	**9.236 714**

3 LLG-Digital pocket themometer Type 12060

3



Measuring range -50 to +150°C, accuracy ±1°C. With hold function. Probe made of stainless steel, 125 x 3.5mm, with protective plastice sleeve and clip, with battery 1 x 1.5V (LR44). Dimensions (L x W): 60 x 20mm.

Type	PK	Cat. No.
LLG-Digital pocket themometer Type 12060	1	**9.236 701**

4 LLG-Digital pocket themometer Type 12090

4



Waterproof. Measuring range -50 to +150°C/-58 to +302°F, accuracy ±1°C. With hold function. Probe made of stainless steel, 85 x 3.5mm, with protective plastic sleeve, with battery 1 x 1.5V (LR44).
Overall dimensions (L x W): 185 x 30mm.

Type	PK	Cat. No.
LLG-Digital pocket themometer Type 12090	1	**9.236 707**

5 LLG-Digital pocket themometer Type 12080

5



Waterproof. Measuring range -50 to +300°C/-58 to +572°F, accuracy ±1°C until 150°C, above ±2°C. With hold function and Max/Min function. Probe made of stainless steel, 85 x 3.5mm, with protective plastic sleeve, with battery 1 x 1.5V (LR44). Overall dimensions (L x W): 195 x 50mm.

Type	PK	Cat. No.
LLG-Digital pocket themometer Type 12080	1	**9.236 703**

1



1 Thermometer Pocket-Digitemp

Waterproof instrument in plastic housing (food-grade).
Low budget, durable instrument for measuring temperature in air, gas, liquid and platical substances (acc. to EN 13485).
Range of applications: Food (HACCP), industry, agriculture and hobby.
Features: waterproof, 1-second measuring frequency, Max-Min-Hold function, °C/°F-selectable.

Sensor:	NTC
Measuring range:	-40°C to +200°C
Resolution:	0.1°C
Accurancy:	±0.8°C (at 0°C to 100°C) others 1.5°C
Dimensions:	202 x 20 x 16mm (long version) 150 x 20 x 16mm (short version)
Probe dimensions:	126 x 3.5mm (long version) 75 x 3.5mm (short version)
Weight:	40g

Type	PK	Cat. No.
short version	1	**9.851 028**
long version	1	**9.851 029**

2



3



2 3 Mini-Thermometer TDC 110

ebro

- Probe: Stainless steel, diam. 4mm, length 120 mm
- Pointed probe, fixed
- Robust and impact-resistant
- Exchangeable battery
- °C/°F switchable
- Automatic deactivation after approx. 10 min.
- With needle guard and spare battery

Specifications

Measuring range:	-50°C to +150°C
Sensor:	NTC
Accuracy (±1 Digit):	±1°C (-10°C ... -120°C). ±2°C for remaining measuring range
Readabilty:	0.1°C
Operating range:	0 to +50°C
Batterie:	1.5 V, G 10-A
Dimensions:	50 x 40 mm
Weight:	approx. 13g

Type	PK	Cat. No.
Mini-Thermometer TDC 110	1	**6.237 979**

4



9.851 997

Digital pocket themometer ThermoJack/ThermoJack PRO

Foldable pocket themometer, watertight. Ideal for measuring foods (acc. to EN13485), liquids etc. ThermoJack PRO with calibration certificate.

Dostmann electronic

Type	Measuring range °C	Accuracy °C	Resolution °C	Probe	PK	Cat. No.
ThermoJack	-40 ... +250	± 0.5 (-20 ... +150)*	0.1	70	1	**9.851 997** 4
ThermoJack PRO	-50 ... +350	± 0.5 (-30 ... +150)*	0.1	110	1	**9.851 999**

*otherwise ±1.0°C or 1%, the larger value applies

5



5 Core Thermometer TDC 150

NEW!

ebro

- Fast temperature checks
- Including needle protection
- Battery exchangeable

Specifications:

Accuracy:	±1°C (-30°C to 150°C)
Battery lifetime:	approx. 5000 hours
Battery:	1.5 V, LR44, G13
Dimensions:	24 x 26 x 85mm
Sensor:	NTC
Measuring range:	-50°C to+150°C
Operating Temperature:	0°C to+50°C
Resolution:	0.1°C (-20°C to +150°C)
Response time (t99):	10 sec (water)
Display:	LCD-7mm
Housing material:	ABS
Protection class:	IP 65 (waterproof)
Temperature probe:	Stainless steel, diam. 3.5mm, L = 125mm, pointed

Type	Description	PK	Cat. No.
TDC 150	Core Thermometer	1	**6.233 287**

E & OE.

1 Digital pocket thermometer TLC 700

NEW!

ebro

The practical folding thermometer TLC 700 is suitable for measuring the core temperature during transport, storage and receiving of goods. Thanks to the foldable penetration probe the waterproof thermometer (IP 65) can be stored safely.
The device is primarily characterized by its small size and the large display and comes with a calibration certificate.

1



Specifications

Measuring range/Resolution:	-30 to +220°C/ 0.1°C
Accuracy:	±0.5°C (-30 to +100°C)
	±1.0°C (remaining range)
Probe:	70mm
Battery type:	1 x 3V (CR 2032)
Dimensions (WxDxH):	118 x 33 x 15mm
Weight:	approx. 41g

Type	PK	Cat. No.
Digital pocket thermometer TLC 700	1	**9.908 018**

2 Digital thermometer, Checktemp C

Hanna

With very high measurement accuracy of ±0.3°C (-20 to +90°C) and integral stainless steel insertion probe. Equipped with the unique "Checkcal" function which tests internal instrument electronics when the Checktemp is switched on.

2



Range:	-50 to +150°C
Resolution:	0.1°C
Accuracy:	±0.3°C (-20 to 90°C)
	±0.5°C (rest of range)
Overall L x W x H:	170 x 50 x 25mm
Probe L x dia.:	105 x 3mm
Weight:	100g

Type	PK	Cat. No.
Checktemp C	1	**9.950 179**

3 Digital thermometer Checktemp 1 C

Hanna

With very high measurement accuracy of ±0.3°C (-20 to +90°C) and integral stainless steel insertion probe with handle and 1 metre cable, ensuring flexibility in use. Equipped with the unique "Checkcal" function which tests internal instrument electronics when the Checktemp 1 is switched on.

3



Specifications

Range:	-50 to +150°C
Resolution:	0.1°C
Accuracy:	±0.3°C (-20 to 90°C) ±0.5°C (rest of range)
Overall L x W x H:	170 x 50 x 25mm
Probe length L x dia.:	106 x 3mm
Weight:	80g

Type	PK	Cat. No.
Checktemp 1 C	1	**9.950 180**

4 Digital hand held thermometer Type 12200

Waterproof. Measuring range -50 to +300°C/-58 to +572°F, accuracy ±1°C until 150°C above ±2°C. With hold function and Max/Min function. Penetration probe made of stainless steel, 140 x 3.5mm with 1m cable and handle.
With battery 1 x 1.5V AAA. Overall dimensions (L x W): 140 x 75mm.

4



Type	PK	Cat. No.
Digital hand held thermometer Type 12200	1	**9.236 705**

1



6.231 995

Core Thermometer TTX 100/110

ebro

The robust and shock-resistant insertion thermometer TTX 100 and TTX 110 are suitable for HACCP core temperature measurement during transport, storage and incoming goods department in accordance with DIN EN 13485 as well as for laboratory temperature measurements.

- Inexpensive calibrated thermometer
- Battery included and replaceable by the user if required
- Splash-proof
- factory calibration certificate
- Temperature probe for TTX 100 is permanently attached, with 60 cm silicone cable, probe with grip, needle Ø 3 mm, length = 105 mm, pointed
-Temperature probe for TTX 110 is permanently attached, needle Ø 3 mm, length = 90 mm, pointed

2



6.230 658

Specifications

Measuring range:	-50 to +350°C
Accuracy:	±0.8°C or ±0.8%, with the bigger value being applicable
Resolution:	0.1°C from -60°C to + 199°C and 1°C for the remaining measuring range
Housing material:	ABS
Operating temperature:	-20°C to +50°C
Storage temperature:	-30°C to +70°C
Reaction time (90%):	5s
Dimensions:	90 x 42 x 17 mm (without probe)
Battery lifetime:	typical 100 h with uninterrupted use
Battery:	CR 2032, replaceable
Protection class:	IP 55

Type	Description	PK	Cat. No.	
TTX 100	Fixed probe with cable	1	**6.231 995**	1
TTX 110	Fixed probe without cable	1	**6.230 658**	2
TTX-WM	Wall holder for TTX 100/TTX 110	1	**9.908 026**	

3



3 Hand held thermometer Type 13100

NEW!

Schneider

Digital temperature measuring device with 2 input channels, incl. 1 sensor with flat plug (measuring range up to approx. +150°C, cable length: 3 m). For measuring sensors type K (NiCr-Ni). Measuring range: -200...+1370°C/-328...+2498°F. Resolution: 0.1°C/F. Accuracy: ±0.1%. With hold function, with max/min memory and automatic switch-off after 30 min. With PC interface and bag. Battery: 1 x 9 V block.
Dimensions: 184 x 64 x 30 mm

Description	PK	Cat. No.
Hand held thermometer Type 13100	1	**9.236 715**
Power adapter (100-240V, 50-60Hz)	1	**9.236 716**
Insertion sensor with handle type K, measuring range: -50 to +600°C (±2.5°C)	1	**9.236 717**
Surface sensor with handle type K, measuring range: -50 to +400°C (±2.5°C)	1	**9.236 718**
90° Surface sensor with handle type K, measuring range: -50 to +400°C (±2.5°C)	1	**9.236 719**

4



4 Digital thermometer ama-digit ad 14 th

Amarell

Temperature range: -35 to +500°C, resolution 1°C. Rapid response and ergonomic design. Dimensions (WxDxH) 90 x 60 x 25mm. With stainless steel probe (L x dia.) approx. 100 x 2.5mm. With battery.

Type	PK	Cat. No.
ama-digit ad 14 th	1	**9.243 100**

5



5 Digital thermometer ama-digit ad 15 th

Amarell

Color back (available in 4 additional colors)Range: -40 to +120°C, resolution 0.1°C. Precise and cost-effective. Dimensions (WxDxH) 90 x 60 x 25mm. With stainless steel probe approx. 30 x 2.5mm (L x dia). With battery.

Type	PK	Cat. No.
ama-digit ad 15 th	1	**9.243 101**

E & OE.

1 Digital thermometer ama-digit ad 20 th

Temperature range: -50 to +300°C. Resolution 0.1°C from -50 to +180°C, 1°C for the rest of the range. Dimensions (WxDxH) 90 x 60 x 25mm. With battery. For appropriate temperature probes see order no. 9.243 111 to 114.

Amarell

Type	PK	Cat. No.
ama-digit ad 20 th	1	**9.243 102**



2 Temperature probes, Pt100 for ama-digit ad 20 th

Class A. Stainless steel sheathed probe, approx. 105 x 3mm L x dia. With handle and approx. 1m cable.

Amarell

Type	PK	Cat. No.
Pt100 immersion probe	1	**9.243 111**
Pt100 penetration probe	1	**9.243 112**
Pt100 surface probe	1	**9.243 113**
Pt100 air probe	1	**9.243 114**

2



3 Temperature meter, digital, testo 925

Without probe. Economical. Very robust. With 1 measuring input. **With battery and calibration protocol.** For °C, °F, °K. Hold function and battery display.

Testo

Digital thermometers, testo 925, accessory probes:
- Waterproof immersion/penetration probe
- Precise and rapid, waterproof immersion probe
- Rapid reaction surface probe
- Robust, economical, air probe

Measuring range:	-50 to +1000°C
Sensor:	Type K (NiCr-Ni)
Accuracy:	-40 to +900°C : ±0.5°C, ±0.3%
	remaining range: ±0.7°C, 0.5%
Battery:	9V, 6F22

Type	PK	Cat. No.
Temperature meter, digital, testo 925	1	**9.851 324**
TopSafe testo 925, protective cover against impact and dust	1	**9.718 011**
Immersion / penetration probe	1	**9.718 200**
Immersion probe	1	**9.718 202**
Surface probe	1	**9.718 222**
Air probe	1	**9.718 230**

3



Digital thermometer testo 110

NEW!

Without probe. For use with accessory NTC sensor probes. For control measurements in the food industry and laboratories. Features: switchable °C readout, with Hold function, low battery indicator and battery saving automatic switch-off after a period without use. **With battery and calibration certificate.**

Testo

Accuracy: System accuracy using immersion/penetration probes.
- 20 to +80°C : ±0.2°C, ±0.3°C: rest of range

Battery: 9V, 6F22

Description	Measuring range °C	PK	Cat. No.
Digital thermometer testo 110	-50 ... +150	1	**9.851 300** 4
TopSafe (IP68 protective boot)		1	**9.718 020**
NTC immersion/penetration probe, diam. 4mm, length 110mm	-50 ... +150	1	**9.851 716**
NTC surface probe, with widened measuring tip, diam. 5mm, length 115mm	-50 ... +150	1	**9.851 720**
NTC air probe, robust, diam. 5mm, length 115mm	-50 ... +125	1	**9.851 723**
Robust food penetration probe with special handle, diam. 5mm, length 115mm	-25 ... +150	1	**9.851 352**

4



9.851 300

1



1 Electronic Contact Thermometer GFX 460

NEW!

ebro

Applications:
- control of magnetic stirrers, stirrer/hotplates, etc.
- laboratory
- process monitoring

Attributes:
- high accuracy through fuzzy logic algorithm
- minimizes temperature overshoot
- suitable for all magnetic stirrers

Safety features: Probe failure identification, Probe limit warning.
Safety and control circuit according to DIN 12878 Class 1 and 2

Also suitable for Heidolph Magnetic stirrers MR-Hei Standard constructed up to June 2014.

Specifications

Measuring range:	-50 to +300°C
Resolution:	1°C
Accuracy:	±1°C
Measuring rate:	1s
Measuring probe:	Pt1000
Operating temperature:	-5 to +60°C
Storage temperature:	-30 to +70°C
Type of control:	Fuzzy logic control
Protection class:	IP 65
Connection:	5-pin diode plug DIN 45322
Display:	Background illumination LED display for control status
Power supply:	external 9-12V d.c., 20mA
Dimensions (WxDxH):	54 x 22 x 110mm without probe
Housing material:	Polyamide, acid-resistant
Weight:	approx. 150g

Type	Description	PK	Cat. No.
GFX 460	with V2A probe, 205 x 3 mm L x dia.	1	**9.908 056**
GFX 460 G	with glass-coated probe, 235 x 7 mm L x dia.	1	**9.908 057**
Relay box		1	**9.908 059**

2



2 Laboratory Thermometer TFX 410-1

ebro

Robust and impact resistant temperature measurement device for Pt 1000 penetration probe (connection Lemo size 0). For control measurements in laboratories, food sector, storage and incoming goods. For temperature determination of air, liquids, plastic substances and food. Conform to HACCP and DIN EN 13485. With battery and factory calibration certificate.

- Probes made of stainless steel, for temperatures up to +400°C
- Accuracy: exceeds DIN IEC 584, class 1

Please order probes separately.

Specifications:

Measurement range:	-50°C to +300°C
Accuracy:	±0.3°C
Resolution:	0.1°C
Sensor:	Pt 1000 (connection Lemo size 0)
Operating temperature:	-25°C to +50°C
Automatic switch-off:	After 2 hours, optional
Dimensions (L x W x H):	54 x 22 x 109 mm (without probe)
Weight:	Approximately 90 g
Battery:	3.0 V Lithium, replaceable
Battery lifetime:	Approximately 5 years
Protection class:	IP 67

Type	Description	Length mm	Diam. mm	PK	Cat. No.
TFX 410-1	Laboratory thermometer (without probe)			1	**6.207 171**
TPX 100	Blunt probe, without cable	120	3	1	**9.908 021**
TPX 200	Pointed probe, without cable	120	3	1	**6.251 438**
TPX 200-20	Pointed probe, without cable	200	3	1	**9.908 022**
TPX 200-30	Pointed probe, without cable	300	3	1	**9.908 023**
TPX 200-40	Pointed probe, without cable	400	3	1	**9.908 024**
TPX 400	Pointed probe with 60 cm silicone cable (red) and grip	120	3	1	**6.233 543**
TPX 400-40	Pointed probe with 40 cm silicone cable (red) and grip	120	3	1	**9.908 025**
TPX 400-150	Pointed probe with 150 cm silicone cable (red) and grip	120	3	1	**6.254 169**

E & OE.

1 Laboratory Thermometer TFX 422C

NEW!

ebro

Due to the new German calibration law, which became effective on January 01 2015, we were forced to stop the sales of the TFX 422 Laboratory Thermometer with PTB certification. The so called certification of conformity replaces the calibration by the measurement office. Our new Conformity Certified Laboratory Thermometer TFX 422C is the equivalent successor: same properties, same quality.

- PTB approved
- Robust and impact resistant
- High accuracy
- Waterproof IP 67
- Approx. 5 years battery life
- According to EN 13485
- With fixed Pt 1000 probe
- 2 cable lengths (60cm, 150cm) available

Specifications:

Measurement range:	-50°C to +200°C
Accuracy:	±0.3°C
Resolution:	0.1°C
Sensor:	Pt 1000 (l 120mm, Ø 3mm)
Operating temperature:	-25°C to +50°C
Deactivation:	Automatically after 2 hours, deactivalable
Dimensions (L x W x H):	109 x 54 x 22 mm (without probe)
Weight:	Approximately 90 g
Battery:	3.0 V Lithium, 1 Ah, type CR 2477, replaceable
Battery lifetime:	Approximately 5 years
Protection class:	IP 67

Type	Description	PK	Cat. No.
TFX 422C-60	Thermometer with certification of conformity, with 60 cm cable	1	**6.266 921**
TFX 422C-150	Thermometer with certification of conformity, with 150 cm cable	1	**6.266 922**

1



Precision thermometer TFX 430 (without probe)

NEW!

ebro

Features:
- high accuracy
- four-wire measuring system
- waterproof IP67
- approx. 5 years battery life
- factory calibration certificate
- different probes for different applications

Specifications

Measuring range:	-100 to +500°C
Accuracy:	±0.05°C (from -50 to +199.99°C); remaining measuring range: ±0.2°C
Resolution:	0.01°C (from -100 to +199.99°C); remaining measuring range: 0.1°C
Operating temperature:	-20 to +50°C
Storage temperature:	-30 to +70°C
Probes:	Pt100
Measurement interval:	1 to 15 secs, adjustable
Battery:	Lithium 3V, 1Ah, Type CR2477
Deactivation:	Automatically after 2 hours, deactivatable
Dimensions:	109 x 54 x 22mm
Weight:	approx. 90g
Protection class:	IP67
Housing material:	ABS

2



9.908 075

Type	Description	PK	Cat. No.
TFX 430	Precicion-Thermometer, without probe	1	**9.908 075** 2
TFX 430 + TPX 130	Precicion-Thermometer, with probe (length 130mm, 3mm dia., blunt)	1	**9.908 076**
TFX 430 + TPX 230	Precicion-Thermometer, with probe (length 130mm, 3mm dia., pointed)	1	**9.908 077**
TFX 430 + TPX 330	Precicion-Thermometer, with probe (length 190mm, 8mm dia., glass-coated)	1	**9.908 078**
TPX 230	Probe, length 130mm, 3mm dia., blunt for TFX 430	1	**6.233 571**
TPX 130	Probe, length 130mm, 3mm dia., pointed for TFX 430	1	**6.235 806**
AX 110	Extention cable, length 1m, silicone for TFX 430	1	**6.226 725**

1



6.227 520

Digital thermometer testo 735-2

NEW!

Testo

3 channel temperature instrument testo 735-2, certified acc. to DIN EN ISO 13485. Highly accurate temperature measurement in corrosive media.

Suitable for precise temperature measurements in chemicals at 338°C and 98 % acid content. With the robust and yet highly precise 3-channel temperature measuring instrument testo 735-2, and the corresponding Pt100 laboratory probe, you measure temperature reliably even in corrosive media. Thanks to its glass coating, the Pt100 probe is ideally suited to typical temperature measurements in laboratories. **Please order Pt100 probe separately.**

- Ideally suitable for use in a laboratory thanks to a glass-coated Pt100 probe
- Implementation and recording of measurement series
- Evaluation, visualization, documentation with free software ComSoft Professional
- Consistent compliance with quality standards
- Norm-compliant work
- Measurement, analysis and documentation of results with one instrument
- Highest level of precision over entire measuring range due to system adjustment
- Recording of measurement series (instrument store 10.000 measurement values) with freely selectable cycle

2



9.851 718

Specifications

Measuring range with Pt100 probe:	-50 to +400°C
Working temperature:	-20 to +50°C
Housing material:	ABS/TPE/metal
Batterie type:	Alkali manganese, AA
Dimensions (L x W x H)	220 x 74 x 46mm
Weight:	428g
Protection class:	IP 65
Guarantee:	2 year

Description	PK	Cat. No.	
Temperature measuring instrument testo 735-2 incl. ComSoft Professional Software	1	**6.227 520**	1
Laboratory probe Pt100, glass-coated, glass tube DURAN®	1	**9.851 718**	2
Mains unit, 5VDC 500 mA with Euro plug, 100-250 VAC	1	**7.633 482**	
Service case for basic equipment measuring instrument and probes	1	**6.207 195**	

3



3 Infrared-Thermometer Slim Flash

Non-contact temperature measurement via infrared. Response time 1 second. Measuring range -33 to +199°C, Accuracy ±2°C or 2%, incl. CR2032 button cell.

Dostmann electronic

Type	PK	Cat. No.
Infrared-Thermometer Slim Flash	1	**9.851 998**

4



6.241 105

Combination Infrared and Penetration Thermometer TLC 730

Handy, waterproof infrared thermometer with large measurement range for noncontact measurement of the surface temperature and secure core temperature measurement with the folding penetration probe. For time-saving, precise temperature measurements at incoming goods, production and storage of diverse goods and food. Conform to HACCP and DIN EN 13485. With battery and factory calibration certificate.

ebro

Specifications:

Measurement range:	-50°C to +350°C
Accuracy infrared:	±4°C at -50°C to -30.1°C ±2.5°C at -30°C to -18.1°C ±1.5°C at -18°C to -0.1°C ±1.0°C at 0°C to +65°C ±2.0°C or 2 % at +65°C to +350°C
Accuracy penetration probe:	±0.5°C at -18°C ... +120°C Otherwise ±1°C [1%], whichever is larger
Resolution:	0.1°C
Sensor:	Type K
Operating temperature:	-25°C to +50°C
Dimensions (L x W x H):	48 x 24 x 172 mm (without probe)
Weight:	Approximately 140 g
Battery:	2 x 1.5 V AAA, replaceable
Deactivation:	Automatically after 15 sec., deactivatable
Protection class:	IP 55

Type	Description	PK	Cat. No.	
TLC 730	Combination infrared and penetration thermometer	1	**6.241 105**	4
AG 121	Nylon case for TLC 730	1	**6.207 112**	

E & OE.

1 2 Infrared thermometer, DualTemp Pro, with penetration probe

For simple, rapid, non-contact, temperature measurement.
- dual display
- wide measurement ranges:
- infra-red: -33 to +250°C
- conventional penetration probe: -55 to + 250°C
- measuring spot:distance ratio 2.5:1
- Max./ Min., Hold functions
- auto-off after 15 secs.
- belt-clip included
- accessories: certificate of calibration & pilot drill for taking measurements from frozen items

Resolution:	0.2°C
Accuracy (IR):	-33°C to 0°C ±1.0°C ±0.1/1°C 0°C to +65°C ±1.0°C +65°C to +200°C ±1.5%
Accuracy (penetration probe):	below -5°C ±1.0°C -5°C to +65°C ±0.5°C above +65°C ±1%
Spectral sensitivity:	6 to 14µm
Adjustable emissivity:	0.10 to 1.00
Operating temperature:	0 to 50°C
Battery:	Lithium cell CR2032
Dimensions:	24.2 x 39.8 x 156mm
Weight:	380g (incl. packaging)

Type	PK	Cat. No.
DualTemp Pro	1	**9.851 023**

1 2



3 Infra-red thermometer ScanTemp 385

With IR thermometers you can measure surface temperature. A short response time and non-contact measurement are key advantages. ideal for monitoring applications such as:
- moving parts (running paper webs...)
- registering the surface temperature of gears and motors
- checking live electrical parts (components, transformers...)
- newly coated or painted parts
- food and corrosive substances

Specifications

Temperature range:	-35°C to +365°C
Precision:	±2% or 2°C, the higher value counts
Response time:	< 1 sec
Spectral sensitivity:	6 to 14µm
Operating temperature:	0 to 50°C
Optical resolution:	12:1
Laser:	Spot laser
Dimensions (L x W x H):	147.9 x 112.6 x 41.4mm
Weight:	150g (incl. packaging)
Battery:	2 x 1.5V AAA Batteries

Type	PK	Cat. No.
ScanTemp 385	1	**9.851 996**

3



4 Infra-red thermometer ScanTemp 410

Infra-red thermometer with laser aiming. For quick, easy and safe measurement of surface temperatures. Easy to use: just point, press the button and read the measurement from the large, illuminated display.

Specifications

Temperature range:	-33°C to 500°C
Precision:	±2 % of measurement or 2°C
Response time:	0.5 secs.
Spectral sensitivity:	7 to 18µm
Operating temperature:	0 to 50°C
Optical resolution:	11:1
Laser:	Spot laser
Dimensions (L x W x H):	175 x 39 x 79mm
Weight:	300g (incl. packaging)
Battery:	2 x 1.5V AAA Batteries

Type	PK	Cat. No.
ScanTemp 410	1	**9.851 919**

4



1



9.908 031

Infrared Thermometers TFI 250/TFI 54

ebro

Non-contact measurement of the surface temperature with infrared. Ideal for fast and secure measurements of moving or energized parts and food. With batteries and factory calibration certificate.

Specifications:

Measurement range:	-60°C to +550°C
Accuracy:	±2°C or 2% (at 0°C to +550°C), whichever is larger
Resolution:	0.1°C
Optical resolution:	12:1
Operating temperature:	0°C to +50°C
Response time:	1 sec.
Emissivity factor:	0.95 fixed (0.1 to 1.0 possible)
Dimensions (L x W x H):	153 x 115 x 48mm (TFI 250) 144 x 117 x 43mm (TFI 54)
Weight (with batteries):	177g (TFI 250), 180g (TFI 54)
Battery:	2 x 1.5V AAA, replaceable
Protection class:	IP 20 (TFI 250), IP 54 (TFI 54)

Type	Description	PK	Cat. No.
TFI 250	Infrared thermometer	1	**9.908 031** 1
TFI 54	Splash water proof infrared thermometer	1	**9.908 032**

2



2 Dual Infrared Thermometer TFI 550 with NiCr-Ni Connection

ebro

Addtional connection for NiCr-Ni temperature probes with SMP-connection.
Please order probes separately.
- Optics D:S = 30:1
- Dual laser
- NiCr-Ni connection for core temperature measurement with penetration probe
- Alarm when Min/Max exceeded
- Factory calibration certificate

Specifications:

Measurement range:	-60°C to +550°C (-76°F to 1022°F)
Accuracy:	±2°C at -18°C to +23°C (±3.6°F at 0°F to 73°F) ±1 % of measurement ±1°C (whichever is larger) at +23°C to +510 C ±1.8°F (whichever is larger) at 73°F to 950°F
Resolution:	0.1°C at -9.9°C to +199°C, otherwise 1°C (0.2°F at 14°F to 391°F, otherwise 1.8°F)
Response time (t_{99}):	Approximately 1 s
Emissivity factor:	0.1 to 1.0
Distance : spot ratio:	30:1
NiCr-Ni probe measurement:	
Measurement range:	-64°C to +1400°C (-83°F to 2552°F)
Connection:	SMP
Accuracy:	±1 % of measurement value/±1°C (±1.8°F), whichever is larger
Battery:	2 x AAA (Micro)
Battery lifetime:	Typically 180 hours
Operating temperature:	0°C to +50°C (32°F to 122°F)
Storage temperature:	-20°C to +65°C (-4°F to 149°F)
Protection class:	IP 20
Weight:	approx. 180g

Type	Description	PK	Cat. No.
TFI 550	Dual Infrared Thermometer (without probe)	1	**6.238 001**

We can supply this
manufacturer's whole product range !
partner of the LLG Lab Logistics Group
-ebro- a xylem brand

E & OE.

Disposable data logger TEMPMATE-PDF

1

Dostmann electronic

The innovative single-use data logger with a built-in USB connector, is ideal solution for low-cost temperature monitoring of transports.
TEMPMATE-PDF loggers will be supplied according each customer's specifications.



9.726 424

Product features
- Recording cycle 6, 15 or 90
- ON-Board PDF report generator, no software required
- Built-in USB connector, no hardware required
- Bank-card size
- Quick-start with START button
- Easy to read LED ind
- Food-safe packaging
- Free costumisation service
- Includes Certificate

At quantities of 100 pieces, the TM logger can be customized.
Following pre-programmed settings can be made free of charge:
- Upper and lower alarm set point (e.g. <+2°C and >+8°C)
- Alarm delay (default: 30 min.)
- Start delay (default: 0 min.)

Specifications:

Temperature Range:	-30°C to +70°C
Accuracy:	±0.5°C
Resolution:	0.1°C
Data Memory:	12960 measurements
Recording Cycle*:	up to 90 days
Sampling Interval*:	1 min 6 days/2 min 15 days/ 10 min 90 days
Shelf Life:	12 months
Dimensions (L x W x H):	80mm x 52mm x 4mm
Weight:	10g
Protection Class:	IP 67
System Requirements:	Adobe® Reader
Certifications:	Calibration Certificate, CE, RoHS, EN 12830 S, T, C, D, 1

For	Interval	PK	Cat. No.
6 days	1 min	1	**9.726 426**
15 days	2 min	1	**9.726 428**
90 days	10 min	1	**9.726 424** 1

*dependent on model

2 Data Logger LOG32T

NEW!

2



Dostmann electronic

- Memory size: 60 000 measurements
- Usable without software (default settings) (15-minute-interval, without alarm settings)
- Optional free of charge software download for alarm setting and free adjustable recording interval (30sec to 24h)
- Automatic PDF creation
- Battery lifetime > 3 years (recording interval >15 minutes)
- Status and Alarm-LEDs, acoustic signal
- Includes wall mount
- HACCP (EN12830) conform
- IP65 watertight

Applications
The LOG32T is perfectly designed for product transportation or storage applications.
- Quality surveillance in laboratories during production in storage areas
- Monitoring conditions in manufacturing facilities
- Maintaining product storage according to HACCP
- Ambient conditions in power plants
- Monitoring of fridges for the pharmaceutical industry

Specifications

Measuring range:	-40 ... +70°C
Accuracy:	±0.5°C (-10 ... +40°C), otherwise ±1.0°C
Resolution:	0.1°C
Memory:	60 000 measurements
Interface:	USB (integr.)
Housing:	ABS
Dimensions (L x W x H):	100 x 19 x 19mm
Weight:	70g
Battery:	1 x 3.6 Volt Lithium ½ AA

Type	PK	Cat. No.
LOG32T	1	**9.726 431**

1



7.626 604

Mini data logger testo 174T

Testo

The mini data logger for temperature, testo 174T, is ideal for accompanying transports. Simply positioned close to the goods, e. g. in containers and refrigerated rooms, the data logger monitors temperature continuously, securely and unobtrusively. The free software ComSoft testo 174 allows fast programming of the data logger and easy analysis.

- High data integrity, even with empty battery
- Large measurement data memory
- Watertight in accordance with IP65
- Compact and robust
- Conforms to EN12830
- Issue of alarms via display
- Data transfer to the PC via USB interface
- Reliable temperature measurement for the monitoring of sensitive goods and cold chain during storage and transport

Specification

Probe type:	Internal NTC temperature sensor
Measuring range:	-30 to +70°C
Accuracy:	±0.5°C
Resolution:	0.1°C
Operating temperature:	-30 to +70°C
Storage temperature:	-40 to +70°C
Battery type:	2 x 3V button cell (2 x CR 2032 lithium), can be changed by user
Battery life:	500 days (15 min measuring cycle, +25°C)
Protection class:	IP65
Meas. cycle:	1min - 24h (can be selected)
Memory:	16.000 readings
Software:	can be used with Windows XP, Vista, Win7

Type	Description	PK	Cat. No.
testo 174T	Mini data logger, 1-channel, incl. wall bracket, battery (2 x CR 2032 Lithium) and calibration protocol	1	**7.626 604** 1
testo 174T set	Mini data logger, 1-channel, incl. USB interface for programming and reading out the logger, wall bracket, battery (2 x CR 2032 lithium) and calibration protocol	1	**7.626 614**

2



9.908 069

Data Logger EBI 20-T1/EBI 20-TE1

NEW!

ebro

Applications:
- reliable temperature recording
- transport
- storage monitoring
- refrigeration areas and coldrooms

Features:
- excellent price/performance ratio
- waterproof
- visual Alarm
- max/min values on display
- stores 40.000 readings, can be read off at any time
- replaceable battery

Specifications

Measuring range temperature:	-30 to +70°C
Accuracy, temperature:	±0.5°C (-20 to +40°C); ±0.8°C for remaining measuring range
Resolution temperature:	0.1°C
Memory:	40.000 samples
Sensor:	NTC
Operating temperature:	-30 to +70°C
Storage temperature:	-40 to +70°C
Measuring period:	1 minute to 24 hours
Measuring mode:	immediate loop measurement, measurement from starting point, start immediately until memory full, start/stop measuring, start when button pressed
Battery:	3V lithium (CR 2450), can be replaced by user
Protection class:	IP 67
Housing :	ABS
Dimensions:	69mm x 48mm x 22mm
Weight:	approx. 45g

3



6.240 382

Type	Description	PK	Cat. No.
EBI 20-T1-Set	Starter-Set (Temperature Logger, evaluation software, Interface)	1	**9.908 073**
EBI 20-TE1-Set	Starter-Set (Temperature Logger with external sensor, evaluation software, Interface)	1	**6.240 382** 3
EBI 20-T1	Temperature Logger	1	**9.908 069** 2
EBI 20-TE1	Temperature Logger with external probe	1	**6.228 382**
EBI 20-IF	Interface incl. evaluation software Winlog.basic	1	**9.908 072**
EBI 20-WM	Wall mounting incl. padlock	1	**9.908 079**
EBI 20-WM1	Truck wall holder	1	**6.242 239**

E & OE.

1 Temperature data logger LOG100

NEW!

Dostmann electronic

Large display for actual value, battery status display, easy to use software.
Perfect designed instrument for transportation or storage.

- quality surveillance in laboratories, at the production or in the storage
- ambient conditions in manufacturing facilities
- monitoring from storages after HACCP
- ambient conditions in power plants
- monitoring of fridges for the pharma industry
- memory for 60 000 data sets

Please order Software with USB-Cabel separately (9.726 413)

Specifications

Measuring range:	-30 to +70°C
Accuracy:	0.1°C
Precision:	±0.5°C (0 to +40°C), otherwise ±0.7°C
Housing:	Plastic (ABS)
Battery:	1 x CR2032 3V
Dimensions:	92 x 55 x 21mm
Weight:	95g (incl. packaging)
Alarm function:	Alarm for too low or too high temperatur and/or humidity values Calibration reminder

1



Type	PK	Cat. No.
Temperature data logger LOG 100	1	**9.726 411**
Windows Software DE-Graph for LOG 100 and LOG 110 with USB-cabel	1	**9.726 413**
external temperature sensor, 3 x 40 mm, -50 to +120°C with 3 m wire	1	**9.726 416**
external temperature sensor, 3 x 40 mm, -50 to +120°C with 8 m wire	1	**9.726 417**

Standard USB Data Logger EBI 300

NEW!

ebro

- For temperature monitoring related to HACCP/IFS issues or other perishable goods
- Transportation of fresh, cool and deep cool products
- Monitoring of fridges and deep freezers
- Evaluation without software

Benefits:
- Access the data anywhere with the automatically generated PDF report and any PDF software
- Minimise training, user errors and IT costs using EBI 300's simple, easy to use design and standard software.
- Ensure data integrity since no data manipulation is possible
- EN 12830, ATP, VO(EG) 37/2005 Compliant
- Factory calibration certificate included
- Programmable via the free online configurator at www.ebi300.com

Specifications

Measuring range without probe:	-30°C to +70°C
Measuring range with probe TPC 300:	-35°C to +70°C
Accuracy:	±0.5°C (-20°C to +40°C); ±0.8°C for remaining measuring range
Resolution:	0.1°C
Memory:	40.000 samples
Sensor:	NTC for temperature
Battery life time:	up to two years
Measuring period:	1 minute to 24 hours
Maximum Start Delay:	72 hrs
Housing material:	Polycarbonate
Measuring modes:	Start/Stop, endless loop, start with button
Alarms:	High and low limits
Weight:	35g
Protection class:	IP 65
Programming Software:	Winlog.basic, Winlog.light and Winlog.pro

2



7.655 865

3



9.908 027

Type	Description	PK	Cat. No.
EBI 300	Standard USB data logger with calibration certificate	1	**7.655 865** 2
TPC 300	External NTC probe	1	**9.908 027** 3
EBI 300-WM2	Wall Bracket	1	**9.908 017**
EBI 300 TH	Temperature + humidity data logger incl. humidity probe TPH 400	1	**6.266 910**
EBI 300 TE	Temperture data logger incl. temperature probeTPC300	1	**6.266 911**

1



9.908 098

High Precision USB Data Logger EBI 310

NEW!

ebro

- Automatic pdf-report creation with temperature/time values
- Transport of drugs, inoculants, blood products and primary products
- Transport of all temperature sensitive products
- Storage of reference samples in refrigerators and deep-freezers
- Minimize training costs and user errors through simple, easy to use design
- Eliminate costly and time consuming IQ/OQ procedures through standardized software and standard reporting process
- GMP, pharmaceutical law compliant; EN 12830, ATP, VO (EG) 37/205 compliant, 21 CFR Part 11 conform (Winlog.basic)

Attributes:
- USB-Port for PC and Notebook
- easy battery exchangeable
- "traffic light principle" by limit exceeded
- waterproof
- Programmable via the free online configurator at www.ebi300.com

2



9.908 017

Specifications

Operating Temperature:	-30°C to +75°C
Accuracy:	±0.2°C (-30°C to +30°C) ±0.5°C for the remainder
Resolution:	0.1°C
Sensor:	Pt1000/NTC
Channel:	1
Memory Capacity:	120.000 measurements
Battery Life:	2 Years
PDF/LED:	Yes
Weight with battery:	35g
Protection class:	IP 65

Type	Description	PK	Cat. No.
EBI 310	High Precision USB Data Logger	1	**9.908 098** 1
EBI 300-WM2	Wall Bracket	1	**9.908 017** 2
EBI 310 TH	Temperature + humidity data logger incl. humidity probe TPH 400	1	**6.266 912**
EBI 310 TE	Temperture data logger incl. temperature probeTPC300	1	**6.266 913**

3



6.264 938

External 2-channel probe for USB Data Logger EBI 310

NEW!

ebro

Adapter for EBI 310 to measure two temperatures parallel.
Please order 2 sensors separatly.

Specifications TPX 310

Measuring range (sensor):	-200 to +400°C
Working range (logger):	-30 to +70°C
Accuracy:	±2.0°C to -200 to -100°C ±1.0°C to -100 to -20°C ±0.2°C to -20 to +60°C ±0.5°C to +60 to +250°C ±1.0°C to +250 to +400°C
Protection class:	IP65

TPX 310-P1

Measuring range:	-200 to +200°C
Cable:	PTFE, 3 meters

4



6.264 939

Type	Description	PK	Cat. No.
TPX 310	External 2-channel temperature sensor for EBI 310	1	**6.264 938** 3
TPX 310-P1	External sensor, length 45mm, 5mm diam., blunt for TPX 310	1	**6.264 939** 4

Further sensors available on request.

1 Temperature/Humidity data logger LOG 110

Large display for actual value, battery status display, easy to use software. *Dostmann electronic*
Perfect designed instrument for transportation or storage.

- quality surveillance in laboratories, at the production or in the storage
- ambient conditions in manufacturing facilities
- monitoring from storages after HACCP
- ambient conditions in power plants
- monitoring of fridges for the pharma industry
- memory for 60 000 data sets

Please order Software with USB-Cabel separately (9.726 413)

1



Specifications

Temperature

Measuring range:	-30 to +70°C
Accuracy:	0.1°C
Precision:	±0.5°C (0 to +40°C), otherwise ±0.7°C

Humidity

Measuring range:	0 to 99% R.H.
Resolution:	0.1% R.H.
Accuracy:	±3% R.H.
Housing:	Plastic (ABS)
Battery:	1 x CR2032 3V
Dimensions:	92 x 55 x 21mm
Weight:	95g (incl. packaging)
Alarm function:	Alarm for too low or too high temperature and/or humidity values Calibration reminder

Type	PK	Cat. No.
Temperature / Humidity data logger LOG 110	1	**9.726 412**
Windows Software DE-Graph for LOG 100 and LOG 110 with USB-cabel	1	**9.726 413**
external temperature sensor, 3 x 40 mm, -50 to +120°C with 3 m wire	1	**9.726 416**
external temperature sensor, 3 x 40 mm, -50 to +120°C with 8 m wire	1	**9.726 417**

2 Temperature/Humidity logger LOG32TH

NEW!

- Memory size: 60 000 measurements *Dostmann electronic*
- Usable without software, 5-minute-interval default setting
- With free software, free adjustable recording interval: 30 seconds to 24 hours
- Automatic PDF creation (no drivers required)
- Battery lifetime >2 years (recording interval >15 minutes)
- Status and Alarm-LEDs
- Includes wall mount

2



Application profile:
The LOG 32TH is perfectly designed for product transportation or storage applications.
- Quality surveillance in laboratories during production in storage areas
- Monitoring conditions in manufacturing facilities
- Maintaining product storage according to HACCP
- Ambient conditions in power plants
- Monitoring of fridges for the pharmaceutical industry

Specifications

Measuring range:	-40 to +70°C
Accuracy:	0.1°C
Precision:	±0.5°C (-10 to +40°C), otherwise ±1.0°C
Measuring range:	0 to 100%R.H.
Resolution:	0.1% R.H.
Accuracy:	±3% R.H. (40 to 60%), ±3.5% R.H. (20 to 40% and 60 to 80%), otherwise ±5% R.H.
Interface:	USB (integr.)
Housing:	Plastic (ABS)
Battery:	1 x 3.6V ½ AA Lithium
Dimensions:	100 x 19 x 19mm
Weight:	70g

Type	PK	Cat. No.
Temperature/Humidity logger LOG32TH	1	**9.726 422**

1



9.908 070

Humidity Logger EBI 20-TH1

NEW!

ebro

Applications:
- reliable temperature and temperature/humidity recording
- transport
- storage monitoring
- refrigeration areas and coldrooms

Features:
- excellent price/performance ratio
- visual Alarm
- max/min values on display
- stores 40.000 readings, can be read off at any time
- replaceable battery

Specifications

Measuring range temperature:	-30 to +70°C
Measuring range humidity:	0% to 100% R.H.
Accuracy, temperature:	±0.5°C (-20 to +40°C); ±0.8°C for remaining measuring range
Accuracy, humidity:	±3% R.H. (10 to 90% R.H.)
Resolution temperature:	0.1°C
Resolution humidity:	0.1% R.H.
Memory:	40.000 samples
Sensor:	NTC for temperature/capacitive for humidity
Measuring period:	1 minute to 24 hours
Measuring mode:	immediate loop measurement, measurement from starting point, start immediately until memory full, start/stop measuring, start when button pressed
Battery:	3V lithium (CR 2450), can be replaced by user
Protection class:	IP 52
Housing :	ABS
Dimensions:	69mm x 48mm x 22mm

Type	Description	PK	Cat. No.
EBI-20 TH1-Set	Starter-Set (Temperature Humidity Logger, evaluation software, Interface)	1	**9.908 074**
EBI-20 TH1	Temperature Humidity Logger	1	**9.908 070** 1
EBI-20 IF	Interface incl. evaluation software Winlog.basic	1	**9.908 072**
EBI 20-WM	Wall mounting incl. padlock	1	**9.908 079**
EBI 20-WM1	Truck wall holder	1	**6.242 239**

2



6.239 884

Mini data logger testo 174H

Testo

The mini data logger for temperature and humidity, testo 174H, is ideal for monitoring temperature and humidity sensitive goods in storage. The testo 174H also monitors building climate, continuously, securely and unobtrusively. The free software ComSoft testo 174 allows fast programming of the data logger and easy analysis.

- Humidity sensor with long-term stability
- High data integrity, even with empty battery
- Large measurement data memory
- Display of the current temperature or humidity value
- Large measuring range
- Compact and robust
- Issue of alarms via display
- Data transfer to the PC via USB interface

Specification

Probe type:	NTC temperature sensor and internal capacitive humiditiy sensor
Measuring range:	0 to 100% RH, -20 to +70°C
Accuracy:	±0.5°C, ±3% RH
Resolution:	0.1% RH, 0.1°C
Operating temperature:	-20 to +70°C
Storage temperature:	-40 to +70°C
Battery type:	2 x CR 2032 lithium
Battery life:	1 year (15 min measuring cycle, +25°C)
Protection class:	IP20
Meas. cycle:	1min to 24h (can be selected)
Memory:	16000 readings
Software:	can be used with Windows XP, Vista, Win7

Type	Description	PK	Cat. No.
testo 174H	Mini data logger, 2-channel, incl. wall bracket, battery (2 x CR 2032 lithium) and calibration protocol	1	**6.239 884** 2
testo 174H-Set	Mini data logger, 2-channel, incl. USB-interface for programming and reading out the logger, wall bracket, battery (2 x CR 2032 lithium) and calibration protocol	1	**6.239 883**

E & OE.

1 LLG Timer with Triple Alarms, 1-channel

NEW!



Choice of vibration, sound and/or light alarms makes this timer perfect for high noise locations.
- Vibration, light and loud buzzer sound alarms can function at one time, or be independently turned off
- Switchable timing capacity: 19 hours: 59 minutes/99 minutes: 59 seconds
- Timer accuracy: ±5 seconds/day
- Count direction: up/down; displays elapsed time after countdown
- Last time set memory
- Key press confirmation feature gives an audible indication of data entry
- Lay flat on a bench, use the flip-open stand for a vertical view, carry it on a lab coat with the convenient pocket clip, or use the magnetic back for metal surface attachment
- Requires two AAA batteries (included)
- Individually tested, inspected, and calibrated using NIST
- Includes Certificate of Calibration with unique report number, stated corrections and standard used for the calibration, and multi-language instructions (English, French, German, Italian, Portuguese and Spanish)
- CE mark, RoHS compliant

Dimensions (WxDxH): 45 x 75 x 20mm (without clip portion)

Type	PK	Cat. No.
LLG Timer with Triple Alarms, 1-channel	1	**6.266 707**

2 LLG Timer with White Board, 4 channel

NEW!



This four channel timer has a built in white board that helps keep track of time and other critical information.
- Audible alarm for each channel
- Built in white board and dry erase marker with eraser tip (included) helps keep track of crucial information
- Programs: hours/minutes; Displays: hours/minutes/seconds
- Switchable timing capacity: 23 hours: 59 minutes/59 seconds
- Timer accuracy: ±5 seconds/day
- Count direction: up/down; displays elapsed time after countdown
- Last time set memory
- Key press confirmation feature gives an audible indication of data entry
- Lay flat on a bench, use the flip-open stand for a vertical view, or use the magnetic back for metal surface attachment
- Requires two AAA batteries (included)
- Individually tested, inspected, and calibrated using NIST
- Includes Certificate of Calibration with unique report number, stated corrections and standard used for the calibration, and multi-language instructions (English, French, German, Italian, Portuguese and Spanish)
- CE mark, RoHS compliant

Dimensions (WxDxH): 114.3 x 88.9 x 25.4mm

Type	PK	Cat. No.
LLG Timer with White Board, 4 channel	1	**6.266 706**

3 LLG-Short period timer with alarm



Timer and stopwatch at the same time, from/up to 99min. and 59sec.
Easy-to-use, with large display and alarm function.
With magnet for easy fixing.
Battery LR 44 inclusive.
Dimensions (Ø x H): 54 x 16.5mm
Weight: approx.40g

Type	PK	Cat. No.
LLG-Short period timer with alarm	1	**9.260 150**

4 Interval timer with alarm



Benchtop mechanical timer. Suitable for standing, hanging and in addition on the back of two magnets, which allows the fitting of metal parts. Casing and rotary setting knob are white, the dial is black. Running time max. 60mins. Metal movement.

Dimensions (W x H x D): 65 x 65 x 35mm

Type	PK	Cat. No.
Interval timer with alarm	1	**9.260 020**

1



1 Short period timer

Electronic timer and stopwatch with large display and 10-key setting. Counts up or down from 10 hours to 1 second. With pocket clip, bench stand, magnetic attachment and AAA 1.5V battery.

Dimensions (W x H x D): 60 x 70 x 25mm
Weight: 95g

Type	PK	Cat. No.
Timer II	1	**9.851 027**

2



2 Short period timer KT188

- countdown timer from max. 99 mins., 59 secs.
- 30 Sec. loud audible alarm sounds when 'zero' reached
- with magnet.
- supplied with 'SR 44' 1.5 V button cell.

Dimensions (WxDxH): 88 x 12 x 46 mm
Weight: 30 g

Type	PK	Cat. No.
Short period timer KT188	1	**9.260 188**

3



3 Electronic timer clock

Count down/count up timer with loud alarm signal at end of timed period. With Clock, Stopwatch and Memory functions. Timer up to 24 hours. Fittings: magnet, stand and clip. Dimensions (WxDxH): 68mm x 53mm x 20mm, with battery. *Amarell*

Type	PK	Cat. No.
Electronic Timer Clock	1	**9.235 145**

4



4 3-channel-short period timer

Indispensable for laboratories. Triple timer with large display. *Dostmann electronic*

- Indicates three separate times simultaneously, Measuring range: 1sec to 20hours
- Stopwatch function
- Integrated quartz watch
- Supplied with magnet and clip
- Operating temperature: 0 to 50°C
- Battery 1.5V AAA inclusive

Dimensions (W x H x D): 71 x 88 x 24mm
Weight: 115g

Type	PK	Cat. No.
3-channel-timer	1	**6.233 690**

5



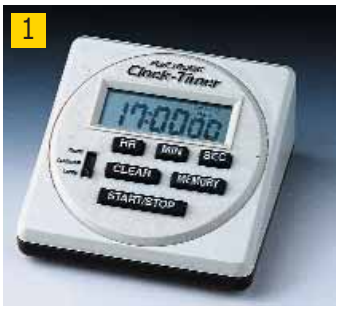
5 Laboratory Short period timer Compact

Compact.
Countdown/Countup.
Digital reading, with alarm and repeat function.
12hr. clock function.
Countdown and countup display: 23hrs, 59mins, 59secs.
Battery SR 44 inclusive.
Dimensions (W x H x D): 64 x 60 x 16mm
Weight: 40 g

Type	PK	Cat. No.
Compact	1	**9.262 071**

E & OE.

1 Short period timer with clock



Easy to operate.
Quartz-accurate. With electronic alarm signal.
Adjustable from 1 sec. to 24 hrs.
Memory.
Dimensions (WxDxH): 80 x 45 x 85 mm
Weight: 120 g

Type	PK	Cat. No.
Microchronometer with clock	1	**9.260 187**

2 Short period timer WB 388



Three separate timers in one instrument. Countdown/countup. Audible alarm sounds when 'zero' reached.
12/24 hour clock. Loud/soft alarm switch.

Dimensions (WxDxH): 83 x 22 x 70mm
Weight: 80g

Type	PK	Cat. No.
WB 388	1	**9.260 184**

3 Dual short period timer WB 388 TR 118 OS



- Large, 6 digit, LCD readout
- 2 separate timers in one instrument
- Countdown/countup 99 hrs. 59 mins. 59 secs.
- Clock function switch
- Audible alarm sounds when 'zero' reached
- With pocket clip/bench stand and magnet
- Supplied with AAA 1.5V battery

Dimensions (W x H x D): 73 x 66 x 18mm
Weight: 63g

Type	PK	Cat. No.
TR 118 OS	1	**9.260 186**

4 Digi-Clock timer, TR 119 OS



- Large, 6-digit LCD display
- Programmable for up to 23 hrs, 59 mins, 59 secs.
- 1-minute audible alarm when timed period has expired
- Countdown or countup functions
- Time display
- Case incorporates combined bench stand/pocket clip with magnet.
- Supplied with 1 x 1.5V AAA battery.

Dimensions (WxDxH): 73 x 70 x 19mm
Weight: 50g

Type	PK	Cat. No.
TR 119 OS	1	**9.260 189**

5 Microchronometer, TR 112 OS



- 4-figure LCD time readout for minutes and seconds
- Programmable for up to 99 mins, 59 secs.
- 30-second audible alarm when timed period has expired
- Countdown
- Timer memory function
- Case incorporates combined bench stand/pocket clip with magnet
- Supplied with 1 x 1.5V AAA battery

Dimensions (WxDxH): 66 x 56 x 18mm
Weight: 45g

Type	PK	Cat. No.
TR 112 OS	1	**9.260 181**

1



1 Benchtop timers, countdown/countup, Prisma series

Prisma 200.
- ABS plastic case
- Large, easy to read LCD display
- Stopwatch function
- Normal time display
- Selectable time resolution 999mins., 59 secs. or 9 hrs., 59 mins., 59 secs., 1/10 sec.
- Loud audible alarm
- 2 channels with start/stop operation, either separately or together.

Prisma 400.
Generally as Prisma 200, but additionally with:
- Sequence programming
- Function window
- 4 channels.

Both models:
Temperature Range: -10º to +55º (in use), -20º to +60º (in storage)
Battery Type: AA (R6)

Type	Colour	PK	Cat. No.
Prisma 200	white	1	**9.260 178**
Prisma 400	white	1	**9.260 179**

2



2 Time switches

With earthed plug. *Theben*

Timer 26
- Daily programme adjustable in 15 min. segments

Eltimo 020 S
- Switch-on intervals: 10 to 120 min.
- Switching capacity 3500 W
- Power reserve 500 h
- Shortest switching time: 1 min
- Digital plug-in timer with weekly program

Type	PK	Cat. No.
Timer 26	1	**9.000 030**
Eltimo 020 S	1	**9.000 031**

3



3 Mechanical stopwatch

Start/stop/reset by single crown, clockwork mechanism, 13 jewels,
chrome metal case, measuring range 15 minutes,
1/10 second increments. Supplied with lanyard and soft case, diam. 50mm, 250g (incl. packaging)

Type	PK	Cat. No.
Mechanical stopwatch	1	**9.851 021**

4



4 Stopwatch, mechanical

Amigo. Impact resistant. Unbreakable spring movement. 55mm diameter ABS case. *Hanhart*
Supplied with 120cm lanyard.

Time intervals secs.	Display mins.	PK	Cat. No.
1 / 10	15	1	**9.262 410**
1 / 5	30	1	**9.262 411**

E & OE.

1 Stopwatch, mechanical

Impact resistant, dustproof and water resistant. With diamond-turned metal case. 55mm diameter. Built-in strap ring. *Hanhart*

Time intervals secs.	Display mins.	PK	Cat. No.
1 / 5	30	1	**9.262 005**
1 / 10	15	1	**9.262 010**

1

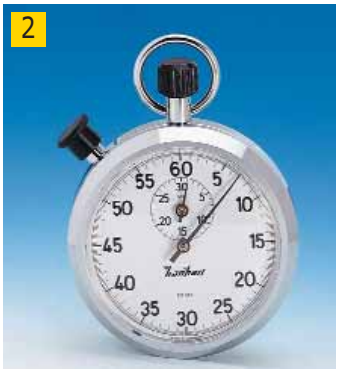


2 Stopwatch, mechanical

Impact resistant, dustproof, water resistant. With diamond-turned metal case. 55mm diameter. Built-in strap ring. 2 push-buttons. *Hanhart*

Time intervals secs.	Display mins.	PK	Cat. No.
1 / 5	30	1	**9.262 205**
1 / 10	15	1	**9.262 210**

2



3 Stopwatch

NEW!

1/100 seconds, split time, clock, date with weekday, hourly chime, alarm with snooze function, lanyard.
Measuring range: Time up to 23h, 59min, 59sec. Dimensions: 65 x 21 x 79mm, weight: 50g, incl. 1x 1.5V LR44 battery, EK-EL *TFA Dostmann*

Type	PK	Cat. No.
Stopwatch	1	**9.851 018**

3



4 Stopwatch Stopstar 2, digital

Stopstar 2. ABS housing with lanyard. Temperature range -10 to +55°C. With 7-digit, 7mm high LCD readout.
Start/Stop/Reset, Cumulative (as often as required), Split interval timing (as often as required), dual measurement of two events in quick succession.
Time display: 9hrs, 59mins, 59.99sec.
Battery life approx. 2 to 3 years.
Supplied with button cell (IEC R 6).

Dimensions: 82 x 61 x 28mm
Weight: 70g

Type	PK	Cat. No.
Stopstar 2	1	**9.262 062**

4



1



1 Stopwatch, digital

Profile LCD.
2 button operation, with 5 event memory, each with split and lap times, 8 mm high LCD readout, 7-figure + 2 event counter, display range: 9hrs, 59mins, 59.99secs. With Start/Stop/Reset, Add./Split/Lap, time functions.

Type	PK	Cat. No.
Stopwatch, digital	1	**9.262 111**

2



2 Stopwatches, Delta E series

Delta E 100
- 65 memories with evaluation, fast run/memory functions
- Large, clear, 2.5-line LCD readout with 7mm high digits
- Battery status indicator
- Function window for Lap, Short-Lap and time. Date indicator and pre-settable split time from the real-time clock
- Mode function button
- Display and memory button.

Delta E 200
Generally as Delta E 100 model, but additionally with:
- Pacer function (1 to 300 strokes/min.)
- Countdown function
- Countdown and stopwatch can be used simultaneously.

Type	Colour	PK	Cat. No.
Delta E 100	red	1	**9.262 521**
Delta E 200	black	1	**9.262 530**

3



3 Stopclock, analogue, Mesotron

Quartz-accurate timer with large, analogue display. Measuring range: 0 to 60 secs, 0 to 60 mins.
Inner scale 1 to 100 secs/100 mins.
110 mm dia.
Battery life over 18 months with a 1.5 V button cell.
Dimensions (WxDxH): 130 x 40/95 x 175 mm
Weight: 375 g

Type	PK	Cat. No.
Mesotron stopclock	1	**9.262 080**

4



4 Radio controlled wall clock

- Highest precision radio-controlled clock
- Analogue display with second hand
- Digital display of date
- Large dial
- Ideal for home, office, waiting room, lobby or entrance hall and as a gift
- Ø 300mm
- Battery included 1.5 V AA

Type	PK	Cat. No.
Radio controlled wall clock	1	**9.851 019**

E & OE.

1 Thermohygrometer, Klimatherm

Spun metal case with dial, separate humidity and temperature indicators, and brass hanging ring. *TFA Dostmann*

Measuring range

Relative humidity: 15 to 100%
Temperature: 0 to 40°C
Weight: 90g

Diam. mm	PK	Cat. No.
100	1	**9.726 404**

1



2 Thermohygrometer, analogue

Synthetic hair, spun metal case with dial and brass hanging ring. *TFA Dostmann*

Measuring range

Relative humidity: 0 to 100%
Temperature: -15 to 55°C
Wieght: 105g

Diam. mm	PK	Cat. No.
100	1	**9.726 403**

2



3 Thermohygrometer

Universal application thermohygrometer with outdoor probe and stand/attachment device. Accessory wall mounting (screws or adhesive tape) are available on request. *Amarell*

Specifications

Measuring range: 0 to +50 x 0.1°C
switchable to °F
20 to 90 x 1% R.H.
Dimensions (WxDxH): approx. 65mm x 20mm x 97mm

Type	PK	Cat. No.
Thermohygrometer	1	**9.235 135**

3



4 Thermohygrometer, TA 100

- Very fast humidity sensor
- Dewpoint and max./min. function
- °C/°F-switchable
- Hi-Lo alarm with red warning LED

TFA Dostmann

Specifications

Temperature
Measuring range: -40°C to +70°C
Display resolution: 0.1°C
Accuracy: ±1°C
Humidity
Measuring range: 0% to 99% R.H.
Display resolution: 0.1%
Accuracy: ±4% from 35% to 75% remaining range ±5%
Working temperature: -40°C to +70°C
Batteries: 2 x 1.5 Volt AAA
Dimensions: 105mm x 105mm x 44mm
Weight: 150g (incl. packaging)

Type	PK	Cat. No.
TA 100	1	**9.726 405**

4



1



9.726 964

Thermohygrometer testo 608

NEW!

Testo

Continuous monitoring of indoor climate

The economic thermohygrometer testo 608-H1 measures humidity, temperature and dewpoint continuously. The large display is easy to read even at a distance. With wall mounting and table holder for flexible positioning.
The accurate testo 608-H2 alarm hygrometer reliably indicates when humidity and temperature limits have been exceeded, for example in greenhouses, warehouses, cleanrooms, museums, laboratories etc.

- Continuous display of temperature and humidity or dewpoint
- With dew point calculation and max/min display
- Battery monitoring

Additional features testo 608 H2:
- LED alarm, warns if limits are exceeded
- High accuracy ±2%rH

Specifications	**testo 608-H1/testo 608-H2**
Measuring rate:	18sec
Battery type:	9V block battery
Dimensions:	111 x 90 x 40mm
Housing:	ABS
Display:	LCD, 2 lines
Sensor type NTC:	
Measuring range:	0 ... +50°C/-10 ... +70°C
Accuracy (at 25°C):	±0.5°C (±1 digit)
Resolution:	0.1°C
Sensor type testo humidtiy sensor capacitive:	
Measuring range:	+10 ... +95%rH/+2 ... +98%rH
Accuracy (at 25°C):	±3%rH /±2%rH
Resolution:	0.1%rH
Operating temperature:	0 ... +50°C/-10 ... +70°C

Type	PK	Cat. No.
testo 608-H1	1	**9.726 964** 1
testo 608-H2	1	**9.726 965**

2



2 Hygrothermograph with quartz clock

NEW!

Thies

White plastic-coated metal casing, with high quality bimetallic temperature measuring system.

Measuring range:	-10 to +50°C/10 to 100% R.H.
Operation period:	1, 7 and 31 days selectable

Other measuring ranges are available on request.

Type	Dimensions (W x D x H) mm	PK	Cat. No.
Quartz clock	280 x 138 x 285	1	**9.726 531**
Quartz clock, with plastic hood	280 x 138 x 270	1	**9.726 533**
Recording charts, 7 days		100	**6.051 813**

3



3 Digital Anemometer

NEW!

Digital Anemometer to measure wind speed and temperature.
Useful for the functional check of fume hoods and safety cabinets.

- Wind speed range: 0 to 30 m/s
- Wind temperature range: -10 to 45°C (14 to 113°F)
- Current/MAX/Average wind speed reading
- Wind speed units: m/s, km/h, ft/min, knots, mph
- Temperature display in °C/°F
- LCD backlight display
- Auto/Manual power off
- Battery: 3V CR2032 (included)

Type	PK	Cat. No.
Digital Anemometer	1	**6.264 198**

E & OE.

1 Precision handheld instruments P700 series

1



For temperature, moisture and airflow. *Dostmann electronic*
For highly accurate temperature measurements with USB PC online interface.
(Optional: Windows SmartGraph software for graphical and tabular documentation, etc). Integral probe calibration for sensor tolerance compensation. Min.- Max.- Hold- and AVG- functions. The large LCD shows two measurements synchronously, even temperature differences can be displayed (P705, P755, P755-Log, P770).

Specifications
General (all models):
USB interface, Max-Min memory, Hold function, true average calculation over a freely selectable period, Auto-off function, measured quantities can be freely assigned to instrument channels, comprehensive calibration options (selectable 1-point, 2-point or 3-point calibration), large display with bar graph for simultaneous display of 2 measured values
P700/P705:
1/2 measurement channels (Pt100 4-wire probe, thermocouples type J, K, L, N, T, R, S), measurement ranges and accuracies: Pt100:-200 to +850°C (±0.1°C -100 to +200°C, otherwise ±0.1% of measurement value) thermocouples, DIN types (-200 to +1760°C)
P710/P715:
1/2 measurement channels (Pt100 4-wire probe, thermocouples type K, J, L, N, T), measurement ranges and accuracies: Pt100: -200 to +1370°C (±0.2°C -40 to +200°C, ±0.5 to 1000°C otherwise ±0.1°C of measurement value) Thermocouples acc. to EN 60584-1
P750/P755/P755-Log:
1/2 measurement channels (Pt100 4-wire probe, thermocouples type J, K, L, N, T, R, S, moisture, flow), measurement ranges and accuracies: Pt100: -200 to +850°C (±0.03°C -50 to +200°C, ±0.05°C -200 to +200°C, otherwise ±0.05% of measurement value), thermocouples, DIN type (types J, K, L, N, T 0 to 200°C, ±0.3°C, +200 to +1000°C ±1.0°C, otherwise ±.5°C;
type R, S ±1.0°C +0.1% of measurement value) humidity 0 to 100% R.H. (±0.5%R.H.), flow 0 to 40 m/s (±0.5% of measurement value +1.0% of final value)
P770:
2 measurement channels (Pt100, thermocouples type J, K, L, N, T, R, S, moisture, flow), measurement ranges and accuracies: Pt100: -200 to +850°C (±0.1°C -100 to +200°C, otherwise ±0.1% of measurement value) thermocouples, DIN types, humidity 0 to 100%R.H. (±0.5%R.H.), flow 0 to 40 m/s (±0.5% of measurement value)
Dimensions (L x W x D)/ weight: 200 x 85 x 40mm/300g

P700-P755 for Ex-use Zone 1 and Zone 2 according to ATEX approval II 2 G Ex ib IIB T4 Gb available on request.

Type	Description	PK	Cat. No.
P700	1 channel, Pt100	1	**9.852 000**
P705	2 channel, Pt100	1	**9.852 001**
P710	1 channel thermocouples Type K, J, L, N, T	1	**9.852 002**
P715	2 channell thermocouples Type K, J, L, N, T	1	**9.852 003**
P750	1 channel, Pt100, moisture, dew piont, flow	1	**9.852 004**
P755	2 channel, Pt100, moisture, dew point, flow	1	**9.852 005**
P755-Log	2 channel, Pt100, moisture, dew point, flow, with datalogger for 6000 values	1	**9.852 006**
P770	2 channel, Pt100, moisture, dew point, flow	1	**9.852 007**
P770-Log	2 channel, Pt100, moisture, dew point, flow, with datalogger for 6000 values	1	**9.852 008**

Accessories for hand-held meters Serie P700

NEW!

Description	PK	Cat. No.
Immersion probe Pt100, -50 to +350°C, Cl. B, 150x3mm	1	**9.851 935**
Immersion probe Pt100, -50 to +350°C, Cl. B, 300x3mm	1	**9.851 936**
Immersion probe Pt100, -200 to +450°C, ±0.03°C, 150x3mm	1	**9.851 937**
Immersion probe Pt100, -200 to +450°C, ±0.03°C, 300x3mm	1	**9.851 938**
Insertion probe Pt100, -200 to +500°C, Cl. B, 150x4mm	1	**9.851 948**
Immersion probe NiCr-Ni/Type K, -40°C to +1100°C, Cl. 1, 300x1.5mm	1	**9.851 949**
Surface probe NiCr-Ni/Type K, T90 3 sec., -65 to +550°C, 150 x 15.0mm	1	**9.851 961**
Temp. / relative Humidity -40 to 80°C / 0 to 100%, 120x20mm	1	**9.851 954**
Airflow Turbine probe 0 to 20m/s, diam. 22 x 28mm, 150mm lg.	1	**9.851 955**
Software DE-Graph for 95 / 98 / 2000 / NT / Vista	1	**9.851 925**
P700 adapter for type K probe with mini plug	1	**9.851 995**
Service case suitable up to 3 probes & accessories	1	**9.851 924**
ISO certificate for temperature CERT	1	**9.851 992**
PC-Cable for USB port	1	**6.242 171**
Power supply 230 V	1	**9.851 959**

1 CO_2 Meter, Air CO_2ntrol 3000

- Large display
- Measuring range: 0 to 3000ppm
- Incl. Power supply for 230 VAC
- 24-hour data logger
- Adjustable Alarm
- C°/°F-selectable
- Relay output for ventilation control

Applications:
Ideal for monitoring the environment (CO_2 concentration) in public buildings, such as universities,schools
- Hospitals, Education, Office, Production plants, Public Facilities

Specifications

CO_2

Range:	0 up to 3000ppm
Resolution:	1ppm (0 up to 1000ppm); 5ppm (1000 up to 2000ppm); 10ppm (<2000ppm)
Accuracy:	50ppm or 5%, larger value applies

Temperature

Range:	0 up to +50°C
Resolution:	0.1°C
Accuracy:	±1% or 1°C, larger value applies
Display:	7 segment LCD(twin-lined)
Housing:	Plastic (ABS)
Supply requirements:	230 VAC adapter or 4 x AA Batteries
Dimensions:	165 x 80 x 23mm
Weight:	600g (incl. packaging)

Type	PK	Cat. No.
Air CO_2ntrol 3000	1	**9.726 408**

2 Weather station, Diva Plus

TFA Dostmann

- transmission of outdoor temperature and humidity via up to 3 transmitters (max. 100m)
- indication of indoor temperature and humidity,
- Max./min. function
- weather forecast, tendency of atmospheric pressure, bar graph indication of atmospheric pressure of the last 24 hours
- radio controlled clock with date, time zone ±12 hrs
- interchangeable °C/°F display
- wall or table mounting

Supplied with: Outdoor temperature and humidity transmitter, batteries 5 x 1.5V AA.

Specifications

Temperature range	
outdoors:	-40 to +60°C (-14 to 140°F)
indoors:	-10 to +60°C (-4 to 140°F)
Humidity:	1 to 99%
Dimensions basis station:	180 x 100 x 35mm
Dimensions transmitter:	160 x 43 x 28mm
Weight:	520g

Type	PK	Cat. No.
Diva Plus	1	**9.726 410**

1



2



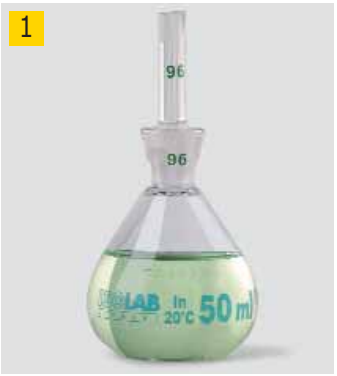
E & OE.

1 Pycnometers, calibrated, Borosilicate glass 3.3.

DIN 12797. Individually calibrated to contain (In) to 0.001ml. Net volume capacity is engraved on the body. Each bottle is calibrated together with its stopper. In order to differentiate easily, both the body and the stopper have the same code numbers printed on themselves. *Isolab*

Capacity ml	PK	Cat. No.
5	1	**4.008 327**
10	1	**6.241 602**
25	1	**4.008 328**
50	1	**6.241 603**
100	1	**4.008 329**

1



2 Pycnometers, BLAUBRAND®, Borosilicate glass 3.3.

DIN ISO 3507, gay-lussac type. Including individual certificate. Adjusted. Reference temperature 20°C. *BRAND*
With NS10/19 capillary stopper. Stopper top ground and polished. Inscription in highly contrasting blue enamel. The volume in cm³ is specified to a precision of 3 decimal places. Calibrated to contain. Every pycnometer is calibrated with its own stopper; hence, stoppers are not interchangeable. Each bottle and its stopper is marked with an unique matching identification number.

Nom. capacity cm³	PK	Cat. No.
5	1	**9.277 305**
10	1	**9.277 310**
25	1	**9.277 325**
50	1	**9.277 350**
100	1	**9.277 400**

2



3 LLG-Precison-Hydrometer, Alcoholmeters, with thermometer, calibratable

Measuring range, graduation: 0.1% vol, with thermometer 0 to +30°C, graduation: 0.5°C, calibrated at 20°C.
Filling: blue. Overall length: 380mm
Optionally available with official calibration certificate, works certificate or DKD-calibation certificate.
Please specify with order.

Type	Measuring range % vol	PK	Cat. No.
1	0 - 10	1	**9.236 810**
2	10 - 20	1	**9.236 811**
3	20 - 30	1	**9.236 812**
4	30 - 40	1	**9.236 813**
5	40 - 50	1	**9.236 814**
6	50 - 60	1	**9.236 815**
7	60 - 70	1	**9.236 816**
8	70 - 80	1	**9.236 817**
9	80 - 90	1	**9.236 818**
10	90 - 100	1	**9.236 819**

3



4 ASTM Hydrometers

NEW!

Precision hydrometers acc. to ASTM E2995-14 for determination of density for mineral oil, with thermometer "mercury free". *Schneider*
Hydrometer with thermometer, error-limit for density: ±0.5 kg/m³, with thermometer -20 to +65°C in 1°C, blue filling, error-limit ±1°C. With works calibration on request. With blue, environmental friendly filling of thermometers. Each item packed in plasic tubes for breakage protection.

Measuring range kg/cm³	Scale	Length mm	Reference temperature °C	PK	Cat. No.
600 - 650	0,5	380	15	1	**6.267 132**
650 - 700	0,5	380	15	1	**6.267 133**
700 - 750	0,5	380	15	1	**6.267 134**
750 - 800	0,5	380	15	1	**6.267 135**
800 - 850	0,5	380	15	1	**6.267 136**
850 - 900	0,5	380	15	1	**6.267 137**
900 - 950	0,5	380	15	1	**6.267 138**
950 - 1000	0,5	380	15	1	**6.267 139**
1000 - 1050	0,5	380	15	1	**6.267 140**
1050 - 1100	0,5	380	15	1	**6.267 141**
775 - 825	0,5	380	15	1	**6.267 142**

4





1 Hydrometers, relative density (S.G.)

Shot poised. Without thermometer. Reference temperature: +20°C.

Measuring range g / ml	Sub-divisions g / ml	Length mm	PK	Cat. No.
0.600 - 0.800	0.002	280	1	**9.004 006**
0.800 - 1.000	0.002	280	1	**9.004 008**
1.000 - 1.200	0.002	280	1	**9.004 010**
1.200 - 1.400	0.002	280	1	**9.004 012**
1.400 - 1.600	0.002	280	1	**9.004 014**
1.600 - 1.800	0.002	280	1	**9.004 016**
0.700 - 1.000	0.005	300	1	**9.004 057**
1.000 - 1.500	0.005	300	1	**9.004 060**
1.500 - 2.000	0.005	300	1	**9.004 065**

Further models availlable on request.

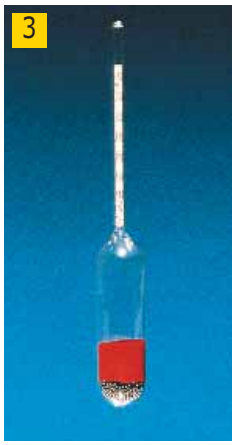


2 Hydrometers, density, adjustable

DIN 12791 (and BS718). Adjustable. M100 series. Shot poised.
Without thermometer. Reference temperature: +20°C.

Measuring range g / ml	Sub-divisions g / ml	Length mm	PK	Cat. No.
0.800 - 0.900	0.002	250	1	**9.004 108**
0.900 - 1.000	0.002	250	1	**9.004 109**
1.000 - 1.100	0.002	250	1	**9.004 110**
1.100 - 1.200	0.002	250	1	**9.004 111**
1.200 - 1.300	0.002	250	1	**9.004 112**
1.300 - 1.400	0.002	250	1	**9.004 113**
1.400 - 1.500	0.002	250	1	**9.004 114**
1.500 - 1.600	0.002	250	1	**9.004 115**

Further models availlable on request.



3 Hydrometers, density

Shot poised. Without thermometer. Reference temperature: +20°C.

Measuring range g / ml	Sub-divisions g / ml	Length mm	PK	Cat. No.
0,760 - 0,820	0.001	160	1	**9.004 153**
0,820 - 0,880	0.001	160	1	**9.004 154**
0,880 - 0,940	0.001	160	1	**9.004 155**
0,940 - 1,000	0.001	160	1	**9.004 156**
1,000 - 1,060	0.001	160	1	**9.004 157**
1,060 - 1,120	0.001	160	1	**9.004 158**
1,120 - 1,180	0.001	160	1	**9.004 159**
1,180 - 1,240	0.001	160	1	**9.004 160**
1,240 - 1,300	0.001	160	1	**9.004 161**
1,300 - 1,360	0.001	160	1	**9.004 162**
1,360 - 1,420	0.001	160	1	**9.004 163**

Further models availlable on request.



4 Hydrometers, Baumé

Baumé type. Shot poised. Without thermometer. Reference temperature: +15°C.

Measuring range Bé	Sub-divisions Bé	Length mm	PK	Cat. No.
0 - 5	0,1	260	1	**9.004 305**
0 - 10	1,0	220	1	**9.004 310**
0 - 15	1,0	230	1	**9.004 315**
0 - 20	1,0	230	1	**9.004 320**
0 - 30	1,0	250	1	**9.004 330**
0 - 40	1,0	250	1	**9.004 340**
0 - 50	1,0	280	1	**9.004 350**
0 - 70	1,0	300	1	**9.004 370**

Further models availlable on request.

1 Hydrometers, mineral oil

With -10 to +60°C thermometer.
Adjustable.
Reference temperature: +15°C.

Measuring range g / ml	Sub-divisions g / ml	Length mm	PK	Cat. No.
0,610 - 0,700	0,001	390	1	**9.004 561**
0,680 - 0,770	0,001	390	1	**9.004 568**
0,750 - 0,840	0,001	390	1	**9.004 575**
0,820 - 0,910	0,001	390	1	**9.004 582**
0,890 - 0,990	0,001	390	1	**9.004 589**



2 Hydrometers, lime water $Ca(OH)_2$

For lime water $Ca(OH)_2$.
Without thermometer.
Reference temperature: +20°C.

Measuring range	Length mm	PK	Cat. No.
0 - 340 g/l	300	1	**9.004 640**



3 Salinometers, Bischoff type

For common salt.
Without thermometer.

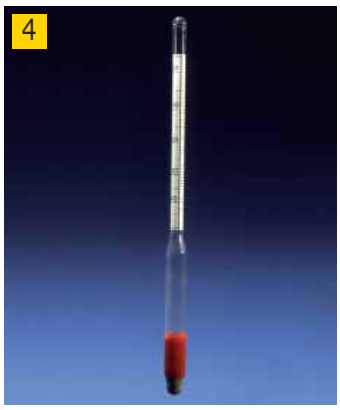
Measuring range g / ml	Length mm	PK	Cat. No.
0 - 27	240	1	**9.004 650**



4 Hydrometers for acids/bases in %

Without thermometer.
Total length: 250mm to 280mm

For	Measuring range	Reference temperature °C	PK	Cat. No.
Ammonia	0 to 35 x 0.5 %	20	1	**9.004 651**
Sodium hydroxide	0 to 27 x 1 %	15	1	**9.004 652**
Sodium hydroxide	0 to 10 x 0.1 %	15	1	**9.004 653**
Nitric acid	0 to 47 x 1 %	15	1	**9.004 654**
Hydrochloric acid	0 to 39 x 1 %	15	1	**9.004 655**
Sulphuric acid	0 to 45 x 1 %	15	1	**9.004 656**
Hydrogen peroxide	0 to 30 x 1 %	15	1	**9.004 657**



5 Alcoholometer

Richter-Tralles type.
0 to 100% at reference temperature: +20°C.
Without thermometer.

Type	PK	Cat. No.
Alcoholometer	1	**9.004 400**



1



1 Hydrometers, high-quality plastics

NEW!

Schneider

We use state-of-the-art processes to manufacture hydrometers made of high-quality plastics (polycarbonate). Each hydrometer is accurately adjusted, passes strict quality control and is marked with its individual serial number. Therefore, the determined values are traceable to the measurement device. Hydrometers made of plastics can even be used as test medium within quality management systems with the highest standards of quality, safety and reliability due to an optional calibration of our accredited calibration lab.

- Breakage protected (no glass breakage)
- Fully made of resistant polycarbonate (PC)
- High transparency (like glass), easy-to-read scales
- High precision and reproducibility
- Suitable for applications in food, pharmaceutical and cosmetic industries as well as many others
- Measuring units: specific gravity, density, Oechsle, % mass, Brix, saturation, ° Baumé, etc.
- Made in Germany: We are the only German manufacturer producing both precision glass and plastic hydrometers
- DAkkS or works certificates on request
- Food safety according to HACCP

Measuring range	Scale	Length mm	Reference temperature °C	For	PK	Cat. No.
1.000 - 1.220g/cm³	0.002g/cm³	300	20	Density	1	**9.236 840**
1.200 - 1.420g/cm³	0.002g/cm³	300	20	Density	1	**9.236 841**
1.400 - 1.620g/cm³	0.002g/cm³	300	20	Density	1	**9.236 842**
0 - 100°	1°	300	20	Salt saturation	1	**9.236 843**
0 - 26%mas.	0.2%	300	20	Sodium chloride	1	**9.236 847**
0 - 12°Bé	0.2°Bé	250	15	Sugar / Salt	1	**9.236 844**
9 - 21°Bé	0.2°Bé	250	15	Sugar / Salt	1	**9.236 845**
19 - 31°Bé	0.2°Bé	250	15	Sugar / Salt	1	**9.236 846**
0 - 35%mas./Brix	0.5%mas.	300	20	Sugar	1	**9.236 848**
0 - 50%mas./Brix	0.5%mas.	300	20	Sugar	1	**9.236 849**

2



2 Hydrometer jars, PP

BRAND

With overflow chamber so that hydrometer can be read when cylinder is completely full. Impact resistant and flexible. With spout.

Capacity ml	Int. diam. mm	Height mm	PK	Cat. No.
500	50	350	1	**9.004 900**

3



3 Hydrometer jars, glass

With spout and base.

Height mm	Diam. mm	PK	Cat. No.
150	38	1	**9.950 034**
200	38	1	**9.950 035**
200	50	1	**9.950 036**
250	50	1	**9.950 037**
300	50	1	**9.950 038**
350	63	1	**9.950 039**

4



4 Battery hydrometer

Battery acid tester 1.10 to 1.30.
Boxed complete with glass tube, rubber bulb and hydrometer.

Type	PK	Cat. No.
Battery hydrometer	1	**9.004 710**

1 Dipping flow cups Frikmar

NEW!

Aluminium. DIN 53211 viscometer. With brass nozzle.
For all types of liquid chemicals, varnishes, fluid enamels, gravure printing inks and leather dyes, oils, fats, foodstuffs etc.
Beaker volume 100ml.

Flow nozzle mm	PK	Cat. No.
3	1	**6.056 477**
4	1	**9.149 898**
5	1	**6.058 370**
6	1	**6.056 922**
8	1	**6.084 496**

1



2 Flow cups with fixed nozzle

NEW!

With fixed nozzle made of stainless steel. Housing made of titanium anodised aluminum, Cat. No. 6226 824 with stainless steel housing.

Flow nozzle mm	DIN	PK	Cat. No.
2	similar to DIN 53 211	1	**6.057 808**
3	similar to DIN 53 211	1	**6.091 529**
4	according to DIN 53 211	1	**9.149 862**
4	according to DIN 53 211	1	**6.226 824**
6	similar to DIN 53 211	1	**6.301 841**
8	similar to DIN 53 211	1	**6.302 759**
3	according to ISO 2431	1	**6.223 165**
4	according to ISO 2431	1	**6.088 604**
5	according to ISO 2431	1	**6.901 466**
6	according to ISO 2431	1	**6.088 605**

2



3 Immersion flow cup with fixed nozzle

NEW!

With fixed nozzle from stainless steel or aluminium.

Flow nozzle mm	DIN	Material Nozzle	PK	Cat. No.
4	DIN 53 211	Aluminium	1	**9.149 894**
6	similar to DIN 53 211	Aluminium	1	**6.080 098**
4	DIN 53 211	Stainless Steel	1	**6.264 682**
6	similar to DIN 53 211	Stainless Steel	1	**6.225 937**
2	ISO 2431	Aluminium	1	**6.705 831**
4	ISO 2431	Aluminium	1	**6.302 328**
5	ISO 2431	Aluminium	1	**6.705 832**
6	ISO 2431	Aluminium	1	**6.314 566**

3



4 Flow cups, without nozzles

For 2, 3, 4, 5, 6, 7 and 8mm outlet detachable nozzles, please order separately.
Flow cups and nozzles similar to DIN 53211.

Type	Flow nozzle mm	PK	Cat. No.
Flow cups		1	**9.149 860**
Nozzle	2	1	**9.149 872**
Nozzle	3	1	**9.149 873**
Nozzle	4	1	**9.149 874**
Nozzle	5	1	**9.149 875**
Nozzle	6	1	**9.149 876**
Nozzle	7	1	**9.149 877**
Nozzle	8	1	**9.149 878**

4



Flow cup stands

NEW!

Stainless steel.

Type	PK	Cat. No.
Flow cup stand, ring stand	1	**9.149 881** 5
Flow cup stand, tripod stand	1	**9.149 884** 6

5



9.149 881

6



9.149 884

1



1 Viscometers, glass, kinematic, Ubbelohde

To ISO/DIS 3105. DIN 51562. BS 188. NF T 60 to 100. *SI Analytics*
Without documentation of the constants.
For manual and automatic relative measurements.

Type	Capillary	Constant K	PK	Cat. No.
53001	0a	0.005	1	**9.268 301**
53003	0c	0.003	1	**9.268 303**
53010	I	0.01	1	**9.268 310**
53013	Ic	0,03	1	**9.268 313**
53020	II	0.1	1	**9.268 320**
53023	IIc	0.3	1	**9.268 323**
53030	III	1	1	**9.268 330**
53033	IIIc	3	1	**9.268 333**
53040	IV	10	1	**9.268 340**

2



2 Viscometers Ubbelohde, glass, kinematic

NEW!

ISO 3105, DIN 51562, NF T60-107 *SI Analytics*
For manual (type 501 ..) or automatic (type 532 ..) measurements.
Constants documented in manufacturer's certificate.

Type	Capillary	Capillary i.d. mm	Constant K	Measuring range mm²/ sec	PK	Cat. No.
501 00	0	0.36	0.001	0.2 - 1	1	**9.268 100**
501 03	0c	0.47	0.003	0 - 3	1	**9.268 103**
501 01	0a	0.53	0.005	0.8 - 5	1	**9.268 101**
501 10	I	0.63	0.01	1.2 - 10	1	**9.268 110**
501 13	Ic	0.84	0.03	3 - 30	1	**9.268 113**
501 11	Ia	0.95	0.05	5 - 50	1	**9.268 111**
501 20	II	1.13	0.1	10 - 100	1	**9.268 120**
501 23	IIc	1.50	0.3	30 - 300	1	**9.268 123**
501 21	IIa	1.69	0.5	50 - 500	1	**9.268 121**
501 30	III	2.01	1	100 - 1000	1	**9.268 130**
501 33	IIIc	2.65	3	300 - 3000	1	**9.268 133**
501 31	IIIa	3.00	5	500 - 5000	1	**9.268 131**
501 40	IV	3.60	10	1000 - 10000	1	**9.268 140**
532 00	0	0.36	0.001	0.3 - 1	1	**7.023 176**
532 03	0c	0.47	0.003	0.5 - 3	1	**9.268 203**
532 01	0a	0.53	0.005	0.8 - 5	1	**9.268 201**
532 10	I	0.63	0.01	1.2 - 10	1	**9.268 210**
532 13	Ic	0.84	0.03	3 - 30	1	**9.268 213**
532 11	Ia	0.95	0.05	5 - 50	1	**7.023 177**
532 20	II	1.13	0.1	10 - 100	1	**9.268 220**
532 23	IIc	1.50	0.3	30 - 300	1	**9.268 223**
532 21	IIa	1.69	0.5	50 - 500	1	**7.023 178**
532 30	III	2.01	1	100 - 1000	1	**9.268 230**
532 31	IIIa	3.00	5	500 - 5000	1	**7.023 179**
532 33	IIIc	2.65	3	300 - 3000	1	**9.268 233**
532 40	IV	3.60	10	1000 - 10000	1	**9.268 240**

3



3 Viscometer holders

Type 05392. VA steel. *SI Analytics*
Suitable for all Ubbelohde viscometers without TC sensors. For manual and automatic measurements. Holds the viscometer perpendicularly. Accuracy <1°. Protects the viscometer from damage.

Type	PK	Cat. No.
05392	1	**9.268 790**

4



4 Viscometer heating jacket

With support plate for Ubbelohde and capillary viscometers. Can be thermoregulated in mantles in the temperature range 0 to 180°C. *SI Analytics*

Type	PK	Cat. No.
Viscometer heating jacket	1	**9.269 420**

E & OE.

1 Measuring instrument for viscosity analysis ViscoClock

Introductory model for automatic viscosity analysis. *SI Analytics*
For determining absolute and relative viscosity.

The most precise method for determining the viscosity of liquids is to measure it in capillary viscometers. The ViscoClock works in accordance with this method. Optical fibres precisely determine the liquid meniscus on two measuring planes, the running time is determined and displayed with a resolution of 0.01 secs. Since the measuring process runs automatically, subjective sources of error are reliably excluded. The 0.01% accuracy of the measured time for calculating the absolute and relative viscosity is given as a measuring uncertainty with a confidence level of 95 %.

The ViscoClock was designed to use Ubbelohde, micro Ubbelohde or micro Ostwald viscometers and can be operated in all thermostatic baths with transparent tanks.

1



Specifications

Measuring range:	Up to 999.99 secs./resolution 0.01 sec.
Timing accuracy:	±0.01 sec. ±1 digit, but not more accurate than 0.1%, given as measuring uncertainty with a confidence level of 95%
Measuring range viscosity:	0.35 to 10000 mm²/sec. (cSt) The absolute, kinematic viscosity is also dependent on the uncertainty of the numerical value of the viscometer constants and on the measuring environment, in particular the measuring temperature
RS 232C interface:	For connecting a printer with a serial interface or a computer (PC) for documenting the data
Operating temperature:	Stand: -40 to +150°C Electronic measuring unit: +10 to +40°C
Dimensions (WxDxH):	approx. 95 x 50 x 490 mm
Weight:	approx. 450g (without viscometer) Power pack approx. 220g
Viscometers accepted:	Ubbelohde (DIN, ISO, ASTM, micro), micro Ostwald.

Type	PK	Cat. No.
ViscoClock	1	**9.269 480**

2 Density meter Densito 30PX

Portable instrument for determining the specific gravity. *Mettler-Toledo Online*
- Wide range of applications
- Easy to use: take a sample and read the final result
- Results within seconds displayed in the unit of your choice
- Choice of temperature correction coefficient before each measurement
- Intuitive user guidance and plain language display
- Clearly visible measuring cell
- External sample tip/external syringe connection for high viscosity samples

Supplied with: Protective case, density standards, cleaning tissues, instruction manual, flasks for cleaning solution, batteries, LabX® direct DE/RE data transfer software for data collection and manipulation.

2



Specifications

Density measuring range:	0 to 2g/cm³
Resolution:	0.0001g/cm³
Accuracy:	±0.001 g/cm³
Measuring units:	Density, relative density, density temperature compensated, relative density temperature compensated, Brix %, alcohol (gravity-%, volume-%, US Proof and UK Proof), Baumé, Plato, API (scales A, B and D), %sulphuric acid (gravitypercents), user-defined units
Temperature:	0 to 40°C
Measuring range:	0.1°C
Resolution:	either in °C or °F
Calibration:	with dry air and pure water or other density standards
Data storage:	storage space for up to 1100 results
Display:	Matrix-LCD with background lighting
Interface:	Infrared, protocol selectable (IrDA or RS232C)

Type	PK	Cat. No.
Densito 30PX	1	**9.947 550**
Density standards (6mL), 10-piece set with certificate	1	**9.947 551**

1



1 Density Meter DS7800

NEW!

A.KRÜSS Optronic

Digital density meters with up to four decimal places for measuring density, relative density and concentration of aqueous solutions in a range of 0.0000 - 1.9999 g/cm³.
Calibration is performed with pure water and dry air.
An integrated SQL database stores up to 99 userdefined measurement methods and the last 999 measurement.

- Density measurement based on the oscillating U-tube principle
- Bright touchscreen display with intuitive operation in 6 languages
- Very efficient integrated Peltier temperature regulation (10-40°C) with high precision
- Desiccation unit and peristaltic pump included
- Can be filled using the integrated peristaltic pump or by injection
- Resistance to samples: all parts that come into contact with samples are made of glass or PTFE
- LUER or UNF couplings
- Includes built-in air pressure sensor
- USB interface for data export and firmware updates and for connecting keyboard or barcode scanner
- RS-232 interface for serial printer
- Ethernet interface for direct connection to a PC (with possibility of remote maintenance via internet)
- PDF Export
- Full cGMP/GLP capability: password protection, data backup, automatic printout or data output in CSV-Format
- Meets the relevant international standards such as Pharmacopoe, OIML, ASTM
- Calibration certificate in accordance with N.I.S.T.
- IQ/OQ/PQ-start-ups possible
- 3-year warranty on registration

Includes the following accessories
- Desiccation cartridge
- Rinsing and filling pump
- Tube set - standard: 4 pc. adapter connection, Specimen tube, Pump tubing, 10 pc. syringe 5 ml Luer, 1 T-piece
- Waste vessel
- Operating manual
- Test report and calibration certificate in accordance with N.I.S.T.

Specifications

Measurement range:	0.0000-1.9999g/cm³
Accuracy:	0.0001g/cm³
Repeatability:	0.0001g/cm³
Sample volume by manual injection:	0.9ml
Temperature range:	10-40°C
Temperature stability:	±0.02°C
Measurement time approx:	5min
Ambient temperature:	10-40°C
Calibration:	Automatic menu-driven calibration with dried air and distilled water
Manufacturers calibration:	4-10 sampling points for air, water with 9 temperatures
Case Cast:	aluminium, powder-coated
Display:	LCD TFT 5.7 ", 640x480pixel colour display (VGA)
Interfaces:	RS-232 (printer) USB (data export, firmware updates), Ethernet (LIMS, remote monitoring)
Power supply:	90-264V, 50/60Hz
Power consumption:	(measuring mode) 25W
Power consumption:	(max.) 100W
Methods:	99 freely definable methods
Result storage:	999 last measurements
Printer port:	serial
User administration/Password protection:	activatable
LIMS access:	possible
Dimensions (WxDxH):	220 x 220 x 430mm
Weight:	5.3kg

Type	PK	Cat. No.
Density Meter DS7800	1	**6.265 000**

E & OE.

1 LLG-Melting point apparatus

NEW!

Ideal for determination of the melting point of powders and substances that do not have a clear transparent melting point.

Both models have the following properties:
- Digital temperature control
- Sample can be monitored through a magnifying glass with integrated light
- For capillaries with 1.4mm outer diameter
- Automatic fan cooling that activates to cool off the device after completion of the measurement
- Text display of error messages
- Keyboard covered with foil for easy cleaning
- With operating instructions in German and English; brief instructions right at the device
- With integrated printer for saving space (only HV2)

H2 for visual, semi-automatic measurement with magnifying glass, without printer:
In this model, the melting point is determined visually and then saved by pushing the "Save" key. The starting temperature (approx. 3°C below the expected melting point) is set. A signal sounds when this temperature is reached. The sample is introduced and observed at a heating rate of 1°C/min. after the "start" key is pushed again. When the melting point is determined, the value can be stored by pushing the memory button and read on the display until the device is switched off or a new measurement is performed.

HV2 for visual measurement with magnifying glass or automatic measurement, with printer:
Either fully automatic or visual measurements, 1 sample each.
With this version, you can specify whether you want to observe the melting process through the magnifying glass or have the melting point determined automatically after the pre-set starting temperature is reached (indicated by sound signal). The device starts the heating rate of 1°C/min after introduction of the capillaries into the corresponding opening for automatic measurements. If you chose automatic measurement, a transparency progression is printed from the time the substance starts to become transparent (melting process) to absolute transparency (light-permeability). For visual measurement, only the melting point determined by you will be printed.

The scope of delivery contains 100 melting point determination capillaries and a device protection hood. Refill pack melting point tubes for LLG-Melting point apparatus please order Cat. No. 9.208 131.

Specifications

Measuring range:	25.0°C to 360.0°C
Resolution:	0.1°C
Accuracy:	±0.5°C (+25°C to +200°C) ±0.5% of measured value °C (rem. measuring range)
Heating rate at fast heating:	to 200°C, approx. 4 min to 350°C, approx. 8 min
Heating rate when measuring:	1°C/min
Magnifying glass:	10x
Lighting:	2 x LED
Dimensions (WxDxH):	230mm x 220mm x 315mm
Dimensions capillaries:	1.4mm x 80mm
Weight:	4.5kg
Power supply:	115-230V, 50Hz

Type	Description	PK	Cat. No.
MPM-H2	Visual measuring / magnifier	1	**9.208 120**
MPM-HV2	Visual or automatical measuring with printer	1	**9.208 121**
Melting point tubes	Sealed one end, length 80mm, OD 1.40mm	100	**9.208 131**



1



2

1 2 Melting point apparatus, model SMP10/SMP20

Supplied with 100 melting point tubes, open one end. *Stuart*
With BioCote, silver-based, antimicrobial protection.

Specification	**SMP10/SMP20**
Number of samples:	2
Temperature range:	Ambient to 300ºC
Temperature accuracy:	±1.0ºC at 20ºC, ±2.5ºC at 300ºC
Display:	Three digit LED/Four digit LED
Display resolution:	1ºC/0.1ºC
Display hold facility:	No/ Yes
Ramp rates:	20ºC per minute to plateau, 2ºC per minute to melt/20ºC per minute to plateau, variable between 1 and 10ºC per minute to melt
Dimensions (w x d x h):	160 x 220 x 170mm
Net weight:	1.8kg
Electrical supply:	230V, 50Hz, 75W

Type	PK	Cat. No.
SMP10	1	**9.950 177**
SMP20	1	**9.830 430**

3



4



3 4 Melting point apparatus, Electrothermal IA 9100/9200/9300

Electrothermal

With microprocessor heating oven control. Up to 3 melting points can be quickly and accurately determined simultaneously. The starting temperature of the approximate melting range can be input via the keyboard. The unit quickly heats up to this temperature and gives an optical and acoustic signal once it has been reached. When the operator then presses another key, the device begins to heat up at a constant rate
(IA 9100 fixed at 1°C/min., IA 9200 and IA 9300 adjustable between 0.2 to 10°C/min. in increments of 0.1°C).
Up to 4 melting points(IA 9300 up to 6 melting points) can be recorded and transferred to the memory as discreet temperatures for later recall on the display. The different phases of a melt or the critical melting temperatures of various samples can be investigated under the same conditions in this way. Model IA 9200/9300 provides the opportunity for computer-supported data analysis. The initial temperature and heating rate can be set via the keyboard in order that various test protocols are available. An accessory printer enables documentation of the results, date, time (real time) and sample number. Model IA 9200/9300 can allocate continuous sample numbers or recall data via the keyboard. Information can be transferred directly to a LIMS computer via the RS 232 C interface.
The 8X magnifier has a Ø of 40mm and an adjustable focal point. Units comply with VDE requirements (CE marked).
Model IA 9300 can be used for pharmacopeia requirements.

Dimensions (WxDxH):	200mm x 350mm x 85mm
Weight:	2.5kg
Input:	220V -240V
Output:	12V
Power:	45W
Oven output:	18W
Oven chamber illumination:	12V/ 2.2W
Oven temperature range:	45 to 400°C
Digital thermometer	
Sensor:	linearised industrial platinum resistance thermometer, compensated.
Measuring range:	Amb. to 400°C
Resolution:	0.1°C
Accuracy:	±0.6°C at 20°C ±1 digit ±1.0°C at 350°C ±1 digit
Display:	Four-digit, 12mm high LCD

Type	PK	Cat. No.
Cold finger	1	**9.830 445**
Capillary tubes, 2.0 mm Ø	100	**9.830 447**
Printer with connection cable	1	**9.830 448**
IA 9100	1	**9.830 441**
IA 9200	1	**9.830 442**
IA 9300	1	**9.830 443**
Capillary tubes, 1.5 mm Ø	100	**9.830 463**

E & OE.

1 Melting Point Meter M5000

NEW!

A.KRÜSS Optronic

With this instrument, powdery substances with a melting point up to 400°C can automatically be examined. A fan cooling allows fast measurements in every range of temperature. The display provides a clearly-arranged readout of all important measuring data.

- Fully automatic measuring instrument
- Digital temperature control via LCD-display
- Sealed keyboard for easy cleaning
- Alarm function when reaching the melting point
- Digital display of all important data
- Display in German and English
- Automatic quick cooling by integrated fan
- Inclusive instrument protective cover and 100 melting point tubes
- With RS-232 interface for printer CBM910

1



Specifications

Measuring range:	25 - 400°C
Resolution:	0.1°C
Accuracy:	±0.3°C (25 - 200°C) ±0.5°C (200 - 400°C)
Reproducibility:	±0.2°C
Safety class:	IP 20
Preheating rate:	up to 300°C approx. 4.0min up to 400°C approx. 7.5min
Heating rate during measurement:	1°C min^{-1}
Capillary-Ø:	1.4mm
Capillary intake:	1
Power supply:	90 - 264V
Dimensions (WxDxH):	230 x 210 x 110mm
Weight:	approx. 1.8kg

Type	PK	Cat. No.
Melting Point Meter M5000	1	**6.264 452**

2 3 Melting Point Apparatus, advanced, SMP30

NEW!

Stuart

- Maximum temperature 400°C
- Patented head up display
- Integrated cooling 350°C to 50°C in 12 minutes
- Large easy to read user friendly interface

The SMP30 can take three samples simultaneously within the optimised heating block. To allow maximum flexibility a plateau facility is included with variable ramp rate between 0.5 and 10°C in 0.1°C increments. The tubes are illuminated with bright white LED's to give the clearest view of the samples during the melt. The block has been designed for easy access for cleaning. To allow the most comfortable viewing angle the SMP30 features a two stage head adjustment. The SMP30 features the patent pending head up display, this unique feature displays a floating image of the block temperature, visible through the eyepiece, in front of the tubes.

An accessory printer is available separately to produce a written record of the melt.

2



3



Specifications

No of samples:	3
Temperature range:	Ambient to 400°C
Temperature resolution:	0.1°C
Display:	40 x 4 segment LCD
Ramp rates:	0.5 to 10°C in 0.1°C increments
Memory:	8 results per tube
Date/time display:	Yes
Cool down time:	350 to 50°C (~12 mins)
Heat up time:	50 to 350°C (~ 6 mins)
Supply requirements:	120V/230V 50Hz
Language variants:	English, German, French, Italian
Temperature unit:	°C

Type	PK	Cat. No.
Melting point apparatus, complete with pack of 100 melting point tubes, closed at one end.	1	**9.950 188**
Melting point tubes, closed at one end.	100	**6.803 067**
Accessory printer with power supply	1	**9.950 399**

1



2



1 2 Automatic Melting Point Apparatus, SMP40

Stuart

- maximum temperature 400°C
- utilises latest technology in digital imaging
- 5.7" colour VGA touch screen display
- unique split design concept
- integrated cooling: 350°C to 50°C in 10 minutes

The SMP40 automatic melting point uses the latest technology in digital image processing to accurately identify the melt of up to three samples simultaneously. The unit comes with a 5.7" colour VGA display, on which the melt can be watched real time, or the melt video will automatically be saved as an AVI file that can be reviewed later, either on the unit or via PC. The result can also be overridden if for any reason the operator does not agree with the result calculated by the image processing algorithm. The SMP40 has an innovative split design concept, the unit can be used as normal or the control side and the melt side can be separated, allowing maximum footprint flexibility. Once the unit has been split the control panel side can be used in two orientations, either landscape or portrait to allow the perfect viewing angle whether you are sat or stood at the bench, the screen automatically changes orientation with the unit. The unit can store up to 200 result files with videos, if required data can be easily transferred from the unit to a flash memory drive or PC via one of the USB connectors. All units are supplied with a calibration certificate showing individual serial numbers for traceability. The SMP40 conforms to Pharmacopeia and GLP.

The SMP40 is also available with IQ/OQ documentation according to FDA guidelines.

Specifications

No of samples:	3 simultaneously
Temperature range:	Ambient to 400°C
Temperature resolution:	0.1°C
Display:	5.7" Colour VGA touchscreen
Ramp rates:	0.1 to 20°C in 0.1°C increments
Memory:	200 results with video
Date/time display:	Yes
Cool down time:	350 to 50°C (approx. 10 mins)
Heat up time:	50 to 350°C (approx. 6 mins)
Flash memory/PC interface:	USB
Supply requirements:	120V, 230V 50Hz a.c.
Language:	English
Temperature units:	°C, °F

Type	PK	Cat. No.
Melting point apparatus, incl. 100 melting point tubes, closed at both ends	1	**9.950 398**
Glass melting point tubes, closed at both ends	100	**9.950 400**

3



3 Melting point tubes

NEW!

Capillary tubes for melting point analysis. Clear glass, different diameters and lengths. Special remarks are available. Other sizes on request.

Ext. diam. mm	Int. diam. mm	Length mm	Type	Material	PK	Cat. No.
1.00	0.80	80	Sealed one end	Duran®	100	**9.208 081**
1.00	0.80	80	Open both ends	Duran®	100	**9.208 080**
1.00	0.80	100	Sealed one end	Duran®	100	**9.208 101**
1.00	0.80	100	Open both ends	Duran®	100	**9.208 100**
1.40	1.00	80	Sealed one end	Soda glass	100	**9.208 131**
1.50	0.90	100	Closed both ends	Soda glass	100	**9.830 463**
1.55	1.15	75	Sealed one end	Soda glass	100	**9.208 076**
2.00	1.50	100	Closed both ends	Soda glass	100	**9.830 447**

4



4 Hot bench, Kofler system

Wagner & Munz

Very easy to use. Various characteristics can be observed simultaneously. Linear temperature scale adjustment. Enables quick identification of organic substances. Supplied with test and standard material sets. CE marked.

Dimensions (WxDxH):	430 x 100 x 140mm
Supply requirements:	230 V/50 Hz, 100 W
Temperature range:	+50 to +260°C

Type	PK	Cat. No.
Hot bench	1	**9.830 160**

E & OE.

Magnetic stirrers / Hotplates 412

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IP Protection classes

IP	Characteristic 1 for special protection
0	No special protection
1	Protection from solid objects greater than 50mm in diameter
2	Protection from object greater than 12mm in diameter
3	Protection from object greater than 2.5mm in diameter
4	Protection from object greater than 1mm in diameter
5	Complete protection against contact, Protection against dust deposit
6	Complete protection against contact, Protection from infiltration of dust

IP	Characteristic 2 for waterproofing
0	No waterproofing
1	Protection from dripping water
2	Protection from vertically dripping water (tilted up to 15°)
3	Protection from sprayed water (tilted up to 60°)
4	Protection from splashed water
5	Protection from water projected from a nozzle
6	Protection against heavy seas or powerful jets of water.
7	Protection against immersion
8	Protection against complete, continuous submersion in water.
9	Protection against the ingress of water from all directions even under greatly high pressure on the housing. (High-pressure/steam cleaner, 80-100 bar)

IP 64

IP 64 { **6**: Complete protection against contact, Protection from infiltration of dust
4: Protection from splashed water

1



1 LLG magnetic stirrer uni*Stirrer* 2

NEW!

A reasonably priced magnetic stirrer without heating for volumes up to 1000ml. Adjustable speed from 0 to 2000rpm. Plate diameter 120mm. Body made of ABS. 3 years warranty.

Support rod, aluminium (Cat. No. 6.263 435) available as an optional accessory.

Specifications

Stirring quantity (H_2O):	1000ml
Speed range:	0 to 2000rpm
Permissible ambient temperature:	0 to 50°C
Permissible relative moisture:	85%
Material:	ABS case
Dimensions (WxDxH):	150 x 135 x 53mm
Weight:	0.5kg
Power supply:	100 - 230V, 50/60Hz
Protection class:	IP 21
Guarantee:	3 years

Type	PK	Cat. No.
uni*STIRRER* 2 with EU-plug	1	**6.263 430**
uni*STIRRER* 2 with UK-plug	1	**6.263 431**
Support rod, 25 cm, aluminum	1	**6.263 435**

2



2 Magnetic stirrer HI190

Hanna

Compact and lightweight stirrer.
- Speed is regulated by simply turning a button
- ABS plastic covered top plate
- Splashproof

Specifications

Max. stirring capacity (H_2O):	1000ml
Speed:	100rpm to 1000rpm
Dimensions (WxDxH):	120mm x 120mm x 45mm
Protection category:	IP 54
Permissible ambient temperature:	0°C to +50°C
Permissible relative humidity:	95%
Material:	ABS
Power supply:	230V

Type	PK	Cat. No.
HI 190M-2	1	**9.720 085**

E & OE.

1 Magnetic stirrer HI180

Without heating. Economical and lightweight stirrer. *Hanna*
- Available in different colours
- Splashproof

Speedsafe system ensures that maximum speed will never be exceeded.

Specifications

Max. stirring capacity (H_2O):	1000ml
Speed:	100rpm to 1000rpm
Dimensions (dia. x H):	137 x 51mm
Protection category:	IP 54
Permissible ambient temperature:	0°C to +50°C
Permissible relative humidity:	95%
Material:	ABS
Power supply:	220V

Type	Colour	PK	Cat. No.
HI 180A-2	light yellow	1	**9.720 090**
HI 180B-2	light green	1	**9.720 091**
HI 180C-2	light blue	1	**9.720 092**
HI 180D-2	yellow	1	**9.720 093**
HI 180E-2	green	1	**9.720 094**
HI 180F-2	dark blue	1	**9.720 095**
HI 180G-2	red	1	**9.720 096**
HI 180H-2	grey	1	**9.720 097**
HI 180I-2	ivory	1	**9.720 098**

1



Magnetic stirrer UC151

Without heating. Glass ceramic top plate 150 x 150mm. Electronic variable speed control with off position. *Stuart*

Specifications

Max. stirring capacity (H_2O):	15l
Speed:	100 to 2000rpm
Dimensions (WxDxH):	172 x 248 x 109mm
Protection category:	IP 32
Permissible ambient temperature:	+5 to +40°C
Permissible relative humidity:	≤ 80%
Plate material:	glass ceramic
Power supply:	230 V, 50 Hz

Type	PK	Cat. No.
UC151	1	**9.645 297** 2

2



9.645 297

3 Magnetic stirrer MIXdrive 1 XL

NEW!

Ultra flat, compact and strong magnetic stirrer with fully automatic stirring bar monitoring mixWATCH, up to 40 litres stirring volume, also suitable for highly viscous media, very strong magnetic coupling, therefore predestined for magnetic power transmission over wide distances or for thick vessel bottoms. *2mag*

Maintenance-free 2mag-motor-drive with large speed range from 60 up to 2000 rpm, temperature resistant up to +150°C, designed for use in ovens, extremely robust construction and performance, easy to clean and firm.

Control unit MIXcontrol XL

Powerful control unit for MIXdrive 1 XL, wide speed range 60 to 2000 rpm, jerk-free, even and smooth stirring even at slow speeds, incl. mixWATCH, stirring bar monitoring with fully automatic trim of the maximum reachable speed, for reliable and unattended operation, digital display, 4-step power setting, high power setting for viscous liquids and reduced power setting for long-term operation without warming effect, adjustable SoftStart for different volumes/viscosities, adjustable interval times for automated restart, QuickStop against after-run and glass breakage, RS232.

3 years warranty, Made in Germany.

Please order control unit separately.

3



Specifications

Ambient temperature:	+5 to +150°C (at 95% humidity)
Housing:	stainless steel, hermetically sealed
Protection class:	IP66

Type	Rotation speed	Stirring capacity	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	rpm	ml	mm	W	kg		
MIXdrive 1 XL	-	1000 - 40000	225 x 225 x 38	20	3.4	1	**9.646 028**
MIXcontrol XL	60 - 2000	-	200 x 155 x 48	20	1.8	1	**9.646 029**



1 Magnetic stirrer MIX 1XL

2mag

Wear-free 2mag motor drive, powerful, up to 40liters, 60-2000rpm, internal controller with 20 watts, incl. mixWATCH stirring bar monitoring with fully automatic trim of the max. Reachable speed for reliable and unattended operation, digital display, 4-step power setting for high power with regard to large and viscous media and reduced power for warming-free continuous operation, adjustable SoftStart for different volumes/viscosity, QuickStop against after-run and breakage, reliable sealed stainless-steel housing, 3 years warranty. Made in Germany.

Specifications

Operating conditions:	-10°C to +50°C at 80% R.H. max.
Housing:	Stainless steel
Protection category:	IP 64

Type	Rotation speed	Stirring capacity	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	rpm	ml	mm	W	kg		
MIX 1 XL	60 - 2000	500 - 40000	225 x 280 x 35	20 (4-steps)	4.0	1	**6.236 109**



2 Magnetic stirrer steriMIXdrive with external control

2mag

Pressure, steam, vacuum and temperature resistant.

Maintenance-free 2mag-motor-drive with large speed range from 60rpm up to 1200rpm, fully encapsulated, pressure and vacuum resistant housing, IP68, temperature resistant up to +150°C, extremely robust construction and performance, easy to clean and firm. 3 years warranty. Made in Germany.

Specifications

Operating conditions:	-10 to +150°C at 100% R.H. max.
Housing:	PPSU, hermetically sealed
Protection category:	**IP 68/IP 20 (control)**

Type	Rotation speed	Stirring capacity	Dimensions (W x D x H)	Rating	Weight	PK	Cat. No.
	rpm	l	mm	W	kg		
steriMIXdrive	-	1 - 40	140 x 140 x 32	20	9.0	1	**9.646 035**
steriMIXcontrol*	60 - 1200	-	200 x 175 x 48	20	1.8	1	**9.646 036**

* Control unit.



9.645 990



9.645 976

Magnetic stirrer FABdrive/MAXdrive with external control

Stirring Systems for Viscous Liquids or Volumes up to 1000 liters.

2mag

Outstanding powerful magnetic stirrer, up to 1000 liters, for stirring over larger distances or heavy-walled reservoir bases and for jacked reaction vessels, extremely powerful magnetic coupling, maintenance-free 2mag-motor-drive, speed range 80-990 rpm, adjustable SoftStart for different volumes/viscosities, QuickStop against motor overrun and glass breakage, closed stainless steel housing, sealed, IP64, robust and reliable construction, easy to clean, separate control unit with digital display, display of set speed and actual speed, 3 years warranty, made in Germany.

MAXdrive:

Identical to FABdrive, but for 250 liters, speed range 100-1200 rpm, housing with large surface, load up to 300 kg, separate control unit identical to FABcontrol, but with display of set speed.

Please order control unit separately!

Specifications

Operating conditions:	-10 to +50°C at 95% R.H. max.
Casing:	Stainless steel
Protection category:	IP 64

Type	Rotation speed	Stirring capacity	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	rpm	l	mm	W	kg		
FABdrive	-	1 - 1000	180 x 180 x 75	100	9.0	1	**9.645 990** 3
FABcontrol*	80 - 990	-	200 x 175 x 48	100	2.0	1	**9.645 991**
MAXdrive	-	1 - 250	260 x 260 x 68	40	9.0	1	**9.645 976** 4
MAXcontrol*	100 - 1200	-	200 x 175 x 48	40	2.0	1	**9.645 977**

* Control unit

1 Magnetic stirrer maxMIX

2mag

Maintenance-free 2mag motor drive. Without heating. For universal stirring applications in science and industry up to 150L. Suitable for use with heavy-walled reservoir bases, round bottom flasks and jacketed reaction vessels. Can also stir over larger distances (max. 60mm). With long range, extremely powerful magnetic field, which produces dual torque when starting up. Offers optimal operation safety by consistent speed regulation and 3 second quick-stop without motor overrun. Adjustable SoftStart, digital speed display. Can be cleaned under running water. Supplied with mains adapter for 230V 50/60 Hz. 3 years warranty. Made in Germany.

Specifications

Speed accuracy:	±0.25%
Digital display:	Adjustable SoftStart (10 sec. to 60 sec.)
Operating conditions:	-10°C to +50°C at 80% R.H. max.
Housing:	Stainless steel
Protection category:	IP 64

Type	Rotation speed	Stirring capacity	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	rpm	ml	mm	W	kg		
maxMIX	100 to 1200	1 to 150000	265 x 320 x 68	40	9.3	1	**9.645 975**

1



2



9.646 056

3



9.646 045

Accessories for 2mag magnetic stirring systems

NEW!

2mag

Description	PK	Cat. No.
Enlargement frame maxFRAME for MIX/MAXdrive, footprint 500 x 500mm, loading capacity 1000kg	1	**9.646 056** 2
Mobile stand mixCADDY for FABdrive, for vessels up to diam. 570mm, loading capacity 250kg	1	**9.646 045** 3
Extension cable for MIXdrive, 3m	1	**9.646 041**
Extension cable for bioMIXdrive, 3m	1	**9.646 042**
Extension cable for MAXdrive/FABdrive, 3m	1	**9.646 043**

4 Magnetic stirrer for cell cultures with external control, bioMIXdrive 1/2/3/4

2mag

Maintenance free motor drive. Magnetic stirrer with 1/2/3/4 stirring positions, for careful, protective and warming-free mixing of cell cultures and culture broths, also for viscous cultures, maintenance-free, large surface. 100% jerk-free, speed range 5rpm to 250rpm, encapsulated stainless steel housing, water-, dust-, germproof, IP68, submersible, easy to clean, robust construction, flat design, suitable for propeller and spinning ball culture flasks, individual measurement on request. 3 years warranty. Made in Germany. Suitable for underwater use.

4



Specifications

Permitted operation conditions:	-10°C up to +50°C at 100% H.R. max. +50°C submerged in water
Housing:	Stainless steel
Protection class:	IP 68

Type	Rotation speed	Stirring positions	Stirring centre distances	Stirring capacity	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	rpm		mm	ml	mm	W	kg		
bioMIXdrive 1	5 to 250	1		5 to 5000	180 x 180 x 38	5	2.5	1	**9.645 950**
bioMIXdrive 2	5 to 250	2	140	5 to 5000	130 x 270 x 38	5	2.5	1	**9.645 978**
bioMIXdrive 3	5 to 250	3	140	5 to 5000	130 x 410 x 38	5	3.5	1	**9.645 979**
bioMIXdrive 4	5 to 250	4	140	5 to 5000	270 x 270 x 38	5	4.7	1	**9.645 980**

1



9.645 981

2



9.645 982

Control units for stirring drives bioMIXdrive

bioMIXcontrol *2mag*

Control unit for 1x bioMIXdrive 1/2/3/4, speed range 5rpm to 250rpm, power setting (10 steps) for high power with regard to large and viscous media and reduced power for warming-free continuous operation e.g. in CO_2 incubators, digital display, SoftStart, stainless steel housing. 3 years warranty. Made in Germany.

bioMIXcontrol S

Identical to bioMIXcontrol, but with stackable housing and vertical control panel.

bioMIXcontrol MS4

Identical to bioMIXcontrol, but for 4x bioMIXdrive 1, individual and independent speed setting for each stirring drive, also ON-/OFF-function, synchronous speed mode for all drives with one touch.

Specifications

Operation conditions:	0 to +50°C at 80% H.R. max.
Operating voltage:	100-240V 50/60Hz, 1.5A
Housing:	Stainless steel
Protection category:	IP 20

Type	Rotation speed rpm	Dimensions (W x D x H) mm	Power W	Weight kg	PK	Cat. No.
bioMIXcontrol	5 to 200	200 x 155 x 38	4-40 (10-steps)	1.4	1	**9.645 951**
bioMIXcontrol S	5 to 200	215 x 120 x 50	4-40 (10-steps)	1.4	1	**9.645 981** 1
bioMIXcontrol 4MS*	5 to 200	200 x 155 x 38	6	2.5	1	**9.645 982** 2

* only for bioMIXdrive 1

3



3 Magnetic mini-stirrers topolino

Without heating. Extremely convenient magnetic mini-stirrer for mixing volumes up to 250ml. *IKA*

- Durable, brushless motor
- Infinitely variable speed range
- Strong magnetic coupling

Specifications

Stirring quantity max. (H_2O):	250ml
Speed range:	300rpm to 1800rpm
Dimensions (W x H x D):	95mm x 37mm x 115mm
Protection category:	IP 21
Permissible ambient temperature:	5°C to 40°C
Permissible relative humidity:	80%
Material:	PP
Power supply:	100 - 240 V

Type	Dimensions mm	PK	Cat. No.
topolino	95 x 37 x 115	1	**9.720 220**

Optional accessories: Ikaflon®- stirring bars, Trika®- stirring bars, RSE Stirring bar retriever

4



4 Magnetic stirrer color squid

Without heating. Small magnetic stirrers with digital speed display (LED). *IKA*

- Electronically controlled motor for more capacity
- Higher range of speeds from 0rpm to 2500rpm
- Excellent chemical resistance due to glass top and plastic base in TPC-ET
- Manufactured in recyclable materials
- Power supply with adapter for EU/CH/UK/USA

Specifications

Stirring volume (H_2O):	1L
Speed display:	digital (LED)
Speed range:	0rpm to 2500rpm
Top plate dimensions:	115mm diameter
Dimensions (WxDxH):	145mm x 160mm x 45mm
Permissible ambient temperature:	5°C to 40°C
Permissible relative humidity:	80%
Protection class acc. to DIN EN 60529:	IP54
Supply requirements:	100V - 240V 50/60Hz

Tested to DIN EN IEC 61010-1.

Type	PK	Cat. No.
color squid white	1	**9.720 365**

Optional accessories: Ikaflon®- stirring bars, Trika®- stirring bars, RSE Stirring bar retriever
Further models available on request.

E & OE.

IKA®

#lookattheblue

All from one source for your lab



Tube Mill control



Crushing

Mixing



Heating/Tempering





Separation





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sales@ika.de · www.ika.com

1



9.720 470

Magnetic stirrer big squid

Without heating. Small magnetic stirrers with digital speed display (LED). *IKA*
- Electronically controlled motor for more capacity
- Higher speed range from 0rpm to 2500rpm
- Excellent chemical resistance due to glass top and plastic base in TPC-ET
- Manufactured in recyclable materials
- Power supply with adapter for EU/CH/UK/USA

Specifications

Magnetic drive

Stirring volume max. (H_2O):	1.5L
Speed display:	digital (LED)
Speed range:	0rpm to 2500rpm

Top plate

Material:	glass
Dimensions:	160mm diameter

General data

Dimensions (WxDxH):	185 x 205 x 45mm
Ambient operating temperature:	5°C to 40°C
Ambient operating humidity:	80% R.H.
Protection class acc. to DIN EN 60529:	IP54
Supply requirements:	100-240V 50/60 Hz
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
big squid white	1	**9.720 470** 1

2



2 Magnetic stirrer Mini MR standard

Without heating. *IKA*
- For stirring quantities up to 1L (H_2O).
- Infinitely variable speed from 0 to 2500rpm
- White top plate suitable for observing colour reactions
- Power supply with adapter for EU/CH/UK/USA

Specifications

Max. stirring volume, (H_2O):	1L
Speed range:	0 to 2500rpm
Top plate:	115mm x 115mm Polyester film
Size (WxDxH):	114mm x 127mm x 37mm
Protection to DIN EN 60529:	IP42
Supply requirements:	100-240V 50/60 Hz.
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
Mini MR standard	1	**9.720 211**

3



3 Magnetic stirrer, KMO2 basic

Without heating. Small but very powerful magnetic stirrer. *IKA*
- strong magnetic field resists stirrer bar decoupling
- opto-electronic speed control motor
- adjustable speed up to 1100rpm
- stainless steel housing for easy cleaning and sterilization
- with M10 thread for support rod H 16 V

Specifications

Max. volume stirred (H_2O):	5L
Motor rating input/output:	14/4W
Speed range (rpm):	0 to 1100rpm
Speed indication:	Scale
Surface:	140 x 120mm, stainless steel (AISI 304)
Dimensions (WxDxH):	140 x 200 x 75mm
Weight:	1.4kg
Housing IP rating to DIN EN 60529:	IP21
Supply requirements:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
KMO 2 basic	1	**9.720 210**
KMO 2 basic UK	1	**4.007 982**

E & OE.

Magnetic stirrers C-MAG MS 4/C-MAG MS 7/C-MAG MS 10

IKA

Without heating. With glass ceramic top plate which offers excellent chemical resistance.
- powerful motor for stirring quantities of up to 5l, 10l, or 15l (H_2O)
- raised control panel for protection against leaking liquids

Specifications

Magnetic stirrer

Stirring volume max. (H_2O)	
C-Mag MS 4/MS 7/MS 10:	5l/10l/15l
Motor rating input/output:	15/1.5W
Speed range:	100 to 1500rpm
Speed display:	scale
Max. magnetic bar (L x dia.)	
C-MAG MS 4:	30 x 8mm
C-MAG MS 7/MS 10:	80 x 10mm

Set-up plate

Material:	glass ceramic
Dimensions (W x D)	
C-MAG MS 4:	100 x 100mm
C-MAG MS 7:	180 x 180mm
C-MAG MS 10:	260 x 260mm
Dimensions (WxDxH)	
C-Mag MS 4:	150 x 260 x 105 mm
C-Mag MS 7:	220 x 330 x 105 mm
C-Mag MS 10:	300 x 415 x 105 mm
Weight	
C-Mag MS 4/MS 7/MS 10:	3kg/5kg/6kg
Protection class acc. to DIN EN 60529:	IP 21
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.	
C-MAG MS 4	1	**9.720 493**	1
C-MAG MS 7	1	**9.720 494**	2
C-MAG MS 10	1	**9.720 495**	3

1



9.720 493

2



9.720 494

3



9.720 495

4 Magnetic stirrers, Midi MR 1 digital

IKA

Without heating.
- high power
- flat stable stainless steel housing
- non-locking motor
- adjustable speed
- LED digital speed display
- 0 to 56 minute timer, or continuous operation

4



Specifications

Motor rating input/output:	70/19W
Max. volume stirred (H_2O):	50L
Speed range:	0 to 1000rpm
Top plate:	350 x 350mm, Stainless steel (AISI 304)
Dimensions WxDxH:	360 x 430 x 110mm
Weight:	10.7kg
Protection system to DIN EN 60529:	IP21
Supply requirements:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
Midi MR 1 digital	1	**9.720 306**

Magnetic stirring bars and stirring bar retrievers please see from page 438 onwards.

Multi-position magnetic stirrers RO 5/10/15 series

IKA

Without heating. 5, 10 or 15-position digital magnetic stirrers, designed for synchronous stirring. The magnetic coil technology provides noiseless and consistent stirring on all positions. Speed remains constant, even when load changes. The closed and compact design allows easy cleaning and protects the equipment against the penetration of liquids. Additionally, a removable transparent anti-slip mat is included.

- Adjustable reverse operation
- Eco-mode for a low self-warming of the surface
- Wear free magnetic coils
- Error Code Display
- Easy operation with touch keypad
- Suitable for continuous operation
- Adjustable speed in increments of 10rpm

Specifications

Max. stirring quantity per stirring position (H_2O):	0.4l
Distance between stirring places:	90mm
Deviation for individual stirring positions:	0%
Speed range:	0 to 1200rpm
Speed display:	LED line
Set-up plate material:	stainless steel 1.4301
Protection class acc. to DIN EN 60529:	IP 40
Power supply:	100-240V, 50/60Hz

Type	Stirring positions	Dimensions (W x D x H) mm	PK	Cat. No.
RO 5	5	120 x 570 x 60	1	**9.720 208** 1
RO 10	10	190 x 570 x 60	1	**9.720 222**
RO 15	15	280 x 570 x 60	1	**9.720 226** 2

1



9.720 208

2



9.720 226



1 LLG magnetic stirrer uni*STIRRER* 1

NEW!

An ultra-flat inductive magnetic stirrer without heating with timer for applications in biology and biochemistry.
The modern magnet coil technology consists only of non-moving parts and therefore guarantees a wear-free drive. No heating of the probes. For a better mixing of samples it is possible to change the direction of rotation every 30 seconds. 3 years warranty.

- Timer (1min to 99min, infinetly)
- 100% wear- and maintenance-free inductive drive
- LED-display for an exact adjustment of the rotation speed
- Digital regulated rotation speed
- Alteration of the stirring direction
- High protection class IP 65
- Stainless steel surface

Delivery includes: magnetic stirrer, power cable, adapters for UK and US.

1



Specifications

Stirring quantity (H_2O):	800ml
Speed range:	15 to 1500rpm
Permissible ambient temperature:	5 to 40°C
Magnetic bar:	max. 25mm
Display:	LED
Heating plate:	94mm diam./ Stainless steel
Dimensions (WxDxH):	110 x 155 x 12mm
Weight:	0.5kg
Power supply:	100 - 230V, 50/60Hz
Protection class:	IP 65
Guarantee:	3 years

Type	PK	Cat. No.
uni*STIRRER* 1	1	**6.263 420**

2 Magnetic stirrers, lab disc

IKA

Without heating. Lab disc is an innovative, very flat, magnetic stirrer. It's modern, toroidal coil technology with no moving parts guarantees a maintenance-free drive. Lab disc can automatically change it's rotational direction every 30secs. and therefore enhances mixing of the medium.
- High IP protection class (IP 65)
- Set-up plate and casing made from chemically resistant materials
- Slip-proof, safe stand

2



Specifications

Max. volume stirred (H_2O):	800ml
Motor rating input/output:	5W/3W
Speed range:	15rpm to 1500rpm
Stirring bar length max.:	25mm
Set-up plate material:	polyester
Set-up plate dimensions:	Ø 100mm
Dimensions (W x H x D):	117mm x 12mm x 180mm
Permissible ambient temperature:	5°C to 40°C
Permissible relative humidity:	80%
Protection category:	IP 65
Voltage/Frequency	100V - 240V/50/60Hz

Description	PK	Cat. No.
lab disc white EU/CH	1	**9.720 480**
lab disc white UK	1	**4.008 137**

Optional accessories: Ikaflon®- stirring bars, Trika®- stirring bars, RSE Stirring bar retriever

Magnetic stirring bars and stirring bar retrievers please see from page 438 onwards.

1



9.720 501

Magnetic stirrer, Cimarec i Mono Direct

Thermo Scientific

With powerful magnets and no moving parts, these inductive-drive stirrers are the perfect choice for your general laboratory needs.

- Large, flat, easy to clean work surfaces
- Compact, space saving design
- Initital acceleration is gradual and gentle, ensuring optimum magnetic coupling
- Adjustable power settings are separate from the speed control
- Decreases power consumption
- Lowers heat output
- Easy-to-use rotary knob design
- Rugged powder coated stainless steel housing

Specifications

Operating conditions:	-10 to +40°C at 95% R.H. max.
Housing:	Stainless steel
Colour:	Grey

Type	Rotation speed	Stirring capacity	Dimensions (W x D x H)	Power	Protection-level	PK	Cat. No.
	rpm	ml	mm	W			
Mono Direct	130 - 1200	1 - 3000	180 x 215 x 35	1-5	32	1	**9.720 501** 1

2



9.720 618

Magnetic stirrer, Cimarec i Maxi Direct

Thermo Scientific

With non-mechanical, electronic induction drive and dust/watertight, easy-clean stainless steel housing. Constant speed irrespective of load even if viscosity changes. With large footprint and a strong and more penetrating magnetic field. Not suitable for use in incubators. With mains adapter.

Specifications

Stirrer:	1
Speed range:	80rpm to 2000rpm
Operating conditions:	-10°C to +40°C at 95% R.H. max.
Casing:	Stainless steel
Protection class acc. to DIN EN 60529:	IP 64

Type	Stirring capacity	Power	Dimensions (W x D x H)	PK	Cat. No.
	ml	W	mm		
Maxi Direct	100 - 5000	5 - 20	180 x 215 x 35	1	**9.720 618** 2

Magnetic stirrer MIX 1and MIX 1 eco

NEW!

2mag

Wear-free inductive drive, powerful, up to 10liters, 100-2000rpm, internal controller with 20 watts, digital display, 4-step power setting for high power with regard to large and viscous media and reduced power for warming-free continuous operation, adjustable SoftStart for different volumes/viscosity. 3 years warranty. Made in Germany.

MIX 1 eco

Identical to MIX 1, but price optimized, up to 3 liters, speed range 120rpm-1400rpm, extremely robust, simple operation by speed knob and scale.

Specifications

Operating conditions:	-10°C to +50°C at 80% R.H. max.
Housing:	Stainless steel
Protection category:	IP 64

Type	Rotation speed	Stirring capacity	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	rpm	ml	mm	W	kg		
MIX 1	100 - 2000	1 - 10000	188 x 230 x 38	20 (4-steps)	4.0	1	**9.645 954** 3
MIX 1 eco	120 - 1400	1 - 3000	120 x 120 x 35	10	1.7	1	**9.645 955** 4

3



9.645 954

4



9.645 955

E & OE.

1 Magnetic stirrer luMIX with light function



2mag

Ultra flat, 100% maintenance-free and wear-free, 2mag magnetic induction drive concept. Magnetic stirrer with 1 large stirring position and a luminescent plate, up to 3000ml stirring volume, also suitable for viscous media.
Stirring function and illumination function separately switchable.

Light: Bright and warming-free luminescent PMMA plate, white LEDs with homogenous brightness and variable light intensity (4-step), non-reflecting illumination.
Stirring: 100% maintenance-free and wear-free by inductive 2mag-Magnetic-Drive concept for powerful mixing of solutions, extremely wide speed range from 100rpm to 2000rpm, jerk-free stirring even at low speeds, 4-step power settings for high power with regard to large and viscous stirring volumes and reduced power for the warming-free continuous operation.
Clear digital display for light-, speed- and power settings.

Specifications

Perm. operating temperature:	-10 to +50°C at 80% R.H. max. -40°C to +70°C, 10 to 95%, 500 to 1060hPa
Housing:	Stainless steel
Protection class:	IP64

Type	Rotation speed	Stirring capacity	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	rpm	ml	mm	W	kg		
luMIX	100 - 2000	1 - 3000	188 x 238 x 44	20	3.6	1	**9.645 992**

Magnetic stirrer, Cimarec Power Direct



9.720 595

Thermo Scientific

Super flat, powerful magnetic stirrer for volumes from 100ml up to 40L, with long-range, magnetic field for stirring over long distances up to max. 40mm, ideal for thick-walled, glass vessels, round bottom flasks or double-walled containers, wash- and abrasion-resistant, stainless steel housing, speed range 100rpm to 2000rpm with feedback control, quick stop within 2 sec., 4-step stirring power adjustment (5W/10W/15W/20W), digital speed display, bi-directional RS232 interface allowing up to 14 units to be directly and individually controlled by the user's PC and 24V d.c. output, a.c. adapter for 100 - 240V. Ambient operating temperature: -10 to +40°C.
Protection class: IP 22.

Type	Rotation speed	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	rpm	mm	W	kg		
Power Direct	100 - 2000	240 x 295 x 35	5/10/15/20	2.5	1	**9.720 595** 2

3 Multi-position magnetic stirrers, Cimarec i Poly 15



Thermo Scientific

With non-mechanical, electronic induction drive. With 15 stirring spaces, for e.g. 6 x 1L erlenmeyer flasks or 15 x 250ml beakers. For mass screening and biological applications, even in humidity incubators. With built-in controller, digital speed indicator and soft-start drive. With mains adaptor.

Specifications

Stirring positions:	15
Protection class:	IP 32
Operating conditions:	-10 to +40°C at 95% R.H. max.
Housing:	stainless steel, powder coated
Colour:	grey

Type	Rotation speed	Dimensions (W x D x H)	Power	PK	Cat. No.
	rpm	mm	W		
Poly 15	130 - 990	240 x 420 x 35	10	1	**9.720 650**

Multi-position magnetic stirrers, Multipoint



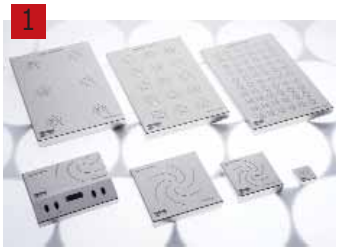
9.720 625

Thermo Scientific

With non-mechanical, electronic induction drive. Ideal for batch series stirring. Choice of 6-place, stirring position models which can stir up to 6 x 1liter erlenmeyer flasks or 15-place models for up to 15 x 250ml beakers. With digital stirring speed display and soft-start function.
With 4 adjustable power level stirring speeds (5 to 20W), easy to clean, hermetically sealed casing which can be washed under running water, ultra flat, space-saving profile and 100% synchronous speed control in all stirring positions. Supplied with mains adapter for 230 V 50/60 Hz. Operating conditions: -10 to +40°C at 95% R.H. max.
Housing: Stainless steel (240 x 420 x 35 mm).
Protection class: IP 64
Stirring capacity up to 3000 ml.

Type	Stirring positions	Stirring centre distances	Rotation speed	PK	Cat. No.
		mm	rpm		
Multipoint 6	6	130	80 - 2000	1	**9.720 624**
Multipoint 15	15	65	80 - 2000	1	**9.720 625** 4

1



1 Multi-position magnetic stirrers MIXdrive with external control use in waterbath and oven

2mag

Without heating. With non-mechanical, electronic inductive drive and dust/water tight housing, 100% wear-free and maintenance-free. Ideal for batch series stirring and for use in water baths. Choice of 6-place stirring position models which can stir up to 6 x 1L erlenmeyer flasks, 15-place models for up to 15 x 250ml beakers (high form) and 60-place models for small sample containers and using appropriate test tube stands, up to 60 test tubes or centrifuge tubes. Control units available as price-optimized eco 10W, high-power 20W or ultra high-power 40W version. Preselectable mixing power. SoftStart. With external control unit. 3 years warranty. Made in Germany.

Specifications

Operating conditions:	-10°C to +50°C at 100% R.H. max.
Operating temp. range	
Standard:	in air and water +50°C
HT-Version:	in air (ovens) +200°C, in water +95°C
Stirrer unit housing:	Stainless steel
Protection category:	IP 68

Type	Stirring positions	Stirring centre distances	Stirring capacity	Dimensions (W x D x H)	Weight	PK	Cat. No.
		mm	ml	mm	kg		
MIXdrive 1 XS	1		1 - 1000	48 x 48 x 18	0.3	1	**9.645 985**
MIXdrive 1 XS HT	1		1 - 1000	48 x 48 x 18	0.3	1	**9.645 986**
MIXdrive 1 eco	1		1 - 3000	120 x 120 x 35	1.5	1	**9.645 961**
MIXdrive 1 eco HT	1		1 - 3000	120 x 120 x 35	1.5	1	**9.645 962**
MIXdrive 1	1		1 - 10000	180 x 180 x 38	3.3	1	**9.645 959**
MIXdrive 1 HT	1		1 - 10000	180 x 180 x 38	3.3	1	**9.645 960**
MIXdrive 6	6	130	1 - 3000	245 x 375 x 38	8.9	1	**9.645 963**
MIXdrive 6 HT	6	130	1 - 3000	245 x 375 x 38	8.9	1	**9.645 964**
MIXdrive 15	15	65	1 - 3000	245 x 375 x 38	9.5	1	**9.645 965**
MIXdrive 15 HT	15	65	1 - 3000	245 x 375 x 38	9.5	1	**9.645 966**
MIXdrive 60	60	32.5	1 - 500	245 x 375 x 38	9.5	1	**9.645 967**
MIXdrive 60 HT	60	32.5	1 - 500	245 x 375 x 38	9.5	1	**9.645 968**

Please order control unit **MIXcontrol** separately.

2



9.645 971

Control units for mixers MIXdrive

2mag

MIXcontrol eco: Prize-optimized control unit, speed setting and ON/OFF by turning knot.
MIXcontrol 20: Stainless steel housing, digital speed display, 4-step power setting, 20watts.
MIXcontrol 40: Identical to MIXcontrol 20, but 10-step power setting, 40watts, 2 sockets for MIXdrive stirres.

Type	Rotation speed	Dimensions (W x D x H)	Rating	Weight	PK	Cat. No.
	rpm	mm	W	kg		
MIXcontrol eco	120 - 1200	65 x 50 x 45	10	0.5	1	**9.645 969**
MIXcontrol 20	100 - 1600	200 x 155 x 38	20	1.4	1	**9.645 970**
MIXcontrol 40	100 - 2000	200 x 155 x 38	40	1.4	1	**9.645 971** 2

3



4

3 4 Magnetic stirring atexMIXdrive 1 with external control

2mag

Explosion protected.
1 stirring position, 100% maintenance-free and wear-free by inductive 2mag-Magnetic-Drive concept for powerful mixing of solutions, jerk-free stirring even at low speeds. Fully encapsulated and hermetically sealed stainless steel housing, IP68, water, dust and germproof, extremely robust construction and performance. Easy to clean and maximum resistance, submersible in water, oil baths, suitable for the use in CO_2 incubators and ovens, temperate range up to +40°C. Certified according to ATEX II 2G Ex mb IIC T4.

Specifications

Operating conditions:	-10°C to +40°C at 100% R.H. max. +40°C immersed in water
Casing:	Stainless steel
Protection category:	IP 68

Type	Stirring capacity	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	l	mm	W	kg		
atexMIXdrive 1	0.001 - 10	180 x 180 x 38	20	3.5	1	**6.238 005**
atexMIXcontrol cleanroom*	-	210 x 55 x 30	20 (4 steps)	3.6	1	**9.646 000**

* Control unit explosion protection zone 2.

E & OE.

Accessories for mixer MIXdrive

NEW!

2mag

Description	PK	Cat. No.
distriBOX 4 (4-way header)	1	**9.645 972**
distriBOX 8 (8-way header)	1	**9.645 973**
mixBATH (stainless steel bath, electropolished), fits for MIXdrive 6/15/60 (also HT)	1	**9.645 974**
mixBATHCover 6, PP, for mixBath in combination with MIXdrive 6	1	**7.639 439**
mixBATHCover 15, PP, for mixBath in combination with MIXdrive 15	1	**6.255 612**

Special design on request.

1 Multi-position Magnetic stirrer with internal control MIX 4 MS

2mag

Powerful 4-position stirring, 100% maintenance-free and wear-free, 2mag magnetic induction drive concept, **with individual and independent speed setting for each stirring position** (Master-Slave-Technology). On-/Off function, synchronous speed mode for all positions, extremely wide speed range of 100rpm to 2000rpm, jerk-free stirring even at low speeds. Clear digital display for settings of stirrer speeds, SoftStart procedure for reliable stirrer bar coupling/centring and safe acceleration, automatic memory function to save the last settings, outstanding long working life of the hermetically sealed drive system and resistant stainless steel housing for easy and fast cleaning.



Specifications

Housing: Stainless steel
Protection class: IP 64

Type	Rotation speed	Stirring positions	Stirring capacity	Dimensions (W x D x H)	Rating	Weight	PK	Cat. No.
	rpm		ml	mm	W	kg		
MIX 4 MS	100 to 2000	4	1 to 3000	245 x 425 x 38	28	8.9	1	**9.646 010**

2 Multi-position magnetic stirrers MIX 6/15/8 XL/12 XL

NEW!

2mag

Without heating. With non-mechanical, electronic induction drive, 100% wear-free and maintenance-free. Ideal for batch series stirring. Choice of 6-place, stirring position models which can stir up to 6 x 1000 ml. Erlenmeyer flasks or 15-place models for up to 15 x 250ml (high form) or 8/12 x 600ml beakers (high form). Digital stirring speed display and soft-start function. With 4 adjustable power level stirring speeds (5W to 20W). Easy to clean, hermetically sealed casing which can be washed under running water, ultra flat, space-saving profile and 100% synchronous speed control in all stirring positions. SoftStart. 3 years warranty, Made in Germany.



Specifications

Operating conditions: -10°C to +50°C at 80% R.H. max.
Housing: Stainless steel
Protection category: IP 64

Type	Rotation speed	Stirring positions	Stirring centre distances	Stirring capacity	Dimensions (W x D x H)	Weight	PK	Cat. No.
	rpm		mm	ml	mm	kg		
MIX 6	100 - 2000	6	130	1 - 3000	245 x 425 x 38	8.8	1	**9.645 956**
MIX 15	100 - 2000	15	65	1 - 3000	245 x 425 x 38	8.8	1	**9.645 957**
MIX 8 XL	100 - 1600	8	90	1 - 3000	185 x 420 x 38	6.2	1	**9.646 026**
MIX 12 XL	100 - 1600	12	90	1 - 3000	275 x 420 x 38	8.8	1	**9.646 027**

3 Multi-position magnetic stirrers MIX 15 eco

2mag

Without heating. Non-mechanical, electronic induction drive, 100% wear-free and maintenance-free. With 15 stirring positions, e.g. for 6L x 1L erlenmeyer flasks or 15ml x 250ml beakers (high form). Suitable for mass screening and biological applications, even in humidity incubators. With built-in controller, digital speed indicator and SoftStart drive. Supplied with mains adapter.
3 years warranty. Made in Germany.



Specifications

Operating conditions: -10°C to + 50°C at 80% R.H. max.
Housing: Stainless steel
Protection category: IP 64

Type	Rotation speed	Stirring positions	Stirring centre distances	Stirring capacity	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	rpm		mm	ml	mm	W	kg		
MIX 15 eco	120 - 1200	15	65	1 - 1500	245 x 425 x 38	10	8.8	1	**9.645 958**

1



1 Magnetic stirrer accuMIX, with battery operation

2mag

Mobile magnetic stirrer, 100% maintenance-free and wear-free by inductive 2mag-Magnetic-Drive concept for mixing of solutions, speed range from 120rpm up to 1600rpm, jerk-free stirring also at low speeds, two-step power setting for high power with regard to large and viscous stirring amounts and reduced power for battery-saving long-term operation. Constructed for the independent battery- and stationary mains operation, equipped with 8 commercially available high performance rechargeable batteries (Mignon/AA), universal charging/power supply device, intelligent battery charging station with single controlled charging slots as well as battery service function and 12V adapter cable for the operation at cigarette lighter car sockets.

Specifications

Operating conditions:	-10°C to +50°C at 80% R.H. max.
Casing:	Stainless steel
Protection category:	IP 30

Type	Rotation speed rpm	Stirring capacity l	Dimensions (W x D x H) mm	Power W	Weight kg	PK	Cat. No.
accuMIX	100 - 1600	1 - 3000	215 x 130 x 40	2/10 (2-steps)	2.5	1	**9.646 011**

2



2 Magnetic stirrer SM27, with battery operation

Stuart

For use in the field or inside incubators or glove boxes where external power supply is impractical. With BioCote, silver-based, antimicrobial protection. Maximum speed 1300rpm. Maximum volume stirred 1.5L (H_2O). Top plate 150mm x 160mm. Variable speed control with battery status indicator. ABS casing 70mm high. Maximum operating conditions +60°C and 80% R.H. Weight 1.3kg. Supplied with 4 x 1.5V size 'D' alkaline batteries giving up to 600 hours operation, and a 25mm PTFE coated follower. Accessory adapters are available for use on 230V 50Hz mains or 12V vehicle supply using the cigar lighter socket.

Type	PK	Cat. No.
SM27	1	**9.950 408**

Accessories for magnetic stirrer, SM27

Stuart

Description	PK	Cat. No.
Mains adapter, SM27/1 for UK / Ireland, 230 V 50Hz single phase supplies	1	**9.950 409**
Mains adapter, SM27/2 for continental Europe, 230 V 50Hz single phase supplies	1	**9.950 410**
Vehicle battery adapter, SM27/3 with cigarette lighter plug	1	**9.950 411**

3



3 Magnetic stirrer, operated by water/air pressure

Kartell

PP-ABS construction. This unique stirrer is operated either by water pressure between 1kg/cm² and 2.5kg/cm² (15psi to 40psi) or by air pressure. No electrical supply is needed, thus eliminating heat, electric shock and explosion hazards. Corrosion-proof, all-plastic construction. Can be used on the bench or clamped to a stand with a 12mm (½") diameter rod using the integral bosshead.

Diam. mm	Height mm	PK	Cat. No.
129	61	1	**9.303 043**

Accessories for 2mag magnetic stirrers, see page 415.

E & OE.

1 Heated magnetic stirrer hotMIX 1 with internal control

NEW!

2mag

Price-optimized magnetic stirrer, 100% maintenance-free and wear-free by inductive 2mag magnetic drive concept for mixing of solutions, speed range from 100rpm up to 1600rpm, jerk-free stirring even at low speeds. SoftStart for reliable catching/centering and safe accelerating of the stirring bar, resistant stainless steel housing for easy and fast cleaning, spill-over protection, extremely robust construction. Hot plate made from resistant aluminium alloy, max. heating temperature +200°C, socket for contact thermometer (accessory), warning-LED in case of hot plate, 3 integrated over temperature protection loops against overheating.



Specifications

Operating conditions: -10°C to +40°C at 80% R.H. max.
Casing: Stainless steel
Protection category: IP 20

Type	Hot-plate	Rotation speed	Stirring capacity	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	mm	rpm	ml	mm	W	kg		
hotMIX 1	aluminum	100 to 1600	1 to 2000	120 x 140 x 80	10	2.0	1	**6.238 077**

2 Multiple stirring hotplate 2mag STIRRING HOTPLATE 6/15

NEW!

2mag

Stirring - Powerful 15 stirring points, maintenance-free and wear-free by 2mag inductive drive, extremely wide speed range of 100rpm to 2.000rpm, 100% synchronized speed, jerk-free stirring even at low speeds, 10-step power settings of the stirrer, high power setting for viscous liquids and reduced power setting for long-term operation without any heating effects caused by the stirrer, clear digital display for settings of stirrer speed, stirrer power and temperature of the integrated heater, SoftStart procedure for reliable catching/centering and safe acceleration of the stirring bar.

Heating - Heating plate made of resistant aluminium alloy, PTFE-coated for increased chemical resistance and easier cleaning, fast heating-up by powerful integrated electrical heater, homogenous temperature distribution, maximum heating temperature +200°C, Power Detect for automatic compensation of physically determined loss in stirring power which can come up to 40% at high temperatures, independent over-temperature protection inside the plate.

Type	Stirring positions	Stirring centre distances	Stirring capacity	Dimensions (W x D x H)	Weight	PK	Cat. No.
		mm	ml	mm	kg		
HOTPLATE 15	15	65	1 to 1.000	250 x 430 x 75	15.0	1	**9.646 051**



1



1 LLG magnetic stirrer with heating uni*STIRRER* 3, complete set

NEW!

Low-priced magnetic stirrer with all essential functions and equipment features. A LED display to control all parameters, an integrated temperature control as well as an enclosed design (IP42) are integrated features. The included PT-1000 sensor ensures an exact temperature control. A stand rod with a sensor holder is supplied with this instrument. The integrated HOT-sign warns the user of a hot plate even if the device is switched off. 3 years warranty.

- LED display to set the exact rotation speed and the temperature
- Digital controlled rotation speed and temperature
- 'HOT' warning sign, even if the device is switched off
- Sensor PT-1000 is included
- Integrated temperature control
- Stand rod and sensor holder is supplied

Delivery includes: magnetic stirrer with PT-1000, stand rod and fixing material

Specifications

Stirring quantity (H_2O):	3l
Speed range:	100 to 1500rpm
Setting accuracy:	±10rpm
Magnetic bar:	max. 50mm
Display:	LED
Heating plate:	135mm diam./Stainless steel
Permissible ambient temperature:	5 to 40°C
Temperature range:	RT to 280°C
Setting accuracy:	±1°C
Control accuracy:	±2°C
Heat output:	500W
Safety temperature:	320°C
Dimensions (WxDxH):	155 x 215 x 100mm
Weight:	1.5kg
Power supply:	200 - 240V, 50/60Hz
Protection class:	IP 42
Guarantee:	3 years

Type	PK	Cat. No.
uni*STIRRER* 3 with EU-plug	1	**6.263 410**
uni*STIRRER* 3 with UK-plug	1	**6.263 411**



1 LLG-Magnetic stirrer with heating uni*STIRRER* 5, complete package

NEW!

1



Universal magnetic stirrer with an outstanding price-performance ratio. Safety features include a "hot" warning display and a stirring function that continues to run until the plate temperature is below 50°C, even when the device is switched off. A digital timer enables unattended operation and can be set from 1min to 99h 59min. When the set time has elapsed, the unit stops automatically. An integrated control function offers precise control of the heated fluid temperature via a remote PT1000 temperature probe. The device is equipped with a 135mm ceramic plate, suitable for the LLG- Universal reaction block systems. 3 years warranty.

- Latest generation magnetic stirrer/hotplate
- Maintenance-free, brushless DC motor
- Timer (1min to 99h 59min)
- Digital control and backlit display
- Stirrer and display can be controlled remotely via an RS232 interface
- Hot surface indicator
- White ceramic-coated, stainless steel top plate
- Sturdy metal housing, IP42-rated
- Powerful stirring
- Connection for PT1000, integrated control function

Delivery includes: Magnetic stirrer with PT1000 probe, rod and holder, user manual.

Specifications

Stirring quantity (H_2O):	20l
Speed range:	100 to 1500rpm
Accuracy:	±1rpm
Magnetic bar:	80mm
Display:	LCD
Heating plate:	diam. 135mm/stainless steel with ceramic surface
Permissible ambient temperature:	5 to 40°C
Temperature range:	Ambient to 340°C
Setting accuracy:	±0.1°C
Control accuracy:	±0.2°C
Heat output:	550W
Safety temperature:	100 to 360°C
Dimensions (WxDxH):	280 x 160 x 85mm
Weight:	2.8kg
Power supply:	200 - 240V, 50/60Hz
Protection class:	IP 42
Guarantee:	3 years



Type	PK	Cat. No.
uni*STIRRER* 5 with EU-plug	1	**6.263 440**
uni*STIRRER* 5 with UK-plug	1	**6.263 441**



1 2 LLG-RCT standard *safety control*

NEW!

Magnetic stirrer with new technology and new functions:
- integrated temperature control
- incl. PT 1000 temperature sensor (PT 1000.60)
- exact temperature and speed setting via digital display, even when switched off
- digital display of set safety temperature limit
- hot top indicator, hot surface warning to prevent burns
- digital error code display
- with adjustable safety circuit of heating plate temperature (+50 to +360°C)
- safety magnetic stirrer with heating, suitable for unsupervised operation
- DIN 12878 connector for attaching a contact thermometer, e.g. ETS-D5; enables precise temperature control directly in the heated medium
- enhanced safety due to improved heat control technology
- enclosed assembly (IP42) guarantees long service life
- highly polished, aluminium hotplate for optimal heat transfer
- improved magnetic coupling
- supplied with housing protection cover H 98

Specifications

Drive unit	
Stirring quantity (H_2O):	20L
Motor rating input/output:	16/9W
Speed display:	digital
Speed range:	50 to 1500rpm
Max. magnetic bar (L x dia.):	80 x 10mm
Heating function	
Speed display:	digital
Heat output:	600W
Heating rate (1 litre H_2O in H 15):	6.5K/min
Temperature range:	RT to 310°C
Setting accuracy:	±1K
Temp. variation without temp. sensor:	±2K
Adjustable safety circuit:	50 to 360°C
Control accuracy with sensor:	PT 1000/±1K ETS-D5/±0.5K ETS-D6/±0.2K
Heating plate	
Material:	aluminium alloy
Dimensions:	135mm dia.
General data	
Dimensions (WxDxH):	160 x 270 x 85mm
Weight:	2.5kg
Operating temperature range:	5 to 40°C
Operating humidity range:	80% R.H.
Protection class acc. to DIN EN 60529:	IP42

Tested to DIN EN IEC 61010-1.

Type	Connector	PK	Cat. No.
RCT Standard safety control incl. PT 1000	CEE	1	**9.720 250**
RCT Standard safety control incl. PT 1000	UK	1	**6.242 087**
RCT Standard safety control incl. PT 1000	CH	1	**4.008 142**

Optional accessories: Electronic contact thermometer ETS-D5, Ikaflon® stirring bars, Trika® stirring bars, RS 1 stirring bar set, RSE Stirring bar remover, Quarter System, Reaction block System

1



2



Universal reaction block system for magnetic stirrers please see page 437.

E & OE.

Magnetic stirrer with heating, US152/UC152 and US152D/UC 152D

NEW!

Stuart

- Choice of top plate: Robust coated aluminium or chemically resistant ceramic
- Flashing "Hot" warning light, mains independent
- Accurate temperature control with LED indicator scale
- Compact space saving design

Stylish and economical general purpose hotplate stirrers designed with safety as well as performance in mind. The compact shape takes up less bench space and makes storage easier. The hotplate has an innovative LED temperature indicator scale and can also be used in conjunction with the SCT1 digital contact thermometer to accurately control sample temperature. The "Hot" warning light will flash whenever the plate temperature is above 50°C even when the hotplate is turned off and unplugged from the mains. Powerful magnets and motor give stirring speeds up to 2000rpm and is capable of mixing large volumes (up to 15L).

Model US152 has a robust aluminium/silicon alloy top plate for excellent heat transmission. The top plate has a thin ceramic coating for added chemical resistance. A 700W element gives rapid heating and ensures even temperature distribution across the whole surface of the plate.

Model UC152 has a glass ceramic top which has excellent chemical resistance. The surface is easy to clean and the thermal properties allow very high plate temperatures while ensuring the edges stay cooler, reducing the chance of accidental burns. The white surface ensures good visibility of colour changes.

All models have an integral fitting for a retort rod and are supplied with 2 x 25mm PTFE coated stirring bars.

1



9.645 298

2



9.645 342

Specifications	**US152(D)/UC152(D)**
Plate Material:	Coated Aluminium and Silicon/Glass ceramic
Plate Dimensions:	150mm x 150mm
Heated Area:	150mm x 150mm/120mm x 120mm
Heater Power:	700W/500W
Max plate temp:	325°C/450°C
Stirrer Speed:	100-2000rpm
Maximum Stirring Capacity:	15L
Dimensions (WxDxH):	172 x 248 x 120mm/172 x 248 x 122mm
Weight:	2.9kg
Electrical supply:	230V, 50Hz, 750W/230V, 50Hz, 550W
IP Rating:	IP 32

Type	Description	PK	Cat. No.
US152	Analog magnetic stirrer/hotplate, coated aluminium plate	1	**9.645 295**
US152D	Digital magnetic stirrer/hotplate, coated aluminium plate	1	**9.645 299**
UC152	Analog magnetic stirrer/hotplate, glass ceramic plate	1	**9.645 296**
UC152D	Digital magnetic stirrer/hotplate, glass ceramic plate	1	**9.645 298** 1
SCT1	Digital contact thermometer	1	**9.645 342** 2
SCT 1/2	PTFE probe	1	**9.645 344**
SCT 1/1	Probe holder	1	**9.645 343**
SR1	Retort rod, 600 x 12mm diameter	1	**9.645 335**

3 4 Magnetic stirrer with heating, 3-Position, SB162-3

Stuart

With 3 independently adjustable aluminium hotplates, Overheat protection mechanism and warning light which switches on when the plate temperature exceeds 50°C. With facility for mounting a 12.5mm retort rod at the rear of each plate and 3mm x 25mm PTFE coated followers. With BioCote, silver-based, antimicrobial protection.

3



4

BioCote

Specifications

Max. stirring quantity (H_2O):	15l
Speed range:	100 - 1500rpm
Heat output:	3 x 700W
Max. plate temperature:	325°C
Set-up plate:	AL/Si alloy, 3 x 160 x 160 mm
Dimensions (WxDxH):	600 x 270 x 110mm
Weight:	11kg
Power supply:	230V, 50Hz
Protection class:	IP32

Type	Stirring positions	PK	Cat. No.
SB162-3	3	1	**9.950 424**

1



1 Magnetic stirrer with heating SLR, with glass ceramics plate

SI Analytics

For stirring, heating and controlling. As well as the ability for rapid and temperature-controlled heating, many applications also require liquids to be stirred. You can use the SLR hotplate/stirrer to provide gentle or vigorous liquid stirring and, if required, gradual heating or cooling. All functions are displayed on the clear LCD panel and can be monitored. The stirrer and heater are individually controlled via manual control knobs. The stirrer can be set from 100rpm to 1100rpm x 10rpm increments. True running is achieved even at the lower end of the rpm range. Heating can also be adjusted over 24 steps attaining an average of 0.9kW at the top of the range. It is possible to regulate temperatures between 25°C and 200°C with variations of between ±2°C and ±5°C using the Pt1000 temperature sensor, depending on the liquid volume, heat capacity and ambient temperature conditions.

Specifications

Max. stirring quantity (H_2O):	10l
Speed range:	100 to 1100rpm
Heat output:	900W
Min. time to boiling point 1 l H_2O:	approx. 15min
Temperature max.:	550°C
Connection for ext. temp. sensor:	Pt 1000
Control accuracy with sensor:	±2 - 5°C
Set-up plate:	glass ceramic, 235 x 235mm
Dimensions (WxDxH):	240 x 370 x 85mm
Weight:	approx. 3.8kg
Power supply:	230V, 50/60Hz
Protection class:	IP20

Type	PK	Cat. No.
SLR	1	**9.720 130**

2



9.720 411

Magnetic stirrers RH basic/digital

IKA

Newly designed, economic magnetic stirrer with heating. High heat output of 600 watts and the steel-copper compound hot plate ensures rapid heating. Adjustable safety temperature from 50 to 370°C. Soft-start stirring motor. Includes M 10 thread for a support rod. Strong magnetic field and wide speed range for volumes up to 15 litres. RH basic white/RH digital white with chemically resistant hot plate.

RH digital only:
Bushing according to DIN 12878 for connecting an electronic contact thermometer, such as the ETS-D5. Highly accurate temperature control is possible with the sensor placed directly in the medium.
- Digital display of temperature and speed
- Error code display
- Easy operation with touch keypad

3



9.720 414

4



9.720 418

Specifications

Max. stirring quantity (H_2O):	15l
Motor rating input/output:	15/2W
Speed range:	50 to 2000rpm
Speed display RH basic:	scale
Speed display RH digital:	LED
Heat output:	600W
Heating rate (1l H_2O):	6K/min
Temperature range min./max.	50 to 320°C
Setting accuracy RH digital:	±5K
Adjustable safety circuit min./max.:	50 to 370°C
Connection for ext. temp. sensor:	DIN 12878
Control accuracy with sensor:	±1K
ETS-D5:	±0.5K
ETS-D6:	±0.2K
Set-up plate:	Stainless steel 1.4301, diam. 135mm
Dimensions (WxDxH):	160 x 246 x 90mm
Weight:	2kg
Protection class acc. to DIN EN 60529:	IP 21
Power supply:	220-240V, 50/60Hz

Type	PK	Cat. No.	
RH basic	1	**9.720 411**	2
RH basic S 2 UK	1	**9.720 412**	
RH basic white	1	**9.720 417**	
RH digital	1	**9.720 414**	3
RH digital white	1	**9.720 418**	4

1 Magnetic stirrer RET® control-visc with heating and integrated balance



IKA

Safety magnetic stirrer with heating and integrated balance. Clear, multilingual TFT display makes it easy to set all parameters. Integrated temperature control feature enables connection of a temperature probe, placed directly in the medium, to control medium temperature with a high degree of precision. PT 1000 temperature sensor is included with purchase of RET control. The stainless steel composite hot plate, reaching a temperature of 340°C, enables rapid heating. RS 232 and USB interfaces enable pc control of the magnetic stirrer and documentation of all test parameters. "Lock" function prevents inadvertent changes of speed and temperature settings. As a safety feature, "HOT" sign flashes when the unit is switched off but surface is still hot.

RET® control-visc white with chemically resistant hot plate.

- BNC socket for connection of a pH electrode
- Adjustable temperature control mode: rapid heating and very accurate temperature control
- Dual sensor for simultaneous control of heat transfer fluid temperature and medium temperature
- Timer and countdown functions
- Display of viscosity change trend
- Detached magnet detection
- Intermittent operation
- Several modes of operation available
- Safety circuit adjustable from 50 to 380°C
- Transparent protective cover included
- Error code display for easy troubleshooting
- Exact temperature and speed adjustment by means of digital display; even when function switched off
- Digital display of the safety temperature limit
- Suitable for unsupervised operation
- Sealed casing (IP 42) ensures a long service life
- labworldsoft® software included

Specifications

Max. stirring quantity (H_2O):	20l
Motor rating input/output:	22/12W
Speed:	50 to 1700rpm
Speed display:	TFT
Heat output:	600W
Heating rate (1l H_2O):	7K/min
Temperature range min./max.	RT to 340°C
Setting accuracy:	±0.1K
Adjustable safety circuit min./max.:	50 to 380°C
Connection for ext. temp. sensor:	DIN 12878
Control accuracy with sensor:	±0.2K
Interface:	USB/RS 232
Weighing range:	0 to 5000g
Weighing accuracy:	<500g : ±1g , >500g: ±5g
Set-up plate:	Stainless steel 1.4301, diam. 135mm
Dimensions (WxDxH):	160 x 270 x 85mm
Weight:	3kg
Protection class acc. to DIN EN 60529:	IP 42
Power supply:	220-240V, 50/60Hz

Type	PK	Cat. No.
RET® control-visc	1	**9.720 261**
RET® control-visc S 2 UK	1	**9.720 262**
RET® control-visc S 3 CH	1	**9.720 263**
RET® control-visc white	1	**9.720 231**
RET® control-visc white S 2 UK	1	**9.720 232**
RET® control-visc white S 3 CH	1	**9.720 233**

Temperature sensor for RET® control-visc



9.720 350

IKA

Type	Description	Immersion depth mm	PK	Cat. No.
PT 100.50	AISI 316 Ti	230	1	**9.720 350** 2
PT 100.51	Borosilicate glass 3.3	230	1	**9.720 351**
PT 1000.50	Stainless steel	230	1	**9.720 348**
PT 1000.51	Stainless steel, glass coated, for corrosive media	230	1	**9.720 349**
PT 1000.80	Stainless steel	150	1	**9.720 352**

1



9.720 441

Magnetic stirrers C-MAG HS 4 digital/C-MAG HS 7 digital/C-MAG HS 10 digital

IKA

New magnetic stirrer with heating and ceramic heating plate which offers excellent chemical resistance.

- Powerful motor for stirring quantities of up to 5l, 10l or 15l (H_2O)
- Simultaneous digital display of target and actual temperatures via LCD display
- Directly connection for a PT 1000 temperature sensor enable a precise temperature control (included in delivery)
- Control accuracy in medium ±0.5K (in combination with PT 1000)
- Display of actual temperature value in medium with 0.1K resolution when using PT 1000 temperature sensor
- 3 operating modes to choose (standard, safe, adjustment protection)
- Fixed safety circuit of 550°C
- Hot Top indicator: hot surface warning to prevent burns!
- Digital error code display
- Elevated control panel for protection against leaking liquids

2



9.720 443

Specifications

Magnetic drive

Max. stirring quantity (H_2O)	
C-MAG HS 4:	5l
C-MAG HS 7:	10l
C-MAG HS 10:	15l
Motor rating input/output:	15/1.5W
Speed range:	100 to 1500rpm
Speed display:	Scale
Max. stirring bar length	
C-MAG HS 4:	30mm
C-MAG HS 7/HS 10:	80mm

Heating function

Heat output:	
C-MAG HS 4:	250W
C-MAG HS 7:	1000W
C-MAG HS 10:	1500W
Heating rate (1l H_2O):	
C-MAG HS 4:	2.5K/min
C-MAG HS 7/HS 10:	5K/min
Temperature range min./max.	50 to 500°C
Setting accuracy:	±1K
Temperature display:	LCD
Safety circuit fixed:	550°C
Connection for ext. temp. sensor:	DIN 12878
Control accuracy with sensor:	±0.5K

Set-up plate

Material:	ceramic
Dimensions	
C-MAG HS 4:	100 x 100mm
C-MAG HS 7:	180 x 180mm
C-MAG HS 10:	260 x 260mm
Protection class acc. to DIN EN 60529:	IP 21
Power supply:	230 V, 50/60 Hz

3



9.720 445

Type	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.	
C-MAG HS 4 digital	150 x 260 x 105	3	1	**9.720 441**	1
C-MAG HS 4 digital S 2 UK	150 x 260 x 105	3	1	**9.720 442**	
C-MAG HS 4 digital S 3 CH	150 x 260 x 105	3	1	**9.720 447**	
C-MAG HS 7 digital	215 x 330 x 105	5	1	**9.720 443**	2
C-MAG HS 7 digital S 2 UK	215 x 330 x 105	5	1	**9.720 444**	
C-MAG HS 7 digital S 3 CH	215 x 330 x 105	5	1	**9.720 448**	
C-MAG HS 10 digital	300 x 415 x 105	6	1	**9.720 445**	3
C-MAG HS 10 digital S 2 UK	300 x 415 x 105	6	1	**9.720 446**	
C-MAG HS 10 digital S 3 CH	300 x 415 x 105	6	1	**9.720 449**	

4



4 Magnetic stirrer C-MAG HS 7 Package

IKA

C-MAG HS 7 Package includes:
Magnetic stirrer/hotplate C-MAG HS 7, ETS-D5 Electronic contact thermometer, H 38 Holding rod, H 16 V Support rod and H 44 Bosshead.

Type	PK	Cat. No.
C-MAG HS 7 Package	1	**6.235 183**

Overall accessories for IKA magnetic stirrers

IKA

Type	Description	For model	PK	Cat. No.
PT 1000.60	Temperature sensor	RCT basic	1	**6.229 702**
PT 1000.70	Temperature sensor, glass-coated	RCT basic	1	**6.231 283**
H 104	Protective cover	RET control, RCT basic	1	**9.910 338**
H 29	Oil bath attachment, i. d. : 136 - 180 mm, H: 81 mm, Vol. : 1 l	RET, RCT	1	**7.017 796**
H 30	Oil bath attachment, i.d. : 136 - 190 mm, H: 110 mm, Vol. : 1.5 l	RET, RCT	1	**7.017 797**
labworldsoft® V5	Software for control and data collection	RET, RCT	1	**9.910 319**

Electronic Contact thermometer ETS-D5/ETS-D6

IKA

3 possible operation modes guarantee optimum adjustment to your application:
Operating mode A: Suitable for work with varying parameters (from -50°C to 450°C).
Adjustable safety temperature
Operating mode B: Suitable for repeated operation under uniform conditions and parameters
Operating mode C: Suitable for unsupervised operation
- with optimised PID control
- reset function
- includes stainless steel sensor probe H 62.51
- for all magnetic stirrers with a DIN 12878 class 2 contact thermometer connection, e.g. IKA®, Heidolph and Corning with adapter AD-C1.

ETS-D6 additionally with integrated pH measuring instrument (without pH electrode) and large, graphic LCD display with multilingual user guide.

1



9.720 241

Specifications

Temperature

Measuring range:	-50 to 450°C
Resolution:	±0.1K
Accuracy*:	±0.2K
Control accuracy:	0.1K
Control accuracy (with sensor)	±0.5K
Voltage:	8 to 16V d.c.
Current (at 9V)	15 mA
Connection:	DIN 12878 Class 2
Operating range:	0 to 60°C
Max. R.H.:	80%
Protection class:	IP54
Connector:	6-pole, DIN 45322
Weight:	0.2kg

Tested to DIN EN IEC 61010-1.

2



9.720 242

Type	Dimensions (W x D x H) mm	PK	Cat. No.	
ETS-D5	82 x 22 x 83	1	**9.720 241**	1
ETS-D6	96 x 45 x 98	1	**9.720 242**	2

Dimensions without sensor.
*Sensor: PT1000 DIN IEC 751 Class A

Accessories for ETS-D5/ETS-D6 contact thermometer

IKA

Type	Description	PK	Cat. No.
H 44	Bosshead	1	**9.232 994**
H 16 V	Stainless steel support rod	1	**9.720 257**
H 62.51	Replacement sensor, stainless steel	1	**9.232 998**
H 66.51	Stainless steel sensor, glass sleeved	1	**9.232 999**
H 70	Extension cable, 1 metre	1	**9.233 000**
H 11	Replacement power cable	1	**9.720 276**
H 38	Holding rod	1	**9.232 996**

Magnetic stirrers/hotplates, multi-position, RT 5/10/15

NEW!

IKA

Digital magnetic hotplate stirrers with 5, 10 or 15 positions, designed for synchronous heating and stirring. The magnetic coil technology provides noiseless and consistent stirring on all positions. The surface temperature is infinitely adjustable up to 120°C, producing a maximum medium temperature of 70°C (depending on type of vessel). Speed remains constant, even when load changes.

- Homogeneous temperature distribution across heating plate
- Adjustable reverse operation
- Eco-mode for a low self-warming of the surface
- Wear free magnetic coils
- Error code display
- Easy operation with touch keypad
- Suitable for continuous operation
- Adjustable speed in increments of 10rpm

Specifications

Max. stirring quantity per stirring position (H_2O):	0.4l
Distance between stirring places:	90mm
Deviation for individual stirring positions:	0%
Speed range:	0 to 1000rpm
Heating rate (1l H_2O in H15):	3K/min
Temperature range heatig plate:	RT to 120°C
Max. temperature medium (dep. on vessel):	70°C
Temperature display:	LED
Heat control accuracy:	±1K
Speed display:	LED line
Set-up plate material:	aluminium alloy
Protection class acc. to DIN EN 60529:	IP 40
Power supply:	100-240V, 50/60Hz

Type	Stirring positions	Dimensions Set-up plate (W x D) mm	Dimensions (W x D x H) mm	Heating power W	PK	Cat. No.
RT 5	5	110 x 495	120 x 610 x 60	175	1	**9.720 603** 1
RT 5 S 2 UK	5	110 x 495	120 x 610 x 60	175	1	**9.720 604**
RT 5 S 3 CH	5	110 x 495	120 x 610 x 60	175	1	**9.720 605**
RT 10	10	180 x 495	190 x 610 x 60	375	1	**9.720 606**
RT 10 S 2 UK	10	180 x 495	190 x 610 x 60	375	1	**9.720 607**
RT 10 S 3 CH	10	180 x 495	190 x 610 x 60	375	1	**9.720 608**
RT 15	15	270 x 495	280 x 610 x 60	580	1	**9.720 609** 2
RT 15 S 2 UK	15	270 x 495	280 x 610 x 60	580	1	**9.720 610**
RT 15 S 3 CH	15	270 x 495	280 x 610 x 60	580	1	**9.720 611**

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9.720 603

2



9.720 609

E & OE.

1 2 3 LLG-Universal reaction block system for magnetic stirrers

NEW!

Universal alternative to oil bath

The reaction block allows syntheses to be carried out in round flasks at temperatures of up to 250°C. As a result oil as a heat transfer media is made redundant and your lab is a safer place with this system. The reaction block ensures safety at work and prevents oil baths and heating mantles from overheating in your lab. The messy oil clean-ups that results from changing oil or removing flasks from an oil bath will be eliminated. Injuries and burns from hot oil will never happen again. Uniform mixing is also guaranteed because there is no interference to the magnetic field from the aluminium blocks. This system ensures optimal heat transfer from the heating plate directly into the medium.

- Universal model
- For round plates of 135 to 145mm diameter
- With adapter plate for all square plates of min. 145mm length side

- Reaction blocks are available in six standard sizes.
- Delivered adapter allows the use with either IKA or Heidolph magnetic stirrers.
- Syntheses in round flasks without oil bath up to 250°C.
- Uniform and constant mixing
- High-precision thermal conduction directly into the reaction block
- Safe and clean working
- Made in Germany

Description	PK	Cat. No.
LLG-Universal reaction block system 50ml	1	**9.728 890**
LLG-Universal reaction block system 100ml	1	**9.728 891**
LLG-Universal reaction block system 250ml	1	**9.728 892**
LLG-Universal reaction block system 500ml	1	**9.728 893**
LLG-Universal reaction block system 1000ml	1	**9.728 897**
LLG-Universal reaction block system 2000ml	1	**9.728 898**
Spare adapter ring for reduction from 145mm to 135mm, for attachment 50 to 500ml	1	**9.728 894**
Spare adapter ring for reduction from 145mm to 135mm, for attachment 1000 and 2000ml	1	**9.728 899**
Adapter plate for rectangular hotplates, for attachment 50 to 500ml	1	**9.728 895**
Adapter plate for rectangular hotplates, for attachment 1000 and 2000ml	1	**9.728 900**
2 spare screws and 1 wrench, for attachment 50 to 500ml	1	**9.728 896**
2 spare screws (countersunk), for attachment 1000 and 2000ml	1	**9.728 901**

1



2



3



4 Safety cover for LLG-Universal reaction block system for magnetic stirrers

NEW!

Safety cover for LLG-Reaction block system to protect against broken glass and for heat insulation.

For	PK	Cat. No.
Round flask attachement 250ml	1	**9.728 885**
Round flask attachement 500ml	1	**9.728 886**
Round flask attachement 1000ml	1	**9.728 887**
Round flask attachement 2000ml	1	**9.728 902**

4





1 LLG-Magnetic stirring bars, cylindrical, PTFE, *eco pack*

Circular, smooth and PTFE-coated. Packaging size: 10 pieces

Length mm	Diam. mm	PK	Cat. No.
10	6	10	**9.198 910**
12	3	10	**9.198 766**
15	6	10	**9.198 919**
20	6	10	**9.198 920**
25	6	10	**9.198 925**
25	8	10	**9.198 767**
30	6	10	**9.198 930**
35	6	10	**9.198 935**
40	8	10	**9.198 940**
45	8	10	**9.198 945**
50	8	10	**9.198 950**
60	9	10	**9.198 960**
70	9	10	**9.198 970**
80	9	10	**9.198 980**



6.267 318

Magnetic stirring bar behrotest, set 1 + 2

NEW!

Behr

Magnetic stirring bars behrotest ®, Set 1 in a transparent box with hinged lid
Consisting of: 2x 20 x 6 mm, 2x 25 x 6mm, 2x 30 x 6 mm, 2x 40 x 8 mm, 1x 50 x 8 mm, 1x 60 x 9 mm

Magnetic stirring bars behrotest®, Set 2 in a transparent box with hinged lid including magnetic stirring bar retriever, length 245 mm
Consisting of: 1x 15 x 6 mm, 2x 20 x 6 mm, 2x 25 x 6mm, 1x 30 x 6 mm, 2x 40 x 8 mm, 1x 50 x 8 mm, 1x 60 x 9 mm

Description	PK	Cat. No.
Set 1	1	**6.267 317**
Set 2	1	**6.267 318** 2



3 Magnetic stirring bars, cylindrical, PTFE

PTFE-coated. Cylindrical. Round, smooth surface. Versatile. Autoclavable. Further sizes available on request.

BRAND

Length mm	Diam. mm	PK	Cat. No.
2.5	2.5	1	**9.197 502**
3.5	3.5	1	**9.197 505**
5.0	2.0	1	**9.197 503**
6.0	3.0	1	**9.197 506**
7.0	2.0	1	**9.197 504**
8.0	3.0	1	**9.197 509**
10.0	3.0	1	**9.197 507**
10.0	6.0	1	**9.197 510**
12.0	4.5	1	**9.197 512**
13.0	3.0	1	**9.197 508**
15.0	6.0	1	**9.197 515**
15.0	4.5	1	**9.197 514**
20.0	6.0	1	**9.197 520**
25.0	6.0	1	**9.197 525**
30.0	6.0	1	**9.197 530**
35.0	6.0	1	**9.197 535**
40.0	8.0	1	**9.197 540**
45.0	8.0	1	**9.197 545**
50.0	8.0	1	**9.197 550**
60.0	9.0	1	**9.197 560**
70.0	9.0	1	**9.197 570**
80.0	9.0	1	**9.197 580**



4 Magnetic stirring bars, triangular, PTFE

Triangular. PTFE-coated. Wedge-shaped, ideal for dissolving solids and re-suspending sediments due to scraping action. Angular surface produces high turbulence, even at low stirring speeds.

BRAND

Length mm	Diam. mm	PK	Cat. No.
12	6	1	**7.019 669**
20	8	1	**7.019 670**
25	8	1	**9.197 652**
25	14	1	**7.019 672**
35	10	1	**7.019 673**
40	14	1	**9.197 654**
50	12	1	**7.019 675**
55	14	1	**9.197 655**
80	16	1	**9.197 658**

1 Magnetic stirring bars ASTEROID, triangular, PTFE

NEW!



2mag

More than 4x higher torque transmissible. Unbeatably enhanced mixing effect in comparison to conventional stirring bars. Strong, stable, long-lasting magnetic field, with no demagnetization effect. Concave design for minimal surface contact and reliable rotation, triangular shape for powerful shear force and enhanced mixing at lower rotational speeds. Significantly higher rotation speeds achievable, high quality, even and sealed PTFE encapsulation. Conform to FDA requirements, steam sterilisable at 121°C. Multiple enhancements against all types of magnetic stirrers.

Length mm	Diam. mm	PK	Cat. No.
25	17	1	**9.646 057**
40	28	1	**9.646 040**
70	46	1	**9.646 058**

2 Magnetic stirring bar, octagonal, PTFE

NEW!

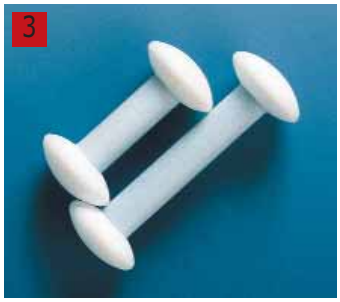


Bel-Art Products

- Interrupted profile provides greater surface area and added turbulence when compared to the smooth surface of cylindrical bars
- Pivot ring aids in reducing friction and chattering
- PTFE encapsulated Alnico magnet
- Autoclavable

Length mm	Diam. mm	PK	Cat. No.
12.7	8	1	**9.197 460**
15.9	8	1	**9.197 461**
22.2	8	1	**9.197 462**
25.4	8	1	**9.197 463**
28.6	8	1	**9.197 464**
38.1	8	1	**9.197 465**
50.8	8	1	**9.197 466**

3 Magnetic stirring bars, dumbbell, PTFE



BRAND

PTFE-coated. Dumbbell-shaped. Excellent centring, low surface contact and high turbulence even at low stirring speeds, ends 20mm diameter. Stem diameter 8mm.

Length mm	PK	Cat. No.
37	1	**9.197 643**
55	1	**9.197 645**

4 Magnetic stirring bars, oval, PTFE

NEW!



BOLA

Encapsulated in PTFE. Oval. Ideal for round bottom flasks.

Length mm	Diam. mm	PK	Cat. No.
20	10	1	**9.197 590**
25	12	1	**9.197 591**
30	15	1	**9.197 592**
35	15	1	**9.197 593**
40	20	1	**9.197 594**
50	20	1	**9.197 595**

5 LLG-Magnetic Stirring Bar Retrievers, PTFE



PTFE-encapsulated stirring bar retriever with strong permanent magnet (Alnico 5), universal chemical resistance. For the removal of stirring bars from aggressive liquids, prevents loss of stirring bars. Lower end diameter 10mm.

Length mm	Diam. mm	PK	Cat. No.
150	8	1	**9.197 717**
250	8	1	**9.197 725**
300	8	1	**4.008 501**
350	8	1	**9.197 735**

1



1 Overhead stirrer EUROSTAR 20 digital

IKA

Laboratory stirrer designed for simple stirring tasks for quantities up to 15l (H_2O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/30 to 2000rpm. Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.

- Digital speed display
- Infinitely adjustable speed
- Push-through agitator shafts
- Overload protection
- Short-term overload operation
- Slim casing
- Quiet operation
- Error code display

Specifications

Stirring quantity max. (H_2O):	15l
Max. viscosity:	10000mPas
Motor rating input/output:	56/44W
Speed range:	0/30 to 2000rpm
Max. torque at stirring shaft:	20Ncm
Display:	LED
Chuck range:	0.5 to 10mm
Dimensions (WxDxH):	86 x 208 x 248mm
Protection class DIN EN 60529:	IP 40
Power supply:	230V, 50/60Hz

Type	PK	Cat. No.
EUROSTAR 20 digital	1	**9.816 691**
EUROSTAR 20 digital S 2 UK	1	**9.816 692**
EUROSTAR 20 digital S 3 CH	1	**9.816 693**

2



2 Overhead stirrer EUROSTAR 20 high speed digital

IKA

High speed laboratory stirrer designed for intensive stirring tasks for quantities up to 20l (H_2O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/150 to 6000rpm. Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.

- Digital speed display
- Infinitely adjustable speed
- Cone seat for precision shaft
- Overload protection
- Short-term overload operation
- Slim casing
- Quiet operation
- Error code display

Specifications

Stirring quantity max. (H_2O):	20l
Max. viscosity:	10000mPas
Motor rating input/output:	176/125W
Speed range:	0/150 to 6000rpm
Max. torque at stirring shaft:	20Ncm
Display:	LED
Chuck range:	fixed
Dimensions (WxDxH):	86 x 208 x 325mm
Protection class DIN EN 60529:	IP 40
Power supply:	230V, 50/60Hz

Type	PK	Cat. No.
EUROSTAR 20 high speed digital	1	**9.816 694**
EUROSTAR 20 high speed digital S 2 UK	1	**9.816 695**
EUROSTAR 20 high speed digital S 3 CH	1	**9.816 696**

3



9.197 053

4



9.197 055

Stirrers for overhead stirrer EUROSTAR 20 high speed digital/control

IKA

Type	Description	For Volume l	Rotor diam. mm	PK	Cat. No.
R 1401	Propeller	1 - 30	55	1	**9.197 054**
R 1405	Propeller	0.25 - 30	45	1	**9.197 053** 3
R 1402	Dissolver	1 - 30	42	1	**9.197 055** 4

E & OE.

1 Overhead stirrer EUROSTAR 20 high speed control

NEW!

IKA



High speed laboratory stirrer designed with a removable wireless controller and a digital TFT display. It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/150 - 6000 rpm. The stirrer comes equipped with a RS 232 and a USB interface to control and document all parameters, and an update of the current firmware. An integrated torque trend display is provided for the measurement of viscosity changes. The included precision stirrer shaft is 280 mm long and has a maximum immersion depth of 220 mm.

- Multilingual TFT display
- Programmable functions
- Integrated temperature measurement
- Interval operation
- Timer function
- Adjustable safety circuit
- Locked function
- Infinitely adjustable speed
- Push-through agitator shafts
- Overload protection
- Short-term overload operation
- Slim casing
- Quiet operation
- Error code display

Specifications

Stirring quantity max. (H_2O):	20l
Max. viscosity:	10000mPas
Motor rating input/output:	176/125W
Speed range:	0/150 to 6000rpm
Max. torque at stirring shaft:	20Ncm
Display:	TFT
Chuck range:	special stirrer shaft (incl. in delivery)
Dimensions (WxDxH):	86 x 230 x 325mm
Protection class DIN EN 60529:	IP 40
Power supply:	230V, 50/60Hz

Type	PK	Cat. No.
EUROSTAR 20 high speed control	1	**6.265 592**
EUROSTAR 20 high speed control S 2 UK	1	**6.265 900**
EUROSTAR 20 high speed control S 3 CH	1	**6.265 901**

2 Overhead stirrer EUROSTAR 40 digital

IKA



Universal laboratory stirrer designed for simple stirring tasks for quantities up to 25l (H_2O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/30 to 2000rpm. Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.

- Digital speed display
- Infinitely adjustable speed
- Push-through agitator shafts
- Overload protection
- Short-term overload operation
- Slim casing
- Quiet operation
- Error code display

Specifications

Stirring quantity max. (H_2O):	25l
Max. viscosity:	30000mPas
Motor rating input/output:	118/84W
Speed range:	0/30 to 2000rpm
Max. torque at stirring shaft:	40Ncm
Display:	LED
Chuck range:	0.5 to 10mm
Dimensions (WxDxH):	86 x 208 x 248mm
Protection class DIN EN 60529:	IP 40
Power supply:	230V, 50/60Hz

Type	PK	Cat. No.
EUROSTAR 40 digital	1	**9.816 697**
EUROSTAR 40 digital S 2 UK	1	**9.816 698**
EUROSTAR 40 digital S 3 CH	1	**9.816 699**

Overhead stirrer EUROSTAR 60 digital/60 control

IKA

Universally used strong laboratory stirrer for quantities up to 40l (H_2O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/30 to 2000rpm. Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.

EUROSTAR 60 digital:
- Digital speed display
- Infinitely adjustable speed
- Push-through agitator shafts
- Overload protection
- Short-term overload operation
- Slim casing
- Quiet operation
- Error code display

EUROSTAR 60 control additionally:
- Multilingual TFT display
- Programmable functions
- Integrated temperature measurement
- Interval operation
- Timer function
- Adjustable safety circuit
- Locked function

Specifications

Stirring quantity max. (H_2O):	40l
Max. viscosity:	50000mPas
Motor rating input/output:	176/126 W
Speed range:	0/30 to 2000rpm
Max. torque at stirring shaft:	60Ncm
Display 60 digital:	LED
Display 60 control:	TFT
Chuck range:	0.5 to 10mm
Dimensions (WxDxH) 60 digital:	86 x 208 x 248mm
Dimensions (WxDxH) 60 control:	86 x 230 x 267mm
Protection class DIN EN 60529:	IP 40
Power supply:	230V, 50/60Hz
EUROSTAR 60 control only:	
Temperature measurement:	PT 1000
Temperature measuring range:	-10 to +350°C

Type	PK	Cat. No.	
EUROSTAR 60 digital	1	**9.816 700**	1
EUROSTAR 60 digital S 2 UK	1	**9.816 701**	
EUROSTAR 60 digital S 3 CH	1	**9.816 702**	
EUROSTAR 60 control	1	**9.816 703**	2
EUROSTAR 60 control S 2 UK	1	**9.816 704**	
EUROSTAR 60 control S 3 CH	1	**9.816 705**	

1



9.816 700

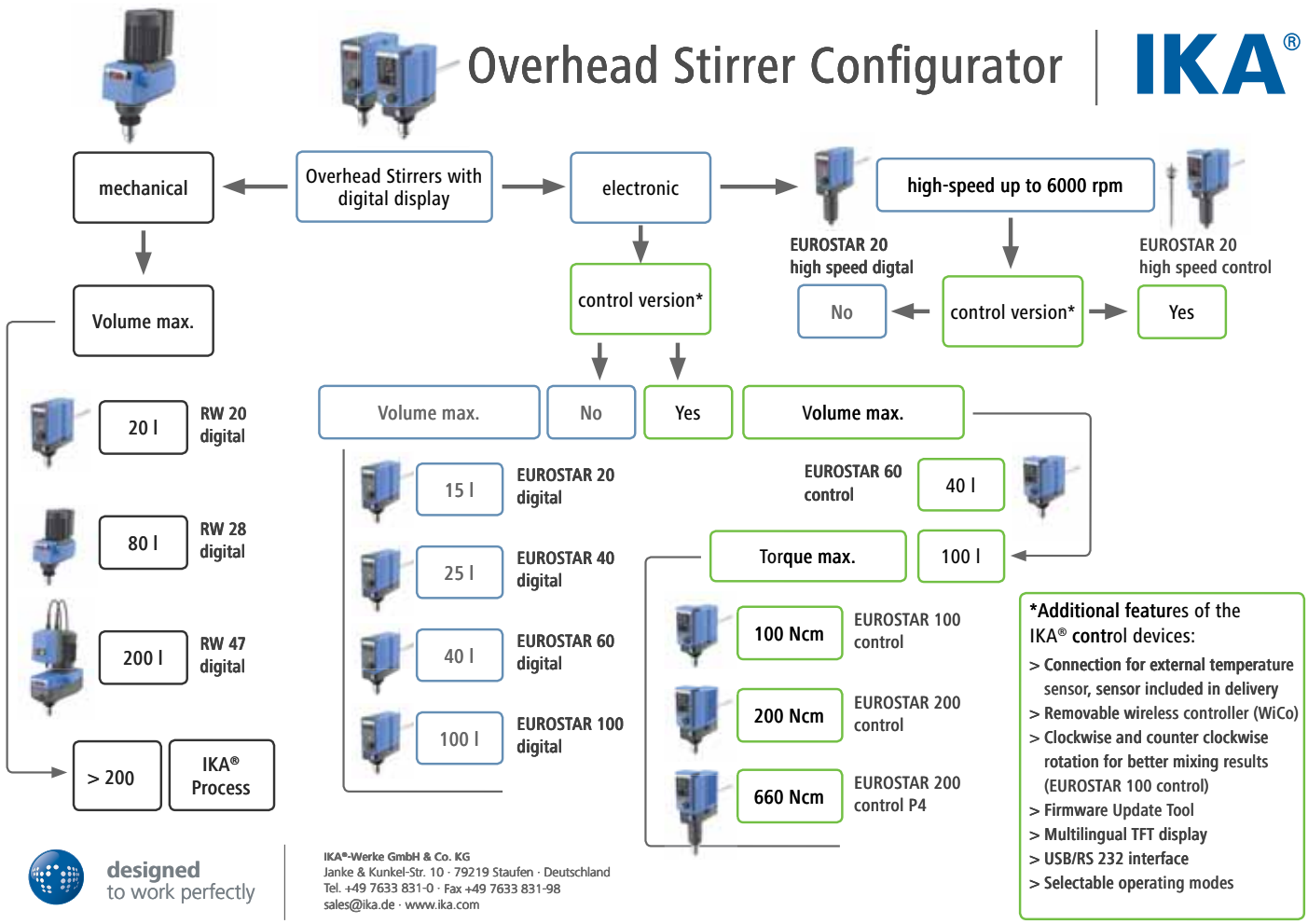
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9.816 703

Accessories for the IKA overhead stirrers please see page 449.

E & OE.



We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

IKA®

Overhead stirrer EUROSTAR 100 digital/100 control

IKA

Powerful laboratory stirrer for highly viscous applications and intensive mixing for quantities up to 100l (H_2O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/30 to 1300rpm. Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.

EUROSTAR 100 digital:
- Digital speed display
- Infinitely adjustable speed
- Push-through agitator shafts
- Overload protection
- Short-term overload operation
- Slim casing
- Quiet operation
- Error code display

EUROSTAR 100 control additionally:
- Multilingual TFT display
- Detachable remote control
- Programmable functions
- Integrated temperature measurement
- Interval operation
- Reverse function
- Timer function
- Adjustable safety circuit
- Locked function

Specifications

Stirring quantity max. (H_2O):	100l
Max. viscosity:	70000mPas
Motor rating input/output:	186/136W
Speed range:	0/30 to 1300rpm
Max. torque at stirring shaft:	100Ncm
Display 100 digital:	LED
Display 100 control:	TFT
Chuck range:	0.5 to 10mm
Dimensions (WxDxH) 100 digital:	86 x 208 x 248mm
Dimensions (WxDxH) 100 control:	86 x 230 x 267mm
Protection class DIN EN 60529:	IP 40
Power supply:	230V, 50/60Hz
EUROSTAR 100 control only:	
Temperature measurement:	PT 1000
Temperature measuring range:	-10 to +350°C

Type	PK	Cat. No.	
EUROSTAR 100 digital	1	**9.816 706**	1
EUROSTAR 100 digital S 2 UK	1	**9.816 707**	
EUROSTAR 100 digital S 3 CH	1	**9.816 708**	
EUROSTAR 100 control	1	**9.816 709**	2
EUROSTAR 100 control S 2 UK	1	**9.816 710**	
EUROSTAR 100 control S 3 CH	1	**9.816 711**	

1



9.816 706

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9.816 709

E & OE.

Overhead stirrer EUROSTAR 200 digital/200 control

IKA

Extremely powerful laboratory stirrer for highly viscous applications and intensive mixing for quantities up to 100l (H_2O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/6 to 2000rpm (two speed ranges). Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.

EUROSTAR 200 digital:
- Digital speed display
- Infinitely adjustable speed
- Push-through agitator shafts
- Overload protection
- Short-term overload operation
- Slim casing
- Quiet operation
- Error code display

EUROSTAR 200 control additionally:
- Multilingual TFT display
- Detachable remote control
- Programmable functions
- Integrated temperature measurement
- Interval operation
- Timer function
- Adjustable safety circuit
- Locked function

Specifications

Stirring quantity max. (H_2O):	100l
Max. viscosity:	100000mPas
Motor rating input/output:	130/84W
Speed range:	6 to 2000rpm
Speed range I (at 50/60 Hz):	6 to 400rpm
Speed range II (at 50/60 Hz):	30 to 2000rpm
Max. torque at stirring shaft:	200Ncm
Display 200 digital:	LED
Display 200 control:	TFT
Chuck range:	0.5 to 10mm
Dimensions (WxDxH) 200 digital:	91 x 209 x 274mm
Dimensions (WxDxH) 200 control:	91 x 231 x 274mm
Protection class DIN EN 60529:	IP 40
Power supply:	230V, 50/60Hz
EUROSTAR 200 control only:	
Temperature measurement:	PT 1000
Temperature measuring range:	-10 to +350°C

Type	PK	Cat. No.	
EUROSTAR 200 digital	1	**9.816 715**	1
EUROSTAR 200 digital S 2 UK	1	**9.816 716**	
EUROSTAR 200 digital S 3 CH	1	**9.816 717**	
EUROSTAR 200 control	1	**9.816 718**	2
EUROSTAR 200 control S 2 UK	1	**9.816 719**	
EUROSTAR 200 control S 3 CH	1	**9.816 720**	

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9.816 715

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9.816 718

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1 Overhead stirrer EUROSTAR 200 control P4

IKA

Extremely powerful laboratory stirrer for highly viscous applications for quantities up to 100l (H_2O). It is designed with a removable wireless controller and a digital TFT display.
It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/4 to 530rpm (two speed ranges). The stirrer comes equipped with a RS 232 and a USB interface to control and document all parameters. An integrated torque trend display is provided for the measurement of viscosity changes. Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.

- Multilingual TFT display
- Detachable remote control
- Programmable functions
- Integrated temperature measurement
- Interval operation
- Timer function
- Adjustable safety circuit
- Locked function
- Infinitely adjustable speed
- Overload protection
- Short-term overload operation
- Slim casing
- Quiet operation
- Error code display

Specifications

Stirring quantity max. (H_2O):	100l
Max. viscosity:	150000mPas
Motor rating input/output:	134/76W
Speed range:	0/4 to 530rpm
Speed range I (at 50/60 Hz):	0/4 to 110rpm
Speed range II (at 50/60 Hz):	0/16 to 530rpm
Max. torque at stirring shaft:	660Ncm
Display	TFT
Chuck range:	0.5 to 10mm
Dimensions (WxDxH)	91 x 231 x 379mm
Protection class DIN EN 60529:	IP 40
Power supply:	230V/50/60Hz

Type	PK	Cat. No.
EUROSTAR 200 control P4	1	**9.816 712**
EUROSTAR 200 control P4 S 2 UK	1	**9.816 713**
EUROSTAR 200 control P4 S 3 CH	1	**9.816 714**

2



2 Overhead stirrer RW 20 digital

IKA

- Technical improvements on the trusted RW20 series design, mechanically controlled
- with digital display
- robust, ergonomic design
- constant power-drive
- two speed ranges for universal use from 60rpm to 2000rpm
- hollow-shafted chuck for rotor shaft height adjustment (only when stationary)

Specifications

Stirring volume max. (H_2O):	20L
Viscosity range:	up to 10000mPas
Motor rating input/output:	70/35W
Output max. at stirring shaft:	26W
Max. stirring shaft torque (at 100rpm.):	150Ncm
Speed range I (at 50Hz):	60 to 500rpm.
Speed range II (at 50Hz):	240 to 2000rpm.
Chuck range:	0.5 to 10mm
Diameter/length of extension arm:	13mm/160mm
Dimensions (WxDxH)	88 x 212 x 294mm
Weight:	3.1kg
Protection class acc. to DIN EN 60529:	IP20
Supply requirements:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
RW 20 digital	1	**9.816 622**
RW 20 digital UK	1	**6.227 717**

Optional accessories: Stands: R 1825, R 1826, R 1827, R 182 Boss head, FK 1 Flexible coupling, RH 3 Strap clamp, R 301 Stirring shaft protection, Stirring elements: e.g. R 1342, R 1381

E & OE.

1 Overhead stirrer RW 28 digital

IKA

Powerful, mechanically controlled laboratory stirrer designed for highly viscous applications for quantities up to 80l (H_2O). It is suitable for intensive mixing for use in laboratories and pilot plants. The stirrer comes equipped with a protection for overheating of the motor by means of self-locking temperature limiter. Additionally, to secure bowls, a stirring shaft protection and clamping fixture are optionally available.

- Digital speed display
- Infinitely adjustable speed in two speed ranges
- Push-through agitator shafts
- Overload protection
- Error code display
- Robust, ergonomic design
- Quiet operation
- With constant power-drive

Specifications

Stirring quantity max. (H_2O):	80l
Max. viscosity:	50000mPas
Motor rating input/output:	220/90W
Speed range (at 50/60 Hz):	60 to 1400rpm/72 to 1680rpm
Speed range I (at 50/60 Hz):	60 to 400rpm/72 to 480rpm
Speed range II (at 50/60 Hz):	240 to 1400rpm/288 to 1680rpm
Max. torque at stirring shaft:	900Ncm
Display:	LED
Chuck range:	1 to 10mm
Dimensions (WxDxH):	123 x 252 x 364mm
Protection class DIN EN 60529:	IP 40
Power supply:	220-240V,/50/60Hz

Type	PK	Cat. No.
RW 28 digital	1	**9.816 630**
RW 28 digital S 2 UK	1	**9.816 631**
RW 28 digital S 3 CH	1	**9.816 632**

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2 Overhead stirrer RW 47 digital

IKA

Universal laboratory stirrer designed for simple stirring tasks for quantities up to 200l (H_2O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/30 to 2000rpm. Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.

- Digital speed display
- Infinitely adjustable speed
- Push-through agitator shafts
- Overload protection
- Short-term overload operation
- Slim casing
- Quiet operation
- Error code display

Specifications

Stirring quantity max. (H_2O):	200l
Max. viscosity:	100000mPas
Motor rating input/output:	513/370W
Speed range:	57 to 1300rpm
Speed range I (at 50Hz):	57 to 275rpm
Speed range II (at 50Hz):	275 to 1300rpm
Max. torque at stirring shaft:	3000Ncm
Display:	LED
Chuck range:	3 to 16mm
Dimensions (WxDxH):	145 x 358 x 465mm
Protection class DIN EN 60529:	IP 54
Power supply:	3 x 400V, 50/60Hz

Type	PK	Cat. No.
RW 47 digital	1	**9.816 633**

2



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1 Flexible clutch

Required for stirring tasks using glass stirring rods. The flexible coupling compensates for any structural variances. *Buddeberg*

Clamping range: 6 to 10mm
Torque max. 10 Ncm

Type	PK	Cat. No.
FK 1	1	**9.197 060**

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6.240 637

3



7.632 676

4



6.231 539

Globe Stirrer Couplings, POM

Made of POM, a plastic material with a good mechanical strength, powerful transmission of up to 300Ncm, suitable for a speed of up to 1.200 rounds per minute, maximum misalignment of axes 10mm. Ideal for balancing misalignment of axes between agitator and stirrer shaft, suitable for glass, metal or PTFE stirrer shafts. Opening for stirrer shaft diameter 8 + 10mm. Upper diameter 10mm. *BOLA*

- very low centrifugal forces due to low weight
- suitable for both left and right-handed rotation (except for GL 10 thread: no left-handed rotation possible)
- no resonance
- simple assembly by means of screw joints with clamp rings
- pivot (length 90mm) can be shortened by the user

Opening for stirrer shaft	Top diam.	Overall length	PK	Cat. No.	
mm	mm	mm			
Diam. 6.5 + 10	10	190	1	**6.240 637**	2
Diam. 8 + 10	10	190	1	**7.632 676**	3
Inner sqare SW6	SW8	180	1	**6.231 539**	4

5



5 Magnetic Stirrer Heads P-MRK

Ideal stirrer head for PTFE-jacketed stirrer shafts from BOLA. Consisting of capsuled drive shaft (stainless steel) with ball bearings, rotor and lower bearing made of PTFE/PEEK and a hollow shaft made of borosilicate glass. Requires little space due to compact construction.No leakage or memory effects due to non-porous, welded rotor. Compression fittings for safe fixing of stirrer shaft and optimum power transmission. Joint-Cone with nut (Safe-Lab) for easy locking and unlocking of the ground joint. Square size 6mm for accepting an agitator or a stirrer coupling. Insertion length of shaft 95mm. Drive shaft outside diameter 50mm. *BOLA*

- gastight stirrer head for perfect vacuum
- stirrer shaft's height adjustable, approx. 40mm
- also suitable for shortened stirrer shafts
- powerful transmission of up to 90Ncm
- excellent chemical resistance
- all products which are exposed to the medium do not contain any metals
- no grease required/save to run dry
- high speed of up to max. 1.500rpm
- drive shaft fixed for your safety
- high durability
- easy disassembly of all parts for cleaning

Joint size	For diam. stirring rod	Height	PK	Cat. No.
NS	mm	mm		
29/32	8	145	1	**9.197 205**
29/32	10	145	1	**9.197 206**
45/40	10	145	1	**9.197 207**

E & OE.

Stands for overhead stirrers

IKA

Type	Description	Rod diam. mm	Height mm	Max. load kg	PK	Cat. No.	
R 1825	Stand with baseplate	16	560	5	1	**9.224 031**	1
R 1826	Stand with baseplate	16	800	5	1	**9.224 032**	
R 1827	Stand with baseplate	16	1000	5	1	**9.224 033**	
R 2722	H-stand	34	1010	10	1	**9.224 026**	2
R 2723	Telescopic stand	34	620 - 1010	10	1	**9.224 028**	
R 474	Telescopic stand	48	500 - 1000	30	1	**9.816 735**	3
R 472	Floor stand	80x80	980 - 1860	30	1	**9.816 736**	4

Further stands available on request.

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9.224 031

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9.224 026

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9.816 735

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9.816 736

Bossheads for overhead stirrers

IKA

Type	Jaw opening mm	PK	Cat. No.	
R 182	Stand / extension arm: 6 to 16	1	**9.224 292**	5
R 270	Stand / extension arm: 25 to 36 / 5 to 21	1	**9.224 293**	6
R 271	Stand / extension arm: 34 / 16	1	**9.224 266**	

5



9.224 292

6



9.224 293

Strap clamps for overhead stirrers

IKA

Type	Rod diam. mm	Vessel diam. mm	PK	Cat. No.	
RH 3	8 to 16	40 to 300	1	**9.224 761**	7
RH 5*	25 to 36	40 to 300	1	**9.224 762**	8

*with R 270 bosshead

7



9.224 761

8



9.224 762



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9.778 950

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9.778 960

3



3 PLR compressed air laboratory stirrers up to 25 L for use in potentially explosive atmospheres, without/with tachometer

PLR compressed air laboratory stirrers are designed for all kinds of standard mixing tasks. The vane type, air-driven motor offers a high power density and is significantly lighter and smaller than an equivalent electric motor. *Buddeberg*

General specifications:
- operating pressure max. 6 bar
- air consumption 260 L/min. at 6 bar
- power output 200W at 6 bar
- clockwise rotation
- ATEX certification in accordance with Directive 94/9 EG

Basic models include:
- all-stainless steel housing, grade 1.4305
- continuously adjustable speed control valve
- support arm diam. 14mm
- tubing nozzle connector diam. 9mm
- output shaft L x diam. 26 x 10mm

Type	Rating	Capacity max.	For fluid viscosity	Off-load speed	Load speed	Load torque	Torque	ATEX certification	PK	Cat. No.	
	W	litres	mPa.	rpm.	rpm.	Nm	Nm				
PLR 10	200	3	1000	18000	8200	0.2	0.3	Ex II 2G c T4	1	**9.778 950**	1
PLR 11	200	20	50000	1800	900	1.8	3.5	Ex II 2G c T5	1	**9.778 951**	
PLR 12	200	25	70000	870	480	3.1	5.3	Ex II 2G c T5	1	**9.778 952**	
PLR 28	200	25	100000	580	296	5.8	10.4	Ex II 2G c T5	1	**9.778 954**	
PLR 13	200	25	150000	80	60	12.0	19.8	Ex II 2G c T5	1	**9.778 953**	
PLR 10T*	200	3	1000	18000	8200	0.2	0.3	Ex II 2G c T4	1	**9.778 960**	2
PLR 11T*	200	20	50000	1800	900	1.8	3.5	Ex II 2G c T5	1	**9.778 961**	
PLR 12T*	200	25	70000	870	480	3.1	5.3	Ex II 2G c T5	1	**9.778 962**	
PLR 28T*	200	25	100000	580	296	5.8	10.4	Ex II 2G c T5	1	**9.778 964**	
PLR 13T*	200	25	150000	80	60	12.0	19.8	Ex II 2G c T5	1	**9.778 963**	

* analogue tachometer

Compressed air powered stirrers, PLR, accessories

Buddeberg

9.779 052: Chuck F8:
For quick, easy attachment of stirring rods. Not to be used in potentially explosive atmospheres.

9.779 003: Connection couplings VK:
Fixed-diameter connection for motor/magnetic coupling drive shaft and stirring rod. Suitable for use in potentially explosive atmospheres.

9.198 010: Flexible glass stirring shaft couplings PK:
For stirring tasks using glass stirring rods. Elastic connector between motor and stirring shaft. Provides exact alignment of motor and shaft, and evens out axial and height differences. Accepts 6mm to 10mm diameter shafts.

9.779 013: Flexible glass stirring shaft couplings K:
For stirring tasks using glass stirring rods. Elastic connector between motor and stirring shaft. Provides exact alignment of motor and shaft, and evens out axial and height differences. Output drive accepts 6mm to 10mm diameter shafts, input shaft receiver fits 10mm or 10/13mm diameter drives, secured by allen screws.

9.779 065: Double-Cardan-Coupling DCK I:
With 8mm dia. hexagonal input drive receiver and 6mm square socket drive output.

Type	Description	Material No.	PK	Cat. No.	
F 8	Chuck for shafts 0.5 to 8.5mm		1	**9.779 052**	4
VK 10 x 6	Connection coupling	1.4305	1	**9.779 003**	5
VK 10 x 8	Connection coupling	1.4305	1	**9.779 005**	
VK 10 x 10	Connection coupling	1.4305	1	**9.779 006**	
K 10	Flex coupling receiver i. d. 10mm		1	**9.198 010**	6
K 10/13	Flex coupling receiver i. d. 10/13mm		1	**9.197 400**	
PK 10	Flex coupling receiver i. d. 10mm		1	**9.779 013**	7
PK 10/13	Flex coupling receiver i. d. 10/13mm		1	**9.779 014**	
DCK I	Stainless steel, L = 110mm		1	**9.779 065**	8

4



9.779 052

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9.779 003

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9.198 010

7



9.779 013

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9.779 065

E & OE.

Stands

Floor stand BS *Buddeberg*
with angled foot, side length 600 mm, rod diam. 34 mm.

Wall bracket WS
Rod diam. 34 mm, clearance from wall: 200 mm.

Type	Description	Length mm	PK	Cat. No.
BS 1	Floor stand	1000	1	**9.224 000** 1
BS 2	Floor stand	1500	1	**6.206 348**
WS	Wall bracket	1000	1	**6.225 791** 2

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9.224 000

2



6.225 791

3 Compressed air industrial stirrers BSR 64 with floor stand

NEW!

BSR series stirrers perform routine mixing tasks up to 200l, mounted on a floor stand. *Buddeberg*

General specifications:
- operating pressure max. 6 bar
- air consumption 800l/min. at 6 bar
- power output 640W at 6 bar
- clockwise rotation
- ATEX certification in accordance with Directive 94/9 EG

Basic models include:
- all-stainless steel housing, grade 1.4305
- continuously adjustable speed control valve
- spherical clamping device with support arm diam. 16mm, length 200mm
- floor stand with rod (height 1000mm, width 600mm) and bosshead
- tubing nozzle connector diam. 9mm
- output shaft L 32mm x diam. 14mm

3



Type	Rating W	Capacity max. litres	For fluid viscosity mPa.	Off-load speed rpm.	Load speed rpm.	Load torque Nm	PK	Cat. No.
BSR64/160-V	640	200	20000	2600	1300	4.7	1	**9.779 163**
BSR64/65-V	640	200	50000	1300	650	9.4	1	**9.779 164**
BSR64/30-V	640	200	100000	580	290	21.0	1	**9.779 165**

4 5 Propeller stirring rotors, 3-blade, stainless steel 1.4305

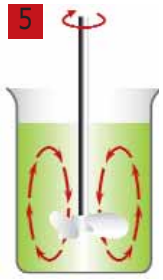
The 3-blade propellers produce axial flow, and reduce shear forces to a minimum, even at high stirring speeds, thanks to their optimised blade design. Recommended for medium to high speed operations.
Other sizes available on request.

Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
45	8	350	1	**9.197 021**
55	8	350	1	**9.197 022**
140	10	550	1	**9.197 023**
140	10	800	1	**9.197 024**

4



5



6 7 Diagonal blade stirring rotors, 4-blade, stainless steel 1.4305

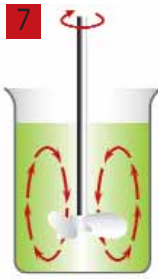
The 4-blade diagonal blade stirring rotor provides axial flow and creates increasing shear forces at higher stirring speeds. Recommended for medium to high speed operations.
Other sizes available on request.

Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
50	8	350	1	**9.197 006**
100	8	350	1	**9.197 009**
100	10	550	1	**9.779 320**

6



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1 2





1 2 Turbine stirring rotors, 3-blade with guide ring, stainless steel 1.4305

The 3-blade turbine stirring rotor produces radial flow; the guide ring surrounding the blades reduces shear forces, and offers protection when contacting the wall or bottom of the vessel. Recommended for medium to high speed operations.

Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
30	8	350	1	**9.197 030**
50	8	350	1	**9.197 031**
70	10	400	1	**9.197 032**

3



3 Double blade stirring rotors, stainless steel 1.4305

The double blade rotor creates two counter-currents. Vortices are prevented. Recommended for medium to high speed operations.
Other sizes available on request.

Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
60	8	500	1	**6.203 095**
80	8	500	1	**9.779 321**

4



5



4 5 Dissolver stirring rotors, stainless steel 1.4305

The dissolver stirring rotor creates a radial flow with high turbulence. The mixture is drawn from top to bottom. High shear forces are created at the dissolver disk, which provides effective particle reduction. Recommended for medium to high speed operations.

Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
30	8	350	1	**9.779 322**
40	8	350	1	**9.197 007**
50	8	350	1	**9.779 323**
60	8	350	1	**6.050 915**
70	8	350	1	**9.779 324**
80	8	350	1	**9.197 001**
80	8	550	1	**9.779 325**
100	10	350	1	**9.197 003**

6



7



6 7 Centrifugal stirring rotors, 2-blade, stainless steel 1.4305

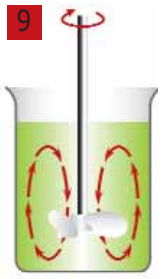
The folding blades of this 2-blade centrifugal stirring rotor open with increasing speed, allowing use with narrow-neck vessels. The stirring effect it provides is similar to a standard diagonal blade stirring rotor. Recommended for medium to high speed operations.

Ø agitator open / closed mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
60/15	8	350	1	**9.197 011**
100/24	8	550	1	**9.197 013**

8



9



8 9 Moebius stirrer, stainless steel 1.4571

NEW!

Generates axial flow. For drawing the material to be mixed from above. For circulating and handling low to medium viscous liquids. Recommended for medium speed operations.

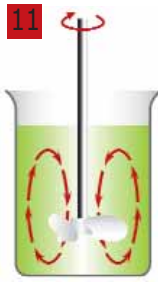
IKA

Type	Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
R 3000.1	100	10	565	1	**6.265 593**
R 3001.1	100	10	575	1	**6.265 594**

10



11



10 11 Spiral stirrer, stainless steel 1.4571

NEW!

Generates axial flow. Medium is conveyed from the bottom upwards. For homogeneous mixing and heat exchange of medium to high viscosity media. Recommended for medium speed operations.

IKA

Type	Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
R 3003	50	8	350	1	**6.265 595**
R 3003.1	100	10	550	1	**6.265 596**
R 3003.2	150	10	800	1	**6.265 597**

E & OE.

1 2 Blade stirrer, stainless steel 1.4571

NEW!

IKA

Generates a radial flow. For drawing the material to be mixed from the top and bottom. For aerating of low viscosity media and for homogenizing solids in liquids. Used at medium to high speeds.





Type	Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
R 3004	30	8	359	1	**6.265 598**
R 3004.1	50	10	565	1	**6.265 599**
R 3004.2	70	10	819	1	**6.265 700**

3 4 Paddle stirring rotors, 6 holes, stainless steel 1.4305

The paddle stirring rotor creates a tangential flow with minimum turbulence. Its design ensures a gentle action on sensitive products and good heat exchange. Recommended for low to medium speed operations.
Other sizes available on request.





Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
70	8	350	1	**9.197 019**
150	10	550	1	**9.197 020**

5 6 Anchor stirring rotors, stainless steel 1.4305

The anchor-shape rotor creates a tangential flow and high shear forces between the vessel wall and stirring blades. This stirrer is especially suitable for medium to high viscosity fluids. Recommended for low speed operations.
Other sizes available on request.



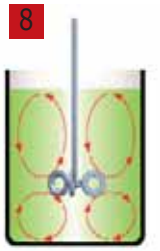


Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
45	8	350	1	**9.197 033**
80	8	350	1	**9.779 326**
90	8	350	1	**9.197 034**
100	8	550	1	**6.238 672**
150	10	550	1	**9.197 036**

7 8 BuddeMix Stirring System 1 - 4

This novel stirring system has been conceived to mix low viscosity fluids as well as highly viscous media at slow speeds. Its special design creates inherent dynamic currents to produce perfectly homogeneous mixing results in very little time. Additional components like baffles, bottom bearings, etc. are not needed.





Advantages at a glance:
- suitable for low to highly viscous fluids
- stirs media containing solids and fibres without any difficulty
- gentle, low-shear stirring, due to slow stirring speed
- constant product temperature, with no heating effect
- short mixing times as the entire contents of the container are agitated
- no air addition, no foaming
- no baffles required
- low gear wear due to balanced forces
- minimal power consumption thanks to low speeds and short operation times
- easy cleaning
- material no. 1.4404

Particularly for potentially explosive atmospheres:
- a single stirring zone, near to the container base, ensures easy mixing of settled residues, e.g. in flow-through mixing containers
- no baffles required, thus no additional sources of ignition

Type	Ø agitator mm	Ø agitator shaft mm	Length mm	Material No.	PK	Cat. No.
BuddeMix 1	60	8	350	1.4404	1	**9.779 331**
BuddeMix 2	80	8	350	1.4404	1	**9.779 332**
BuddeMix 3	120	10	550	1.4404	1	**9.779 333**
BuddeMix 4	150	10	850	1.4404	1	**9.779 334**

Stirring rotors made of PTFE

Interesting facts about PTFE stirrers:
The stirrer shafts consist of a PTFE-jacketed, stainless steel shaft and a stirrer paddle made of solid PTFE. The stainless steel core assures stability of the stirrer shaft and allows safe attachment of the stirrer chuck. Thanks to the thick PTFE coat and the paddle made of solid PTFE, the medium will only come into contact with PTFE. High chemical resistance makes it almost universally suitable. PTFE is extremely nonstick so that residues are repelled from shaft and paddle. The stirrer shafts are similar in size to (KPG) glass stirring rods and are therefore interchangeable easily.

Operating temperature: -200°C to +250°C

Additional sizes and accessories are available on request.
Information on the mixing effects of the different stirring geometries can be found in the descriptions of the stainless steel stirring rotors.



9.197 194

Propeller, 3 blades, PTFE

The blades are inclined at 45°. Recommended for medium to high speed operations.

Ø agitator mm	Ø agitator shaft mm	To fit chuck diam. mm	Length mm	Blades	PK	Cat. No.
50	6	4.7	450	angular	1	**9.197 138**
75	8	6.5	350	angular	1	**9.197 130**
75	10	8.0	450	angular	1	**9.197 140**
75	10	8.0	800	angular	1	**9.197 149**
140	10	8.0	600	round	1	**9.197 194** 1
140	10	8.0	800	round	1	**9.197 195**
200	16	14.0	1000	round	1	**6.244 067**



2 Crescent-shaped stirring rotors, PTFE

The semi-circular shape of the paddle is ideal for mixing in round-bottom flasks. The pivoting blade allows insertion into vessels with narrow necks and/or ground joints. *BOLA*

Ø agitator mm	Ø agitator shaft mm	To fit chuck diam. mm	Length mm	PK	Cat. No.
65	8	6.5	350	1	**9.197 121**
90	8	6.5	450	1	**9.197 122**
90	10	8.0	350	1	**9.197 127**
90	10	8.0	450	1	**9.197 124**
90	10	8.0	510	1	**9.197 128**
90	10	8.0	600	1	**9.197 125**
125	16	14.0	800	1	**9.197 126**



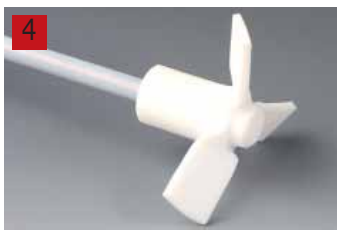
3 Anchor stirrer, PTFE

Recommended for low speed operations.

Ø agitator mm	Ø agitator shaft mm	To fit chuck diam. mm	Length mm	PK	Cat. No.
60	8	6.5	350	1	**9.197 144**
100	8	6.5	600	1	**9.197 145**
80	10	8.0	350	1	**9.197 146**
100	10	8.0	600	1	**9.197 147**

Additional wings available on request

4 5 6 7 Additional wings available on request









1 Overhead stirrer rotors, centrifugal paddle, PTFE

NEW!

With PTFE-coated, stainless steel shaft.



Length mm	Shaft diam. mm	To fit chuck diam. mm	Ø Paddle mm	PK	Cat. No.
350	6	4.7	50	1	**9.197 176**
450	8	6.5	90	1	**9.197 177**
350	10	8.0	90	1	**9.197 178**
450	10	8.0	90	1	**9.197 179**

2 Propeller stirring rotors, PP/PE

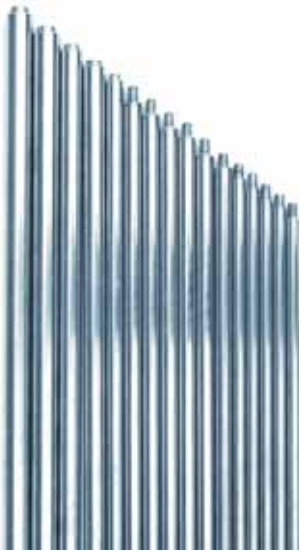
PP propeller, stirring shaft PE-coated. Good operating characteristics thanks to the steel core of the stirring shaft. Highly resistant to breakage and reduced scratching effect when contacting the vessel wall.



Ø agitator mm	Ø agitator shaft mm	Length mm	PK	Cat. No.
45	6	380	1	**9.197 101**

3 Rods for stirrer rotor shafts, M6 and 2 M10 screwthread end

Stainless steel 1.4301. With screwthread fitting as outlined below.
For subsequent stirrer heads.



Description	Diam. mm	Length mm	PK	Cat. No.
Rod, screwthread M 6	6	150	1	**9.156 100**
Rod, screwthread M 6	6	300	1	**9.156 101**
Rod, screwthread M 6	6	350	1	**9.156 102**
Rod, screwthread M 6	6	400	1	**9.156 103**
Rod, screwthread M 6	6	450	1	**9.156 104**
Rod, screwthread M 6	6	500	1	**9.156 105**
Rod, screwthread M 6	6	600	1	**9.156 106**
Rod, screwthread M 6	6	700	1	**9.156 107**
Rod, screwthread M 6	6	800	1	**9.156 108**
Rod, screwthread M 10	10	550	1	**9.156 129**
Rod, screwthread M 10	10	750	1	**9.156 130**
Rod, screwthread M 10	10	1000	1	**9.156 131**
Rod, screwthread M 10	10	1300	1	**9.156 132**
Rod, screwthread M 10	12	550	1	**9.156 133**
Rod, screwthread M 10	12	750	1	**9.156 134**
Rod, screwthread M 10	12	800	1	**9.156 135**
Rod, screwthread M 10	12	1000	1	**9.156 136**
Rod, screwthread M 10	12	1300	1	**9.156 137**
Rod, screwthread M 10	12	1500	1	**9.156 138**

4 Paddles, 2 blade propeller

For stirrer rotors with M6 thread. Stainless steel 1.4301.



Type	Blade mm	PK	Cat. No.
2 blades, M6	50	1	**9.156 164**
2 blades, M6	70	1	**9.156 165**
2 blades, M6	100	1	**9.156 166**
2 blades, 90° offset, M6	50	1	**9.156 167**
2 blades, 90° offset, M6	70	1	**9.156 168**
2 blades, 90° offset, M6	100	1	**9.156 169**

5 Paddles, 3 blade propeller.

Stainless steel 1.4301. With screwthread fitting as outlined below.



Type	Blade mm	PK	Cat. No.
3 blades, M6 thread	50	1	**9.156 170**
3 blades, M6 thread	70	1	**9.156 171**
3 blades, M6 thread	100	1	**9.156 172**
3 blades, M6 thread	140	1	**9.156 173**
3 blades, M10 thread	140	1	**9.156 148**

1



1 Paddles, 4 blade propeller

Stainless steel 1.4301. With screwthread shaft connection as outlined below.

Description	Blade mm	PK	Cat. No.
4 blades, M6 thread	50	1	**9.156 174**
4 blades, M6 thread	70	1	**9.156 175**
4 blades, M6 thread	100	1	**9.156 176**
4 blades, M6 thread	150	1	**9.156 177**
4 blades, M10 thread	150	1	**9.156 142**
4 blades, 90° offset, M6 thread	50	1	**9.156 178**
4 blades, 90° offset, M6 thread	70	1	**9.156 179**
4 blades, 90° offset, M6 thread	100	1	**9.156 180**

2



2 Paddles, flask with holes

Stainless steel 1.4301. With screwthread fitting as outlined below.

Description	Blade mm	PK	Cat. No.
3 hole, M6 thread	70 x 70	1	**9.156 185**
6 hole, M6 thread	70 x 70	1	**9.156 186**
10 hole, M6 thread	70 x 100	1	**9.156 187**
14 hole, M6 thread	70 x 150	1	**9.156 188**

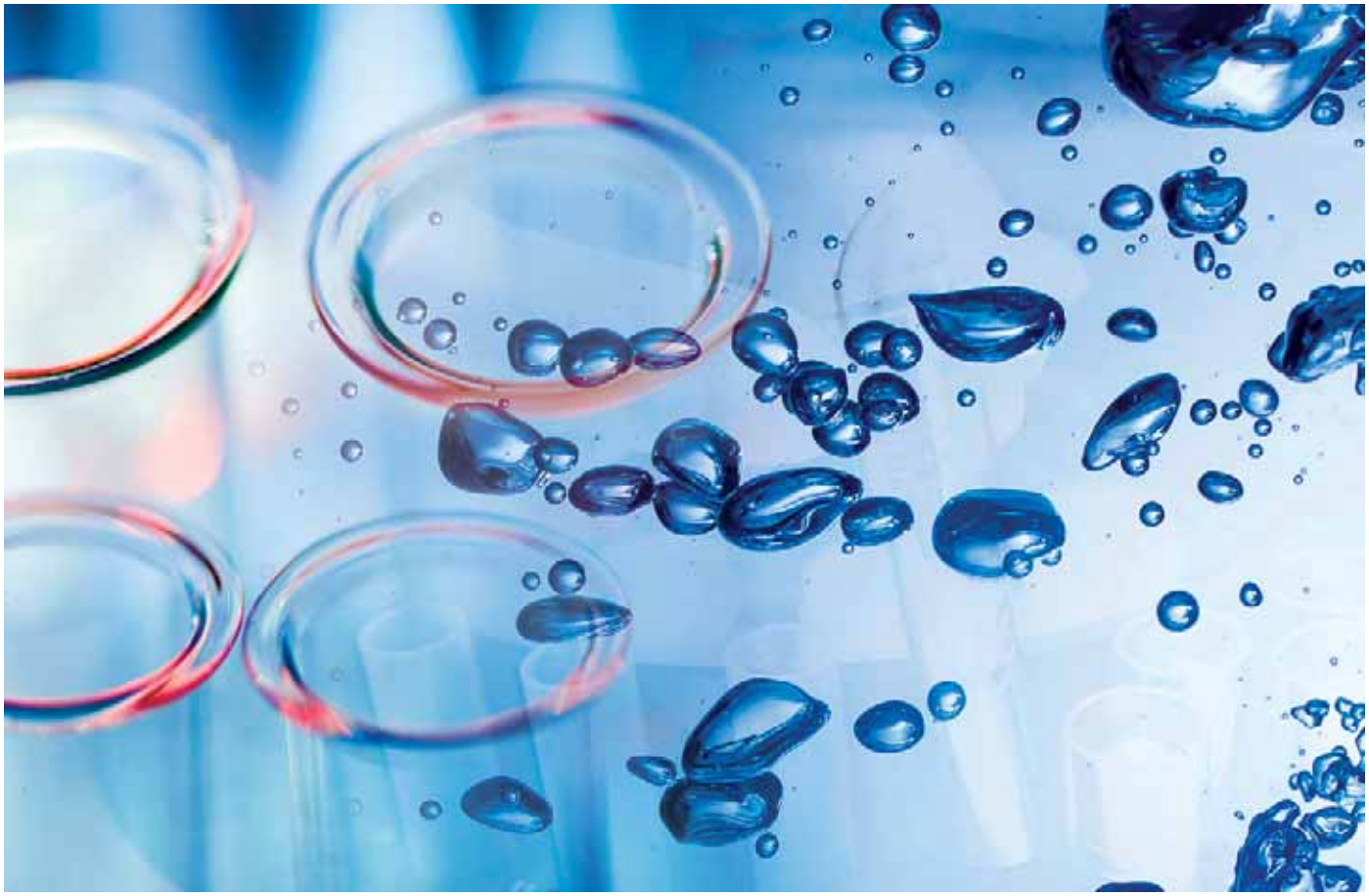
3



3 Centrifugal stirrer heads

Stainless steel 1.4301. With screwthread fitting as outlined below.

Type	Blade mm	PK	Cat. No.
1 blade, M6 thread	60	1	**9.156 181**
2 blade, M6 thread	60	1	**9.156 182**
2 blade, M6 thread	90	1	**9.156 183**
2 blade, M6 thread	100	1	**9.156 184**



E & OE.

Shakers overview

Movement	Load capacity (kg)	Rotation speed (rpm)	Orbit (mm)	Variable speed range	IP class	Product	Cat. No.	Page
orbital, vibrating	0	750-3000	2	Yes	5-40ºC / IP 20	Vortex PV-1, Grant	**9.721 000**	459
orbital, vibrating	0	500-2850	4	Yes	-	Genie®-S 2 digital, Scientific Ind.	**6.242 793**	460
orbital, vibrating	0	600-2700	4	Yes	-	Genie®-S 2, Scientific Ind.	**9.730 060**	460
orbital, vibrating	0.1	2800	4.5	No	IP 40	Lab dancer, IKA	**9.729 936**	459
orbital, vibrating	0.1	1000-2800	4.5	Yes	IP 21	Vortex 1, IKA	**9.729 931**	460
orbital, vibrating	0.4	500-2500	4	Yes	IP 21	Vortex 3, IKA	**9.729 950**	461
orbital, vibrating	0.5	0-3000	4.5	Yes	IP 21	MS 3 digital, IKA	**9.729 939**	462
orbital, vibrating	0.5	0-3000	4.5	Yes	IP 21	MS 3 basic, IKA	**9.729 938**	462
orbital, vibrating	0.5	0-3000	4.5	Yes	IP 21	Vortex 4 basic, IKA	**9.729 932**	460
orbital, vibrating	0.5	0-3000	4.5	Yes	IP 21	Vortex 4 digital, IKA	**9.729 933**	460
orbital, vibrating	0.5	0-4500	4.5	Yes	5-40ºC / IP 43	LLG-uni*TEXER*, LLG Labware	**6.261 826**	458
orbital, vibrating	0.5	1000, 2000, 3000	3.7	Yes	2-40°C / IP 20	LLG-uni*TEXER* 1, LLG Labware	**6.263 490**	459
orbital, vibrating	1.5	200-1000	4	Yes	-	Multi Vortex Genie, Scientific Ind.	**9.730 090**	464
orbital, vibrating	2	0-2200	4	Yes	IP 21	VXR basic, IKA	**9.729 900**	463
orbital, vibrating	8	20-250	20	Yes	4-40ºC / IP 20	PSU-20i, Grant	**6.256 816**	467
orbital	0.2	0-1100	3	Yes	IP 21	MTS 2/4 digital, IKA	**9.838 195**	1296
orbital	1	150-1000	2	Yes	4-40ºC / IP 20	PMS-1000i, Grant	**9.721 074**	1295
orbital	2	80-800	4	Yes	IP 21	KS 130 basic, IKA	**9.838 150**	474
orbital	2.5	100-800	4	Yes	IP 21	RS-OS 10, Phoenix Instr.	**9.852 120**	469
orbital	3	50-450	10	Yes	4-40ºC / IP 20	PSU-10i, Grant	**9.721 019**	466
orbital	3	30-300	16	Yes	5-40ºC / IP 31	SSM1, Stuart	**9.728 830**	468
orbital	4.5	20-300	19.2	Yes	-	Sea Star®, Heathrow	**9.839 701**	466
orbital	7.5	100-500	10	Yes	IP 21	RS-OS 20, Phoenix Instr.	**9.852 121**	469
orbital	7.5	10-500	10	Yes	IP 21	KS 260 control, IKA	**9.838 175**	475
orbital	7.5	20-500	10	Yes	IP 21	KS 260 basic, IKA	**9.838 074**	475
orbital	8	20-500	10	Yes	IP 20	Typ 3005, GFL	**9.837 905**	470
orbital	10	50-400	10	Yes	IP 21	MO10, Hettich Benelux	**9.777 253**	467
orbital	10	30-300	16	Yes	5-40ºC / IP 31	SSL1, Stuart	**9.728 840**	469
orbital	15	20-300	30	Yes	IP 20	Typ 3015, GFL	**9.837 915**	471
orbital	15	20-300	30	Yes	IP 20	Typ 3017, GFL	**9.837 917**	471
orbital	15	0-300	30	Yes	IP 21	KS 501 digital, IKA	**9.838 040**	475
orbital	25	50-500	25	Yes	IP 21	LLG-uni*SHAKER* 25, LLG Labware	**6.263 590**	465
orbital	30	20-250	32	Yes	IP 20	Typ 3019, GFL	**9.837 919**	471
orbital	30	20-250	32	Yes	IP 20	Typ 3020, GFL	**9.837 920**	471
reciprocating	2.5	100-350	4	Yes	IP 21	RS-LS 10, Phoenix Instr.	**9.852 122**	469
reciprocating	7.5	100-350	10	Yes	IP 21	RS-LS 20, Phoenix Instr.	**9.852 123**	469
reciprocating	7.5	10-300	20	Yes	IP 21	HS 260 control, IKA	**9.838 185**	479
reciprocating	7.5	20-300	20	Yes	IP 21	HS 260 basic, IKA	**9.838 063**	479
reciprocating	8	20-300	20	Yes	IP 20	Typ 3006, GFL	**9.837 906**	478
reciprocating	10	25-250	20	Yes	5-40ºC / IP 31	SSL2, Stuart	**9.728 841**	469
reciprocating	15	20-300	30	Yes	IP 20	Typ 3016, GFL	**9.837 916**	478
reciprocating	15	20-300	30	Yes	IP 20	Typ 3018, GFL	**9.837 918**	478
reciprocating	15	0-300	30	Yes	IP 21	HS 501 digital, IKA	**9.838 041**	475
3D 7° and rotation	1	5-30	22	Yes	4-40ºC / IP 20	PS-M3D, Grant	**9.721 017**	484
wave, 0-15°	2	5-80	-	Yes	4-50ºC / IP 21	Rocker 3D digital, IKA	**9.729 987**	485
wave, 3°	15	2-50	-	Yes	IP 20	Typ 3011, GFL	**9.837 911**	486
wave, 3°	15	2-50	-	Yes	IP 20	Typ 3012, GFL	**9.837 912**	486
wave, 3°-12°	3	5-70	-	Yes	5-40ºC / IP 30	SSM3, Stuart	**9.728 820**	468
wave, 3°-12°	10	5-70	-	Yes	5-40ºC / IP 30	SSL3, Stuart	**9.728 800**	482
wave, 4°	5	5-50	-	Yes	IP 21	3DL 05, Hettich Benelux	**9.777 293**	484
wave, 7°	0.5	10-30	-	Yes	4-40ºC / IP 20	PS-3D, Grant	**9.721 014**	483
wave, 8°	2	30	-	No	4-50ºC / IP 21	Rocker 3D basic, IKA	**9.729 986**	485
wave, 8°	5	5-50	-	Yes	IP 21	3D, Hettich Benelux	**9.777 250**	484
overhead	0	6-80	-	Yes	IP 20	Typ 3025, GFL	**9.837 925**	489
overhead	0.4	5-30	-	Yes	4-40ºC / IP 20	PTR-25, Grant	**9.721 016**	488
rocking, 0-15°	2	5-80	-	Yes	4-50ºC / IP 21	Rocker 2D digital, IKA	**9.729 985**	482
rocking, 0-10°	5	5-50	-	Yes	4-40ºC / IP 20	PMR-100, Grant	**9.721 015**	481
rocking, 3°	15	2-50	-	Yes	IP 20	Typ 3014, GFL	**9.837 914**	483
rocking, 3°	15	2-50	-	Yes	IP 20	Typ 3013, GFL	**9.837 913**	483
rocking, 7°	0.5	7,5-30	-	Yes	4-40ºC / IP 20	PMR-30, Grant	**9.721 011**	484
rocking, 7°	3	5-70	-	Yes	5-40ºC / IP 30	SSM4, Stuart	**9.728 821**	468
rocking, 7°	10	5-70	-	Yes	5-40ºC / IP 30	SSL4, Stuart	**9.728 801**	482
rocking, 8°	2	5-80	-	Yes	4-50ºC / IP 21	Rocker 2D basic, IKA	**9.729 984**	482
overhead	0.5	10-100	-	Yes	4-40ºC / IP 20	PTR-35, Grant	**9.721 028**	488
overhead	0.8	10-100	-	Yes	4-40ºC / IP 20	PTR-60, Grant	**9.721 030**	488
overhead	2	20	-	No	4-50ºC / IP 21	Trayster analog, IKA	**9.837 870**	489
overhead	2	5-80	-	Yes	4-50ºC / IP 21	Trayster digital, IKA	**9.837 871**	489
overhead	2	20	-	No	4-50ºC / IP 21	Loopster basic, IKA	**9.729 982**	492
overhead	2	5-80	-	Yes	4-50ºC / IP 21	Loopster digital, IKA	**9.729 983**	492
overhead	2.3	5-35	-	Yes	-	Rotator Genie™, Scientific Ind.	**6.254 273**	487
overhead	8	6-60	-	Yes	IP 31	STR4, Stuart	**9.950 375**	490
overhead	20	1-20	-	Yes	IP 20	Typ 3040, GFL	**9.837 931**	490
arc	3	8 - 800 Osz.	-	Yes	IP 31	SF1, Stuart	**9.950 372**	480
rolling	2	30	24.5	No	4-50ºC / IP 21	Roller 6 analog, IKA	**9.729 970**	493
rolling	2	5-80	24.5	Yes	4-50ºC / IP 21	Roller 6 digital, IKA	**9.729 971**	493
rolling	2	30	24.5	No	4-50ºC / IP 21	Roller 10 analog, IKA	**9.729 972**	493
rolling	2	5-80	24.5	Yes	4-50ºC / IP 21	Roller 10 digital, IKA	**9.729 973**	493
rolling	4	10-70	17	Yes	4-40ºC / IP 21	RS-TR 5, Phoenix Instr.	**9.852 140**	492
rolling	4	0-70	17	Yes	4-40ºC / IP 21	RS-TR 10, Phoenix Instr.	**9.852 143**	492
rolling	5	33	16	No	4-60ºC / IP 20	SRT6, analog, Stuart	**9.728 810**	493
rolling	5	5-60	16	Yes	4-60ºC / IP 20	SRT6D, digital, Stuart	**9.728 811**	493
rolling	5	33	16	No	4-60ºC / IP 20	SRT9, analog, Stuart	**9.728 812**	493
rolling	5	5-60	16	Yes	4-60ºC / IP 20	SRT9D, digital, Stuart	**9.728 813**	493

1 2 3

LLG-Vortexer uni*TEXER* with universal attachment

NEW!

One head - multiple uses

Vortexer with single carrier head, accommodating the most popular consumables and tubes: for 1 x assay plate, 2 x 50ml conical tubes, 2 x 15ml conical tubes, 2 x 5 ml conical tubes, 4 x 1.5/2ml microcentrifuge tubes, 6 x 0.5ml and 24 x 0.2ml microcentrifuge tubes.

- Carrier head is very easy to clean
- Precise speed control via a variable rotary switch
- Elastomeric feet ensure excellent stability on the bench and quieter operation
- Modern design
- Robust, ABS housing
- 3 years warranty

Specifications

Type of movement:	orbital/vortex
Orbital diameter:	3.7mm
Speed:	1000, 2000 und 3000rpm
Dimensions (WxDxH):	173 x 198 x 198mm
Weight:	3.8kg
Protection class:	IP 20
Supply requirements:	220 V, 50/60 Hz
Guarantee:	3 years

Type	PK	Cat. No.
LLG-uni*TEXER*	1	**6.261 826**

1



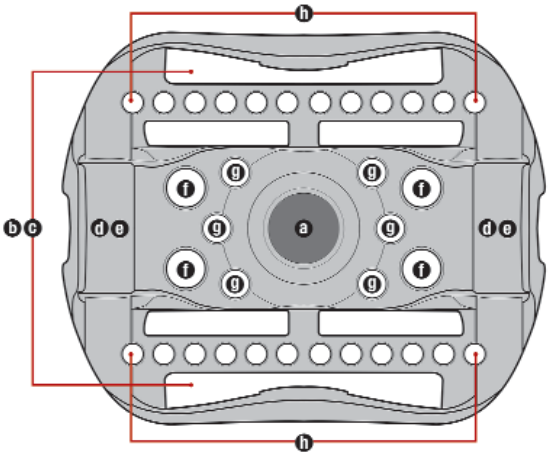
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3



Mixing head with multiple loading possibilities



a	Center pad area for hand held mixing
b	Assay plate x 1 (to be used with retention cords)
c	50 ml conical tubes x 2 (horizontally mounted)
d	15 ml conical tubes x 2 (horizontally mounted)
e	5 ml tubes x 2 (horizontally mounted in the same retention space as 15 ml)
f	1.5/2 ml microfuge tubes x 4 (vertically mounted)
g	0.5 ml microfuge tubes x 6 (vertically mounted)
h	0.2 ml microfuge tubes (strip tubes) x 24 (vertically mounted)

1 LLG-Test tube shaker uni*TEXER* 1

NEW!

1



Compact test tube shaker with brushless motor drive and touch function. Adjustable speed control up to 4500rpm for excellent mixing results in a very short time. Especially for small volumes. 3 years warranty.

Specifications

Type of movement:	orbital/circular motion
Orbit:	4.5mm
Speed range:	0 to 4500rpm
Permissible ambient temperature:	5 to 40°C
Permissible relative moisture:	<80%
Dimensions (WxDxH):	100 x 100 x 70mm
Weight:	0.55kg
Power supply:	100 - 240V, 50/60Hz
Protection class:	IP 43
Guarantee:	3 years

Type	PK	Cat. No.
uni*TEXER* 1 with EU-plug	1	**6.263 490**
uni*TEXER* 1 with UK-plug	1	**6.263 491**

2 Vortex mixer PV-1

2



With low profile and small footprint for gentle mixing to vigorous re-suspension of cell or chemical pellets. *Grant*

- variable speed: 750rpm to 3000rpm
- continuous or touch operation
- for tubes up to 30mm diameter

Specifications

Speed range:	750 to 3000rpm
Dimensions (WxDxH):	90 x 150 x 80mm
Temperature range:	4 to 40°C

Type	PK	Cat. No.
PV-1	1	**9.721 000**

3 Test tube shaker, lab dancer

3



Inexpensive, compact, attractively designed, test tube vortex shaker. *IKA*
Designed for mixing small test samples by touch function.

- Small, compact and reliable
- For small containers up to 30mm in diameter, e.g. test tubes, centrifuge tubes, Eppendorf tubes
- Fixed speed (2800rpm)
- Excellent mixing
- Top of housing and the test tube accessories are made from chemically inert plastic. The bottom section is a coated, zinc die-casting.
- Includes lightweight 12V mains adapter

Specifications

Mixing:	orbital/vortex
Orbit:	4.5mm
Capacity, volume:	1 tube, max. 50ml
Motor rating input/output:	1.2/0.8W
Speed:	2800rpm (fixed)
Dimensions (Diam. x H):	100 x 70mm
Weight:	550g
Material housing:	PP
Material attachment:	TPU
Material base:	Zinc, coated
Enclosure according to DIN EN 60529:	IP40
Supply requirements:	100-240V 50/60 Hz

Tested to DIN EN IEC 61010-1.

Type	PK	Cat. No.
lab dancer EU/CH	1	**9.729 936**
lab dancer UK	1	**4.008 065**

1



1 Shaker VORTEX 1

New test tube shaker with infinitely adjustable speed range. Specially for mixing small sample volumes with touch function. *IKA*

Specifications

Type of movement:	orbital/vortex
Orbital diameter:	4.5mm
Max. shaken quantity (1 test tube)	100ml
Motor rating input/output:	1.2/0.8W
Speed range:	1000 to 2800rpm
Dimensions (W x H x D):	95 x 110 x 70mm
Weight:	0.55kg
Enclosure according to DIN EN 60529:	IP 40

Type	PK	Cat. No.
VORTEX 1	1	**9.729 931**

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9.729 932

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9.729 933

Shaker VORTEX 4 basic/digital

Compact, universal small shaker suitable for shaking tasks with small vessels and microtiter plates *IKA*

Specifications

Type of movement:	orbital/vortex
Orbital diameter:	4.5mm
Max. permitted shaking weight (incl. attachment)	0.5kg
Motor rating input/output:	10/8W
Speed range:	0 to 3000rpm
Timer:	only for VORTEX 4 digital (1 sec. - 999 min)
Dimensions (W x H x D):	176 x 190 x 63mm
Weight:	3.0kg
Enclosure according to DIN EN 60529:	IP 21

Type	PK	Cat. No.
VORTEX 4 basic	1	**9.729 932** 2
VORTEX 4 digital	1	**9.729 933** 3

4



4 Vortex-Genie®-series

NEW!

Robust and reliable shakers for speedy mixing and shaking of samples. Multiple accessories: e.g. adapter tops for test tubes, beakers, centrifuge tubes etc. Adapter tops can be changed easily with the snap fit system. *Scientific Industries*

Vortex-Genie® 2
Variable speed for precise mixing from gentle to vigorous. Broad range of attachments for most tubes, plates and other containers. Hands-Free or Touch On control.

Vortex-Genie® 2T with an integrated timer
Timer function: (Touch On) 1-60 seconds, (Hands-Free) 1-60 minutes or continuous. Unit automatically stops at the end of user programmed time.

Digital Vortex-Genie® 2 with digital control and display of speed and time
Digital display provides accuracy, reproducibility and repeatability. Timer function: (Touch On) 1-99 seconds, (Hands-Free) 1-99 minutes or continuous. Specially configured unit for Applied Biosystems protocol available.

Specifications	**Vortex-Genie® 2/Vortex-Genie® 2T/Digital Vortex-Genie® 2**
Shaking movement:	circular
Speed display/Timer:	Scale/No/Scale/Scale/Digital/Digital
Speed range:	600 - 2700rpm/600 - 2700rpm/500 - 2850rpm
Timer	
Interval operation:	-/1 to 60s/1 to 99s
Hands-free mode:	-/1 to 60min/1 to 99min
Dimensions (L x W x H):	165 x 122 x 165mm
Permissible ambient conditions:	0 to 38°C at 95% rh
Weight:	4kg
Power supply:	230V, 50/60Hz

Type	Connector	PK	Cat. No.
Vortex Genie® 2	EU	1	**9.730 060**
Vortex Genie® 2	UK	1	**6.251 939**
Vortex Genie® 2	CH	1	**6.235 684**
Vortex-Genie® 2T	EU	1	**6.252 823**
Vortex-Genie® 2T	UK	1	**6.252 946**
Vortex-Genie® 2T	CH	1	**9.730 121**
Digital Vortex-Genie® 2	EU	1	**6.242 793**
Digital Vortex-Genie® 2	UK	1	**9.730 120**
Digital Vortex-Genie® 2	CH	1	**6.240 599**

E & OE.

Accessories for Vortex-Genie®-series

NEW!

Scientific Industries

Description	PK	Cat. No.	
Standard shaking attachment, diam. 25 mm	1	**9.730 051**	
Microtube holder for 12 x 1.5 or 2.0ml tubes	1	**6.253 281**	
TurboMix® attachment	1	**7.400 045**	
Recessed platform	1	**7.301 382**	2
Elastic bands for recessed platform	2	**6.235 226**	
Foam inserts for 9-16mm tubes, for recessed platform	2	**7.510 295**	
Foam inserts for 14-29mm tubes, for recessed platform	2	**7.510 296**	3
Foam inserts, blank, for recessed platform	2	**7.981 175**	
Platform (diam. 150mm)	1	**7.091 220**	
Foam inserts for microtubes, for platform (diam. 150mm)	2	**6.252 944**	4
Foam inserts for microplates, for platform (diam. 150mm)	1	**9.730 058**	
Platform (diam. 75mm) with rubber cover	1	**6.254 016**	
Spare rubber cover (diam. 75mm)	1	**9.730 053**	
Attachment, horizontal, for 2 large ampoules	1	**6.203 006**	
Attachment, horizontal, for 24 microtubes	1	**6.252 814**	5
Attachment, horizontal, for 12 x 15ml tubes	1	**7.970 740**	
Attachment, vertical, for 6 x 50ml tubes	1	**6.252 942**	
Attachment, vertical, for 24 microtubes	1	**6.257 992**	
Attachment, vertical, for 6 x 50ml, 6 x 15ml and 12 x microtubes	1	**7.930 215**	
High speed attachment, vertical, for 3 x 50ml tubes	1	**6.259 054**	1
Starter Set incl. one foam insert for microtubes and microplates each	1	**6.254 476**	
Starter Set incl. recessed platform and 4 different foam inserts	1	**6.256 952**	

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6.259 054

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7.301 382

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7.510 296

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6.252 944

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6.252 814

6 Shaker Vortex Genius 3

IKA

Vortex shaker suitable for intermittent operation (touch function), activated by pressing shaker attachment, or for continuous operation.

- Wide speed range, infinitely adjustable
- Versatile, due to 3 accessory interchangeable attachments and 7 inserts (e.g. Eppendorf tubes, microtitre plates, 250ml Erlenmeyer flasks etc.), please order separately
- Attachments securely click onto shaker in any position
- Strap clamp (VG3.36) ensures easy holding of round/Erlenmeyer flasks
- Sturdy, die cast zinc casing
- Stable at high speeds due to special feet (silicone base with ultra-high vibration damping)
- Eccentric drive with ball bearings
- Self-ventilated motor allows continuous operation with minimal warm-up of the housing

Supplied with standard attachment.

6



Specifications

Type of movement:	orbital/vortex
Orbital diameter:	4mm
Motor rating input/output:	58/10W
Speed range:	500rpm to 2500rpm
Speed indication:	scale 0 to 6
Dimensions (WxDxH):	127 x 149 x 136mm
Weight:	4.5kg
Protection class acc. to DIN EN 60529:	IP 21
Supply requirements:	230V 50/60 Hz

Tested to DIN EN IEC 61010-1.

Type	PK	Cat. No.
VORTEX Genius 3 EU	1	**9.729 950**
VORTEX Genius 3 CH	1	**4.008 062**
VORTEX Genius 3 UK	1	**4.008 061**

Accessories for shaker Vortex Genius 3

IKA

Type	Description	PK	Cat. No.
VG 3.1	Standard attachment, for test tubes, small vessels*	1	**9.729 954**
VG 3.2	One-hand attachment 88mm, rubber inlet	1	**9.729 955**
VG 3.3	Standard tray 150mm, rubber inlet	1	**9.729 951** 1
VG 3.31	Insert for 54 Eppendorf tubes	1	**9.729 956**
VG 3.32	Insert for 18 x 10mm diameter test tubes	1	**9.729 957**
VG 3.33	Insert for 12 x 12mm diameter test tubes	1	**9.729 958**
VG 3.34	Insert for 8 x 16mm diameter test tubes	1	**9.729 959**
VG 3.35	Insert for 8 x 20mm diameter test tubes	1	**9.729 952** 2
VG 3.36	Attachment for Erlenmeyer and round vessels 100 to 250ml	1	**9.729 953** 3
VG 3.37	Holder for 1 standard microtitre plate	1	**9.729 960**

*included in delivery

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9.729 951

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9.729 952

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9.729 953

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9.729 938

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9.729 939

Shaker MS3 basic/digital

IKA

Compact, universal small shaker suitable for shaking tasks with all small vessels and microtitre plates.
- Continuous or touch operation (with standard attachment)
- Two operating modes available:

Mode A (safe mode with attachment detection)
the maximum speed of 3000rpm is only attained with the standard attachment in touch mode.
When using other attachments the speed is limited to 1300rpm.
Mode B (without attachment detection)
a speed of 3000rpm is possible with all attachments.
- Stable in all speed ranges
- Sturdy, zinc, die-cast casing

MS 3 digital additionally with countdown function timer (1sec to 999min).
Items supplied with MS3 basic + digital:
Standard attachment, universal attachment, one-hand insert
Additional items supplied with MS3 digital:
Microtitre plate attachment, test tube insert with 6 holes for 12mm diameter tubes

Specifications:

Type of movement:	orbital
Orbit:	4.5mm
Max. permitted shaking weight (incl. attachment):	0.5kg
Motor rating input/output:	10/8W
Speed display:	Scale
Speed range:	0 to 3000rpm
Dimensions (WxDxH):	148 x 205 x 63mm
Weight:	2.9kg
Protection class acc. to DIN EN 60529	IP21
Supply requirements:	100-240V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	Operating mode	PK	Cat. No.
MS 3 basic EU/UK/CH/US	Continuous mode and touch operation	1	**9.729 938** 4
MS 3 digital EU/UK/CH/US	Timer and continous mode, touch operation	1	**9.729 939** 5

E & OE.

Accessories for Shaker MS 3

IKA

Type	Description	PK	Cat. No.
MS 3.1	Standard attachment	1	**9.729 942** 1
MS 3.3	Universal attachment	1	**9.729 944** 2
MS 3.4	Microtitre plate attachment	1	**9.729 943** 3
MS 3.5	PCR attachment	1	**6.237 469** 4
MS 1.21	One-hand insert	1	**9.729 945** 5
MS 1.31	Test tube insert, with 14 holes for tubes diameter 10mm	1	**9.729 946**
MS 1.32	Test tube insert, with 6 holes for tubes diameter 12mm	1	**9.729 947**
MS 1.33	Test tube insert, with 4 holes for tubes diameter 16mm	1	**9.729 948**
MS 1.34	Test tube insert, plain, for user to drill	1	**9.729 949**

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9.729 942

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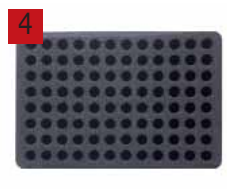
9.729 944

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9.729 943

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6.237 469

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9.729 945

6 Vibrating shaker, VXR basic Vibrax®

IKA

Optoelectronically controlled small shaker with a very wide speed range.
- Suitable for continuous operation
- New design and improved drive system
- Circular shaking motions
- Slow speeds are well maintained
- Attachments are interchangeable

Please order the required shaker attachment separately.

6



Specifications:

Shaking motion:	Orbital
Orbit:	4mm
Motor rating input/output:	35/13.2W
Speed range:	0 to 2200rpm
Dimensions (WxDxH):	157 x 247 x 130mm
Weight (without attachment):	6.1kg
Max. loading:	2kg
Protection class DIN EN 60529:	IP21
Supply requirements:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
VXR basic	1	**9.729 900**
VXR basic UK	1	**6.202 467**

Optional accessories: Attachements: VX 1, VX 2, VX 2E, VX 7, VX 8, VX 11, VX 11.1, VX11.2, VX 11.3, VX 11.4

Vibrating shaker, VXR basic Vibrax®, accessory attachments

IKA

VX 1 one-hand attachment
For shaking single, non-fixed vessels of 1ml to 250ml.
VX 2 test tube attachment
For up to 36 test tubes or centrifugal tubes with a diameter of 16 mm.
VX 2E "Eppendorf" attachment
For intensive shaking of up to 64 "Eppendorf" tubes (1.5ml).

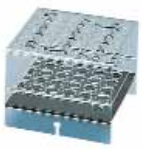
Type	Width mm	Depth mm	Height mm	PK	Cat. No.
VX 1	130	135	40	1	**9.729 901** 7
VX 2	140	145	115	1	**9.729 902** 8
VX 2E	210	210	65	1	**9.729 914**

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9.729 901

8



9.729 902

Microtitre shakers please see page 1295.

1



6.231 284

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9.729 915

Accessories for Shaker VXR basic Vibrax®

VX 11 Basic holder
Attachment for test tube inserts.
VX 11.1 Test tube insert
Attachment for Eppendorf tubes or test tube inserts.
VX 11.2/ VX 11.3/VX 11.4 Test tube inserts
For test tubes.

Type	No.of holes	Diam. of holes mm	PK	Cat. No.
VX 11			1	**6.231 284** 1
VX 11.1	70	10	1	**6.232 813**
VX 11.2	41	12	1	**6.231 285**
VX 11.3	32	16	1	**6.228 246**
VX 11.4	18	20	1	**9.729 915** 2

3 Shaker Multi Vortex Genie®

NEW!

Robust and reliable shaking device for mixing and shaking of samples in Erlenmeyer flasks or vials.

Scientific Industries

Properties:
- Digital display for speed and time
- Speed increase in steps of 10rpm Robust metal case
- Secure stand at high speed thanks to supports with high vibration damping
- Can be loaded with e. g. max. 6 Erlenmeyer flasks 250ml or 2 multi racks each for 12 test tubes (max. tube diameter 29mm, length min. 85mm)
- After 10 minutes of non use, the mixer switches to "sleep" mode

Supplied with: incl. platform with clamp/tension roller (for securely attaching standing vessels) and 2 multi-racks.

Specifications

Type of movement:	vibrating
Dimensions (WxDxH):	310 x 270 x 195mm
Weight:	11.3kg
Supply requirements:	230V, 50Hz
Speed range:	200rpm to 950rpm

Type	Connector	PK	Cat. No.
Multi Vortex-Genie®	EU	1	**9.730 090**
Multi Vortex-Genie®	UK	1	**6.265 221**
Multi Vortex-Genie®	CH	1	**6.265 222**

3



E & OE.

1 2 LLG-Orbital shaker uni*SHAKER 25*

NEW!

Powerful, smooth running orbital shaker for loads up to 25kg. The maintenance free brushless motor and the shaking mechanism with counter weight allow any time smooth and stable operation. Digital display for speed and time. Adjustable speed from 50 to 500rpm, built-in timer from 1 to 99 minutes or continuous. Two different platforms (610 x 460mm or 760 x 460mm) and 5 clamps for vessels from 125ml to 2000ml available. Platforms and clamps must be ordered separately.

- Stable and robust metal housing
- Maximum load capacity 25kg
- Shaking orbit 25mm
- Different platforms and clamps available

Specifications

Type of movement:	orbital
Orbital diameter:	25mm
Speed range:	50 to 500rpm
Motor:	Brushless DC motor
Timer:	0-99 minutes, continuous
Power consumption:	250VA
Permissible ambient temperature:	4 to 75°C
Dimensions (WxDxH):	600 x 550 x 150mm
Weight:	48kg
Power supply:	230V, 50Hz

Type	PK	Cat. No.
LLG-uni*SHAKER 25* with EU plug	1	**6.263 590**
LLG-uni*SHAKER 25* with UK plug	1	**6.263 599**
Universal attachment, 610 x 460mm	1	**6.263 591**
Universal attachment, 760 x 460mm	1	**6.263 592**
Clamp, 100ml	1	**6.263 593**
Clamp, 250ml	1	**6.263 594**
Clamp, 500ml	1	**6.263 595**
Clamp, 1000ml	1	**6.263 596**
Clamp, 2000ml	1	**6.263 597**
Rubber mat, adhesive, transparent blue, 150 x 150 x 3mm	1	**6.263 598**

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9.839 701

Sea Star® Digital Orbital Shaker

Heathrow Scientific

The Sea Star® is designed with high-end features such as an electronic sensor that maintains gentle agitation or vigorous motion while compensating for full or unbalanced loads.
The slow, soft-start greatly decreases the risk of spills. The low adjustable rpm setting also provides gentle shaking - ideal for western blot, molecular biology and other immunology protocols and applications. For vigorous culture applications, simply turn the speed knob up to 300rpm. The large, back lit digital display tracks pre-set timed run, continuous run and rpm settings for improved test procedure repeatability. Non-stop optical motor feedback provides instantaneous speed adjustment. Aesthetically pleasing style and highly intuitive, the Sea Star can be set for continuous time or up to 49 hours. The LCD display shows speed and time remaining and an audible beep indicates ending time.
The Sea Star is also designed for use in incubators.
Soft rubber feet minimise walking, and the skid-free rubber mat with unique wave design acts as a non-slip surface for Petri dishes, culture bottles, media flasks and dishes. Sturdy anodized platform provides a stable surface for samples with eight elastic ties for added security. Plug-in-place interchangeable power adapter meets all source requirements.
Platform capacity:
Erlenmeyer Flasks e.g.: 25ml x 50ml, 16ml x 125ml, 9ml x 250ml , 4ml x 500ml, 4ml x 1000ml, 1ml x 2000ml
Beakers e.g.: 36ml x 50ml , 25ml x 100ml, 16ml x 250ml, 9ml x 400ml, 4ml x 1000ml
Deep well assay plates e.g.: 6 x standard (more if stacking is an option)

Supplied with: Orbital Shaker Sea Star® incl. universal attachement, universal power supply, non-slip rubber mat and 8 elastic ties

Specifications

Type of movement:	orbital
Orbit diameter:	19.2mm
Maximum load:	4.5kg
Speed range:	20 to 300rpm (adjustable)/1rpm increments
Ambient conditions:	4 to 40°C; 20% to 80% RH, non-condensing
Speed display:	digital
Timer range:	0 to 49 hours/1 second increments
Power supply:	100 to 240 V, 50/60 Hz
Platform interior dimensions:	279 x 279mm
Overall dimensions (WxDxH):	314 x 305 x 183mm

Description	Max. Load kg	PK	Cat. No.
Digital orbital shaker Sea Star®, complete	4.5	1	**9.839 701** 1
Spare rubber mat		1	**9.839 702**
Spare ties, elastic		8	**9.839 703**
Spare power adapter		1	**9.839 704**

2



2 Orbital Shaker PSU-10i

Grant

Microprocessor controlled shaking platform providing smooth and quiet horizontal orbital motion for mixing in bottles, flasks and beakers.
- Variable shaking speed: 50rpm to 450rpm
- Loads up to 3kg
- Continuous or timed operation with automatic switch-off
- Reliable direct drive system
- Automatic load balancing system
- The five interchangeable accessory platforms enable a wide choice of vessels to be used, including bottles, flasks and beakers, dishes, boxes and petri-dishes.

Specifications

Type of movement:	orbital
Orbit diameter:	10mm
Maximum load:	3kg
Speed range:	50 to 450rpm/10rpm increments
Timer range:	1min to 96 hours or continuous
Overall dimensions (WxDxH):	220 x 205 x 90mm
Power supply:	100 - 240V, 50/60Hz

Type	Max. Load kg	PK	Cat. No.
PSU-10i	3.0	1	**9.721 019**

Accessories for Orbital shaking platform PSU-10i

Grant

Type	Description	PK	Cat. No.
Bio PP-4	Flat platform, working area 230 x 230mm	1	**9.721 018**
PUP-12	Universal platform, working area 270 x 195mm	1	**9.721 021**
P12-100	Platform with clamps for 12 x 100ml flasks / 150ml beakers	1	**9.721 023**
P6-250	Platform with clamps for 6 x 250ml flasks / 400ml beakers	1	**9.721 024**
P16-88	Platform with spring holders for 88 tubes up to 30mm	1	**9.721 049**

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9.721 021

2 Orbital Shaker PSU-20i

Grant

Powerful and efficient microprocessor controlled, multi-functional orbital shaker providing all that is required to mix your samples: rotation, reciprocation and vibration. This enables optimisation of the mixing whether in flasks, beakers, Petri dishes or other laboratory vessels.

- Orbital motion (20 to 250rpm), reciprocation (20 to 250rpm) and vibration functions all in one product
- Loading capacity: 8kg
- Fully programmable sequence that can use one or all the functions
- 6 interchangeable platforms for vessels up to 1000ml including a multi-level platform to hold a large number of various microplates, Petri dishes and culture bags.
- Reciprocal rotation: 0 to 360° turning angle, in 30 degree steps
- Vibration: 0 to 5° turning angle, 1 degree steps

2



Type	Max. Load kg	PK	Cat. No.
PSU-20i	8.0	1	**6.256 816**

3 Accessories for Orbital shaker PSU-20i

NEW!

Grant

Type	Description	PK	Cat. No.
PUP-330	Universal plattform with adjustable bars	1	**9.721 081**
PP-20	Flat platform with non-slip mat, 400 x 360mm	1	**6.256 809**
P30-100	Platform with clamps for 30 x 100 ml flasks	1	**9.721 061**
P16-250	Platform with clamps for 16 x 250 ml flasks	1	**9.721 062**
P9-500	Platform with clamps for 9 x 500 ml flasks	1	**9.721 063**
P6-1000	Platform with clamps for 6 x 1000 ml flasks	1	**9.721 064**

3



4 Orbital Shaker MO10

Hettich Benelux

The Orbital Shaker works with an orbital shaking motion.
Application areas for this device are life science, diagnostics, food science and chemics. It's rock-solid metal housing, the large accessories range and excellent price make the Orbital Shaker a real all-rounder.

Specifications

Speed:	50 to 400rpm
Timer:	0 to 120min
Max. capacity:	10kg
Platform dimensions (L x W):	350 x 400mm
Overall dimensions (WxDxH):	410 x 570 x 140mm
Power supply:	230V, 50Hz

4



Type	Max. Load kg	PK	Cat. No.
Orbital Shaker MO10	10.0	1	**9.777 253**
Orbital Shaker MO10 CH	10.0	1	**9.777 292**

Further power connectors on request.

Accessories for Orbital shaker MO10

Hettich Benelux

Description	PK	Cat. No.
Non-slipping Platform, 350 x 400mm	1	**9.777 254**
Universal Platform with 5 rollers, 350 x 400mm	1	**9.777 256**
Platform fastening for Erlenmeyer clips	1	**9.777 259**
Erlenmeyer Clip 250ml	1	**9.777 262**
Erlenmeyer Clip 500ml	1	**9.777 263**

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9.777 254

1



1 2 Rocking Shaker SSM3/SSM4

Stuart

- Small space saving design, ideal for personal use
- Gentle rocking action
- Choice of two models: 3D gyratory action SSM3 and See-saw wave action SSM4
- Digital speed control and built-in timer
- Optional tier system available to increase capacity

These compact rockers are ideal where gentle mixing is required. There is a choice of two models:
Model SSM3 provides a 3D gyratory motion, ideal for low foaming agitation, DNA extractions, staining and de-staining procedures etc. The tilt angle can be adjusted to any position by hand to optimise mixing of vessels.
Model SSM4 has a see-saw rocking action that creates a wave motion within vessels such as culture flasks, Petri dishes etc.
Both models are supplied with a non-slip mat and have digital selection of both speed and time.
An accessory tier system is available. Fitted in seconds, without the need for tools, it triples the available space for samples.
With BioCote, silver-based, antimicrobial protection.

2

BioCote

Technical Specifications	**SSM3/SSM4**
Rocking action:	3D gyratory/See-saw wave
Platform dimensions (W x D):	235 x 235mm/235 x 235mm
Speed range:	5 to 70rpm/5 to 70rpm
Angle of tilt:	3 to 12°/7°
Angle adjustable:	Yes by hand/No
Maximum load:	3kg/3kg
Overall dimensions (WxDxH):	240 x 300 x 165mm/240 x 300 x 150mm
Net weight:	5kg/5kg
Electrically supply:	230V 50Hz, 50W

Type	Description	Max. Load kg	PK	Cat. No.
SSM3	Rocker, gyratory, mini	3.0	1	**9.728 820**
SSM4	Rocker, see-saw, mini	3.0	1	**9.728 821**

3



9.728 830

4



9.728 831

5 Shaker SSM1

Stuart

- Smooth orbital shaking action
- Built-in digital timer
- Variable speed control 30 to 300rpm
- Supplied with non-slip mat for microplates etc.
- Optional accessory cradle system for flasks and bottles

The compact SSM1 provides a smooth uniform circular motion with an orbit of 16mm. It is supplied with a non-slip mat that can hold up to four microplates or diagnostic cards. Alternatively, an accessory cradle system is available that can accommodate a variety of vessels including flasks, bottles or beakers via four rubber securing bars. It will hold up to: 4 x 250ml or 2 x 500ml or 1 x 1000ml Erlenmeyer Flasks or bottles.
Speed is variable from 30rpm to 300rpm. Once set on the digital display, the shaking speed is effectively maintained even over long periods of time. Shaking times can be set to run for 1 second to 9 hours on the built-in digital timer, or the unit can also be set for continuous operation.
With BioCote, silver-based, antimicrobial protection.

Technical Specifications	
Platform dimensions (W x D):	220 x 220mm
Speed range:	30 to 300rpm
Orbit diameter:	16mm
Maximum load:	3kg
Overall dimensions (WxDxH):	240 x 300 x 140mm
Net weight:	5kg
Supply requirement:	230V, 50Hz, 50W

Type	Description	Max. Load kg	PK	Cat. No.
SSM1	Shaker, orbital, mini	3.0	1	**9.728 830** 3
SSM1/1	Accessory cradle with 4 securing bars		1	**9.728 831** 4

Attachments are not included. - Please order separately.

5

BioCote

E & OE.

2 Shakers, large platform, SSL1/SSL2

Stuart

- available with orbital or reciprocating action
- digital speed selection: SSL1 to 300rpm with soft start, SSL2 to 250rpm
- built-in digital timer
- reliable, quiet running mechanism
- fully adjustable cradle system



1

9.728 840

These lab scale platform shakers have powerful yet quiet shaking mechanisms and have been designed for trouble-free, continuous use. The cradle type platforms have vour rubber cushioned horizontal securing bars which can be easily adjusted both vertically and horizontally to hold most sizes and types of vessel, including flasks, bottles and beakers. For example, they will accommodate the following Erlenmeyer flasks or bottles: 12 x 250ml or 9 x 500ml or 6 x 1000ml or 2 x 2000ml. Speed is continuously adjustable and is set digitally. The speed is accurately maintained, even over long runs. A built-in digital timer allows shaking times from 1 to 999 minutes to be set. Alternatively the unit can be set for continuous operation.
With BioCote silver based antimicrobial protection.

2

Technical Specifications	**SSL1/SSL2**
Platform dimensions (W x D):	335 x 335mm
Speed range:	30 to 300rpm/25 to 250rpm
Orbit/stroke:	16mm/20mm
Maximum loading:	10kg
Overall dimensions (WxDxH):	360 x 420 x 270mm
Net weight:	11kg
Supply requirements:	230V, 50Hz, 50W

Type	Description	Max. Load kg	PK	Cat. No.
SSL1	Shaker, orbital, large platform	10.0	1	**9.728 840** 1
SSL2	Shaker, reciprocating, large platform	10.0	1	**9.728 841**
SSL1/1*	Accessory platform 510 x 510 mm with twelve rubber securing bars		1	**9.728 842**
SSL1/2	Accessory flat platform 350 x 350 mm without cradle		1	**9.728 843**

* For use with SSL1 only.

3 Linear and Orbital shaker RS-OS /RS-LS series

Phoenix Instrument

A compact, orbital and linear shaker with ideal swivel motion, for a maximum shaking weight of 2.5kg and 7.5kg. The shakers can be set up individually by using the comprehensive range of accessories.

Features at a glance RS-OS 10/20 - RS-LS10/20:

- compact shaker for a maximum shaking weight of 2.5 or 7.5 kg
- Backlight LCD display for speed and timer adjustment.
- Speed ,time and operating mode can be viewed simultaneously
- Comprehensive accessories
- Electronic time switching clock: control time or continuous operation mode
- PC control via RS232 interface, the special Shaker PC software can realise the setting of instrument parameters on the PC and the display of working curves real-time.
- 2 years warranty

3



Please order attachments and further accessories separately.

Specifications

Type of movement/Orbit diameter:	
RS-OS 10/RS-OS 20	orbital/4mm
RS-LS 10/RS-LS 20	linear/10mm
Maximum load:	
RS-OS 10/RS-LS 10	2.5kg
RS-OS 20/RS-LS 20	7.5kg
Voltage:	100 to 240 VAC, 50/60 Hz
Power:	30W
Speed display:	digital
Interface:	RS-232
Housing IP rating	IP 21

Type	Description	Rotation speed rpm	Dimensions mm	Weight kg	Max. Load kg	PK	Cat. No.
RS-OS 10	digital orbital shaker	100-800	340 x 300 x 100	8.1	2.5	1	**9.852 120**
RS-OS 20	digital orbital shaker	100-500	420 x 370 x 100	13.5	7.5	1	**9.852 121**
RS-LS 10	digital linear shaker	100-350	340 x 300 x 100	8.1	2.5	1	**9.852 122**
RS-LS 20	digital linear shaker	100-350	420 x 370 x 100	13.5	7.5	1	**9.852 123**

1



1 Accessories linear and orbital shaker RS-OS/RS-LR series

NEW!

Phoenix Instrument

Type	Description	PK	Cat. No.
RSS-E 100	universal attachment with clamping rolls for OS/LS 10	1	**9.852 125**
RSS-E 105	base plate for OS/LS 10 to be used with Erlenmeyer fixing clips	1	**9.852 126**
RSS-E 110	universal attachment with vertical adjustable clamping rolls for OS/LS 10	1	**9.852 127**
RSS-E 115	dish attachment for OS/LS 10	1	**9.852 128**
RSS-E 200	universal attachment with clamping rolls for OS/LS 20	1	**9.852 129**
RSS-E 205	base plate for OS/LS 20 to be used with Erlenmeyer fixing clips	1	**9.852 130**
RSS-E 210	universal attachment with vertical adjustable clamping rolls for OS/LS 20	1	**9.852 131**
RSS-E 220	dish attachment with tensioning belt for OS/LS 20	1	**9.852 146**
RSS-E 120	fixing clip for Erlenmeyer flask 25 ml volume	1	**9.852 133**
RSS-E 125	fixing clip for Erlenmeyer flask 50 ml volume	1	**9.852 134**
RSS-E 130	fixing clip for Erlenmeyer flask 100 ml volume	1	**9.852 135**
RSS-E 135	fixing clip for Erlenmeyer flask 200/250 ml volume	1	**9.852 136**
RSS-E 140	fixing clip for Erlenmeyer flask 500 ml volume	1	**9.852 137**
RSS-E 145	clamping roll for universal attachment for OS/LS 10	1	**9.852 138**
RSS-E 245	clamping roll for universal attachment for OS/LS 20	1	**9.852 139**

2



3



2 3 Shakers, 3000 series

GFL

Housing made of high impact strength polystyrene, finished in off-white. The base plate is made of electrolytically galvanized, powder-coated sheet steel, the shaking platform of anodised aluminium, equipped with four plastic pins (models 3005 to 3018 and 3023) for secure attachment of accessory equipment (holds almost all shapes of vessels used in standard laboratory applications). Models 3019/3020: Shaking platform made of electrolytically galvanized, powder-coated sheet steel, equipped with four support rods with screw-type clamps made of stainless steel. Clearly laid out control panels for easy operation and an a.c. motor with overload protection drives the unit. Stepless, electronic speed control, with soft-start and quiet operation. Constant speed maintained during continuous operation, independent of load. Suitable for use in laboratories, incubation and controlled environment rooms at ambient temperatures between +10°C and +50°C. The devices are low-maintenance, have the German seal for proven Safety (GS) and the CE mark.

Analogue control models (1)
3005/3006/3011/3013/3015/3016/3019/3023.
Timer for operations up to 60min. and continuous operation.

Digital control models (2)
3012/3014/3017/3018/3020.
Microprocessor controlled, with interface RS232. Timer: 1 min. up to 99:59 h or continuous operation. Speed and remaining time indicated by two LCD readouts.

The following shaker types are available: Orbital shakers, horizontal shaker, rocking shakers, tumbling shakers and overhead shakers. Please see the different motion types of the 3000 series shakers in the relevant chapters.

4



4 Circle-Shaker 3005

GFL

With orbital motion.
Space-saving, universally applicable. Either for gentle movement of liquids or vigorous mixing. Applications are in biology and microbiology laboratories and in diagnostic test reactions. Compact, low-wear counterbalanced drive mechanism, ensuring high stability for continuous operation.

Specifications

Overall (WxDxH):	380mm x 510mm x 140mm
Platform (W x D):	330mm x 330mm
Max. loading:	max. 8kg
Type of movement:	orbital
Orbit:	10mm
Shaking speed:	20rpm to 500rpm
Supply requirements:	230V 50/60Hz, 65 W
Net/Gross weight:	10kg/12kg
Timer:	up to 60 min or continuous operation

Type	Max. Load kg	PK	Cat. No.
3005	8.0	1	**9.837 905**

E & OE.

1 Orbital shakers 3015 and 3017



With orbital motion. *GFL*
For gentle motion or vigorous shaking of liquids. Quiet operation. For universal application, e.g. in biochemistry, biotechnology, microbiology, bacteriology and virology, especially suitable for growing microorganisms, cell and tissue cultures. Compact, low-wear counterbalanced drive mechanism for orbital shaking motion.

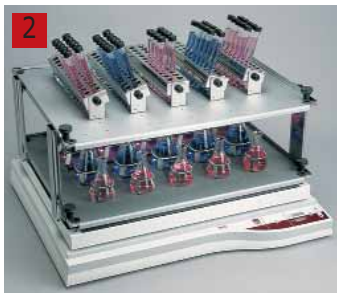
Technical Specifications

Overall (WxDxH):	510 x 625 x 142mm
Platform (W x D):	450 x 450mm
Max. loading:	15kg
Type of movement:	Orbital
Orbit:	30mm
Shaking speed:	20 to 300rpm.
Supply requirements	
3015:	230V 50/60Hz, 65W
3017:	230V 50 or 60Hz, 65W*
Net/gross weight:	18/22kg
Timer:	
3015:	up to 60 min. or continous operation
3017:	1 min up to 99:59 hours or continous operation
Model 3017:	microprocessor controlled, with RS-232 interface

Type	Max. Load kg	PK	Cat. No.
3015	15.0	1	**9.837 915**
3017**	15.0	1	**9.837 917**

* Please specify when placing your order!
**Speed and remaining time indicated by 2 LC-displays.

2 Orbital shakers 3019 and 3020



With orbital motion. *GFL*
With a large shaking tray for accommodating heavier loads. Well-suited for gentle motion or vigorous mixing of the most varying liquids, thanks to its useful shaking amplitude and the option of adjusting its speed. Quiet, universally applicable, e.g. for analytical or diagnostic applications in the pharmaceutical industry, chemistry, biology, or in plant breeding or nutritional applications, in the growing of microorganisms, cell and tissue cultures. Compact, low-wear counterbalanced drive mechanism, ensuring high stability and dependability.
(3020 with RS 232 interface)

Technical Specifications

Overall (WxDxH):	745 x 730 x 135mm
Platform (W x D):	676 x 540mm
Max. loading:	30kg
Type of movement:	Orbital
Orbit:	32mm
Shaking speed:	20 to 250rpm, when the rack frame is used 20 to 200rpm
Supply requirements:	
3019:	230V 50/60Hz, 90W
3020:	230V 50 or 60Hz, 90W*
Net/gross weight:	34/40 kg
Timer:	
3019:	Up to 60 min. or continuous operation
3020:	1 min. up to 99:59 h. or continous operation
Model 3020:	microprocessor controlled, with a built-in RS-232 interface

Type	Max. Load kg	PK	Cat. No.
3019	30.0	1	**9.837 919**
3020**	30.0	1	**9.837 920**

* Please specify when placing your order.
**Speed and remaining time indicated by 2 LC-displays.



1 Shaking Trays

NEW!

GFL

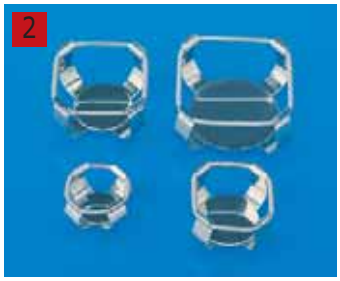
Made of stainless steel with holes to accommodate clamps for Erlenmeyer flasks and other accessory equipment.
Type 3950: for Shakers 3005 and 3006.

Type 3966: for Shakers 3011 to 3018 (**see also Shaking Incubator 3031**).

Type 3980: for Shakers 3019/3020 (**see also Shaking Incubator 3033**).

Made of 3mm thick anodised aluminium, with holes to accommodate clamps for Erlenmeyer flasks and other accessory equipment.

Type	For Type	PK	Cat. No.
3950	3005 / 3006	1	**9.837 972**
3966	3011 - 1018 / 3031	1	**9.837 936**
3980	3019 / 3020 / 3033	1	**9.837 980**



2 Clamps for Erlenmeyer Flasks

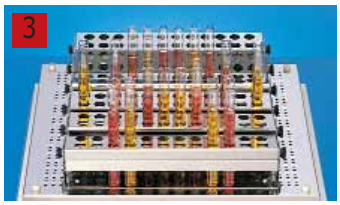
NEW!

GFL

Stainless steel, for screwing onto shaking tray 3950, 3966 and 3980, supplied with attachment fittings (**see also Shaking Incubators 3031-3033**).

Type	For flasks ml	Clips required shaker Model 3005, 3006	Clips required shaker Model 3011 to 3018	Clips required shaker Model 3019, 3020	PK	Cat. No.
3983	25	45	79	99	1	**9.837 983**
3984	50	25	49	99	1	**9.837 984**
3985	100	16	36	50	1	**9.837 985**
3986	200	12	22	26	1	**9.837 986**
3987	250-300	9	16	26	1	**9.837 987**
3988	500	9	12	26	1	**9.837 988**
3989	1000	4	9	12	1	**9.837 989**
3990	2000	2	4	9	1	**9.837 991**

Other clamps on request



3 Test tube rack

GFL

For **Shakers 3005 and 3006, 3015 to 3020 and Shaking Incubator 3031 (Tray 3966), 3032 (Tray 3970/3 racks) and 3033 (Tray 3980).**
Stainless steel, for max. 24 test tubes, 12mm to 17mm diameter, perforated section can be tilted by 90°, with clamping springs for secure grip and silent shaking of tubes. For screwing onto **shaking trays 3950, 3966 and 3980.**

For trays:	Number of racks:
3950	3
3966	6
3980	9

Type	PK	Cat. No.
3953	1	**9.837 974**



4 Clamps for Separating Funnels

Stainless steel, for screwing onto base trays 3950 and 3966.

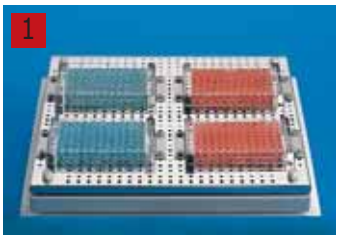
GFL

Type	Capacity ml	Max. clips per platform	Neck width	PK	Cat. No.
3957	50	6 / 11	19 / 26 (ISO / Squibb)	1	**9.837 975**
3958	100	6 / 11	19 / 26 (ISO / Squibb)	1	**9.837 976**
3959	250	4 / 8	19 / 26 (ISO / Squibb)	1	**9.837 977**
3955	250	4 / 8	29 / 32 (conical)	1	**9.837 970**
3956	500	3 / 6	29 / 32 (ISO / Squibb)	1	**9.837 978**

Other clamps on request

E & OE.

1 Holding Frame for a Test Plate



Stainless steel, for securing a test plate. Screws onto shaking trays 3950, 3966 and 3980. **See also Shaking Incubator 3031, (Tray 3966), 3032 (Tray 3970/6 microplates) and 3033 (Tray 3980)**. Supplied with attachment material. *GFL*

For trays:	Number microtitration plates:
3950	4
3966	6
3980	15

Type	For Type	PK	Cat. No.
3910	3005/3006, 3015-3018, 3019/3020	1	**9.837 979**

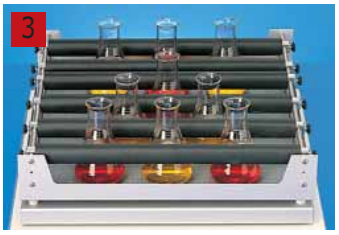
2 Non-slip Mats



Used as a shaking platform. For the slow moving of e.g. nutrient media solutions in Petri dishes and flasks. **Type 3965 also for Shaking Incubator 3031**. *GFL*

Type	For Type	Width mm	Length mm	PK	Cat. No.
3951	3005 / 3006	300	300	1	**9.837 971**
3965	3011 - 3018 / 3031	420	420	1	**9.837 935**

3 Universal Mounts



For secure attachment of various shaking vessels. *GFL*
Type 3952 for Shakers 3005 and 3006. With 4 rubber coated bars.

Type 3967 for Shakers 3011/3012, 3013/3014, 3015/3017, 3016/3018 (**see also Shaking Incubator 3031**). With 6 rubber coated bars.

Type 3982 for Shakers 3019/3020. It consists of 2 longitudinal bars and 6 transverse bars. Screw-type clamps are used for adjusting the longitudinal bars vertically and the transverse bars horizontally.

Type	For Type	PK	Cat. No.
3952	3005 / 3006	1	**9.837 973**
3967	3011 - 3018 / 3031	1	**9.837 937**
3982	3019 / 3020	1	**9.837 982**

4 Platform Frame



For **Shakers 3011 to 3014.** *GFL*
With 4 levels, with top rims, 3 levels removable. Frame and trays made of stainless steel.
Distance between trays 60mm. Grooved rubber mats on trays to ensure secure grip of objects.

Type	For Type	PK	Cat. No.
3968	3011 - 3014	1	**9.837 938**

5 Rack Frame



For **Shakers 3019/3020**. *GFL*
For doubling the capacity by accomodating 2 **shaking trays 3980**. Distance between trays 205mm. The bottom tray can be loaded with flasks up to a max. of 500ml.

Type	For Type	PK	Cat. No.
3981	3019 / 3020	1	**9.837 981**

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2



1 2 Orbital shaker, KS 130 basic/ Package

IKA

Small, quiet running, low-friction shaker with effective orbital movement and a maximum loading of 2kg.
- Electronic speed control and timer adjustment
- LED scale bar speed and time display
- Large selection of attachments for different container types and sizes
- Attachments not included - Please order separately.

Package includes: KS 130 basic, adhesive mat STICKMAX, AS 130.3 Dish attachment

KS 130 control available on request.

Specifications

Shaking movement:	orbital
Orbit:	4mm
Max. capacity including attachment:	2kg
Motor rating input/output:	45 /10W
Speed range:	80 to 800rpm
Speed indication:	LED scale bar
Timer:	5 to 50 min/continuous
Dimensions (WxDxH):	270 x 316 x 98mm
Weight:	8.8kg
Housing IP rating to DIN EN 60529:	IP21
Power source:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	Max. Load kg	PK	Cat. No.
KS 130 basic	2.0	1	**9.838 150**
KS 130 basic Package (incl. adhesive mat STICKMAX, AS 130.3 Dish attachment)	2.0	1	**9.838 151**

Accessories for orbital shaker KS 130

IKA

AS 130.1 Universal attachment
Able to hold most types of container using adjustable tension rollers

AS 130.2 Fixing clip platform
For shaking round bottom vessels, volumetric and Erlenmeyer flasks. Supplied without clips

AS 130.3 Petri dish attachment
For gentle mixing and suspension of cell cultures or growth media in petri dishes, culture bottles and containers. With integral anti-slide mat (PP).

AS 130.4 Test tube holder
For intensive vibrating of small tubes, test tubes, cuvettes, centrifuge tubes.

Type	Description	Dimensions (W x D x H) mm	PK	Cat. No.
AS 130.1	Universal attachment	325 x 234 x 88	1	**9.838 160** 3
AS 130.2	Fixing clip platform*	230 x 230 x 24	1	**9.838 161** 4
AS 130.3	Petri dish attachment	420 x 270 x 32	1	**9.838 162** 5
AS 130.4	Test tube holders	220 x 230 x 95	1	**9.838 163** 6

* Clips AS 2.1 (9.838 091), AS 2.2 (9.838 092), AS 2. 3 (9.838 093), AS 2.4 (9.838 094), AS 2.5 (9.838 095) please order separately.

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9.838 160

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9.838 161

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9.838 162

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9.838 163

E & OE.

Orbital shaker, KS260 control/ Package

IKA

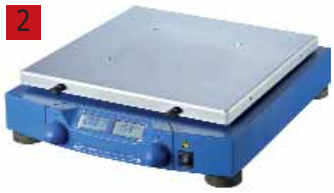
Compact, low-level, platform shaker with highly effective, orbital motion, maximum capacity 7.5kg.
- Electronic speed control and timer adjustment
- Separate digital speed and timer displays with operating mode indication
- Timer: 0 to 9 h 59 min or continuous operation
- Controlled stop-point positioning function (enables use in automated robotic sampling routines)
- All functions can be controlled and documented using labworldsoft® software
- Special variant with reverse rotation function available on request
- Large selection of attachments enable use with a wide variety of vessel shapes and sizes
- Attachments are not included - Please order separately

1



9.838 074

2



9.838 175

3



9.838 176

Specifications

Shaking motion:	orbital
Orbit:	10mm
Max. loading (incl. attachment):	7.5kg
Motor rating input/output:	45/10W
Speed range:	10 to 500rpm
Speed indication:	digital
Timer:	1 to 599 min./continuous
Dimensions (WxDxH):	360 x 420 x 98mm
Weight:	8.8kg
Housing IP rating to DIN EN 60529:	IP21
Interface:	RS232/analogue
Supply requirements:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	Max. Load kg	PK	Cat. No.	
KS 260 basic	7.5	1	**9.838 074**	1
KS 260 basic Package (incl. 2 x STICKMAX, AS 260.3 Dish attachment)	7.5	1	**9.838 075**	
KS260 control	7.5	1	**9.838 175**	2
KS 260 control Package (incl. 2 x STICKMAX, AS 260.3 Dish attachment)	7.5	1	**9.838 176**	3

4 Orbital shaker, KS501 digital/Reciprocating shaker, HS 501 digital

IKA

Low-profile laboratory shaker with large platform and 15kg load capacity. With continuously adjustable speed range: 0 to 300rpm, digital display and timer. Continuous operation is guaranteed even under extreme loads. Requires accessory attachments for operation (these are not supplied)

4



Orbital shaker, KS501 digital
Ideally suited for vessel sizes over 250ml, e.g. round bottom flasks, erlenmeyer flasks, culture flasks, bottles etc. Developed for biological and microbiological growth tests and for production of stock solutions.

Reciprocating shaker, HS 501 digital
Ideally suited for flasks, measuring cylinders and particularly separating funnels. Developed for universal applications.

Specifications

Shaking movement	
KS 501 digital:	orbital
HS 501 digital:	reciprocal
Orbital diameter:	30mm
Max. shaking weight (with attachment):	15kg
Motor rating input/output:	70/19W
Speed range:	0 to 300rpm
Timer:	0 to 56 mins./continuous
Dimensions (WxDxH):	505 x 585 x 120mm
Weight (without attachment):	26kg
Protection class acc. to DIN EN 60529:	IP21
Supply requirements:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	Max. Load kg	PK	Cat. No.
KS 501 digital	15.0	1	**9.838 040**
HS 501 digital	15.0	1	**9.838 041**
HS 501 digital UK	15.0	1	**6.203 237**

Optional accessories: Shaking attachments: AS 501.1, AS 5014, AS 501.5, Non-slip mat STICKMAX

Shakers, KS/HS501 digital, accessories

For orbital shaker Ika KS501 digital and reciprocating shaker Ika HS501 digital. *IKA*

AS 501.1 Universal attachment
For a variety of vessels (flasks, beakers etc.) with volumes of at least 50ml (ideally greater than 250ml). With tension rollers that can be mounted on 2 levels.
Usable area: 420mm x 420mm.
Dimensions (WxDxH) 480mm x 500mm x 120mm.

AS 501.2 Separating funnel attachment
Only for HS 501 digital. For shaking separating funnels from 50ml to 250ml capacity.
Comprises basic holder, 6 tension rollers, 2 x 6 clamping devices.
Suitable for 12 x 50ml, 10 x 100ml or 6 x 250ml separating funnels.

AS 501.3 Separating funnel attachment
For HS 501 digital only. For shaking separating funnels of 500ml to 2000ml. Comprises basic holder, 4 tension rollers, 2 x 4 clamping devices.
Suitable for 4 x 500ml, 3 x 1000ml or 2 x 2000ml separating funnels.

AS 501.6 Separating funnel attachment
Only for HS 501 digital. For shaking 4 x 1000ml separating funnels.
Comprising basic holder, 4 clamping devices, 4 support bars and 8 ground cone section holders.
Dimensions (W x D x H) 480mm x 505mm x 225mm, weight 5500g.

AS 501.4 Gridded clip attachment
(Without spring clips). For shaking round bottom, flat-bottom, pear-shaped, volumetric and erlenmeyer flasks etc. Minimum volume 25ml. Dimensions (W x D x H) 475mm x 460mm x 95mm, weight 2640g.
Capacity: Number of fixing clips (volume held) 110 x AS 2.1 (25ml), 55 x AS 2.2 (50ml), 35 x AS 2.3 (100ml), 16 x AS 2.4 (250ml), 12 x AS 2.5 (500ml), 8 x AS 2.6 (1000ml)

AS 501.5 Dish attachment
For the gentle movement of petri dishes, but also suitable for gentle mixing in vessels with large, flat bottoms (wide mouth erlenmeyers, beakers). Fitted with a non-slip, plastic mat.
Dimensions (W x D x H) 450mm x 450mm x 45mm, weight 1120g. 4 clamping devices with rod AS 1.7.
Suitable for 4 x 500ml, 3 x 1000ml or 2 x 2000ml separating funnels.

Type	Description	PK	Cat. No.
AS 501.1	Universal attachment	1	**9.838 046** 1
AS 501.2	Separating funnel attachment	1	**9.838 047** 2
AS 501.3	Separating funnel attachment	1	**9.838 048** 3
AS 501.6	Separating funnel attachment	1	**9.838 045** 4
AS 501.4	Gridded clip attachment*	1	**9.838 050** 5
AS 501.5	Dish attachment	1	**9.838 049** 6

* Clips AS 2.1 (9.838 091), AS 2.2 (9.838 092), AS 2. 3 (9.838 093), AS 2.4 (9.838 094), AS 2.5 (9.838 095) please order separately.

1

9.838 046

2

9.838 047

3

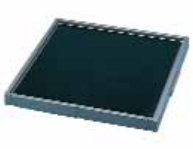
9.838 048

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7


7 Accessories for orbital and reciprocating shakers

Clamps for orbital shakers Ika KS 130 basic/control, KS 260 basic/control and reciprocating shakers Ika HS 260 basic/control, HS 501 digital, KS 501 digital, KS 4000 i/ic control. *IKA*

Type	For bottle ml	PK	Cat. No.
AS 2.1	25	1	**9.838 091**
AS 2.2	50	1	**9.838 092**
AS 2.3	100	1	**9.838 093**
AS 2.4	200/250	1	**9.838 094**
AS 2.5	500	1	**9.838 095**

E & OE.

2 Shakers, large platform, SSL1/SSL2

Stuart

- available with orbital or reciprocating action
- digital speed selection: SSL1 to 300rpm with soft start, SSL2 to 250rpm
- built-in digital timer
- reliable, quiet running mechanism
- fully adjustable cradle system

1



9.728 840

These lab scale platform shakers have powerful yet quiet shaking mechanisms and have been designed for trouble-free, continuous use. The cradle type platforms have vour rubber cushioned horizontal securing bars which can be easily adjusted both vertically and horizontally to hold most sizes and types of vessel, including flasks, bottles and beakers. For example, they will accommodate the following Erlenmeyer flasks or bottles: 12 x 250ml or 9 x 500ml or 6 x 1000ml or 2 x 2000ml. Speed is continuously adjustable and is set digitally. The speed is accurately maintained, even over long runs. A built-in digital timer allows shaking times from 1 to 999 minutes to be set. Alternatively the unit can be set for continuous operation.
With BioCote silver based antimicrobial protection.

2

BioCote

Technical Specification	**SSL1/SSL2**
Platform dimensions (W x D):	335 x 335mm
Speed range:	30 to 300rpm/25 to 250rpm
Orbit/stroke:	16mm/20mm
Maximum loading:	10kg
Overall dimensions (WxDxH):	360 x 420 x 270mm
Net weight:	11kg
Supply requirements:	230V, 50Hz, 50W

Type	Description	Max. Load kg	PK	Cat. No.
SSL1	Shaker, orbital, large platform	10.0	1	**9.728 840** 1
SSL2	Shaker, reciprocating, large platform	10.0	1	**9.728 841**
SSL1/1*	Accessory platform 510 x 510 mm with twelve rubber securing bars		1	**9.728 842**
SSL1/2	Accessory flat platform 350 x 350 mm without cradle		1	**9.728 843**

* For use with SSL1 only.

3 Linear and Orbital shaker RS-OS /RS-LS series

Phoenix Instrument

A compact, orbital and linear shaker with ideal swivel motion, for a maximum shaking weight of 2.5kg and 7.5kg. The shakers can be set up individually by using the comprehensive range of accessories.

Features at a glance RS-OS 10/20 - RS-LS10/20:

- compact shaker for a maximum shaking weight of 2.5 or 7.5 kg
- Backlight LCD display for speed and timer adjustment.
- Speed ,time and operating mode can be viewed simultaneously
- Comprehensive accessories
- Electronic time switching clock: control time or continuous operation mode
- PC control via RS232 interface, the special Shaker PC software can realise the setting of instrument parameters on the PC and the display of working curves real-time.
- 2 years warranty

3



Please order attachments and further accessories separately.

Specifications

Type of movement/Orbit diameter:	
RS-OS 10/RS-OS 20	orbital/4mm
RS-LS 10/RS-LS 20	linear/10mm
Maximum load:	
RS-OS 10/RS-LS 10	2.5kg
RS-OS 20/RS-LS 20	7.5kg
Voltage:	100 to 240 VAC, 50/60 Hz
Power:	30W
Speed display:	digital
Interface:	RS-232
Housing IP rating	IP 21

Type	Description	Rotation speed rpm	Dimensions mm	Weight kg	Max. Load kg	PK	Cat. No.
RS-OS 10	digital orbital shaker	100-800	340 x 300 x 100	8.1	2.5	1	**9.852 120**
RS-OS 20	digital orbital shaker	100-500	420 x 370 x 100	13.5	7.5	1	**9.852 121**
RS-LS 10	digital linear shaker	100-350	340 x 300 x 100	8.1	2.5	1	**9.852 122**
RS-LS 20	digital linear shaker	100-350	420 x 370 x 100	13.5	7.5	1	**9.852 123**

Accessories for RS-OS/RS-LS - please see page 470.


1


2

1 2 Shakers, 3000 series

GFL

Housing made of high impact strength polystyrene, finished in off-white. The base plate is made of electrolytically galvanized, powder-coated sheet steel, the shaking platform of anodised aluminium, equipped with four plastic pins (models 3005 to 3018 and 3023) for secure attachment of accessory equipment (holds almost all shapes of vessels used in standard laboratory applications). Models 3019/3020: Shaking platform made of electrolytically galvanized, powder-coated sheet steel, equipped with four support rods with screw-type clamps made of stainless steel. Clearly laid out control panels for easy operation and an a.c. motor with overload protection drives the unit. Stepless, electronic speed control, with soft-start and quiet operation. Constant speed maintained during continuous operation, independent of load. Suitable for use in laboratories, incubation and controlled environment rooms at ambient temperatures between +10°C and +50°C. The devices are low-maintenance, have the German seal for proven Safety (GS) and the CE mark.

Analogue control models (1)
3005/3006/3011/3013/3015/3016/3019/3023.
Timer for operations up to 60min. and continuous operation.

Digital control models (2)
3012/3014/3017/3018/3020.
Microprocessor controlled, with interface RS232. Timer: 1 min. up to 99:59 h or continuous operation. Speed and remaining time indicated by two LCD readouts.

The following shaker types are available: Orbital shakers, horizontal shaker, rocking shakers, tumbling shakers and overhead shakers. Please see the different motion types of the 3000 series shakers in the relevant chapters.


3

3 Horizontal-Shaker 3006

GFL

For gentle back and forth motion as well as intensive shaking of liquids, especially in separating funnels. Applications are in medical diagnostics or analysis, as well as for culturing micro-organisms, cell and tissue cultures. The stable, low-friction, counterbalanced drive mechanism ensures a reliable, continuous operation.

Technical Specifications

Overall (WxDxH):	380 x 510 x 140mm
Platform (W x D):	330 x 330mm
Max. loading:	8kg
Type of movement:	Reciprocating
Stroke:	20mm
Shaking speed:	20 to 300rpm.
Net/gross weight:	10/12kg
Timer:	up to 60 min. or continuous operation

Type	Max. Load kg	PK	Cat. No.
3006	8.0	1	**9.837 906**


4

4 Horizontal shakers 3016 and 3018

GFL

For vigorous and intensive shaking e.g. of clamped, recumbent flasks, mixing flasks or separating funnels. Quiet operation. The shaking platform's jerky, back and forth motion creates high turbulence, thus thoroughly mixing the media, e.g. when producing suspensions and emulsions. Applications are varied, e.g. medical diagnostics, foodstuffs or environmental analyses. Compact, low-wear, counterbalanced drive mechanism for reciprocal shaking motion. (3018 supplied with RS232 interface)

Technical Specifications

Overall (WxDxH):	510 x 625 x 145mm
Platform (W x D):	450 x 450mm
Max. loading:	15kg
Type of movement:	Reciprocating
Stroke:	30mm
Shaking speed:	20 to 300rpm.
Net/gross weight:	18/22kg
Timer:	
3016:	Up to 60 min. or contiunous operation
3018:	1 min. up to 99:59h. or continous operation

Type	Max. Load kg	PK	Cat. No.
3016	15.0	1	**9.837 916**
3018*	15.0	1	**9.837 918**

* Speed and remaining time indicated by 2 LC-displays.

Accessories for Model 3006/3016/3018 - please see page 472.

Horizontal shaker, HS 260 control

IKA

Compact, low-level, platform shaker with highly effective, reciprocating motion, maximum capacity 7.5kg.
- Electronic speed control and timer adjustment
- Separate digital speed and timer displays with operating mode indication
- Timer: 0 to 9 h 59 min or continuous operation
- Controlled stop-point positioning function (enables use in automated robotic sampling routines)
- All functions can be controlled and documented using labworldsoft® software
- Large selection of attachments enable use with a wide variety of vessel shapes and sizes
- Attachments are not included - Please order separately

1



9.838 063

2



9.838 185

Specifications

Shaking motion:	reciprocating
Stroke:	20 mm
Max. loading incl. attachment:	7.5 kg
Motor rating input/output:	45W/10 W
Speed range:	10 to 300 rpm
Speed indication:	digital
Time switch clock:	1 h 599 min/continuous
Dimensions (WxDxH):	360 x 420 x 100 mm
Weight:	8.8 kg
Housing IP rating to DIN EN 60529:	IP 21
Interface:	RS 232/analogue
Power source:	230 V 50/60Hz

Tested to DIN EN IEC 61010-1.

Type	Max. Load kg	PK	Cat. No.	
HS260 basic	7.5	1	**9.838 063**	1
HS 260 control	7.5	1	**9.838 185**	2

Accessories for orbital shakers HS/KS 260

IKA

AS 260.1 Universal attachment
Able to hold most types of container using adjustable tension rollers. Surface: 320 x 320mm

AS 260.2 Fixing clip platform
For shaking round bottom vessels, volumetric and Erlenmeyer flasks. Supplied without clips.
Max. number of clips (capacity held): 56 x AS 2.1 (25ml), 23 x AS 2.2 (50ml), 23 x AS 2.3 (100ml), 11 x AS 2.4 (250ml), 9 x AS 2.5 (500ml), 5 x AS 2.6 (1000ml)

AS 260.3 Petri dish attachment
For gentle mixing and suspension of cell cultures or growth media in petri dishes, culture bottles and containers. With integral anti-slide mat (PP).

AS 260.5 Separating funnel attachment
For HS 260 basic and control
For shaking, elution, extraction, gassing out, dissolving, enriching. The 3 tension rollers supplied are height-adjustable to accommodate different separating funnel sizes. The separating funnels are secured by means of O-rings (6 O-rings supplied).
Capacity: Number of funnels (pear shaped) x volume 6 x 50ml, 5 x 100ml, 3 x 250ml, 3 x 500ml

Type	Description	Dimensions (W x D x H) mm	PK	Cat. No.	
AS 260.1	Universal attachment	425 x 335 x 135	1	**9.838 080**	3
AS 260.2	Gridded clip platform attachment*	330 x 330 x 24	1	**9.838 191**	4
AS 260.3	Petri dish attachment	410 x 370 x 32	1	**9.838 192**	5
AS 260.5	Separating funnel attachment	334 x 425 x 145	1	**9.838 193**	6

* Clips AS 2.1 (9.838 091), AS 2.2 (9.838 092), AS 2. 3 (9.838 093), AS 2.4 (9.838 094), AS 2.5 (9.838 095) please order separately.

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9.838 080

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9.838 192

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9.838 193

1



1 Orbital shaker, KS501 digital/Reciprocating shaker, HS 501 digital

IKA

Low-profile laboratory shaker with large platform and 15kg load capacity. With continuously adjustable speed range: 0 to 300rpm, digital display and timer. Continuous operation is guaranteed even under extreme loads. Requires accessory attachments for operation (these are not supplied)

Orbital shaker, KS501 digital
Ideally suited for vessel sizes over 250ml, e.g. round bottom flasks, erlenmeyer flasks, culture flasks, bottles etc. Developed for biological and microbiological growth tests and for production of stock solutions.

Reciprocating shaker, HS 501 digital
Ideally suited for flasks, measuring cylinders and particularly separating funnels. Developed for universal applications.

Specifications

Shaking movement	
KS 501 digital:	orbital
HS 501 digital:	reciprocal
Orbital diameter:	30mm
Max. shaking weight (with attachment):	15kg
Motor rating input/output:	70/19W
Speed range:	0 to 300rpm
Timer:	0 to 56 mins./continuous
Dimensions (WxDxH):	505 x 585 x 120mm
Weight (without attachment):	26kg
Protection class acc. to DIN EN 60529:	IP21
Supply requirements:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	Max. Load kg	PK	Cat. No.
KS 501 digital	15.0	1	**9.838 040**
HS 501 digital	15.0	1	**9.838 041**
HS 501 digital UK	15.0	1	**6.203 237**

Optional accessories: Shaking attachments: AS 501.1, AS 5014, AS 501.5, Non-slip mat STICKMAX

2 3 Flask shaker SF1

Stuart

Creates a vigorous shaking action. With clamps to accept 8 flasks up to 500ml capacity.
With stepless variable speed control from 80 to 800 oscillations/min. and 10 to 60 minute timer with off and continuous run settings.
Electronic feedback control ensures a constant speed irrespective of the load. Overall 780mm x 270mm x 240mm (WxDxH). Weight 8.3kg. For 230V 50Hz single phase supplies.
Accessory side-arms are available for converting 9.950 372 to shake up to 12 flasks. Maximum load: 3L. Each side arm accepts six clamps. Supplied with 4 clamps.
With BioCote, silver-based, antimicrobial protection.

Type	PK	Cat. No.
SF1	1	**9.950 372**
Spare clamp	1	**9.950 373**
Accessory side arm	1	**9.950 374**

2



3

BioCote

E & OE.

1 Platform rocker PMR-100

Grant

Large capacity, adjustable angle and speed platform rocker, providing soft or intensive side to side rocking for optimal mixing of samples. Suitable for Life Science applications.
Ideal for minigel destaining after electrophoresis, conducting reactions of Northern, Southern and Western blots, immunoblots, hybridisation washes, cell culture, visualisation of blots, immunostaining, protein electrophoresis. For use in cold rooms or incubators with ambient operating temperature range +4°C to +40°C. Continuous or timed operation, with automatic switch-off. Integral timer: 1min to 99h 59min.

Specifications

Type of movement:	rocking
Shaking diameter (adjustable):	0 to 10° (fixed at 10° over 50rpm)
Permissible shaking weight (incl. attachment):	5kg
Power consumption:	13W
Speed:	1 to 99rpm
Speed display:	LCD
Dimensions platform (WxDxH):	460 x 360mm
Dimensions (WxDxH):	400 x 480 x 250mm
Weight:	13kg
Protection class acc. to DIN EN 60529:	IP20
Power supply:	12V

Type	Max. Load kg	PK	Cat. No.
PMR-100	5.0	1	**9.721 015**

1



2 3 Rocking Shaker SSM3/SSM4

Stuart

- Small space saving design, ideal for personal use
- Gentle rocking action
- Choice of two models: 3D gyratory action SSM3 and See-saw wave action SSM4
- Digital speed control and built-in timer
- Optional tier system available to increase capacity

These compact rockers are ideal where gentle mixing is required. There is a choice of two models:
Model SSM3 provides a 3D gyratory motion, ideal for low foaming agitation, DNA extractions, staining and de-staining procedures etc. The tilt angle can be adjusted to any position by hand to optimise mixing of vessels.
Model SSM4 has a see-saw rocking action that creates a wave motion within vessels such as culture flasks, Petri dishes etc.
Both models are supplied with a non-slip mat and have digital selection of both speed and time.
An accessory tier system is available. Fitted in seconds, without the need for tools, it triples the available space for samples.
With BioCote, silver-based, antimicrobial protection.

2



3

BioCote

Technical Specification **SSM3/SSM4**

Rocking action:	3D gyratory/See-saw wave
Platform dimensions (W x D):	235 x 235mm/235 x 235mm
Speed range:	5 to 70rpm/5 to 70rpm
Angle of tilt:	3 to 12°/7°
Angle adjustable:	Yes by hand/No
Maximum load:	3kg/3kg
Overall dimensions (WxDxH):	240 x 300 x 165mm/240 x 300 x 150mm
Net weight:	5kg/5kg
Electrically supply:	230V 50Hz, 50W

Type	Description	Max. Load kg	PK	Cat. No.
SSM3	Rocker, gyratory, mini	3.0	1	**9.728 820**
SSM4	Rocker, see-saw, mini	3.0	1	**9.728 821**

1



9.728 800

2



9.728 801

Rocking shakers SSL3/ SSL4, large platform

Stuart

- Large platform rockers - ideal for multiple users
- Gentle rocking action
- Choice of two models
- Tumbling gyratory action SSL3
- See-saw, wave action SSL4
- Digital speed control and built-in timer
- Optional tier system available to increase capacity

These rockers have large platforms able to accommodate a number of samples, ideal for a busy lab. They are very quiet in operation and designed to be run continuously. There are two models available:
Model SSL3 provides a tumbling gyratory motion, ideal for low foaming agitation, DNA extractions, staining and de-staining procedures etc. The tilt angle can be adjusted to any position by hand to optimise mixing of vessels.
Model SSL4 has a see-saw rocking action that creates a wave motion within vessels such as culture flasks, petri dishes etc.
Both models are supplied with a non-slip mat and have digital selection of both speed and time.
An accessory tier system is available. Fitted in seconds, without the need for tools, it triples the available space for samples.
With BioCote, silver-based, antimicrobial protection.

Specifications	**SSL3/SSL 4**
Rocking action:	Tumbling gyratory/See-saw wave
Platform dimensions (W x D):	355mm x 355mm/355mm x 355mm
Speed range:	5rpm to 70rpm/5rpm to 70rpm
Angle of tilt:	3° to 12°/7°
Angle adjustable:	Yes by hand/No
Maximum load:	10kg/10kg
Overall dimensions (W x D x H):	360mm x 420mm x 170mm/360mm x 420mm x 160mm
Net weight:	10kg/10kg
Supply requirements:	230V, 50Hz, 50W

Type	Description	Max. Load kg	PK	Cat. No.
SSL3	Rocker, gyratory, lab scale	10.0	1	**9.728 800** 1
SSL4	Rocker, see-saw, lab scale	10.0	1	**9.728 801** 2
SSL3/1	Tier system (2 platforms plus 8 bars)		1	**9.728 802**

Attachments are not included - Please order separately

3



9.729 984

Rocking shaker Rocker 2D basic/2D digital

IKA

Rocking shaker with fixed speed for smooth mixing tasks. For homogeneous mixing in flasks, culture flasks, Petri dishes and tubes. Even with load and voltage fluctuations the shaking speed remains constant. A fixed tilt angle ensures reproducible test results.

- Different attachments allow a variety of applications
- Usable at 4 to 50°C in incubators
- Anti-slip rubber mat included
- Easy operation by foil keypad
- Suitable for continuous operation

Rocker 2D digital only:
- Timer: Countdown, adjustable from 1s to 99h 59min
- Counter: Display of shaking time
- Error code display

Specifications

Type of movement:	rocking
Shaking diameter	
Rocker 2D basic:	8° (angle)
Rocker 2D digital:	0 - 15° (angle)
Permissible shaking weight (incl. attachment):	2kg
Motor rating input/output:	16/9W
Speed:	5 to 80rpm
Speed display:	7 segment LED
Dimensions (WxDxH):	280 x 330 x 150mm
Weight:	2.2kg
Protection class acc. to DIN EN 60529:	IP 21
Power supply:	100-240V, 50/60Hz

Type	Max. Load kg	PK	Cat. No.
Rocker 2D basic	2.0	1	**9.729 984** 3
Rocker 2D digital	2.0	1	**9.729 985**

E & OE.

1 2 Shakers, 3000 series





Housing made of high impact strength polystyrene, finished in off-white. The base plate is made of electrolytically galvanized, powder-coated sheet steel, the shaking platform of anodised aluminium, equipped with four plastic pins (models 3005 to 3018 and 3023) for secure attachment of accessory equipment (holds almost all shapes of vessels used in standard laboratory applications). Models 3019/3020: Shaking platform made of electrolytically galvanized, powder-coated sheet steel, equipped with four support rods with screw-type clamps made of stainless steel. Clearly laid out control panels for easy operation and an a.c. motor with overload protection drives the unit. Stepless, electronic speed control, with soft-start and quiet operation. Constant speed maintained during continuous operation, independent of load. Suitable for use in laboratories, incubation and controlled environment rooms at ambient temperatures between +10°C and +50°C. The devices are low-maintenance, have the German seal for proven Safety (GS) and the CE mark. *GFL*

Analogue control models (1)
3005/3006/3011/3013/3015/3016/3019/3023.
Timer for operations up to 60min. and continuous operation.

Digital control models (2)
3012/3014/3017/3018/3020.
Microprocessor controlled, with interface RS232. Timer: 1 min. up to 99:59 h or continuous operation. Speed and remaining time indicated by two LCD readouts.

The following shaker types are available: Orbital shakers, horizontal shaker, rocking shakers, tumbling shakers and overhead shakers. Please see the different motion types of the 3000 series shakers in the relevant chapters.

3 Shakers 3013 and 3014 rocking



With rocking motion. *GFL*
Compact, low-wear counterbalanced drive mechanism for slow and uniform rocking motion, quiet. The devices create reproducible growth and processing conditions at low speeds for cell cultures and other media. Ideal rinsing and tumbling of the samples. Various applications, e.g for the supply of parallel cultures and cell lines or for staining or de-staining of gels.

Technical Specifications

Overall (WxDxH):	510mm x 625mm x 168mm
Platform (W x D):	450mm x 450mm
Max. loading:	15kg
Platform angle:	3°
Shaking speed:	2rpm to 50rpm.
Supply requirements:	
3013:	230V 50/60Hz, 90W
3014:	230V 50 or 60Hz, 90W*
Net/gross weight:	18kg/21kg
Timer:	
Model 3013:	1min to 60min or continuous operation
Model 3014:	1 min to 99:59 hours or continuous operation
Model 3014:	microprocessor controlled, with RS-232 interface

Type	Max. Load kg	PK	Cat. No.
3013	15.0	1	**9.837 913**
3014**	15.0	1	**9.837 914**

* Please specify when placing your order!
**Speed and remaining time indicated by 2 LC-displays.

Accessories for Type 3013/3014 - please see page 472.

4 Platform tumbling rotator PS-3D



Smooth tumbling orbital motion for mixing in tubes, culture flasks, dishes and boxes. *Grant*
- Ideal size for personal use
- Variable speed: 5rpm to 60rpm
- Operating range: +4°C to 40°C
- Fixed position: 7°C tilt angle
- Loads up to 0.5kg
- 210mm x 210mm platform

Type	Max. Load kg	PK	Cat. No.
PS-3D	0.5	1	**9.721 014**

1



1 Platform rocker PMR-30

Grant

Smooth rocking motion for gentle sample agitation in tubes, culture flasks, dishes and boxes.
- Side to side rocking motion
- Variable speed: 5 to 30rpm
- Load up to 0.5kg
- Fixed position: 7° tilt angle
- Continuous or timed operation with automatic switch-off
- Integral timer: 1 min to 24 hours
- 210 x 210mm platform
- Operating ambient +4°C to 40°C

Type	Max. Load kg	PK	Cat. No.
PMR-30	0.5	1	**9.721 011**

2



2 Multi-function tumbling rotator PS-M3D

Grant

With consistent and reproducible agitation throughout the speed range, multi segment program.
- Multi function: rotation, reciprocation, vibration
- Reciprocal tumbling rotation: 1° to 360°
- Vibration: 1° to 5°
- Loads up to 1kg
- Variable speed: 1rpm to 100rpm
- Fixed position: 7° tilt angle
- 210 x 210mm platform

Type	Max. Load kg	PK	Cat. No.
PS-M3D	1.0	1	**9.721 017**

3



9.721 013

Accessories for platform rocker PMR-30, tumbling-platform rotator PS-3D and multi-function rotator PSM-3D

Grant

Type	Description	PK	Cat. No.
PDM	Dimpled mat, prevents tubes from rolling around	1	**9.721 013** 3

4



4 3D Shaker

NEW!

Hettich Benelux

The DITABIS 3D shaker works with a rotational 3D motion. **Application areas for this device are cultivation and ventilation applications, DNA-extractions as well as colouring and decolouring of gels in life science sectors.** The rock-solid metal housing and the excellent price of the DITABIS 3D shaker will elate you. Shaker available as standard shaker, double platform shaker and shaker with extra large platform.

Specifications

Speed:	5 to 50rpm
Timer:	0 to 120min
Max. capacity:	5kg
Angle of tilt:	8°
3DL05:	4°
Platform dimensions (L x W):	290 x 260mm
3DL05:	350 x 350mm
Distance double platforms:	17mm
Overall dimensions (WxDxH):	340 x 400 x 125mm
Power supply:	230V, 50Hz

Type	Max. Load kg	PK	Cat. No.
3D shaker	5.0	1	**9.777 250**
3D shaker CH	5.0	1	**9.777 288**
3D shaker, double platform	5.0	1	**9.777 251**
3D shaker, double platform CH	5.0	1	**9.777 290**
3D Shaker 3DL 05, extra large platform	5.0	1	**9.777 293**
3D Shaker 3DL 05, extra large platform CH	5.0	1	**9.777 294**
Mat with 12 channels, 260 x 290mm		1	**9.777 252**

Further power connectors on request.

E & OE.

Rocking shakers SSL3/ SSL4, large platform

Stuart

- Large platform rockers - ideal for multiple users
- Gentle rocking action
- Choice of two models
- Tumbling gyratory action SSL3
- See-saw, wave action SSL4
- Digital speed control and built-in timer
- Optional tier system available to increase capacity

These rockers have large platforms able to accommodate a number of samples, ideal for a busy lab.
They are very quiet in operation and designed to be run continuously. There are two models available:
Model SSL3 provides a tumbling gyratory motion, ideal for low foaming agitation, DNA extractions, staining and de-staining procedures etc. The tilt angle can be adjusted to any position by hand to optimise mixing of vessels.
Model SSL4 has a see-saw rocking action that creates a wave motion within vessels such as culture flasks, petri dishes etc.
Both models are supplied with a non-slip mat and have digital selection of both speed and time.
An accessory tier system is available. Fitted in seconds, without the need for tools, it triples the available space for samples.
With BioCote, silver-based, antimicrobial protection.

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9.728 800

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9.728 801

Specifications	**SSL3/SSL 4**
Rocking action:	Tumbling gyratory/See-saw wave
Platform dimensions (W x D):	355mm x 355mm/355mm x 355mm
Speed range:	5rpm to 70rpm/5rpm to 70rpm
Angle of tilt:	3° to 12°/7°
Angle adjustable:	Yes by hand/No
Maximum load:	10kg/10kg
Overall dimensions (W xD xH):	360mm x 420mm x 170mm/360mm x 420mm x 160mm
Net weight:	10kg/10kg
Supply requirements:	230V, 50Hz, 50W

Type	Description	Max. Load kg	PK	Cat. No.
SSL3	Rocker, gyratory, lab scale	10.0	1	**9.728 800** 1
SSL4	Rocker, see-saw, lab scale	10.0	1	**9.728 801** 2
SSL3/1	Tier system (2 platforms plus 8 bars)		1	**9.728 802**

Attachments are not included - Please order separately

Tumbling shakers Rocker 3D basic/3D digital

IKA

Shaker with three-dimensional tumbling motion and a fixed speed for smooth mixing tasks. For homogeneous mixing in flasks, culture flasks, Petri dishes and tubes. Ideal for e.g. the cultivation of cell cultures, DNA extractions, distributing of cells and staining and destaining of cells. Even with load and voltage fluctuations the shaking speed remains constant. A fixed angle ensures reproducible test results.

- Different attachments allow a variety of applications
- Usable at 4 to 50°C in incubators
- Anti-slip rubber mat included
- Easy operation by foil keypad
- Suitable for continuous operation

Rocker 3D digital only:
- Timer: Countdown, adjustable from 1s to 99h 59min
- Counter: Display of shaking time
- Error code display

3



9.729 986

Specifications

Type of movement:	tumbling
Shaking diameter	
Rocker 3D basic:	8° (angle)
Rocker 3D digital:	0 - 15° (angle)
Permissible shaking weight (incl. attachment):	2kg
Motor rating input/output:	16/9W
Speed Rocker 3D basic:	30rpm (fixed)
Speed Rocker 3D digital:	5 to 80rpm
Speed display (Rocker 3D digital only):	7 segment LED
Dimensions (WxDxH) Rocker 3D basic:	280 x 330 x 165mm
Dimensions (WxDxH) Rocker 3D digital:	280 x 330 x 185mm
Weight:	2.2kg
Protection class acc. to DIN EN 60529:	IP 21
Power supply:	100-240V, 50/60Hz

Type	Max. Load kg	PK	Cat. No.
Rocker 3D basic	2.0	1	**9.729 986** 3
Rocker 3D digital	2.0	1	**9.729 987**

1



2



1 2 Shakers, 3000 series

GFL

Housing made of high impact strength polystyrene, finished in off-white. The base plate is made of electrolytically galvanized, powder-coated sheet steel, the shaking platform of anodised aluminium, equipped with four plastic pins (models 3005 to 3018 and 3023) for secure attachment of accessory equipment (holds almost all shapes of vessels used in standard laboratory applications). Models 3019/3020: Shaking platform made of electrolytically galvanized, powder-coated sheet steel, equipped with four support rods with screw-type clamps made of stainless steel. Clearly laid out control panels for easy operation and an a.c. motor with overload protection drives the unit. Stepless, electronic speed control, with soft-start and quiet operation. Constant speed maintained during continuous operation, independent of load. Suitable for use in laboratories, incubation and controlled environment rooms at ambient temperatures between +10°C and +50°C. The devices are low-maintenance, have the German seal for proven Safety (GS) and the CE mark.

Analogue control models (1)
3005/3006/3011/3013/3015/3016/3019/3023.
Timer for operations up to 60min. and continuous operation.

Digital control models (2)
3012/3014/3017/3018/3020.
Microprocessor controlled, with interface RS232. Timer: 1 min. up to 99:59 h or continuous operation. Speed and remaining time indicated by two LCD readouts.

The following shaker types are available: Orbital shakers, horizontal shaker, rocking shakers, tumbling shakers and overhead shakers. Please see the different motion types of the 3000 series shakers in the relevant chapters.

3



3 Tumbling shakers 3011 and 3012

GFL

With orbital rocking motion.
For gentle and uniform orbital rocking motion, quiet. Applications in AIDS research, for diagnostic tests with test plates or for growing cell cultures and microorganisms.
(3012 with RS 232 interface)

Technical Specifications

Overall (WxDxH):	510mm x 625mm x 168mm
Platform (W x D):	450mm x 450mm
Max. loading:	max. 15kg
Type of movement:	Three-dimensional, orbital rocking
Platform angle:	3°C
Shaking speed:	2rpm to 50rpm.
Supply requirements:	
3011:	230V 50/60Hz, 90W
3012:	230V 50 or 60 Hz, 90W*
Net/gross weight:	18kg/22kg
Timer:	
3011:	up to 60 min or continuous operation
3012:	1 min to 99:59 hours or continuous operation
Model 3012:	microprocessor controlled; RS232 interface

Type	Max. Load kg	PK	Cat. No.
3011	15.0	1	**9.837 911**
3012**	15.0	1	**9.837 912**

* Please specify when placing your order
**Speed and remaining time indicated by 2 LC-displays

Accessories for Type 3011/3012 - please see page 472.

E & OE.

1 Rotator Genie™, with magnetic platform

Scientific Industries

Holds a wide variety of tubes, flasks, microplates, and odd-shaped vessels. Available in two interchangeable platform configurations. Magnetic platform features unique spring clip plate system. The optional Standard platform (Cat. No. 9.730 104) is designed to turn 90 degrees allowing different mixing motions. Designed for cold room and incubator use. Will easily fit in most incubators. Uniquely designed for a wide selection of motions, which can be adjusted from gentle rolling to forceful end over end mixing. Continuous-duty quality motor provides smooth, quiet operation.

1



Specifications

Speed:	5rpm to 35rpm
Environmental:	ATEX-Installation Category 2, 0°C to 38°C, 95% max. relative humidity
Overall dimensions (WxDxH):	400 x 175 (290 platform horizontal) x 400mm
Dimensions magnetic platform:	290 x 315mm
Dimensions standard platform:	260 x 260mm
Weight:	5.2kg

Type	Description	Max. Load kg	PK	Cat. No.
SI-2202	incl. magnetic platform, EU plug	2.3	1	**6.254 273**
SI-2203	incl. magnetic platform, UK plug	2.3	1	**9.730 102**
SI-2204	incl. magnetic platform, CH plug	2.3	1	**9.730 103**

3 Accessories for Rotator Genie™

Scientific Industries

Type	Description	Figure	PK	Cat. No.
SI-2110	Standard platform with bands	a	1	**9.730 104** 2
SI-2210	Magnetic platform	h	1	**9.730 114**
SI-1123	1 Clip plate for 12 tubes, 10mm to 13mm*	b	1	**9.730 105**
SI-1124	1 Clip plate for 6 tubes, 15mm to 17mm*	c	1	**9.730 106**
SI-1125	1 Clip plate for 3 tubes, 28mm to 30mm*	d	1	**9.730 107**
SI-1120	6 Clip plate for 12 tubes, 10mm to 13mm*	b	6	**9.730 108**
SI-1121	6 Clip plate for 6 tubes, 15mm to 17mm*	c	6	**9.730 109**
SI-1122	6 Clip plate for 3 tubes, 28mm to 30mm*	d	6	**9.730 110**
SI-1134	2 Universal clip plates	e	2	**9.730 111**
SI-1135	1 Magnetic microtube box, 100 places**	f	1	**9.730 112**
SI-1136	1 Clip plate for volumetric flasks, 100ml	g	1	**9.730 113**

*Platform capacity: 12 Clip plates, **Platform capacity: 8 boxes

2



9.730 104

3



We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

Scientific Industries, Inc.

1



1 Vertical mini rotator PTR-25

Grant

Compact, economy solution with simple to use controls, providing thorough mixing of samples in tubes up to 50ml. Suitable for preventing blood coagulation in tubes and for fulfilment of procedures of extraction of biological components. For use in cold rooms and incubators.

- 360° vertical rotation
- Vertical rotation speed range: 5rpm to 30 rpm
- Timer: 1 min to 24 hours, with audible alarm and automatic switch-off
- Simple to use controls
- Platform accommodating 22 tubes (up to 15mm diameter) is included as standard

Type	Description	Max. Load kg	PK	Cat. No.
PTR-25	for 22 microtubes	0.5	1	**9.721 016**

2



9.721 046

Attachements for Vertical mini rotator PTR-25

Grant

Type	Description	PK	Cat. No.
PRS-22	for 22 tubes up to diam. 15mm, volume: 1.5 to 15ml	1	**9.721 046** 2
PRSC-18	for 18 tubes up to diam. 14-15mm, with clips	1	**9.721 047**
PPRS4-12	for 4 x 50ml and 12 x 1.5 to 15 ml tubes	1	**9.721 029**

3



3 Multi-function rotator PTR-35/PTR-60

Grant

Vertical multi-function rotator for thorough mixing in tubes, with multi-segment programme.
- Multi-function: vertical rotation, reciprocation, vibration
- Continuous or timed operation for each phase
- Choice of two models with different microtube capacities
- Speed: 1rpm to 100rpm
- Reciprocal rotation: 1° to 90° turning angle
- Vibration: programmable in a burst of 1 to 5 seconds
- Fully programmable sequence of functions, including pause
- Alternative platforms for larger tubes

Type	Description	PK	Cat. No.
PTR-35	for 26 microtubes with 15 mm dia.	1	**9.721 028**
PTR-60	for 48 microtubes with 15 mm dia.	1	**9.721 030**

4



6.241 460

Platform for multi-function overhead shakers PTR-35

Grant

Type	For	PK	Cat. No.
PRS-26	26 x 1.5 to 15ml (up to diam. 15mm)	1	**9.721 045**
PRS-5-12	5 x 50ml (up to diam. 30mm) and 12 x 1.5 to 15ml (up to diam. 15mm)	1	**6.241 460** 4
PRS-10	10 x 50ml (up to diam. 30mm)	1	**9.721 038**
PRSC-10	10 x 50ml (up to diam. 30mm), with clips	1	**9.721 039**
PRSC-22	22 x 15ml (up to 15mm), with clips	1	**9.721 040**
PRS-1DP	1 x 96-well microplate	1	**9.721 065**

5



9.721 031

6



9.721 032

Platform for multi-function overhead shakers PTR-60

Grant

Type	For	PK	Cat. No.
PRS-8-22	8 x 50ml (up to diam. 30mm) and 22 x 1.5 to 15ml (up to diam. 15mm)	1	**9.721 031** 5
PRS-14	14 tubes up to dia. 30mm	1	**9.721 032** 6
PRS-48	48 tubes up to dia. 15mm	1	**9.721 048**

E & OE.

Overhead shaker Trayster basic/digital

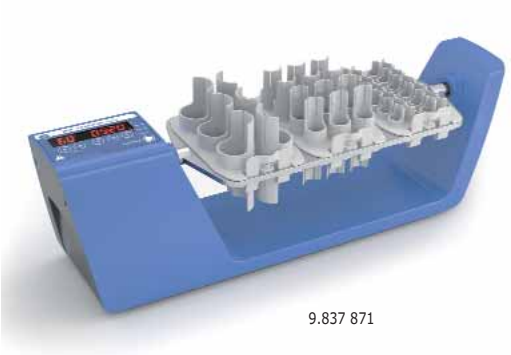
1

IKA

Overhead shaker with vertical rotation for smooth but effective mixing with a fixed speed. Ideal for biological samples, particularly blood samples. Suitable for separating and mixing processes of powdered and liquid samples in Eppendorf tubes and Greiner tubes up to 50 ml. The easy removable attachments allow simple and quick cleaning of the unit of spilled samples.

- Different attachments allow a variety of applications
- Usable at 4 to 50°C in incubators
- Suitable for continuous operation
- Easy operation by foil keypad
- Suitable for continuous operation

Trayster digital only:
- Timer: Countdown, adjustable from 1s to 99h 59min
- Counter: Display of shaking time
- Error code display



9.837 871

Specifications

Type of movement:	overhead
Shaking diameter:	vertical or horizontal
Permissible shaking weight (incl. attachment):	2kg
Motor rating input/output:	16/9 W
Dimensions (WxDxH):	460 x 140 x 180 mm
Protection class acc. to DIN EN 60529:	IP 21
Power supply:	100-240V, 50/60Hz

Type	Rotation speed rpm	PK	Cat. No.
Trayster basic	20	1	**9.837 870**
Trayster digital	5 - 80	1	**9.837 871** 1

2 Test Tube Rotator 3025

GFL

Constant uniform rotating tilting motion, particularly suitable for gentle to intensive shaking and mixing of powdered or liquid substances, e.g. for separating or mixing applications. The axle for max. 24 test tubes can be removed and can also be loaded outside the rotator. Can be exchanged with an axle with removable clamps.
Compact, low-wear drive mechanism. External housing is made of electrolytically galvanized powder coated sheet steel, the axle and the collecting trough are made of stainless steel. Electronic speed control, stepless. Maintenance-free, GS safety approval, comes with CE mark.

For max. 24 test tubes: Ø 12/17 mm/ length: 75 to 180 mm

Technical Specification

External dimensions (WxDxH):	490 x 330 x 220mm
Rotational speed:	6 to 60rpm.
Supply requirements:	230V 50/60Hz, 80W
Net/gross weight:	10/12kg

Type	PK	Cat. No.
3025	1	**9.837 925**

2



1



1 Rotating Shaker 3040

GFL

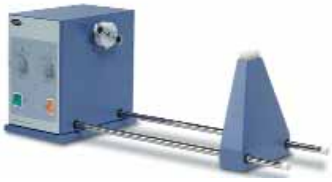
The specialist shaker with uniform rotating motion. Various applications, e.g. for precise sedimention, mixing and processing of soil samples (particularly well-suited for processing soil samples in glass/plastic wide mouth vessels up to 2000ml rated volume as per DIN 38414, Part 4 to German Standard Methods for Water, Wastewater and Sludge Analysis - Determination of Leachability by Water. Compact, low-wear drive mechanism. External housing is made of electrolytically galvanized, powder-coated sheet steel. Clearly laid out control panel for easy operation. With LED speed display. Holding device guarantees easy clamping of sample vessels on the shaking rack. Electronic, stepless speed control, constant speed during continuous operation. Rotating rack incorporates ball bearings on both sides, accommodating a max. of 12 flasks/vessels, round or rectangular, up to 110mm max. dia. and 270mm max. height, stacked in 4 levels, each level with 3 holding frames. Drive motion is achieved via a toothed belt and a sliding hub. With stainless steel clamping frame for safe securing of the sample vessels. For ambient temperatures from 10 to 40°C. Maintenance-free, GS safety approval, CE marked.

Technical Specifications

Motion:	orbital rotating
Speed range:	1 to 20rpm.
Speed control:	Electronic, stepless
Speed display:	Digital
Capacity:	12 bottles/vessels
Bottle height range:	to max. 270mm height
Max. bottle dims.:	110mm, round or square
Drive:	d.c. motor with overload protection
Dimensions (WxDxH):	770 x 700 x 715mm
Supply requirements:	230V 50/60Hz, 100W
Max. load:	20kg
Net/gross weight:	approx. 62/78kg

Type	PK	Cat. No.
3040	1	**9.837 931**

2



3

2 3 Overhead shakers STR4

Stuart

For use with the STR4/1 drum, STR4/2 flask/bottle rotator Drum, STR4/3 figure 8 drum, STR4/4 bottle holder or STR4/5 eppendorf-type tube rack holder. Fitted with illuminated mains On/Off switch. Has variable speed with electronic speed control, range 6rpm to 60rpm, fitted with 10 to 60 minute timer with Off option and manual over-ride position. Fitted with panel mounted fuse. For use on 230V 50Hz single phase supplies. Overall dimensions (WxDxH) 650mm x 250mm x 250mm. Net weight 6.4kg. Requires accessory drums for operation.
With BioCote, silver-based, antimicrobial protection.
Drum and accessories sold separately.

Type	PK	Cat. No.
STR4	1	**9.950 375**

4



5

4 5 Drum STR4/1 for overhead shakersSTR4

Stuart

Square drum which accepts one plate of clips on each side. The plates plug into the drum which is fitted with a push button release/lock mechanism. Without accessory plates.
Drive Cat. No. 9.950 375 separately.

Type	PK	Cat. No.
STR4/1	1	**9.950 376**

* Tubes not included

Accessory plates for STR4/1

Stuart

To fit drum 9.950 376. Fitted with clips to accept tubes vertically. Supplied in pairs.
Drive Art. no 9.950 375 separately.

No. of tubes	Diam. mm	PK	Cat. No.
12	12	2	**9.950 378**
10	16	2	**9.950 379**
8	19	2	**9.950 380**
7	24	2	**9.950 381**

E & OE.

1 2 Drum, Flask, STR4/2 for overhead shakers STR4

Drum with two platforms for STR4. Accepts two 500ml conical flasks or reagent bottles. The support columns can be detached to give two platforms 10.5cm x 17.5cm each for separating funnels, jars or test tube racks.
With BioCote, silver-based, antimicrobial protection.
Drive Art. no 9.950 375 separately.

Stuart

1



Type	PK	Cat. No.
STR4/2	1	**9.950 382**

2

BioCote

3 4 Drum figure-of-8 STR4/3 for overhead shakers STR4

The drum has a platform which can be adjusted within the drum from horizontal to 45°. In this way the sample container can be rolled and turned end over end at the same time. Suitable for extractions, paint mixing, powders and granular samples. The sample container is held by an adjustable velcro strap. With BioCote, silver-based, antimicrobial protection.
Drive Art. no 9.950 375 separately.

Stuart

3



Type	PK	Cat. No.
STR4/3	1	**9.950 384**

4

BioCote

5 6 Bottle holder STR4/4 for overhead shakers STR4

Perspex four segment cradle with velcro straps for STR4. Holds 2 to 4 bottles each up to 1000ml capacity.
With BioCote, silver-based, antimicrobial protection.
Drive Art. no 9.950 375 separately.

Stuart

5



Type	PK	Cat. No.
STR4/4	1	**9.950 385**

6

BioCote

Rack cradle STR4/5 for overhead shakers STR4

Holds four acrylic racks for end over end mixing of Eppendorf tubes by STR4. Supplied with four racks, each with a capacity of 60 Eppendorf tubes. With BioCote, silver-based, antimicrobial protection.
Drive Art. no 9.950 375 separately.

Stuart

7



9.950 386

Type	PK	Cat. No.
Rack cradle STR4/5	1	**9.950 386** 7
Spare rack for STR4/5	1	**9.950 387**

Rotators SB2/SB3

The Stuart rotators give gentle but effective mixing, ideal for life sciences applications such as keeping blood samples in suspension. The angle of tilt is fully adjustable. The Rotators can be used in incubators up to 60°C and in cold rooms down to 4°C.

Stuart

8



9.645 323

SB2: Fixed speed of 20rpm.
SB3: Variable speed of 2rpm to 40rpm. Additional digital timer of 1 to 999 minutes. Digital speed control.

There are six types of tube holder available. Please order separately.

Specifications:

Dimensions (WxDxH):	200 x 270 x 230mm
Supply:	230 V/50 Hz, 50W
Weight:	3.2kg

Type	PK	Cat. No.
SB2	1	**9.645 322**
SB3	1	**9.645 323** 8

1



1 Tube holders for rotators SB2/SB3

Stuart

Type	For	No. of vessels	PK	Cat. No.
SB3/1	Micro tubes, 10 to 11.5mm dia.	46	1	**9.645 324**
SB3/2	Test/blood tubes, 9 to 20mm dia.	20	1	**9.645 325**
SB3/3	50ml centrifuge tubes, 25 to 35mm dia.	12	1	**9.645 326**
SB3/4	Culture tubes, 12mm dia.	63	1	**9.645 327**
SB3/5	Culture tubes, 16mm dia.	63	1	**9.645 328**
SB3/6	Culture tubes, 26mm dia.	30	1	**9.645 329**

Additional accessories on request.

2



9.729 983

Rotators Loopster basic/digital

IKA

Rotators for smooth but effective mixing with a fixed speed. Ideal for biological samples, particularly blood samples. Suitable for separating and mixing processes of powdered and liquid samples in Eppendorf tubes and Greiner tubes up to 50ml. The easy removable attachments allow simple and quick cleaning of the unit of spilled samples.

- Freely adjustable rotary angle
- Different attachments allow a variety of applications
- Usable at 4 to 50°C in incubators
- Easy operation by foil keypad
- Suitable for continuous operation

Loopster digital only:
- Timer: Countdown, adjustable from 1s to 99h 59min
- Counter: Display of shaking time
- Error code display

Specifications

Type of movement:	rotating
Shaking diameter:	adjustable from horizontal to vertical
Permissible shaking weight (incl. attachment):	2kg
Motor rating input/output:	16/9W
Dimensions (WxDxH):	300 x 300 x 360mm
Protection class acc. to DIN EN 60529:	IP 21
Power supply:	100-240V, 50/60Hz

Type	Rotation speed rpm	PK	Cat. No.
Loopster basic	20	1	**9.729 982**
Loopster digital	5 - 80	1	**9.729 983** 2

3



9.852 140

4



9.852 143

Roller mixers RS-TR 5/10

Phoenix Instrument

These tube roller mixers provide gentle and effective mixing by simultaneous rocking and rolling action. The adjustment and control of speed and time can be done easily via the LCD-Display, with the fully digital version or with a knob in the analog version. Additionally a Timer-Function can be activated via the illuminated LCD-Display of the RS-TR 10.

Specifications

Type of movement:	rocking and rolling
Amplitude:	17mm
Roller size (l x Ø)	280 x 30mm
Ambient temperature:	+4 to +40°C
Max. humidity:	80%
Protection class:	IP 21
Power supply:	100 - 240V, 50/60Hz

Type	Rollers	Dimensions (W x D x H) mm	Rotation speed rpm	Load max. kg	PK	Cat. No.
RS-TR 5, analog	6	260 x 460 x 120	0 to 70	4.0	1	**9.852 140** 3
RS-TR 5 UK, analog	6	260 x 460 x 120	0 to 70	4.0	1	**9.852 141**
RS-TR 5 CH, analog	6	260 x 460 x 120	0 to 70	4.0	1	**9.852 142**
RS-TR 10, digital	6	260 x 460 x 120	10 to 70	4.0	1	**9.852 143** 4
RS-TR 10 UK, digital	6	260 x 460 x 120	10 to 70	4.0	1	**9.852 144**
RS-TR 10 CH, digital	6	260 x 460 x 120	10 to 70	4.0	1	**9.852 145**

2 Roller mixers SRT6/SRT9

Stuart

Recommended for mixing blood samples, viscous substances and liquid-solid suspensions where minimum aeration is required. Units can be used in incubators up to 60°C and humidity up to 80%, or in cold rooms down to 4°C. A magnetic block, stacking system is available separately to stack up to three units without tools, optimizing bench space.

- Rocking and rolling action for complete mixing
- Choice of analogue fixed speed or digital variable speed model
- Digital models have integral timer function
- Designed for continuous quiet operation

Specifications

Type of movement:	rocking and rolling
Amplitude:	16mm
Roller size (l x Ø):	340 x 30mm
Ambient temperature:	+4°C to +60°C
Max. humidity:	80%
Protection class:	IP 20
Power supply:	230 V, 50Hz, 50W

Type	Rollers	Dimensions (W x D x H) mm	Rotation speed rpm	Load max. kg	PK	Cat. No.
SRT6	6	565 x 240 x 110	33 (fixed)	5.0	1	**9.728 810**
SRT6D	6	565 x 240 x 110	5 to 60	5.0	1	**9.728 811** 1
SRT9	9	565 x 360 x 110	33 (fixed)	5.0	1	**9.728 812**
SRT9D	9	565 x 360 x 110	5 to 60	5.0	1	**9.728 813**

Stacking system for roller mixers *Stuart*

Type	PK	Cat. No.
SRT/STACK	4	**9.728 815**

1



9.728 811

2

BioCote

Tube roller Roller 6 basic/6 digital/10 basic/10 digital

IKA

Roller shaker with 6 or 10 rolls, with smooth rocking and rolling action and a fixed speed. Particularly for mixing blood samples, solid and liquid suspensions and viscous samples. The unit can be used for all conventional tubes and cylindrical bottles. The easy removable rolls allow simple and quick cleaning of the unit from spilled samples.

- Usable from 4 to 50°C in incubators
- Suitable for continuous operation
- Removable rolls make it suitable for larger tubes
- Easy operation by foil keypad
- Easy removable rolls

Roller 6 digital/10 digital only:
- Timer: Countdown, adjustable from 1s to 99h 59min
- Counter: Display of shaking time
- Error code display

Specifications

Type of movement:	rocking and rolling
Shaking diameter	24.5 (height)
Roller size (l x Ø):	310 x 32mm
Ambient temperature:	+4°C to +50°C
Max. humidity:	80%
Protection class:	IP 21
Power supply:	100-240V, 50/60Hz

Type	Rollers	Dimensions (W x D x H) mm	Rotation speed rpm	Load max. kg	PK	Cat. No.
Roller 6 basic	6	240 x 545 x 115	30 (fixed)	2.0	1	**9.729 970** 3
Roller 6 digital	6	240 x 545 x 115	5 - 80	2.0	1	**9.729 971**
Roller 10 basic	10	380 x 545 x 115	30 (fixed)	2.0	1	**9.729 972**
Roller 10 digital	10	380 x 545 x 115	5 - 80	2.0	1	**9.729 973** 4

3



9.729 970

4



9.729 973

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1



1 Sampling bags, FEP

NEW!

Saint Gobain

Made from 5 mil (125 µm) FEP fluoropolymer film, these flexible, sturdy bags are heat sealed on all four sides for complete chemical resistance and leak-proof operation. They are inert to most chemicals and have low permeability which limits sample loss. Available with either a nickel-plated, brass on/off valve that accepts 6.4mm I.D. flexible tubing or with PTFE/silicone septum in polypropylene housing for use with a hypodermic needle. These FEP bags are easy to use. They can be stored for an unlimited period prior to use. Applications include gas sample analysis, extracting air samples from smokestack exhaust systems, monitoring air quality or calibrating instruments in the field. The bags are individually packaged.

- Chemically resistant
- Flexible
- Will not contaminate sample

Capacity L	Connection	Size mm	PK	Cat. No.
1.2	on/off	150 x 250	1	**6.267 484**
0.5	on/off	150 x 150	1	**6.267 485**
4.7	on/off	300 x 300	1	**6.267 486**
50.0	on/off	600 x 900	1	**6.267 487**
0.5	Septum	150 x 150	1	**6.267 488**
1.2	Septum	150 x 250	1	**6.267 489**
4.7	Septum	300 x 300	1	**6.267 490**
50.0	Septum	600 x 900	1	**6.267 491**

2



2 Sampling bags, PVF

NEW!

Saint Gobain

Reusable bags made of 2 ml (50 µm) PVDF fluoropolymer film, Chemware® Gas Bags offer an economical alternative for analysis of noncorrosive gases. Durable, heat-sealed seams ensure leak-proof operation. Available with either a nickel-plated, brass on/off valve that accepts 6.4mm I.D. flexible tubing or with a PTFE/silicone septum in a polypropylene housing for use with a hypodermic needle. Applications include sampling carbon monoxide, sulfur dioxide, hydrogen sulfide, radon and mercaptan. The bags are individually packaged. When used for liquid samples, bags should be supported with a tray. Custom sizes and configurations available on request.

- Flexible
- Will not contaminate sample
- Choice of fitting style: on/off or septum
- For use in gas sampling trains
- Use for gas or liquid sample containment

Capacity L	Connection	Size mm	PK	Cat. No.
0.3	on/off	150 x 150	1	**6.267 492**
1.6	on/off	230 x 230	1	**6.267 493**
3.8	on/off	300 x 300	1	**6.267 494**
8.1	on/off	380 x 380	1	**6.267 495**
20.3	on/off	460 x 460	1	**6.267 496**
37.7	on/off	600 x 600	1	**6.267 497**
0.3	septum	150 x 150	1	**6.267 498**
3.8	septum	230 x 230	1	**6.267 499**
1.6	septum	300 x 300	1	**6.267 600**
8.1	septum	380 x 380	1	**6.267 601**
20.3	septum	460 x 460	1	**6.267 602**
37.7	septum	600 x 600	1	**6.267 603**

3



9.110 236

Gas sampling tubes, DURAN® tubing

Lenz

Made of DURAN® tubing. Available with or without nozzle (with thread GL and septa), with two one-way stopcocks NS14 (with retaining device), connections: capillary tube (outer dia. 8mm, inner dia. 2.7mm), glass olive (outer dia. 8mm), with inscription label

Capacity ml	Length*	External body diam. mm	Type	PK	Cat. No.
150	155	42	Without sampling connections	1	**9.110 215**
350	200	54	Without sampling connections	1	**9.110 220**
500	220	65	Without sampling connections	1	**9.110 225**
1000	260	85	Without sampling connections	1	**9.110 230**
150	155	42	With sampling connections, GL 14	1	**6.243 069**
350	200	54	With sampling connections, GL 14	1	**9.110 236** 3
500	220	65	With sampling connections, GL 14	1	**9.110 237**
1000	260	85	With sampling connections, GL 14	1	**7.623 930**

* Body length (mm)

E & OE.

1 2 Sampler Silo Drill, aluminium or stainless steel V2A

Bürkle

Designed for sampling powders, granulates or semi-solids from silos and vehicle tankers.
When bulk goods are transported over a long distance (e.g. by HGV) the material can separate out, so if a sample is then taken only from the surface the result may not be representative. With the Silo Drill a sample can be drawn from deeper levels. The Silo Driil is screwed manually into the material and only opened once at the required sample depth. Depths of up to 2.5m can be reached by using extension rods. The Silo Drill is not only suitable for silos, but also can be used in numerous bulk goods containers in the pharmaceutical, chemical, foodstuffs and semi-luxury goods sectors.
Spiral diameter: 90mm, chamber: diameter 40mm, capacity 400ml.

1



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Type	Length cm	PK	Cat. No.
Silo drill, aluminium	150	1	**9.303 858**
Silo Drill, V2A	150	1	**9.303 868**
Extension rods, V2A	100	1	**9.303 859**

3 4 Zone samplers, Multi/All-layer/Jumbo, steel V4A or aluminium

Bürkle

For sampling bulk goods of all types. Available in various different lengths and materials:

Multi-sampler:
With several closed chambers for multi-target samples from several preset sample depths. Available in stainless steel V4A/PTFE, stainless steel V4A/V4A or aluminium. Tube diameter: 25mm.
All-layer-sampler:
With open chambers for cross-sectional sampling through all layers of the sample. Emptied via the open tube end of the collector. Available in stainless steel V4A or aluminium. Tube diameter: 25mm.
Jumbo-sampler:
Generally as the All-layer-sampler with open tube end. Tube diameter is 50mm making the sampler very good for coarser granule samples and large sample volumes. Available in stainless steel V4A or aluminium.
Uno-sampler:
with a closed chamber, for target samples from a pre-determined sample depth.

Easy emptying with the emptying device.

3



4



Type	Material	Length cm	Imm. depth mm	Number openings	Chamber Capacity ml	PK	Cat. No.
Multi-Sampler	Stainless steel (V4A)/PTFE	55	430	3	14	1	**9.303 860**
Multi-Sampler	Stainless steel (V4A)/PTFE	85	710	3	17	1	**9.303 862**
Multi-Sampler	Stainless steel (V4A)/PTFE	150	1355	5	17	1	**9.303 864**
Multi-Sampler	V4A/V4A	55	430	3	14	1	**7.631 201**
Multi-Sampler	V4A/V4A	85	710	3	17	1	**7.653 124**
Multi-Sampler	V4A/V4A	150	1355	5	17	1	**9.303 866**
Multi-Sampler	Aluminium	55	430	3	14	1	**9.303 870**
Multi-Sampler	Aluminium	85	710	3	17	1	**9.303 872**
Multi-Sampler	Aluminium	150	1355	5	17	1	**9.303 874**
Cross-section sampler	Aluminium	55	430	3	70	1	**9.303 875**
Cross-section sampler	Aluminium	85	710	3	130	1	**9.303 876**
Cross-section sampler	V4A/V4A	150	1355	5	260	1	**9.303 865**
Cross-section sampler	Aluminium	150	1355	5	260	1	**9.303 877**
Cross-section sampler	V4A/V4A	55	430	3	70	1	**6.232 190**
Cross-section sampler	V4A/V4A	85	710	3	130	1	**6.234 598**
Jumbo sampler	Aluminium	85	710	3	880	1	**9.303 878**
Jumbo sampler	Aluminium	150	1355	5	1700	1	**9.303 879**
Jumbo sampler	Aluminium	250	2355	7	2900	1	**9.303 883**
Jumbo sampler	Aluminium/PTFE	85	710	3	390	1	**6.240 956**
Jumbo sampler	Aluminium/PTFE	150	1355	5	650	1	**7.625 884**
Jumbo sampler	Aluminium/PTFE	250	2355	7	910	1	**6.236 850**
Uno-Sampler	Stainless steel (V4A)/PTFE	55	430	1	17	1	**9.303 886**
Uno-Sampler	Stainless steel (V4A)/PTFE	85	710	1	17	1	**9.303 887**
Uno-Sampler	Stainless steel (V4A)/PTFE	150	1355	1	17	1	**9.303 888**

Wide mouth bottles please see page 60.



1 Emptying device, stainless steel

NEW!

Bürkle

Emptying zone samplers were often a matter of patience and a steady hand. Now it's easier and faster with Bürkle's emptying device. just lay the zone sampler onto the stainless steel stand, adjust the funnels along the sample chambers, and, after turning the sampler, the media will directly flow into the containers below. Quality materials ensure that the sampler is autoclavable.

Description	PK	Cat. No.
Emptying device	1	**6.236 050**



2 Zone sampler, accessory cleaning brush, PVC/stainless steel

NEW!

Bürkle

For thoroughly cleaning of Zone samplers.

Length cm	Diam. mm	PK	Cat. No.
40	25	1	**6.223 345**
60	25	1	**9.303 880**
80	25	1	**9.303 882**
100	25	1	**9.303 884**
100	50	1	**9.303 885**



3 Sampler QuickPicker, Stainless steel V4A or PP

Bürkle

Suitable for removing bulk materials from sacks or large bags and depositing them directly into sample bottles. Simple to use and clean. Crevice-free to prevent sample residues causing cross-contamination which could affect subsequent sample results. Complete with cleaning brush and two 250ml sample bottles.

Material	Length cm	Imm. depth mm	Capacity ml	PK	Cat. No.
PP clear	50	300	75	1	**6.205 458**
V4A	50	300	75	1	**9.303 850**

Sample bottles for QuickPicker Sampler

NEW!

Capacity ml	Description	Material	PK	Cat. No.
250	round, natural colored, with screw cap	LDPE	10	**9.073 512**
500	sterile, transparent, moulded graduation with tamper-evident cap	PET	1	**9.001 054**



4 Sampler Tubus, V4A stainless steel, according to ISTA

Bürkle

Sampler for free flowing, bulk goods up to approx. 1cm diameter. This makes it possible, for example, to remove hazel nuts, blends of tea, grain or similar items from large sacks.
Operation: Insert Tubus into a sack to the desired sampling depth, while keeping the collection tube closed using your hand. When you take away your hand, the sample flows directly through the open tube into the container or sampling bag beneath it.

- choice of 2 lengths, 40cm and 80cm
- also for coarse-grained bulk goods
- AISI 316 stainless steel
- corresponds to ISTA standard for seed lengths of 10mm and 5mm

Length cm	Diam. mm	PK	Cat. No.
40	40	1	**6.200 394**
80	40	1	**6.204 492**



5 Sampling lance milky, stainless steel V4A, acc. to EN ISO 707

Bürkle

Universal powder and granules sampler collector made of AISI 316 stainless steel. Developed especially for milk powder samples, conforms to standards of DIN and IDF (Int. Dairy Federation). The collector is inserted into bags or casks and the sample is removed using a semi-circular profile lance.

Length cm	Imm. depth mm	Capacity ml	PK	Cat. No.
48	385	150	1	**6.051 629**

For wide neck bottles with screw caps - please see page 69.

E & OE.

Pumps | Sampling | Plastic Labware
for Laboratory, Industry, Science

bürkle

From the clean room to pure sampling

Disposable samplers for highest specifications

Bürkle sets standards in disposable sampling – e.g. by producing samplers in our own clean room. As a matter of course we can also make them from the sustainable bio-plastic *Green PE* and deliver them gamma sterilised. All these samplers come with EU foodstuffs and FDA approval.

Your requirements – our benchmark!



SteriPlast

SteriPlast Bio

LaboPlast

LaboPlast Bio

www.buerkle.de/videos

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Disposable Samplers DispoSampler

In numerous situations, rapid and contamination-free samples have to be taken. DispoSamplers are perfect for this applications. They are individually packed and always ready to use. Avoid expensive decontamination or cleaning of soiled samplers. Gamma sterilised versions are also available.

Bürkle

LiquiDispo
For liquids with low viscosity up to 10000cP.

MicroDispo
For pourable bulk goods up to 0.5mm diameter.

ViscoDispo
For high viscous media up to 100000cP.

PowderDispo
Disposable sampler for taking a cross sectional sample from within a bulk powder.

ZoneDispo
Disposable sampler for pourable bulk goods up to 2 mm particle size. Hole Ø 11 mm.

Type	Length mm	Capacity ml	Material	PK	Cat. No.	
LiquiDispo	500	100	PE-HD	20	**9.303 720**	1
LiquiDispo	1000	190	PE-HD	20	**9.303 722**	
MicroDispo	500	10	PE-HD	20	**9.303 728**	2
ViscoDispo	500	100	PE-HD	20	**9.303 732**	3
ViscoDispo	1000	190	PE-HD	20	**9.303 734**	
PowderDispo	620	100	PE-HD	20	**9.303 736**	4
ZoneDispo	620	100	PE-HD	20	**7.655 427**	5

1



9.303 720

2



9.303 728

3



9.303 732

4



9.303 736

5



7.655 427

6



6 Disposable spatulas LaboPlast/SteriPlast, PS/Green PE, white

NEW!

Bürkle

The LaboPlast and SteriPlast spatulas made of polystyrene are clean-room produced and individually packed for one-way needs. The LaboPlast Bio products are entirely made of renewable resources. Not only with regard to quality but also with regard to its characteristics for high-quality sampling, it is perfectly comparable with conventional polyethylene.
Due to their long, ergonomic and solid handles and pointed blades they can be easily pierced into paper and plastic bags. The spatulas are ideal for sampling of powder, granules and pastes. The spatulas are also available with a transparent sheath to close them immediately after the sampling procedure to secure a sterile and contamination-free sample. Additionally the SteriPlast spatulas are gamma radiation sterilized.

- Individually packed
- Production, assembling and packaging acc. to clean-room class 7 (10 000)
- According to EU food and FDA guidelines

Type	Length mm	Imm. depth mm	Version	Description	Material	PK	Cat. No.
LaboPlast	263	150	without sheath	non-sterile	PS	10	**6.265 035**
LaboPlast	268	150	with sheath	non-sterile	PS	10	**6.265 036**
SteriPlast	263	150	without sheath	sterile	PS	10	**6.265 047**
SteriPlast	268	150	with sheath	sterile	PS	10	**6.265 048**
LaboPlast Bio	263	150	without sheath	non-sterile	Green PE	10	**6.265 062**
SteriPlast Bio	263	150	without sheath	sterile	Green PE	10	**6.265 061**

E & OE.

1 2 3 Control seals for sampling **close-it**

NEW!

Bürkle

Printed or plain. **close-it*food*** is an aluminium backed, vapour-proof adhesive label with extremely strong adhesion. Sacks, boxes etc. which have been pierced with samplers can be hermetically resealed. Can even adhere to slightly moist or dusty sacks coated with fine powders, e.g. plaster, flour etc.

close-it*food* ensures aswell the necessary success when resealing sample openings, as it reliably prevents products from escaping after sampling. The adhesive complies with the European guidelines for foodstuffs. Just like the original, **close-it*food*** has a barrier layer of aluminium foil. This means that **close-it*food*** is suitable for sampling foodstuffs, pharmaceuticals, cosmetics, food additives - in short, for all applications in which the product must not be contaminated by contact with the adhesive.

Type	Colour	Description	PK	Cat. No.
close-it	Red	Printed, 95 x 95mm	500	**9.303 910**
close-it	Green	Printed, 95 x 95mm	500	**9.303 911**
close-it	Yellow	Printed, 95 x 95mm	500	**9.303 912**
close-it	Blue	Printed, 95 x 95mm	500	**9.303 913**
close-it	Black	Printed, 95 x 95mm	500	**9.303 914**
close-it	White	Plain, 95 x 95mm	500	**9.303 915**
Roller for close-it	-	-	1	**9.303 919**
close-it Maxi	Red	Printed, 150 x 150mm	250	**9.303 980**
close-it Maxi	Green	Printed, 150 x 150mm	250	**9.303 981**
close-it Maxi	Yellow	Printed, 150 x 150mm	250	**9.303 982**
close-it Maxi	Blue	Printed, 150 x 150mm	250	**9.303 983**
close-it Maxi	Black	Printed, 150 x 150mm	250	**9.303 984**
close-it Maxi	White	Plain, 150 x 150mm	250	**9.303 985**
Roller for close-it Maxi	-	-	1	**9.303 989**
close-it*food*	Red	Printed, 95 x 95mm	500	**6.228 255**
close-it*food*	Green	Printed, 95 x 95mm	500	**9.303 998**
close-it*food*	Yellow	Printed, 95 x 95mm	500	**9.303 996**
close-it*food*	Blue	Printed, 95 x 95mm	500	**9.303 997**
close-it*food*	Black	Printed, 95 x 95mm	500	**9.303 999**
close-it*food*	White	Plain, 95 x 95mm	500	**9.303 986**
close-it*food* Maxi	Red	Printed,150 x 150mm	250	**9.303 990**
close-it tape Maxi	White	Plain, 150 x 150mm	250	**9.303 991**
close-it*food* Maxi	yellow	Printed, Roll, 150mm x 150mm	250	**9.304 000**
close-it*food* Maxi	blue	Printed, Roll, 150mm x 150mm	1	**9.304 001**
close-it*food* Maxi	green	Printed, Roll, 150mm x 150mm	250	**9.304 002**
close-it*food* Maxi	black	Printed, Roll, 150mm x 150mm	1	**9.304 003**
close-it tape	White	Roll, 95mm x 50m	1	**9.303 992**
close-it tape Maxi	White	Roll, 150mm x 50m	1	**9.303 993**
close-it tape food	White	Roll, 95mm x 50m	1	**9.303 994**
close-it tape food Maxi	White	Roll, 150mm x 50m	1	**9.303 995**

1



2



3



4 Anti-tamper seal-it, self-adhesive roll

Bürkle

If a container opening is closed with Seal-it, then the container cannot be opened without destroying the Seal-it label. Seal-it is additionally provided with several cross-perforations which immediately tear when manipulated like a motorcar tax disc. Seal-it can be used to securely seal bottles, sample bags, sacks, specimen bags, envelopes, etc. The white labelling field on Seal-it can be written on with all conventional writing tools with, for example contents information, sampling date, name of operator, etc.

- Clear identification via numbers in sequence
- Integrated control label with the same number, for accompanying documents
- 500 consecutirlely numbered labels in each roll
- Format 178mm long, 30mm wide
- Tear-off perforation for each label

Type	PK	Cat. No.
Seal-it	500	**7.622 477**

4



For sample containers - please see page 513



1 Dispensing scoops, Aluminium

Schröder

Capacity ml	Overall length mm	Length Scoop mm	PK	Cat. No.
42	135	80	1	**9.201 113**
105	185	113	1	**9.201 118**
140	210	120	1	**9.201 121**
260	250	145	1	**9.201 125**
340	265	155	1	**9.201 126**
555	310	185	1	**9.201 131**
675	350	220	1	**9.201 135**
1510	400	270	1	**9.201 140**
3000	430	300	1	**9.201 143**



2 FoodScoop, Stainless steel

NEW!

Bürkle

Very stable hand scoop for various applications, particularly suited for the food industry.
Seamless connection of scoop and hollow handle, therefore without crevices and edges.
Especially smooth, highly polished surface.

- Especially sturdy model
- Stainless steel V2A (1.4301)
- With handy suspension eyelet

Capacity ml	Overall length mm	Length Scoop mm	PK	Cat. No.
100	215	120	1	**6.254 785**
200	230	140	1	**6.252 363**
250	245	155	1	**6.254 786**
350	290	180	1	**6.242 476**
500	350	220	1	**6.072 181**



3 Scoops, 18/10 steel

Dimensions scoop (W x L): 25 x 60mm

Isolab

Overall length mm	PK	Cat. No.
200	1	**4.008 514**



4 Dispensing scoops, stainless steel

Remanit® 4301

RSG

Capacity ml	Overall length mm	Length Scoop mm	Diam. mm	PK	Cat. No.
120	190	100	50	1	**9.201 219**
450	250	150	75	1	**9.201 222**
1000	310	200	105	1	**9.201 232**
1500	350	240	120	1	**9.201 235**
2000	365	250	150	1	**6.080 286**



1 2 Sampling scoops and spoons, PS, sterile

Bel-Art Products

- White or red high-impact polystyrene plastic.
- Individually sealed and sterilised in a polyethylene bag ready for one time use and disposal
- Long handle increases the distance between the hand and the sample
- Scoop stays vertical when packed or unpacked for use as weighing boat
- Red colored scoops reduces the chance of residual sample staying in the scoop or the scoop being accidently left behind in a sample
- Colour can serve as a code to avoid cross contamination
- Made from FDA grade materials
- Lot stamped for accurate lot tracing; shipped with a Certificate of Processing for Sterilization

Type	Capacity ml	Colour	PK	Cat. No.
Scoop	60	white	1	**9.150 461**
Scoop	125	white	1	**9.150 462**
Scoop	250	white	1	**9.150 463**
Scoop	60	red	1	**9.150 464**
Scoop	125	red	1	**6.242 234**
Scoop	250	red	1	**9.150 465**
Spoon	1.25	white	1	**9.150 639**
Spoon	2.46	white	1	**9.150 640**
Spoon	4.93	white	1	**9.150 641**
Spoon	14.79	white	1	**9.150 642**

Other sampling devices are available on request.





3 Measuring scoops, PP

VITLAB

White measuring scoops which are also suitable as weighing scoops.
With precision formed filling edge and comfortable, stable handle.
Easily readable volume quantities on the upper side of the handle.
Food-safe products according to EC Directive No. 10/2011.



Capacity ml	Length mm	PK	Cat. No.
2	60	1	**9.201 052**
5	82	1	**9.201 053**
10	100	1	**9.201 055**
25	135	1	**9.201 057**
50	160	1	**9.201 058**
100	200	1	**9.201 059**
250	260	1	**9.201 061**
500	315	1	**9.201 062**
1000	385	1	**9.201 065**

4 Measuring scoops, PE-HD

VITLAB

Natural colouring. Conical in shape with tapered filling edge.
Food-safe product according to EC Directive No. 10/2011.



Capacity ml	Length mm	PK	Cat. No.
15	115	1	**7.008 959**
25	135	1	**7.008 960**
65	185	1	**7.008 961**
110	215	1	**7.008 962**
150	250	1	**9.201 025**
350	310	1	**9.201 030**
750	350	1	**9.201 035**
1250	400	1	**9.201 040**

1



2



1 2 Disposable scoops LaboPlast/SteriPlast, PS/Green PE, white

Bürkle

The LaboPlast and SteriPlast scoops made of polystyrene are clean-room produced and individually packed for one-way needs. The LaboPlast Bio products are entirely made of renewable resources. Not only with regard to quality but also with regard to its characteristics for high-quality sampling, it is perfectly comparable with conventional polyethylene. They are ideal for sampling of powder, granules and pastes. The scoops are also available with transparent cover to close them immediately after the sampling procedure to secure a sterile and contamination-free sample. Additionally the SteriPlast scoops are gamma radiation sterilized.

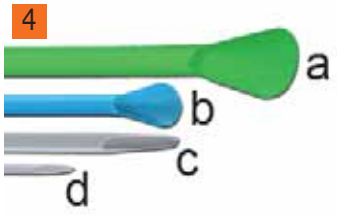
- Individually packed
- Production, assembling and packaging acc. to clean-room class 7 (10 000)
- According to EU food and FDA guidelines

Type	Capacity ml	Length mm	Version	Description	Material	PK	Cat. No.
LaboPlast	25	141	without lid	non-sterile	PS	10	**6.265 025**
LaboPlast	25	142	with lid	non-sterile	PS	10	**6.265 026**
LaboPlast	50	161	without lid	non-sterile	PS	10	**6.265 027**
LaboPlast	50	161	with lid	non-sterile	PS	10	**6.265 028**
LaboPlast	100	205	without lid	non-sterile	PS	10	**6.265 029**
LaboPlast	100	206	with lid	non-sterile	PS	10	**6.265 030**
LaboPlast	150	216	without lid	non-sterile	PS	10	**6.265 031**
LaboPlast	150	218	with lid	non-sterile	PS	10	**6.265 032**
SteriPlast	25	141	without lid	sterile	PS	10	**6.265 037**
SteriPlast	25	142	with lid	sterile	PS	10	**6.265 038**
SteriPlast	50	160	without lid	sterile	PS	10	**6.265 039**
SteriPlast	50	161	with lid	sterile	PS	10	**6.265 040**
SteriPlast	100	205	without lid	sterile	PS	10	**6.265 041**
SteriPlast	100	206	with lid	sterile	PS	10	**6.265 042**
SteriPlast	150	216	without lid	sterile	PS	10	**6.265 043**
SteriPlast	150	218	with lid	sterile	PS	10	**6.265 044**
LaboPlast Bio	25	141	-	non-sterile	Green PE	10	**6.265 055**
LaboPlast Bio	50	160	-	non-sterile	Green PE	10	**6.265 056**
LaboPlast Bio	100	205	-	non-sterile	Green PE	10	**6.265 057**
LaboPlast Bio	150	216	-	non-sterile	Green PE	10	**6.265 058**
SteriPlast Bio	25	141	-	sterile	Green PE	10	**6.265 049**
SteriPlast Bio	50	160	-	sterile	Green PE	10	**6.265 050**
SteriPlast Bio	100	205	-	sterile	Green PE	10	**6.265 051**
SteriPlast Bio	150	216	-	sterile	Green PE	10	**6.265 052**

3



4



3 4 Powder spatula smartSPATULAS®, PP

Heathrow Scientific

Single use polypropylene lab tools made to increase productivity and reduce costly contamination errors. They offer a clean alternative to metal spatulas.

- Size related designs to fit perfectly with standard 0.5, 1.5/2.0, 15 and 50 mL tubes
- Ideal for dispensing or sample collection of powders or soft solids
- Shatter resistant in liquid nitrogen and resistant to dilute acids and bases and can be used with hot liquids
- Anti-static, sterile and Eco-friendly versions available
- Autoclavable and complies with FDA standards for food contact

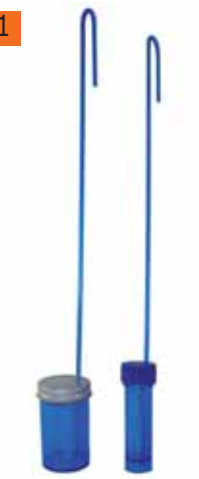
Description	Colour	For tubes ml	Length mm	Diam. mm	Figure	PK	Cat. No.
Micro Antistatic	Natural	0.2	140	3.5	d	300	**6.256 896**
Eco	Natural	15/1.5/2.0	140	7.0	-	300	**6.256 894**
Standard	Blue	15/1.5/2.0	210	7.0	b	300	**6.256 893**
Standard	Natural	15/1.5/2.0	210	7.0	c	300	**6.256 895**
Standard sterile	Natural	15/1.5/2.0	210	7.0	-	100	**6.256 898**
Macro	Green	50	310	1.0	a	150	**6.256 897**

1 LLG-Sampling Dippers, PS, sterile, with screw cap and handle

Blue sample container with PP lid (30ml) or metal cover with PVC seal (100 ml, 250 ml). Easy to transport after sampling by breaking the handle.
- For sterile sample collection and dispatch
- To minimize the risk of cross contamination
- Individually wrapped and EO sterilised
- Leakproof-tested screw cap
- Handle easily breakable after sampling

Capacity ml	Length Handle mm	Material container	Material Lid	PK	Cat. No.
30	200	PS	PP	50	**6.265 643**
100	385	PS	metal	50	**6.265 644**
250	330	PS	metal	50	**6.265 645**

1



2 Chemistry scoop, PP, with rod handle

Suitable for aggressive liquids. With beaker and PP rod handle. *Bürkle*

Capacity ml	Stem mm	Stem diam. mm	PK	Cat. No.
250	1000	20	1	**9.303 840**
600	1000	20	1	**9.303 842**
1000	1000	20	1	**9.303 844**

2



Sample Taking system INGENIOUS

A new, easy-to-handle sample taking system for manual sampling. *Windaus-Labortechnik*
General purpose thanks to
- quick and easy exchange of the sample taking equipment
- simple change by pressing the spring mechanism
- extremely strong fiber glass telescopic poles, non-corrosive
- for up to 20 different sample taking devices
- four different fiber glass telescopic poles extensible from 1.5m up to 6.00m in length

3 4 5 Fiber glass telescopic pole

Very robust telescopic pole, ideal for sample taking. Fiber glass makes it almost indestructible and non-corrosive.
Comfortable to carry even at low temperatures. Simple extension and adjustment mechanism.
You can change the length easily by a quarter rotation. (Pic. 3). At telescope poles of 3.85 to 6 meter the length could be easily changed by using the clamp (Pic. 2). Comfortable use of spring mechanism. This type can take all samplers and catchers with universal connecting part.

Length m	PK	Cat. No.
1.45 - 2.75	1	**6.801 684**
1.50 - 3.85	1	**6.241 444**
1.50 - 5.00	1	**6.263 282**
1.50 - 6.00	1	**6.263 283**

3



4



5



1



1 Waterlanding net

NEW!

Very robust, with nylon net, for catching flees, bugs, floating particles and water insects.
Mesh width 0.8mm.With robust galvanized ring of 200mm diameter. Double stitched execution between nylon mesh and linen. With universal connecting part. With universal connecting part.

Type	Material	Aperture size mm	PK	Cat. No.
Waterlanding net	nylon	0.8	1	**6.263 284**

2



2 Wire sieve net

NEW!

Robust wire sieve net, very robust and reinforced net version with crossed protection strings at the outside (to prevent the net from deforming). This landing net also has a reinforced net at the edges and therefore allows you to catch small animals directly off the ground. A possible bending is avoided by the strong and simple construction. Net diameter of 200mm, mesh width 1.5mm. With universal connecting part.

Type	Material	Aperture size mm	PK	Cat. No.
Wire sieve net	metal	1.5	1	**6.263 285**

3



3 Dip net

NEW!

For sample taking of solid material and organisms from water surfaces. Large version with 320x300mm width and length. Net made of polyamide (mesh width approx. 2 to 5mm), frame made of PVC material. With universal connecting part.

Type	Material	Aperture size mm	PK	Cat. No.
Dip net	polyamide	2 - 5	1	**6.263 286**

4



4 Vegetation scraping net

NEW!

With its double reinforced aluminum ring this version can be used for scraping off particles from bushes, and trees.
The net is made of nylon, mesh width 0.2mm, diameter is 280mm, net depth 500mm. With universal connecting part.

Type	Material	Aperture size mm	PK	Cat. No.
Vegetation scraping net	nylon	0.2	1	**6.263 287**

5



5 Plankton net

NEW!

Mesh width 65µm, robust version with sturdy galvanized ring of 200mm diameter. The ring is covered with green linen fabric to protect the silk gauze from ripping up. With 100ml collecting vessel (100ml Kautex flask). Net could be opened at the botton for filling the bottles. With universal connecting part.

Type	Material	Mesh size µm	PK	Cat. No.
Plankton net	silk gauze	65	1	**6.263 288**

6



6 Pendulum beaker

NEW!

Made of stainless steel; nothing can be spilt because beaker automatically swings into a vertical position.
Dimension of the beaker: 100mm diameter, 130mm height, 1 liter volume. With universal connecting part.

Type	Material	Capacity Litres	PK	Cat. No.
Pendulum beaker	stainless steel	1	1	**6.263 290**

E & OE.

Sampling system TeleScoop

TeleScoop is a versatile sampling system with exchangeable tools for a wide range of applications. *Bürkle*
The tools (angular beaker, pendulum beaker, bottle holder, stainless steel beaker and catch net e.g. for taking solid and organic samples from water courses) are attached to the rod by a practical snap-in joint. Ideal for sampling from baths, tanks, shafts, open water courses etc. Sampling depths down to 6M can be reached with the adjustable telescopic aluminum rod.

1 TeleScoop Telescopic rods, aluminium

NEW!

Aluminium, with red plastic fittings. The special construction prevents the bars rotating during retrieval of a sample. With screw clamps and end-stops to prevent the sections sliding apart. *Bürkle*



Length m	PK	Cat. No.
0.65 - 1.20	1	**9.303 800**
0.70 - 1.80	1	**6.266 590**
0.95 - 2.80	1	**9.303 801**
1.25 - 2.50	1	**9.303 802**
1.15 - 3.00	1	**9.303 804**
1.65 - 4.50	1	**9.303 806**
1.75 - 6.00	1	**9.303 807**

2 Angular, sample beakers, angled for TeleScoop, PP

With individually variable angle adjustment. *Bürkle*



Capacity ml	Material	PK	Cat. No.
600	PP	1	**9.303 810**
1000	PP	1	**9.303 812**
2000	PP	1	**9.303 814**

3 Pendulum beaker for TeleScoop, PP

Automatically swings into a vertical position. Nothing can be spilt. Ideal for deep and narrow shafts. *Bürkle*



Capacity ml	Material	PK	Cat. No.
600	PP	1	**9.303 820**
1000	PP	1	**9.303 822**
2000	PP	1	**9.303 824**

4 Bottle holder for TeleScoop, PP/PA

For industrial dip samplers. Holds bottles up to max. 88mm diameter incl. 750ml bootle. Suitable for plastic and glass bottles. With universal quick-action clamping strap. *Bürkle*



Type	PK	Cat. No.
Bottle holder	1	**9.303 830**

5 Dip sampler for TeleScoop, stainless steel V2A

Beaker with scraper for pasty or powdery materials *Bürkle*

- With lip for scraping
- Sterilisable



Capacity ml	PK	Cat. No.
1000	1	**9.303 846**




1 2 Catch nets for TeleScoop, PVC/PA - PP/PA

Bürkle

Ideal for sampling from basins, tanks, shafts, open waters etc. The telescopic aluminium rods TeleScoop allow sampling up to 6m depth.
- For industries and water treatment
- Mesh width: 2mm up to 5mm
- Depth catch, net depth: 250mm

Type	Material	Dimensions (W x D) mm	PK	Cat. No.
Surface catch net	PVC / PA	310 x 280	1	**9.303 828**
Depth catch net	PP / PA	190 x 430	1	**9.303 829**



3 Liquid sampler MiniSampler, PE

Bürkle

Taking samples is quick, easy, clean and practical.
With the MiniSampler, the sample liquid only comes into contact with the suction hose and the sample bottle. Cross contamination is largely prevented. Bottles can be tightly sealed immediately after the sample is taken with a tamper-evident cap.
The single use, PE suction hose can be quickly replaced, ensuring that samples are never contaminated. A new hose can be used for each sample if required. Because of its small diameter (8mm) and flexibility the hose can reach sampling areas that are otherwise inaccessible.

Included:
Supplied with ten 100ml PE bottles, 10m of PE suction hose (6 x 8mm), 1 hose cutter , 1 stainless steel hose weight and 20 seal-it safety seal labels in a carrying case.

Type	PK	Cat. No.
MiniSampler	1	**9.303 970**



4 Mini-Sampler PTFE

Bürkle

For ultrapure sampling.
Also suitable for viscous oils.
Complete with one PFA Sample Jar 180 ml, 5 m PTFE suction tubing (6 x 8 mm), one tubing cutter, one stainless steel tubing weight and 20 seal-it safety seal labels in case.

Type	PK	Cat. No.
Mini sampler	1	**9.303 975**



5 Sampler ProfiSampler, aluminium

Bürkle

Vacuum-operated sample collector for sampling solventsand flammable liquids in "Explosion Categories IIA and IIb) out of drums, tanks, road tankers, railway wagons, ships, lakes, ground water.
- filling level control, automatic return flow and overfill protection by built-in venting valve.
- optimized draw volume: 200ml, suction pressure 0.5 bar and suction depth down to 4m of water.
- with bottle thread GL 45 (switable for Schott glas bottles 100 to 1000ml)
- can be supplied with optimized, straight suction tube for simpler sampling.
- transport case for tidy transport and disposal
- Always check the chemical resistance of parts coming into contact with the sample.

wear protective clothing!
When taking samples of flammable liquids, the device must be earthed. Antistatic-Set available as accessory.
ProfiSampler Aluminium
Comprises: aluminium vacuum pump, with feet, venting valve and GL45 bottle thread, 1 x 500ml glass bottle, 5 x 220mm long, conductive, black PA suction tubes, 1 tubing cutter, 1 brass hose weight, 24 seal-it bottle seals, earthing cable.

Type	PK	Cat. No.
ProfiSampler Aluminium	1	**6.225 622**
PA suction tubes, black, 220cm length, pack of 10 pieces	10	**6.226 207**

PTFE/PFA tubings - please see page 143.

1 Sampler UniSampler "Ex", for sampling class A1 flammable liquids



Specially developed for sampling class A1 flammable liquids (e.g. benzene, petrol). *Bürkle*
Glass bottles and tubing electrically connected and grounded via an earthing cable.
The UniSampler "EX" was developed in cooperation with "Gütegemeinschaft Tankschutz e.V."

Operation:
1. Earth the Uni-Sampler.
2. Lower the suction hose to the desired depth.
3. Attach the adapter to the sample bottle.
4. Generate vacuum with the hand pump and collect sample.
5. Remove the filled sample bottle, seal and label.

- PTB approval D-333-009 618/00
- Comprises 4M of sample tubing, glass sample bottle, manual vacuum pump and earthing cable in carry case

Type	PK	Cat. No.
UniSampler "Ex"	1	**9.303 831**

2 Vampire Sampler



For field sampling of liquids. *Bürkle*
Portable, peristaltic tubing pump for all liquids. Ideal for sampling from drums, tanks, wells, water separators, sewage installations and treatment plants.
- Simple cleaning, liquids pumped only come into contact with tubing
- Independent of mains power with rechargeable battery and charger
- Sample taken directly into specific sample bottle
- Maximum depth that samples can be withdrawn: 5M
- Also suitable for contaminated or particle-laden liquids
- Good chemical resistance
- High flow rate up to 2.0L/min.

Supplied with bottle basket, drive unit, two re-chargeable batteries, battery charger, peristaltic pump 250ml LDPE bottle and 5M of PE suction tubing.

Type	PK	Cat. No.
Vampire sampler, complete	1	**9.303 851**
Extension tubing, PE, 5m	5	**9.303 839**
Wide-mouth sampling bottle, 250ml	1	**9.303 854**
Wide-mouth sampling bottle, 500ml	1	**9.303 855**
Bottle holder for 500ml bottle	1	**9.303 845**

3 Sampler LiquiSampler, PTFE/FEP or PP



DIN 53242. For liquids. Made of ultra pure and chemically inert PTFE/FEP or PP for contamination-free sampling. Practical push button, single-handed operation. Suitable for point, cross-sectional, and bottom sampling. Ideal for sampling from open and closed drums, kegs, tanks, silos, water sources (ponds, lakes, streams, rivers). Suitable for all commercial kegs and drums with openings of at least 25mm diameter. All surfaces are non-porous and crevice-free preventing accumulation of dirt. Only round-profile screwthreads, suitable for food hygiene applications, are used.. Simple to dismantle and clean. *Bürkle*

Material	Length mm	Diam. mm	PK	Cat. No.
PTFE/FEP	600	25	1	**6.255 307**
PTFE/FEP	1000	25	1	**9.303 950**
PTFE/FEP	2000	25	1	**9.303 951**
PP, transparent	600	25	1	**6.901 807**
PP, transparent	1000	25	1	**9.303 955**
PP, transparent	2000	25	1	**9.303 956**

1



9.303 960

Sampler ViscoSampler, PTFE/FEP or PP

Ultra-pure sampler with powerful suction for tough substances. *Bürkle*
Choice of construction. PTFE/FEP or PP.
Specially designed for tough substances, such as slime, slurries, wet clay and soil samples, sediments, oils, emulsions and creams.
The filter flask sucks up and discharges the material. All surfaces are non-porous and crevice-free, preventing dirt accumulation. Only round-profile threads, suitable for food hygiene applications, are used. Allow easy dismantling and cleaning.

Material	Length mm	Diam. mm	PK	Cat. No.	
PTFE/FEP	600	25	1	**6.803 102**	
PTFE/FEP	1000	25	1	**9.303 960**	1
PTFE/FEP	2000	25	1	**9.303 961**	
PP	600	25	1	**6.253 163**	
PP	1000	25	1	**9.303 965**	
PP	2000	25	1	**9.303 966**	

2



9.303 935

3



9.303 937

(Liquid samplers, vessels and bottles) Dipping vessels

According to DIN 51750 pt. 2 *Bürkle*

Dipping Vessel
For sampling liquids from tanks, lorry tankers, etc. Made for Ex-use or stainless steel V2A. 1L capacity, 81mm diameter, 400mm high. Without lowering cable.
Operation: Lower vessel into liquid. Bottom and cap valves open automatically. Liquid flows through the vessel. The valves close at the target depth, and the desired sample can be collected.

Dipping bottle EX
For sampling flammable liquids.
For sampling group A mineral oil products, Explosion Categories IIA, IIB and IIC. Made from brass that do not produce sparks, 89mm diameter, 385mm high, weight 3kg. Without lowering cable.
Operation: 1. Lower bottle into liquid. 2. Pull the cable when the target spot has been reached and the stopper opens. 3. Sample flows in. 4. Pull up dipping bottle and remove sample. Use an electrically conductive, manually operated reel and lowering cable or chain.

Dipping bottle glass
For sewage disposal plants, sludge and water samples. Nickel-plated brass frame with glass sample bottle. 1000ml capacity, 148mm diameter, 330mm high, weight 3.1kg. Without lowering cable.
Operation: 1. Lower bottle into liquid. 2. Pull cable when target depth is reached and open stopper. 3. Sample flows in. 4. Pull bottle back up and remove sample.

Immersion Cylinders
For target spot and bottom samples of mineral oil products. Made of nickel-plated brass. Heavy, robust design (4.1kg). Without lowering and pull cables
Target spot sample: 1. Immersion cylinder is lowered in the tank to be sampled by the manually operated reel. 2. The separate pull cable is used to open the valve when the target spot is reached and the sample then enters the immersion cylinder.
Bottom sample: 1. Lower the immersion cylinder to the bottom. 2. The weight of the immersion cylinder opens the valve automatically when the bottom is reached and the sample then enters the immersion cylinder.

Target immersion cylinder
With the Target immersion cylinder, liquid samples can be taken from a particular point. The immersion cylinder is lowered on a strong and sealed tube. When the target has been reached, a valve at the tube end is opened. This vents the immersion cylinder and fills it with the sample. The immersion cylinder is pulled up and emptied via the screw thread. Weight 2.5kg. With 5M venting tube. Screw off top enables easy cleaning.

Mini immersion cylinder
For sampling liquids in narrow places where access is difficult. Can also be used in curved dipping tubes and barrels with narrow openings. Capacity 50ml, 32mm diameter, height 180mm, weight 280g. Without lowering cable.
Upper body unscrews for easy cleaning.

4



9.303 938

5



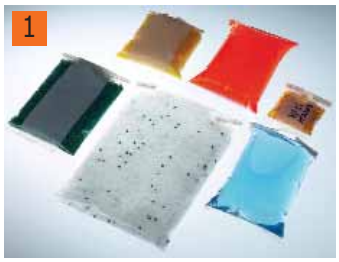
7.623 934

Type	PK	Cat. No.	
Dipping vessel, nickel-plated brass	1	**9.303 935**	2
Dipping vessel, stainless steel V2A	1	**9.303 936**	
Dipping bottles Ex	1	**9.303 937**	3
Dipping bottle	1	**9.303 938**	4
Immersion cylinder	1	**9.303 939**	
Target immersion cylinder	1	**7.623 934**	5
Mini immersion cylinder	1	**9.303 933**	
Manual cable reel, PP green, without cable	1	**6.200 263**	
Manual cable reel Ex, black with grounding cable, without cable	1	**6.234 815**	
Cable, V2A stainless steel conductive	1	**9.303 943**	
AISI 304 stainless steel lowering cable/PTFE-coated, length 10m	1	**6.087 044**	
lowering PP cable, length 10m	1	**7.620 817**	

1 Sample bags SteriBag, PE, sterile

Sterile, PE, liquid sample bags. For samples from chemistry, pharmaceutical, medical, food technology applications etc. *Bürkle*

Type A: Without write-on panel
Type B: With write-on panel.



Filling volume approx ml	Width mm	Length mm	Description	PK	Cat. No.
60	76	127	A	500	**9.404 114**
60	76	127	B	500	**9.404 119**
150	76	178	A	500	**9.404 115**
150	76	178	B	500	**9.404 120**
450	114	229	A	500	**9.404 116**
450	114	229	B	500	**9.404 121**
650	140	229	A	500	**9.404 117**
650	140	229	B	500	**9.404 122**
900	114	305	A	500	**9.404 118**
900	114	305	B	500	**9.404 123**
1650	178	305	A	250	**6.223 094**
1650	178	305	B	250	**6.223 093**

2 Sample bags SteriBag StandUp, PE, sterile, with write-on panel

Sterile, PE, liquid sample bags. For samples from chemistry, pharmaceutical, medical, food technology applications etc. *Bürkle*

This makes SteriBag StandUp stable and able to stand on its own without a separate stand or support, leaving both your hands free to take the sample and fill the bag.



Filling volume approx ml	Width mm	Length mm	PK	Cat. No.
400	114	229	500	**9.404 124**
600	140	229	500	**9.404 125**

Whirl-Pak® Sample bags, PE, sterile

NEW!

Whirl-Pak® bags are sterile polyethylene laboratory sample bags used to transport samples for biological testing and other applications. *Nasco*
With or without write-on strip. Bags should not be used at temperatures above 82°C. Bags can be frozen to any temperature, even liquid nitrogen temperatures down to -210°C - careful handling required after freezing.

3



7.080 208

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.
30	0,057	65x125	with label	500	**7.080 208** 3
60	0,057	75x125	with label	500	**7.058 005**
120	0,057	75x185	with label	500	**7.077 212**
530	0,064	115x230	with label	500	**7.058 120**
710	0,076	150x230	with label	500	**6.242 083**
2720	0,102	254x380	with label	250	**6.266 304**
60	0,057	75x125	without label	500	**6.091 055**
120	0,057	75x185	without label	500	**9.404 234**
207	0,076	95x180	without label	500	**7.981 345**
1240	0,076	150x380	without label	500	**6.266 302**
530	0,064	115x230	without label	500	**9.404 235**
710	0,076	150x230	without label	500	**6.228 639**
1060	0,076	125x380	without label	500	**9.404 236**
2040	0,076	190x380	without label	500	**6.305 117**

Adhesive Labels - please see page 156

Pressure-seal bags - please see page 181.

1



6.263 368

Whirl-Pak® Filter bags, PE, sterile

NEW!

Nasco

All the bags use the same filter material. These special bags contain a third layer of finely perforated polyethylene, which filters out the solids in the sample when used in a homogeniser blender. This allows for easy pipetting of the sample. The hole diameter in the filter layer measures 0.33 mm and there are 285 holes per square cm. The filter is sealed into the perimeter of the bag on the sides and bottom, allowing the sample to be placed in the bag on either side. The liquid will transfer through the filter, but the solids stay on one side.

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.	
710	0,102	150x230	with label	250	**7.970 783**	
1627	0,102	190x300	with label	250	**6.263 368**	1

2



9.404 231

Whirl-Pak® Sample bags, PE, sterile, free standing

NEW!

Nasco

The Whirl-Pak® Stand-Up Bags make sample handling and testing much easier.
Theygive users the ability to perform important laboratory functions with both hands, because the bag will stand completely by itself. No rack or other holder is needed to keep the bag upright. When the sample is placed inside, the specially gusseted bottom flattens out, allowing the bag to stand up on its own. It works just like a beaker or bottle, however, it costs less, is sterilized, won't break, and uses only a fraction of storage space as the other containers.
The white, easy-to-write-on strip makes sample identification easier and more convenient.
Bags should not be used at temperatures above 82°C. Bags can be frozen to any temperature, even liquid nitrogen temperatures down to -210°C - careful handling required after freezing.

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.	
120	0,064	75x185	with label, free standing	500	**9.404 231**	2
530	0,076	115x230	with label, free standing	500	**9.404 232**	
750	0,076	150x230	with label, free standing	500	**6.266 303**	
1065	0,102	125x380	with label, free standing	250	**6.260 542**	
2041	0,102	190x380	with label, free standing	250	**6.260 543**	

3



6.052 018

Whirl-Pak® Sample bags/Homogenizing bags, PE, sterile

- Sterile, solid bags for the homogenization of liquids and solids
- With and without labelling strips

Nasco

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.	
380	0,076	130x190	without label	500	**6.052 018**	3
710	0,102	150x230	without label	500	**9.404 233**	
710	0,102	150x230	with label	500	**7.059 854**	
1630	0,102	190x300	with label	500	**7.059 855**	

4



6.260 544

Whirl-Pak® Special sample bags, PE, sterile

NEW!

Nasco

Whirl-Pak® bags are sterile polyethylene laboratory sample bags used to transport samples for biological testing and other applications.
Following special versions are available:
- With outside pocket for paperwork. Keeps important paperwork dry, clean, and separate from the sample.
- Made of black pigmented PE-film providing maximum protection for samples that are sensitive to light.
- Including a sterile polyethylene glove and a special dry sponge free of bactericides and non-inhibitory
- With sterile 60 ml-scoop. For fast, convenient sampling of a variety of materials.
- Bags can be frozen to any temperature, even liquid nitrogen temperatures down to -210°C - careful handling required after freezing.
- Bags should not be used at temperatures above 80°C

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.	
710	0,064	150x230	with document bag	500	**6.260 544**	4
530	0,064	115x230	with light protection, black	500	**6.260 459**	
530	0,064	115x230	with specimen sponge and gloves	100	**7.970 688**	
530	0,064	115x230	with scoop (60ml)	50	**7.970 696**	

E & OE.

1 Whirl-Pak®Thio-Bag®sample bags

NEW!

Nasco

The Whirl-Pak® Thio-Bag® is specially designed for sampling chlorinated water from for example swimming pools. Each sterile bag contains a nontoxic, nonnutritive tablet containing 10 mg of active sodium thiosulfate to neutralize chlorine at the time of collection. The bag is EPA approved and has the additional benefits of saving time, utility costs, storage space, disposal costs, and replacing sample containers. No. 6.266 300 has a convenient write-on strip and 4 oz and 100 ml fill lines to help collect the correct amount of water as required by Standard Methods (fill lines are approximate).
No. 6.266 301 contains three times the amount of sodium thiosulfate as the smaller Thio-Bag® and holds 300 ml when filled to the top of the white write-on strip (fill line)

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.
100	0,057	75x185	with label	100	**6.266 300**
300	0,064	115x230	with label	100	**6.266 301**

1



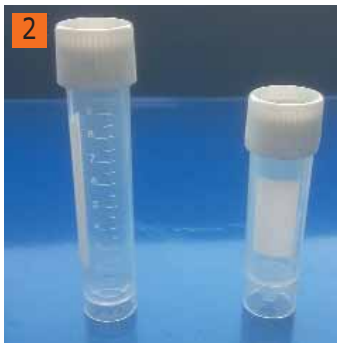
2 LLG-Transport tubes, PP, with screw cap

NEW!

For convenient storage and dispatch of samples.
- Conical bottom
- Free standing
- Printed graduation
- 1 1/4 turn thread design for super fast screwing

Capacity ml	Outer diam. mm	Height with cap mm	PK	Cat. No.
5	16	60	100	**6.265 667**
10	16	80	100	**6.265 668**

2



3 LLG-Sample containers, PP, with screw cap, HDPE

NEW!

Ideal for liquid specimen collection, transportation and storage.
- Container made of non-cytotoxic polypropylene
- Very solid quality
- Top and bottom gripping assures easy opening and closing when wearing gloves
- Half-transparency containers
- With graduation
- With label

Capacity ml	Height mm	Outer diam. mm	Ø Cover mm	PK	Cat. No.
20	42	32	37	1000	**6.265 649**
40	40	45	50	500	**6.265 650**
60	58	45	50	500	**6.265 651**
90	77	45	50	300	**6.265 652**
120	77	53	58	300	**6.265 653**
250	52	89	97	154	**6.265 654**
500	110	89	97	132	**6.265 655**
1000	138	111	120	64	**6.265 656**

3



4 LLG-Sample containers with tamper-evident cap, PS and PP

White with tamper-evident cap. Multi-purpose containers e.g. for storage or transport of samples.

Capacity ml	Diam. with cap mm	Height with cap mm	Material container	Material Lid	PK	Cat. No.
40	36	52	PS	PE-LD	10	**9.402 350**
100	58	58	PP	PP	10	**9.402 353**
250	64	95	PS	PE-LD	10	**9.402 356**
1000	116	116	PP	PP	5	**9.402 359**

4



More containers - please see page 41.



1 LLG-Round sample containers, PP

White with screwed on lid.

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
30	58	19	10	**9.402 310**
75	58	47	10	**9.402 313**
310	81	81	10	**9.402 318**
600	119	67	10	**9.402 321**
1250	119	130	5	**9.402 324**



2 3 Sample bottles, PP, for water sampling, sterile

NEW!

Isolab

These sterile bottles are specially designed for taking, handling, transporting and storing water samples. Manufactured either as clear or amber colour from low density polypropylene.
Clear bottles are manufactured from glass-like transparent special grade polypropylene. Amber bottles are manufactured from an amber coloured clear polypropylene which is higly translucent but still preventing the UV light penetrating inside the bottle. Square body form offers easy handling, and optimum space saving solutions during storage period. Wide bottle neck (GL 50) provides easy filling and pouring. Cap is made from high density polypropylene with self sealing lock with integral security ring. Unique cap inner design ensures hermetical closure and guarantees an excellent leak and contamination proof bottle. Embossed graduation (presicion of ±2%) on side wall enables volume verifications. Each bottle is labelled specifying e.g. sample and source descriptions, code and lot numbers and expiry date.
Bottles with liquid sodium thiosulfate (20 mg/lt - acc to ISO/FDIS 19458:2006) are ideal to analyse water meant for human consumption, swimming pools, and any other water where chlorine may modify the composition of the sample.
Empty bottles, without sodium thiosulfate ; ideal to sample water for physical and chemical analysis, as well as for other sample requirements that demands sterile bottles.
Single packed bottles available on request.



Capacity ml	Description	PK	Cat. No.
250	clear, sterile R, without sodium thiosulfate	108	**9.001 075**
500	clear, sterile R, without sodium thiosulfate	84	**9.001 076**
1000	clear, sterile R, without sodium thiosulfate	30	**9.001 077**
250	amber, sterile R, without sodium thiosulfate	108	**9.001 078**
500	amber, sterile R, without sodium thiosulfate	84	**9.001 079**
1000	amber, sterile R, without sodium thiosulfate	30	**9.001 080**
250	clear, sterile R, with sodium thiosulfate	108	**9.001 081**
500	clear, sterile R, with sodium thiosulfate	84	**9.001 082**
1000	clear, sterile R, with sodium thiosulfate	30	**9.001 083**
250	amber, sterile R, with sodium thiosulfate	108	**9.001 084**
500	amber, sterile R, with sodium thiosulfate	84	**9.001 085**
1000	amber, sterile R, with sodium thiosulfate	30	**9.001 086**



E & OE.

1 Jaw Crusher, BB 50

Retsch



Benchtop Jaw Crusher for the rapid and gentle, coarse and preliminary size reduction of hard, brittle and ductile materials. Continuous digital gap width adjustment with scale, enhanced ultimate fineness up to 0.5mm.
- Large fold-back hopper
- Removable crusher arm for easy cleaning
- Adjustable speed allows adaptation to sample characteristics
- Convenient operating keypad with digital display
- Memory for gap width setting
- Wear compensation with zero-point adjustment

Features:
- Throughput/charge: single items, charges to 3000ml
- Supply requirements: 220-240V, 50Hz

Type	Material breaking jaws	Feed size up to mm	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
BB 50	Manganese steel	to 40	420 x 560 x 460	79	1	**9.738 770**
BB 50	Stainless steel	to 40	420 x 560 x 460	79	1	**9.738 771**
BB 50	Tungsten carbide	to 40	420 x 560 x 460	79	1	**9.738 772**
BB 50	Zirconia	to 40	420 x 560 x 460	79	1	**9.738 773**
BB 50*	Steel 1.1750	to 40	420 x 560 x 460	79	1	**9.738 774**

* for heavy metal free grinding.
Other power supply variants are available on request at the same price.

2 Jaw Crushers, BB 100, BB 200, BB 300

Retsch



For rapid and gentle coarse grinding and crushing of hard, brittle and tough materials. Continuous gap adjustment with scale and zero-point adjustment for wear compensation. Excellent performance with enhanced final fineness, robust construction, fitted with quick-release hopper, receiver with safety switch and casing. Standard model is supplied with manganese steel breaking jaws.

Features:
- High throughput
- Continuous gap width adjustment
- Braking motor with safety switch
- Final fineness approx. 2 to 5mm
- Easy cleaning of grinding chamber
- Supply requirements 400 V 3-ph, 50 Hz

Type	Feed size up to mm	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
BB 100	50	320 x 800 x 960	137	1	**9.739 098**
BB 200	90	450 x 900 x 1160	300	1	**9.519 120**
BB 300	130	670 x 1600 x 1450	700	1	**9.739 093**

3 Jaw crushers PULVERISETTE 1 *classic line* (2 Models)

Fritsch



Ideal for fast and effective pre-crushing of hard and very hard brittle materials in the areas of mining and metallurgy, chemistry, geology and mineralogy, glass industry, ceramics industry, rocks and soils. The final fineness can be easily set from the outside (10 different stages are possible).

Equipment Model I/II:
With crushing jaws and lateral support walls made of tempered steel. Crushers are also available in other voltages and with crushing jaws and lateral support walls made of stainless steel, chromium-free steel, hardmetal tungsten carbide, zirconium oxide and manganese steel.

	Model I/Model II
Max. feed size:	approx. 60mm/approx. 95mm
Throughput:	up to 140kg/h/up to 200kg/h
Gap widths (final fineness):	1 to 15mm/1 to 15mm
Supply requirements:	400V/3~, 50-60Hz/400V/3~, 50-60Hz
Dimensions (WxDxH):	400 x 800 x 800mm/400 x 800 x 800mm
Net weight:	177kg/202kg

Type	Rating W	PK	Cat. No.
Jaw crusher PULVERISETTE 1 *classic line*, Modell I	1450	1	**9.519 213**
Jaw crusher PULVERISETTE 1 *classic line*, Modell II	2780	1	**9.519 223**

The Jaw Crushers PULVERISETTE 1 are also available as *premium line* models with increased performance, even easier to operate and fast cleaning.



1 LLG-Mortars only, porcelain

Capacity ml	Ext. diam. mm	Height mm	DIN	Description	PK	Cat. No.
25	51	32		rough inside	1	**9.164 410**
70	63	41	12906	rough inside	1	**6.227 149**
75	76	45		rough inside	1	**9.164 411**
110	83	50		rough inside	1	**6.232 577**
160	90	56	12906	rough inside	1	**6.243 865**
220	105	64		rough inside	1	**9.164 412**
400	125	71	12906	rough inside	1	**9.164 413**
2250	224	127		rough inside	1	**6.252 383**
110	83	50		glazed	1	**6.227 289**
220	105	64		glazed	1	**6.234 591**



2 LLG- Pestle only, porcelain

Head diam. mm	Length mm	DIN	Description	PK	Cat. No.
14	54		rough	1	**6.227 150**
24	115	12906	rough	1	**9.164 420**
30	135	12906	rough	1	**6.232 574**
36	150	12906	rough	1	**9.164 421**
42	175	12906	rough	1	**9.164 422**
74	250	12906	rough	1	**6.252 384**
42	175	12906	glazed	1	**6.227 292**
36	150	12906	glazed	1	**6.234 592**



3 Mortars only, porcelain

To DIN 12906. With spout, pestle not supplied. Glazed externally. Inside rough. *Haldenwanger*

Capacity ml	Int. diam. mm	PK	Cat. No.
70	65	1	**9.164 206**
170	90	1	**9.164 209**
400	130	1	**9.164 212**
700	150	1	**9.164 215**
1000	180	1	**9.164 218**
2600	240	1	**9.164 225**
6000	330	1	**9.164 235**



4 Pestles only, porcelain

To DIN 12906. With glazed handle. Unglazed grinding surface. *Haldenwanger*

Nominal diam. mm	Head diam. mm	Length mm	PK	Cat. No.
63	24	115	1	**9.164 306**
90	30	135	1	**9.164 309**
125	36	150	1	**9.164 312**
150	42	175	1	**9.164 315**
180	55	210	1	**9.164 318**

Nominal size = mortar internal diameter
Special sizes available on request.



5 Mortar with pestle, porcelain

Unglazed, with wooden handled pestle.

Ext. diam. mm	PK	Cat. No.
115	1	**9.164 373**
135	1	**9.164 374**
150	1	**9.164 375**

1 Mortars and pestles, MF

White. Melamine formaldehyde (MF). With spouted mortar. Resistant to boiling. Autoclavable at 121°C.

BRAND

Diam. mm	Height mm	PK	Cat. No.
125	80	1	**9.164 355**
150	90	1	**9.164 357**



2 Mortars and Pestles, Achat, black

NEW!

Manufactured from agate stone. Recommended for use in laboratories demanding contamination free results. It has a hardness of 7 Mohs providing very good resistance during crushing the samples. Complete with relavent size a agate pestle.

Isolab

Capacity ml	Int. diam. mm	PK	Cat. No.
20	50	1	**6.267 372**
60	75	1	**6.267 373**
125	100	1	**6.267 374**
250	125	1	**6.267 375**



3 Mortars and pestles, Agate

Agate. Polished. Standard quality. Other sizes available on request.

Capacity ml	Ext. diam. mm	Int. diam. mm	PK	Cat. No.
9	50	40	1	**9.164 050**
25	75	60	1	**9.164 075**
50	100	85	1	**9.164 100**
100	125	100	1	**9.164 125**



4 Mortar, stainless steel

Mortar and pestle head are both made from stainless steel.

Bochem

Description	Capacity ml	PK	Cat. No.
Mortar	250	1	**6.900 119**
Pestle (140mm)		1	**6.079 568**





1



1 Laboratory blender MemoryBlender2

ROTOR

The Laboratory Memory Blender 2 is a compact programmable commercial blender, driven by a high power ventilator cooled motor. The high-quality construction and the electronically controlled speed cycles guarantee a maximum performance. The microprocessor based controller features 6 push buttons with 12 optimized pre-programmed cycles which are suitable for most applications. Using the built-in "Memory" function, these cycles can be replaced with individual programs with different time and speed settings. Even the speed of the "Pulse" function can be changed. It's possible to disable the "Memory" function, to prevent unwanted overwriting. The blender can also be operated in a manual mode with 6 fixed speeds. The easy to understand LEDs show the state of the controller.

The high performance programmable commercial silent blender.
- 12 programmable cycles for automatic processing
- 6 fixed speeds in manual mode
- very quiet, space saving, solid and elegant
- polished stainless steel
- easy cleaning

Safety features:
- By opening the plastic cover the motor stops immediately.
- A protective switch prevents the motor from overloading and overheating.
- Rugged main switch.
- The blender conforms to the international IEC standards

Please order mixing containers separately.

Before starting each operation the durability and resistance of all blender materials, e. g. glass, CNS, PP, rubber have to be checked concerning their tolerance against the substances to process.

Specifications

Motor input power:	1000W
Speed range:	2000 to 15000rpm, programable
Dimensions (WxDxH):	225 x 265 x 505mm/225 x 410 x 610mm (open)
Protection class acc. to EN 60335-1.	

Description	PK	Cat. No.
Laboratory blender MemoryBlender2 incl. sound protection hood	1	**9.571 309**
2l stainless steel container HighPower, with lid and knife kit	1	**7.631 205**
2l polycarbonate container HighPower, with lid and knife kit	1	**9.571 308**
125ml glass container without baffles, without lid	1	**9.571 301**
250ml glass container without baffles, without lid	1	**9.571 302**
500ml glass container without baffles, without lid	1	**9.571 303**
1000ml glass container without baffles, without lid	1	**9.571 304**
1000ml glass container with baffles, without lid	1	**9.571 305**

2



2 Mixers MICROTRON® MB 550/MB 800

NEW!

KINEMATICA GmbH

The systems MICROTRON® MB 550 and MB 800 are specially designed for mixing, dispersing, homogenizing, emulsifying and size reduction of cuttable materials. Four different attachments made from glass with volumes of 125ml, 250ml, 500ml and 1000ml are available for the MICROTRON® MB 550. Attachments made from stainless steel with volumes of 2000ml and 4000ml are available for the MICROTRON® MB 800. Both systems are safety laboratory devices: grounded, double safety isolated, radio screened. A safety system prevents uncontrolled starting and therewith personal injuries: the mixer can only be started with well attached safety hood or lid. In case the hood or lid will be removed during operation the device will be stopped automatically. The systems comply with the CE guidelines for industrial machines. Both systems are designed to withstand high loads; they are space saving and always ready to use.

Mixing jars and protective hoods - please order separately. Mixer MICROTRON® MB 550 can only be started with attached safety hood.

Specifications

Motor input power	
MB 550:	550W
MB 800:	800W
Speed range	
MB 550:	Stepless, 600 to 14.000 min^{-1}
MB 800:	Stepless, 500 to 17.000 min^{-1}
Dimensions (Ø x H):	190 x 245mm
Protection class acc. to EN 60335-1.	

Type	PK	Cat. No.
MB 550	1	**6.241 879**
MB 800	1	**6.259 416**

E & OE.

Accessories for Mixer MICROTRON® MB 550/MB 800

NEW!

KINEMATICA GmbH

Mixing attachments including cutter head.
The mixing attachments MBA 125 to 1000ml can be dismantled completely and easily.
All parts are dishwasher safe and rust free.
The mixing attachments MBA 2000 and MBA 4000 are made of dishwasher safe stainless steel.
Their robust safety lids have an integrated feed opening for dosing.

For the operation of the mixer 550 MB MICROTRON a safety hood is mandatory.

Type	Description	Volume ml	Material	For	PK	Cat. No.
MBA 125	Mixing attachment	125	Glass	MB 550	1	**6.257 342**
MBA 250	Mixing attachment	250	Glass	MB 550	1	**6.260 922**
MBA 500	Mixing attachment	500	Glass	MB 550	1	**6.241 880**
MBA 1000	Mixing attachment	1000	Glass	MB 550	1	**6.260 923** 1
MBA 2000	Mixing attachment with safety lid	2000	Stainless steel	MB 800	1	**6.260 924** 2
MBA 4000	Mixing attachment with safety lid	4000	Stainless steel	MB 800	1	**6.259 417**
MBH 125	Safety hood for MBA 125	-	Acrylic glass	MB 550	1	**6.257 343**
MBH 250	Safety hood for MBA 250	-	Acrylic glass	MB 550	1	**6.260 925**
MBH 500	Safety hood for MBA 500	-	Acrylic glass	MB 550	1	**6.241 881**
MBH 1000	Safety hood for MBA 1000	-	Acrylic glass	MB 550	1	**6.260 926** 3

1



6.260 923

2



6.260 924

3



6.260 926

Dry Mill, POLYMIX® PX - MFC 90 D

KINEMATICA GmbH

The PX-MFC 90 D is suitable for dry sample grinding in the laboratory.
It's possible to change the hammer and cutting Mill sets.

- The blade grinding attachment is used for processing of dried, stringy and fibrous and grease-free materials
Application: Wood, straw, dried grease-free meat, leather, paper, carbon, synthetic etc.
- The hammer grinding attachment is used for processing of dried, brittle and grease-free materials
Application: Dried grain, dried beans, bones, rock, ceramics etc.
- Sieves 0.2mm up to 6mm diameter
- Hopper volume 300ml
- If the door is opened during operation for any reason, the motor is stopped

Specifications

Application volume:	Hopper 300ml
Sieves:	0.2, 0.5, 0.8, 1.0, 1.5, 2.0, 3.0, 4.0, 5.0, 6.0mm
Motor input power:	1000W
Speed range:	speeds up to 6000min^{-1}
Drive Dimensions (L x W x H):	251 x 325 x 480mm
Tested to:	IEC/EN 61000-6-2/EN 61000-6-3
	IEC/EN 61010-2-51

4



6.241 371

Type	PK	Cat. No.
PX - MFC 90 D drive unit 230V/EU, with hammer grinding attachment	1	**6.241 371** 4
Blade grinding attachment for PX-MFC 90 D	1	**9.571 495** 5

Sieves 0.2 to 6.0mm also available.

5



9.571 495

1



1 Cyclone Mill TWISTER

Retsch

Application:
The Cyclone Mill TWISTER is specially designed for the processing of foods and feeds for subsequent NIR analysis. The optimized form of rotor and grinding chamber generates an air jet which carries the ground sample through the integrated cyclone into the sample bottle. The air jet prevents the material from heating up, thus preserving the moisture content.

Features:
- Ideal for grinding feeds, grains, forage and other similar products
- 3 controlled speeds
- Cyclone separator with 250 ml collecting bottle for quick extraction of sample
- No cross contamination thanks to easy cleaning
- Convenient operating panel
- Professional industrial design with long lifetime

Specifications:
- Feed size: <10mm
- Final fineness: <500µm
- Batch size/feed quantity: <250 ml
- Speed setting: 10.000/12.000/14.000 rpm
- Dimensions (WxDxH): 449 x 283 x 427mm
- Weight: approx. 14kg
- Power supply: 230 V, 50/60 Hz

Supplied with:
Cyclone Mill TWISTER complete with rotor, grinding ring, sieve inserts (1.0mm and 2.0mm) and 10 sample bottles 250ml.

Type	PK	Cat. No.
TWISTER	1	**6.256 514**

Further inserts and accessories available on request.

2



2 Ultra Centrifugal Mill ZM 200

Retsch

Application:
Extremely rapid and gentle size reduction of soft to medium-hard and fibrous materials.
Ideal for grinding, e.g., chemicals, foods and feeds, washing powder, plastics, fertilizers, pharmaceutical raw materials and finished products. Also suitable for cryogenic grinding.

Features:
- gentle on the material thanks to 2-step rotor/screen system
- wide speed range, adjustable from 6 000 to 18 000 min^{-1}
- patented cassette system for maximum sample recovery and easy cleaning
- defined final fineness due to ring sieves with aperture sizes from 0.08 to 10 mm
- comfortable safety housing with automatic cover closure
- motor compartment and electronics protected against dust and material penetration
- wide range of accessories with different rotors, ring sieves and cassettes

Specifications:
- Feed size: up to 10mm
- Final fineness: down to 40µm
- Batch: up to 300/4500ml (with cyclone)
- Size (WxDxH): 410 x 365 x 515 mm
- Weight: approx. 38 kg
- Mains connection: 230 V, 50/60 Hz

Supplied with:
ZM 200 with cassette 900 ml.
Rotors and ring sieves have to be ordered separately.

Further rotors and ring sieves on request (e.g. for grinding without heavy metal contamination).

Type	PK	Cat. No.
ZM 200	1	**9.738 970**

E & OE.

Accessories for Ultra Centrifugal Mill ZM 200

NEW!

Retsch

Description	PK	Cat. No.
Rotor, stainless steel, 6 teeth	1	**9.739 064**
Rotor, stainless steel, 12 teeth	1	**9.739 065**
Rotor, stainless steel, 24 teeth	1	**9.739 066**
Ring sieve, trapezoid holes 0.08mm	1	**9.738 972**
Ring sieve, trapezoid holes 0.12mm	1	**9.738 973**
Ring sieve, trapezoid holes 0.20mm	1	**9.738 974**
Ring sieve, trapezoid holes 0.25mm	1	**9.738 975**
Ring sieve, trapezoid holes 0.50mm	1	**9.738 976**
Ring sieve, trapezoid holes 0.75mm	1	**9.738 977**
Ring sieve, trapezoid holes 1.00mm	1	**9.738 978**
Ring sieve, trapezoid holes 1.50mm	1	**9.738 979**
Ring sieve, trapezoid holes 2.00mm	1	**9.738 980**
Ring sieve, round holes 3.00mm	1	**9.738 981**
Ring sieve, round holes 4.00mm	1	**9.738 982**
Ring sieve, round holes 5.00mm	1	**9.738 983**
Ring sieve, round holes 6.00mm	1	**9.738 984**
Conversion kit for grinding small quantities, consisting of push-fit rotor with 8 teeth, labyrinth disc, cassette 50 ml	1	**9.738 987**
Feeder kit, DR 100, drive unit for 220-240V, 50Hz, with feed attachment, with 40mm push-fit feed chute, funnel and stand	1	**9.738 971**
Cyclone with 5 litres collecting receptacle and filter bag	1	**9.738 990**

Further Ring sieves and rotors available on request.

1 Rotor Beater Mill SR 300

NEW!

Retsch

The rotor beater mill SR 300 is ideally suited for use in the laboratory and for small series production due to its robust design and the possibility to process large sample volumes. Grinding chamber, feed hopper and material inlet and outlet are completely made of high-quality stainless steel. The variable speed of up to 10.000rpm allows for adaptation to specific application requirements.



Features:
- High throughput for batchwise size reduction of large sample volumes
- Speed from 3.000 to 10.000rpm
- Optional 180° grinding insert suitable for grinding hard, brittle samples
- Defined final fineness due to bottom sieves with aperture sizes from 0.08 to 10mm
- Easy cleaning thanks to removable cassette, hopper and push fit rotor
- Optional distance rotor suitable for heat-sensitive samples
- Ring filter and collecting vessel with convenient, dust-tight bayonet catch
- Quick-action door lock and motor brake

Function principle:
Size reduction and deagglomeration in the SR 300 are achieved by hammering, impact and shear effects. The quick-acting door lock ensures easy access to the grinding chamber for quick cleaning. With their motor brake (braking time < 0.5s), safety switch, splashback and access barrier in the inlet and outlet areas, Rotor Beater Mills offer the highest degree of operating safety.

Scope of supply: Mill with rotor, 5l collecting vessel and filter hose.

Base frame, sieves and sieve frames, please order separately.

Specifications

Feed size:	<25mm
Final fineness:	<0.05 mm
Speed range:	3000 to 10000rpm
Dimensions (WxDxH) with base frame:	600 x 700 x 1200mm
Weight:	approx. 60kg
Power supply:	220-240V, 50/60Hz

Type	PK	Cat. No.
SR 300, stainless steel	1	**6.268 106**

Accessories for Rotor Beater Mill SR 300

NEW!

Retsch

Description	PK	Cat. No.
Retaining frame 360°, stainless steel	1	**6.268 107**
Ring sieve, trapezoid holes 0.25mm	1	**9.738 914**
Ring sieve, trapezoid holes 0.50mm	1	**9.738 915**
Ring sieve, trapezoid holes 0.75mm	1	**9.738 916**
Ring sieve, trapezoid holes 1.00mm	1	**9.738 917**

1



1 Cross beater mill SK 300

NEW!

Retsch

The cross beater mill SK 300 is used for batch-wise or continuous preliminary and fine size reduction. This robust mill is suited for laboratories as well as for the rough conditions of a production environment. Thanks to the powerful drive and rotor speed up to 4000rpm it is often possible to achieve a final fineness <100 microns in one process.

Features:
- High throughput for batch-wise size reduction of large sample volumes
- Suitable for feed sizes up to 25mm
- Adjustable speed from 2000 to 4000rpm
- Defined final fineness due to bottom sieves with aperture sizes from 0.12 to 10mm
- Rapid cleaning thanks to easily removable cassette, hopper and push fit rotor
- Ring filter and collecting vessel with convenient, dust-tight bayonet catch
- Quick-action door lock safety lock and electric brake

Function principle:
Size reduction in the SK 300 takes place by hammering, impact and shearing effects. The air drawn in through the hopper by the cross beater accelerates the discharge of the ground material. The airborne fine fraction is separated off by a downstream filter system.

Supplied with: Cross Beater Mill with grinding insert, cross beater, baffle plates, filter hose and 5l collecting vessel.

Bottom sieves and base frame, please order separately.
Feeders and bottom sieves in furrther sizes are available on request.

Specifications

Feed size:	up to 25mm
Final fineness:	approx. 0.1mm
Speed range:	2000 to 4000rpm
Dimensions (WxDxH) with base frame:	600 x 700 x 1200mm
Weight:	approx. 57kg
Power supply:	220-240V, 50/60Hz

Type	PK	Cat. No.
SK 300, hardened steel	1	**6.268 112**
SK 300, cast iron	1	**6.268 113**
SK 300, stainless steel	1	**6.268 114**

Accessories for Cross Beater Mill SK 300

NEW!

Retsch

Description	PK	Cat. No.
Base frame for SK 300	1	**6.268 115**
Bottom sieve trapezoid holes 0.12mm	1	**6.268 116**
Bottom sieve trapezoid holes 0.20mm	1	**6.268 117**
Bottom sieve trapezoid holes 0.25mm	1	**6.268 118**
Bottom sieve trapezoid holes 0.50mm	1	**6.268 119**
Bottom sieve trapezoid holes 0.75mm	1	**6.268 120**
Bottom sieve trapezoid holes 1.00mm	1	**6.268 121**
Bottom sieve trapezoid holes 1.50mm	1	**6.268 122**
Bottom sieve trapezoid holes 2.00mm	1	**6.268 123**
Bottom sieve round holes 3.00mm	1	**6.268 124**
Bottom sieve round holes 4.00mm	1	**6.268 125**
Bottom sieve round holes 5.00mm	1	**6.268 126**
Bottom sieve round holes 6.00mm	1	**6.268 127**
Bottom sieve round holes 8.00mm	1	**6.268 128**
Bottom sieve round holes 10.00mm	1	**6.268 129**
Ring filter for 5l collecting vessel	1	**6.268 130**

1 Cutting Mill SM 100/200/300

Retsch

Rapid and gentle size reduction of bulky, soft, medium-hard, fibrous, elastic and thermally sensitive materials. The most powerful model, the SM 300, is especially suitable for cutting heterogeneous mixtures such as household waste, plastic materials, computer and electronic scrap. The mills are also used for organic materials like wood, roots, bones, plants and feed pellets. They can be equipped with various rotors and hoppers. The SM 300 features a variable speed which makes it perfectly adaptable to the particular application requirements.

Features:
- powerful size reduction thanks to 3kW drive with high torque and RES technology (SM 300)
- perfect adaptation to application requirements by variable speed from 700rpm to 3000rpm (SM 300)
- optimum cutting effects thanks to double acting cutting bars (SM 200, SM 300)
- quick and easy cleaning without tools due to fold-back housing with smooth surfaces and push-fit rotor and sieves (SM 200, SM 300)
- defined final fineness due to bottom sieves with aperture sizes from 0.25mm to 20mm
- wide range of accessories including various hoppers, collection systems, rotors and sieves

Supplied with:
SM 100 with 5L collecting receptacle. Please order rotor, hopper and bottom sieve and base frame (option) separately.
SM 200/SM 300 with 5L collecting receptacle, base frame. Please order rotor, hopper and bottom sieve separately.
Accessories available on request.

Specifications	**SM 100/200/300**
Feed size:	up to 60 x 80mm
Final fineness:	0.25 to 20mm
Retractable hopper:	-/yes/yes
Push-fit rotor:	yes/ yes/yes
Speed at 50 Hz:	1500rpm (SM 300) variable 700 to 3000rpm
Drive power:	1.5/2.2/3kW
Mains connection:	3/N~ 400V, 50Hz (SM 300) 220-230V, 50/60Hz

Type	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
SM 100	582 x 700 x 1675	73	1	**9.739 069**
SM 200	576 x 760 x 1675	90	1	**9.739 067**
SM 300	576 x 750 x 1677	160	1	**9.739 083**

Further voltages and versions for heavy-metal free grinding on request.



Rotors and Receptacles SM 100/200/300

Retsch

Further accessories as hoppers and bottom sieves available on request.

Description	PK	Cat. No.
6-disc rotor stainless steel, with reversible cutting tips	1	**9.739 074**
Parallel section rotor stainless steel	1	**7.900 427**
Collecting receptacle, 30L plastic, incl. adapter and filter hose	1	**9.739 607**
Collecting unit 250/500ml incl. 2 sample bottles	1	**9.739 608**
V rotor stainless steel for SM 300	1	**6.267 310**

1



1 Knife Mills GRINDOMIX GM 200/GM 300

Retsch

The Knife Mills Grindomix GM 200 and GM 300 are suitable for the rapid and reproducible size reduction and homogenisation of food and feed materials. They can process substances with a high water, oil or fat content just as quickly and reliably as dry, soft and medium-hard products.

Features:
- Very fast and reproducible grinding and homogenisation of foodstuffs, final fineness < 300 µm
- Speed-controlled industrial motor
- Autoclavable grinding tools
- For sample volumes up to 700ml (GM 200) or 4500ml (GM 300)
- Digital display of grinding time and speed
- Interval operation possible
- Optional gravity lid for automatic adjustment of grinding chamber volume
- 10 parameter combinations can be stored (GM 300)
- Drive power : ~ 900W (GM 200); continuous 1.1kW, short term peak 3 kW (GM 300)
- Electrical supply data: 220-240V, 50-60Hz

Supplied with:
GM 200 complete with 1L plastic container, standard lid and stainless steel knife.
GM 300 complete with 5L plastic container, standard lid, stainless steel knife and scraper.

Type	Feed size up to mm	Maximum Throughput/ Charge	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
GM 200	40	700 ml	350 x 392 x 275	10.0	1	**9.739 252**
GM 300	approx. 130	4500 ml	440 x 440 x 340	30.0	1	**9.738 500**

Accessories for Knife Mill GM 200/300

NEW!

Retsch

Type	Description	PK	Cat. No.
GM 200	Grinding container, 1 litre, plastic, autoclavable	1	**9.738 510**
GM 200	Grinding container, PP, 1L	1	**9.739 213**
GM 200	Grinding container, glass, 1L	1	**9.739 208**
GM 200	Grinding container, stainless steel, 1L	1	**9.739 248**
GM 200	Standard lid, PP for grinding container of autoclavable plastic, PP, glass or steel	1	**7.930 430**
GM 200	Reduction lid, PP for volume reduction to 0.5L for grinding container of autoclavable plastic or PP	1	**9.739 222**
GM 200	Gravity lid, PP for grinding container of autoclavable plastic and PP	1	**9.739 210**
GM 200	Gravity lid, PP with overflow channels for grinding container of autoclavable plastic and PP	1	**9.739 218**
GM 200	Gravity lid, PP for grinding container of glass or steel	1	**9.739 211**
GM 200	Gravity lid, PP with overflow channels for grinding container of glass or steel	1	**9.739 209**
GM 200	Scraper	1	**9.739 212**
GM 200	Stainless steel knife for GM 200	1	**7.930 431**
GM 200	Knife, stainless steel with serrated blades	1	**6.267 311**
GM 200	Knife, pure titanium for heavy-metal free grinding	1	**9.739 254**
GM 300	Grinding container, plastic, transparent, autoclavable and scratch-resistant, 5L, including knife holder	1	**9.738 501**
GM 300	Grinding container, plastic, transparent, autoclavable and scratch-resistant, 5L, without knife holder	1	**9.738 502**
GM 300	Grinding container, stainless steel, autoclavable, 5L, including knife holder	1	**9.738 503**
GM 300	Grinding container, stainless steel, autoclavable, 5L, without knife holder	1	**9.738 504**
GM 300	Standard lid, plastic, transparent, autoclavable and scratch-resistant	1	**9.738 505**
GM 300	Gravity lid, plastic, autoclavable and scratch-resistant	1	**9.738 506**
GM 300	Gravity lid, plastic, with overflow channels, autoclavable and scratch-resistant	1	**9.738 507**
GM 300	Standard knife, stainless steel, autoclavable	1	**9.738 508**
GM 300	Knife, stainless steel (full metal blade and cylinder), autoclavable	1	**6.267 312**
GM 300	Knife, stainless steel with serrated blades, autoclavable	1	**6.267 313**
GM 300	Knife, titanium-niob coating, autoclavable, for grinding without heavy metal contamination	1	**6.267 314**
GM 300	Scraper	1	**9.738 509**

E & OE.

1 Disc Mill DM 200

The DM 200 disc mills are mainly used for preliminary and fine grinding of medium-hard and hard-brittle substances in batches. Grinding discs are available in 4 different materials. *Retsch*

Specifications:
- feed size: up to 20mm
- ultimate fineness: up to 0.1mm
- batch: up to 2.5l
- dimensions (WxDxH): 440 x 400 x 870mm
- weight: approx. 140kg
- supply requirement: 3/N~ 400 V, 50/60 Hz

Supplied with: disc mill DM 200 without grinding discs.
Please order grinding discs separately.

Type	PK	Cat. No.
DM 200	1	**9.739 030**

Accessories for Disc Mill DM 200

Retsch

Type	PK	Cat. No.
Grinding discs - hardened steel	1	**9.739 031**
Grinding discs - manganese steel	1	**9.739 032**
Grinding discs - tungsten carbide	1	**9.739 033**
Grinding discs -- zirconium oxide	1	**9.739 034**



2 Mortar Grinder RM 200

Suitable for dry and wet grinding of soft, brittle, hard and paste-like samples. *Retsch*
Depending on the sample, amounts from approx. 10ml up to 190ml can be reduced in size, triturated and homogenised. With beech wood scraper (special accessory) for pharmaceutical and homeopathic applications. The RM 200 is exceptionally easy to operate and clean. With digital time control and performance display, scale for reproducible pestle setting, built-in automatic switch-off and rapid motor-stop.
Please order mortar and pestle separately.

Specifications

Feed size*:	max. 8mm
Batch size/Feed volume:	10 to 190ml
Final fineness*:	approx. 10µm
Dimensions (WxDxH):	400 x 370 x 480mm
Weight: approx:	approx. 24 kg (without grinding set)
Supply requirements:	220 - 240V 50Hz



Type	PK	Cat. No.
RM 200	1	**9.738 170**

*depending on feed material

Accessories for Mortar Grinder RM 200

Retsch

Description	PK	Cat. No.
Mortar, hard porcelain	1	**9.738 151**
Mortar, agate	1	**9.738 172**
Pestle, hard porcelain	1	**9.738 173**
Pestle, agate	1	**9.738 174**

Mortars and pestles made from zirconium oxide, sintered corundum, steel and tungsten carbide are available on request.

1



9.739 080

Mixer Mills MM 200/400

Retsch

The mixer mills are true laboratory "all-rounders". They have been developed specially for grinding, homogenising and mixing of small amounts of sample in only a few seconds.
They are also perfectly suitable for the disruption of biological cells as well as for DNA/RNA recovery.
The MM 400 can also be used for cryogenic and wet grinding.

Features:
- 2 milling stations
- Digital setting of time and vibration intensity
- 9 separate programmes can be stored
- Wide selection of grinding jar sizes and materials
- Self-locking and self-centering, clamping device for grinding jars (MM 400)
- Screw-top grinding jars up to 50ml, especially suitable for wet and cryogenic grinding (MM 400)

Accessories for cryogenic grinding and adapter with centrifuge tubes for cell disruption available on request.
Grinding jars and balls please order separately.

Specifications

Feed size*	
MM 200:	up to 6mm
MM 400:	up to 8mm
Ultimate fineness*	
MM 200:	< 10µm
MM 400:	< 5µm
Charge	
MM 200:	max. 2 x 10ml
MM 400:	max. 2 x 20ml
Digital preselection of vibrational frequency	
MM 200:	3 to 25Hz (180 to 1500rpm.)
MM 400:	3 to 30Hz (180 to 1800rpm.)
Power supply:	100 - 240V 50/60Hz

Type	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
MM 200	371 x 461 x 266	25.00	1	**9.739 080** 1
MM 400	371 x 461 x 266	26.00	1	**9.739 091**

*depending on feed material

2



2 Grinding Jars for Mixer Mill MM 200

Retsch

Material	Capacity ml	PK	Cat. No.
Stainless steel	1.5	1	**9.738 823**
Stainless steel	5.0	1	**9.738 829**
Stainless steel	10.0	1	**9.738 835**
Stainless steel	25.0	1	**9.738 839**
Agate	5.0	1	**9.738 827**
Agate	10.0	1	**9.738 833**

Mixing beakers available on request.

3



3 Grinding Jars for Mixer Mill MM 400

With screw cap.

Retsch

Advantages:
- simple and safe handling
- dust and air-tight
- Suitable for wet and cryogenic grinding

Material	Capacity ml	PK	Cat. No.
Stainless steel	1.5	1	**9.738 848**
Stainless steel	5.0	1	**9.738 849**
Stainless steel	10.0	1	**9.738 960**
Stainless steel	25.0	1	**9.738 964**
Stainless steel	35.0	1	**9.738 875**
Stainless steel	50.0	1	**9.738 885**
Agate	5.0	1	**9.738 852**
Agate	10.0	1	**9.738 961**
Zirconium oxide	10.0	1	**9.738 962**
Zirconium oxide	25.0	1	**9.738 965**
Zirconium oxide	35.0	1	**9.738 880**
Tungsten carbide	10.0	1	**9.738 963**
Tungsten carbide	25.0	1	**9.738 864**
Hardened steel	25.0	1	**9.738 869**
PTFE	25.0	1	**9.738 874**
PTFE	35.0	1	**9.738 966**

E & OE.

1 Mixer Mill CryoMill



Retsch

The CryoMill is designed for the cryogenic size reduction of materials which cannot be ground at room temperature or whose composition would be changed by it. The grinding jar is cooled before and during the grinding process with liquid nitrogen through an integrated cooling system. Thus the sample is embrittled and its volatile components are preserved. The size reduction principle is the same as that of the well-proven Mixer Mill MM 400. The CryoMill can also be operated without the cooling system which makes it suitable for a wide range of applications.

Features:
- Powerful cryogenic grinding by impact and friction, up to 30 Hz
- Closed LN_2-system (autofill) for enhanced safety, avoids any contact of the user with LN2
- Screw-top grinding jars for convenient, leak-proof operation
- Clearly structured user interface, memory for 9 SOPs
- Wide range of accessories including LN_2 feeding systems, various jar and ball sizes, adapter racks, materials

Specifications

Feed size	up to 8mm
Ultimate fineness	< 5µm
Charge	max. 1 x 20ml
Adjustable frequency range	3 to 30Hz (180 to 1800rpm.)
Dimensions (WxDxH)	385 x 675 x 370mm
Weight	40kg
Power supply:	100 - 240V, 50/60Hz

Type	PK	Cat. No.
CryoMill	1	**9.739 299**

Please order Autofill, grinding jars and grinding balls separately.

Ball charge table for grinding jars MM 200/MM 400/CryoMill

Grinding jars ml	Volume ml	Feed size up to mm	Ball diam. mm	Bulbs
1.5	0.2 - 0.5	1	5	1 - 2
5.0	0.5 - 2.0	2	7	1 - 2
10.0	2 - 4	4	10 / 12	1-2 / 1-2
25.0	4 - 10	6	10 / 12 / 15	5-6 / 2-4 / 1-2
35.0	6 - 15	6	10 / 12 / 15 / 20	6-9 / 4-6 / 2-3 / 1
50.0	8 - 20	8	10 / 12 / 15 / 20 / 25	12-14 / 6-8 / 3-4 / 1 / 1

2 Grinding balls for Mixer Mill MM 200/MM 400/CryoMill

NEW!



Retsch

Material	Diam. mm	PK	Cat. No.
Zirconium oxide	10	1	**9.738 419**
Zirconium oxide	20	1	**9.738 847**
Hardened steel	10	1	**9.738 381**
Hardened steel	12	1	**9.738 868**
Stainless steel	5	1	**9.738 870**
Stainless steel	7	1	**9.738 871**
Stainless steel	10	1	**9.738 382**
Stainless steel	12	1	**9.738 873**
Stainless steel	20	1	**9.738 387**
Stainless steel	25	1	**9.738 403**
Tungsten carbide	7	1	**9.738 877**
Tungsten carbide	10	1	**9.738 384**
Tungsten carbide	15	1	**9.738 414**
PTFE with steel core	20	1	**9.738 888**
Agate	5	1	**9.738 860**
Agate	7	1	**9.738 861**
Agate	10	1	**9.738 383**

Further grinding balls available on request.

1 Vibratory Disc Mill RS 200

NEW!

Retsch

The Vibratory Disc Mill RS 200 is suitable for the extremely quick, loss-free and reproducible grinding of hard, brittle and fibrous materials to analytical fineness. The grinding results achieve a high degree of reproducibility even after very short grinding times. The RS 200 is primarily used for sample preparation for spectral analysis.

Features:
- Reproducible results due to "Stabilized-Plane-Drive"
- Variable speed 700 to 1500rpm, stepless
- Extremely short grinding time
- 10 Standard Operating Procedures storable
- Grinding tools in 5 different materials
- Easy handling of the grinding set due to new ergonomic design and new carry handle
- New quick-action grinding set clamping system for convenient and safe tightening
- Protection of the grinding set (reduced maximum speed of 1200 and 700 rpm respectively) due to automatic tungsten carbide and agate detection
- Easy 1-button operation with colored graphics display and optimized menu structure

Specifications

Feed size*:	< 15mm
Ultimate fineness**:	< 20µm
Batch size/Feeding quantity:	35 to 150ml
Grinding time setting:	digital, 1 second - 99 minutes 59 seconds
Dimensions (WxDxH):	836 x 780 x 1220mm
Weight:	approx. 210 kg

* depending on feed material and grinding set volume
**depending on feed material

Type	PK	Cat. No.
Vibratory Disc Mill RS 200	1	**9.738 781**
Grinding set, hardened steel, 50ml	1	**9.738 952**
Grinding set, hardened steel, 100ml	1	**9.738 955**
Grinding set, hardened steel, 250ml	1	**9.738 782**
Grinding set, tungsten carbide, 50ml (only for 1200rpm)	1	**9.738 783**
Grinding set, tungsten carbide, 100ml (only for 1200rpm)	1	**9.738 784**
Grinding set, tungsten carbide, 250ml (only for 1200rpm)	1	**9.738 785**
Grinding set, agate, 50ml (only for 700rpm)	1	**9.738 953**
Grinding set, agate, 100ml (only for 700rpm)	1	**9.738 956**
Grinding set, zirconium oxide, 50ml	1	**9.738 786**
Grinding set, zirconium oxide, 100ml	1	**6.222 238**
Carry handle for RS 200 grinding sets	1	**9.738 787**
Carry handle insert for 50ml grinding set hardened steel or tungsten carbide	1	**9.738 788**
Carry handle insert for 50ml grinding set agate	1	**9.738 789**
Carry handle insert for 50ml grinding set zirconium oxide	1	**9.738 790**
Carry handle insert for 100ml grinding set tungsten carbide	1	**9.738 791**



E & OE.

1 Planetary Ball Mills PM 100/100 CM/200/400



Retsch

Planetary Ball Mills are suitable for mixing and grinding soft, medium-hard, extremely hard, brittle and fibrous materials. They are used whenever high degrees of fineness down to the submicron range are to be achieved in a very short time. In addition to dry and wet grinding, they are also suitable for colloidal grinding and mechanical alloying. Typical materials are minerals, ores, chemicals, ceramics, soils, household and industrial waste etc.

Features:
- extremely high ultimate fineness down to submicron range
- 1, 2 or 4 grinding stations
- grinding jar volumes from 12ml to 500ml
- suitable for long-term trials and continuous use
- programmable starting time
- power failure back-up ensures storage of remaining grinding time
- reproducible results due to digital parameter setting
- 10 parameter combinations can be stored
- single button operation with graphic display
- automatic grinding chamber ventilation for cooling the grinding jars
- grinding jars in 7 sizes and 8 different materials available

Supplied with: Planetary Ball Mill only. Grinding jars and grinding balls have to be ordered separately.
The PM 100 CM is a Planetary Ball Mill with a speed ratio of 1:-1. Size reduction is not so much achieved by impact but by pressure and friction which is more gentle on the material.

Specifications

Ultimate fineness:	< 1µm
Dimensions (WxDxH):	630 x 415 x 468mm
PM 400	836 x 780 x 1220mm
Supply requirements:	230V, 50-60Hz

Type	Grinding stations	Grinding jars ml	Feed size up to mm	Maximum Throughput/ Charge	Weight kg	PK	Cat. No.
PM 100	1	12 to 500	up to 10	up to 220 ml	86.00	1	**9.739 270**
PM 100 CM	1	12 to 500	up to 10	up to 220 ml	86.00	1	**9.739 275**
PM 200	2	12 to 125	up to 4	up to 2 x 50 ml	72.00	1	**9.739 271**
PM 400	4	12 to 500	up to 10	up to 4 x 220 ml	290.00	1	**9.739 274**

Please order grinding jars and grinding balls separately.

2 Grinding Jars for Planetary Ball Mills PM 100/100 CM/200/400

NEW!



Retsch

Material	Capacity ml	PK	Cat. No.
Hardened steel*	500	1	**9.738 222**
Stainless steel	125	1	**9.738 340**
Stainless steel*	500	1	**9.738 223**
Tungsten carbide	50	1	**9.738 311**
Tungsten carbide*	250	1	**9.738 218**
Agate	125	1	**9.738 345**
Sintered aluminium oxide	50	1	**9.738 327**
Sintered aluminium oxide*	500	1	**9.738 226**
Zirconium oxide	50	1	**9.738 325**
Zirconium oxide*	250	1	**9.738 221**
Zirconium oxide*	500	1	**9.738 227**
Silicon nitride	125	1	**9.738 343**
Silicon nitride	250	1	**9.738 354**
Silicon nitride	500	1	**6.267 315**

*not suitable for PM 200.
Further grinding jars on request

Ball charge table for grinding jars PM 100/100 CM/200/400

Grinding jars ml	Volume ml	Feed size up to mm	Ball diam. mm	Bulbs
50.0	5 - 20	3	5 / 10 / 15 / 20	200 / 10 / 7 / 3
80.0	10 - 35	4	5 / 10 / 15 / 20	250 / 25 / 10 / 5
125.0	15 - 50	6	5 / 10 / 15 / 20	500 / 30 / 18 / 7
250.0	25 - 120	10	5 / 10 / 15 / 20 / 30	1200 / 50 / 45 / 15 / 6
500.0	75 - 220	10	5 / 10 / 15 / 20 / 30 / 40	2000 / 100 / 70 / 25 / 8 / 4

1



1 Grinding Balls for PM 100/100 CM/200/400

NEW!

Retsch

Material	Diam. mm	PK	Cat. No.
Agate	10	1	**9.738 383**
Sintered aluminium oxide	10	1	**9.738 380**
Sintered aluminium oxide	20	1	**9.738 385**
Sintered aluminium oxide	30	1	**9.738 390**
Sintered aluminium oxide	40	1	**9.738 395**
Hardened steel	10	1	**9.738 381**
Stainless steel	10	1	**9.738 382**
Stainless steel	20	1	**9.738 387**
Stainless steel 0.5 kg	2	1	**9.738 425**
Stainless steel 0.5 kg	3	1	**9.738 426**
Zirconium oxide	10	1	**9.738 419**
Zirconium oxide	20	1	**9.738 847**
Zirconium oxide	30	1	**9.738 417**
Zirconium oxide	40	1	**9.738 418**
Silicon nitride	10	1	**9.738 400**
Silicon nitride	20	1	**9.738 305**
Silicon nitride	30	1	**9.738 304**
Silicon nitride	40	1	**9.738 303**
Tungsten carbide	10	1	**9.738 384**
Tungsten carbide	20	1	**9.738 389**
Tungsten carbide	30	1	**9.738 394**

Further Grinding balls available on request.

2



2 High Energy Ball Mill Emax

NEW!

Retsch

The Emax is an entirely new type of ball mill for high energy milling for medium-hard, hard, brittle and fibrous materials. The combination of high friction and impact results in extremely fine particles within the shortest amount of time. Thanks to the cooling system with water, the high energy input is effectively used for the grinding process without overheating the sample. The Emax is capable of continuous grinding operation without interruptions for cooling down. The high energy input in combination with the unique cooling system provides perfect conditions for effective mechanical alloying or grinding down to the nanometer range.

Features:
- Speed of 2000rpm allows for ultra-fast and fine pulverization of the sample
- Controlled water cooling allows for continuous operation without cool down breaks
- Temperature-controlled grinding
- Narrow particle size distribution thanks to special jar design which improves mixing of the sample
- 10 combinations of grinding parameters storable
- Operation with 2 grinding jars with integrated safety closure
- Range of jar materials allow for contamination free grinding

Specifications

Material feed size:	< 5mm
Final fineness:	< 80nm
Batch size/feed quantity:	2 x 45ml
Dimensions (WxDxH):	625 x 645 x 525mm
Power supply:	1-phase
Weight:	approx. 120kg

Type	PK	Cat. No.
High Energy Ball Mill Emax	1	**9.738 775**
Grinding jar, 50 ml, stainless steel	1	**9.738 776**
Grinding jar, 125 ml, stainless steel	1	**9.738 777**
Grinding jar, 50 ml, zirconium oxide	1	**9.738 778**
Grinding jar, 120 ml, zirconium oxide	1	**9.738 779**
Grinding jar, 50 ml, Tungsten carbide	1	**9.738 780**

Please order grinding balls separately. Grinding balls for colloid grinding available on request.

Ball charge table for grinding jars Emax

Retsch

Grinding jars nominal volume ml	Volume ml	Feed size up to mm	Ball diam. mm	Bulbs
50	5 - 20	4	5 / 10 / 12	160 / 16 / 8 - 12
125	15 - 50	5	5 / 10 / 12 / 15	400 / 50 / 35 / 15 - 18

E & OE.

1 Disk mill PULVERISETTE 13 *classic line*



Ideal for intermittent and continuous fine grinding of hard-brittle and medium-hard solids in the areas of mining and metallurgy, glass industry, ceramics industry, soil research, rocks and soils.

Fritsch

Max. feed size:	20mm
Throughput:	up to 150kg/h
Final fineness:	0.1 to 12mm
Supply requirements:	400V/3~, 50-60Hz, 1830W
Dimensions (WxDxH):	440 x 870 x 40mm
Net weight:	140kg

Type	PK	Cat. No.
Disk Mill PULVERISETTE 13 *classic line*	1	**9.739 001**

Instrument also available in other voltages.
Fixed and movable grinding disks must be ordered additionally.
The Disk Mill is also available as *premium line* model: even more powerful, safer and easier to operate due to easy reproducible gap width setting via display.

Accessories for disk mill PULVERISETTE 13 *classic line*

Fritsch

Type	Description	PK	Cat. No.
Fixed grinding disk	hardened steel cast	1	**9.739 002**
Mobile grinding disk	hardened steel cast	1	**9.739 003**
Fixed grinding disk	zirconium oxide	1	**9.739 006**
Mobile grinding disk	zirconium oxide	1	**9.739 007**

Grinding disks are also in manganese steel and hardmetal tungsten carbide available.

2 Mortar grinder PULVERISETTE 2



Ideal for universal fine grinding of hard-brittle to soft samples, dry or in suspension, as well as for preparing and homogenising pastes and creams on a laboratory scale.
The PULVERISETTE 2 is an essential instrument in the chemical/pharmaceutical as well as in food processing laboratories. The Mortar grinder is easy to clean ensures reproducible and precise grinding results, due to precise adjustment and pestle pressure readout. Also working with liquid nitrogen for cooling/embrittlement is no problem.

Fritsch

Max. feed size:	8mm
Max. sample quantity:	up to 190ml
Final fineness:	10 to 20µm
Supply requirements:	100-120/200-240V/1~, 50-60Hz, 250W
Dimensions (WxDxH):	310 x 460 x 410mm
Net weight:	24kg

Type	PK	Cat. No.
Mortar Grinder PULVERISETTE 2	1	**9.738 200**

Mortar and pestle must be ordered additionally.

Accessories for mortar grinder PULVERISETTE 2

Fritsch

Material	PK	Cat. No.
Grinding set agate	1	**9.738 211**
Grinding set stainless steel	1	**9.738 235**
Grinding set hard porcelain	1	**9.738 240**

Mortars and pestles are also available in sintered corundum, hardmetal tungsten carbide and zirconium oxide.

1



1 Planetary ball mills PULVERISETTE 5 *classic line*

NEW!

Fritsch

For the finest rapid, batchwise comminution of hard to soft grinding material, dry or in suspension, down to colloidal fineness. For mixing and perfect homogenising of emulsions and pastes.

Areas of application
Geology, chemistry, mineralogy, ceramics industry, construction materials industry, metallurgy, electrical industry, glass industry, nuclear research, soil research

Method of operation
The grinding sample is primarily comminuted by high-energy impacts from grinding balls and partially by friction between balls and the grinding bowl wall.

Features overview
- Toothed belt drive for bowls provides constant transmission ratio
- Rotational speed regulated by microprocessor
- Digital display of the actual rotational speed of the supporting disk
- Programmable grinding and pause times and grinding sequences - for short-time operation adjustable down to the second
- Smaller grinding bowls also possible with an adapter
- RS232 interface for transmission of process parameters (validation)
- Reversing function
- Overload protection with automatic rotational speed adjustment and display
- Maintenance-free drive due to electronically regulated rotary current motor (1.5 kW) with frequency converter and permanently lubricated bearings
- Grinding chamber hood safety lock with stoppage monitoring
- Membrane keyboard
- Robust housing of impact-resistant plastic
- Grinding chamber with forced air ventilation
- Gas pressured springs for easy opening of the cover
- Energy-save-function (electricity-saving mode)
- Certified safety CE
- 2-year guarantee

Equipment
The standard equipment delivered with the Planetary Mill PULVERISETTE 5 *classic line* includes 4 bowl fasteners and „safe lock" clamping; however, it includes no grinding bowls or balls, which are available in 8 different materials and must be ordered as accessories. The voltage specified in the order is preset.

Max. feed size:	10mm
Final fineness:	< 1µm
Grinding bowl sizes:	80, 250, 500ml
Supply requirements:	100-120/200-240V/1~, 50-60Hz
Dimensions (WxDxH):	580 x 670 x 570mm

Type	No. of grinding stations	Rotation speed rpm	Sample volume ml	Weight kg	PK	Cat. No.
classic line Modell I	4	50-400	900	155	1	**9.738 255**
classic line Modell II	2	50-400	450	135	1	**9.738 257**

Grinding bowls and grinding balls must be ordered additionally.
Further models of planetary mills on request.

2



2 Grinding bowls for planetary ball mills PULVERISETTE 5/6 *classic line*

Fritsch

Material	Volume ml	PK	Cat. No.
Tempered steel	80	1	**9.738 515**
Tempered steel	250	1	**9.738 525**
Tempered steel	500	1	**9.738 535**
Stainless steel	80*	1	**9.738 516**
Stainless steel	250	1	**9.738 526**
Stainless steel	500	1	**9.738 536**
Sintered corundum	80*	1	**9.738 512**
Sintered corundum	250	1	**9.738 522**
Sintered corundum	500	1	**9.738 532**
Zirconium oxide	80*	1	**9.738 518**
Zirconium oxide	250	1	**9.738 528**
Zirconium oxide	500	1	**9.738 538**
Hardmetal tungsten carbide**	80*	1	**9.738 514**
Hardmetal tungsten carbide**	250	1	**9.738 524**
Adapter for grinding bowls	80	1	**9.738 315**

* One grinding bowl holder can hold either 2 x 80ml bowls or 1 x 80ml bowl together with a grinding bowl adapter mounted one on top of the other.
** Grinding bowl in a steel casing.
Grinding bowls are also available in agate and silicon nitride. Special gassing lids for grinding in an inert atmosphere and for mechanical alloying as well as the GTM-system (Gas pressure and temperature measuring system) for measuring gas pressure and temperature during the grinding process are available.

E & OE.

1 Grinding balls for grinding bowls PULVERISETTE 5/6 *classic line*



Fritsch

Material	Ball diam. mm	PK	Cat. No.
Tempered steel	10	1	**9.738 555**
Tempered steel	20	1	**9.738 565**
Tempered steel	30	1	**9.738 575**
Tempered steel	40	1	**9.738 585**
Stainless steel	10	1	**9.738 556**
Stainless steel	20	1	**9.738 566**
Stainless steel	30	1	**9.738 576**
Stainless steel	40	1	**9.738 586**
Sintered corundum	10	1	**9.738 552**
Sintered corundum	20	1	**9.738 562**
Sintered corundum	30	1	**9.738 572**
Sintered corundum	40	1	**9.738 582**
Zirconium oxide	10	1	**9.738 558**
Zirconium oxide	20	1	**9.738 568**
Zirconium oxide	30	1	**9.738 578**
Zirconium oxide	40	1	**9.738 588**
Hardmetal tungsten carbide	10	1	**9.738 554**
Hardmetal tungsten carbide	20	1	**9.738 564**
Hardmetal tungsten carbide	30	1	**9.738 574**
Hardmetal tungsten carbide	40	1	**9.738 584**

Grinding bowls are also available in agate and silicon nitride.
Grinding balls are also offered in the diameters 0.1mm to 3mm (to achieve a fineness down to the nanometer-range) as well as in 5mm and 15mm (have a look at grinding balls for grinding bowls for planetary micro mill PULVERISETTE 7 *premium line*).

Recommended number of grinding balls per grinding bowl for PULVERISETTE 5/6 *classic line*

Grinding bowl Useful capacity (sample volume) Ball diameter	500ml 80 - 225ml	250ml 30 - 125ml	80ml 10 - 30ml
5mm	2000	1200	250
10mm	100	50	25
15mm	70	45	10
20mm	25	15	5
30mm	8	6	
40mm	4		

2 Grinding balls for grinding bowls PULVERISETTE 7 *premium line*

NEW!



Fritsch

Material	Ball diam. mm	PK	Cat. No.
Stainless steel	5	1	**9.738 560**
Stainless steel	15	1	**9.739 165**
Sintered corundum	15	1	**9.739 162**
Zirconium oxide	5	1	**9.739 160**
Zirconium oxide	15	1	**9.739 166**
Hardmetal tungsten carbide	5	1	**6.050 329**
Hardmetal tungsten carbide	15	1	**9.739 163**

Grinding bowls are also available in agate, tempered steel and silicon nitride.
Grinding balls are also offered in the diameters 0.1mm to 3mm (to achieve a fineness down to the nanometer-range) as well as in 10mm and 20mm (have a look at grinding balls for grinding bowls for planetary mono mill PULVERISETTE 6 *classic line* and planetary mill PULVERISETTE 5 *classic line*).

Recommended number of grinding balls per grinding bowl for PULVERISETTE 7 *premium line*

Grinding bowl Useful capacity (sample volume) Ball diameter	20ml 1 - 9ml	45ml 3 - 20ml	80ml 10 - 30ml
5mm	80	180	250
10mm	10	18	25
15mm	-	7	10
20mm	-	-	5

1



1 Planetary micro mill PULVERISETTE 7 *premium line*

Fritsch

As extension of the existing *classic line* planetary mills, FRITSCH now offers a new *premium line* generation. For the first time ever, it is possible to reach rotational speeds never known before, which achieves ultrafine grinding results down to the nano range.

FASTER, SIMPLER AND SAFER THAN EVER.

Features:
- Extremely high-speed milling thanks to sunken grinding bowls with up to 1100rpm
- Sensational centrifugal accelerations of up to 95 times the force of gravity for better results in shorter times
- 150% greater energy application than conventional Planetary Ball Mills
- Extremely easy grinding bowl change with just two motions
- Highest safety due to unique SelfLock-grinding bowl-clamping
- For the first time, the bowl and lid form a single unit, no additional tensioning, no incorrect operation
- Automatic check of the grinding bowl locks in the mill
- Blockage in the event of impermissible operating state
- Automatic parameter check performed before every grinding, guarantees exact reproducibility
- Via USB all data can be easily exported to save time

Max. feed size:	5mm
Max. sample quantity:	70ml
Final fineness:	< 100nm
Rotational speed of main disk:	100 to 1100rpm
Supply requirements:	100-240V/1~, 50-60Hz, 1100W
Dimensions (WxDxH):	400 x 580 x 360mm
Net weight:	44kg

Type	PK	Cat. No.
Planetary Micro Mill PULVERISETTE 7 *premium line*	1	**6.233 706**

Grinding bowls and grinding balls must be ordered additionally.
For fast high-tech grinding of larger sample quantities down to the nano range, the Planetary Mono Mill PULVERISETTE 6 *premium line* is available.

2

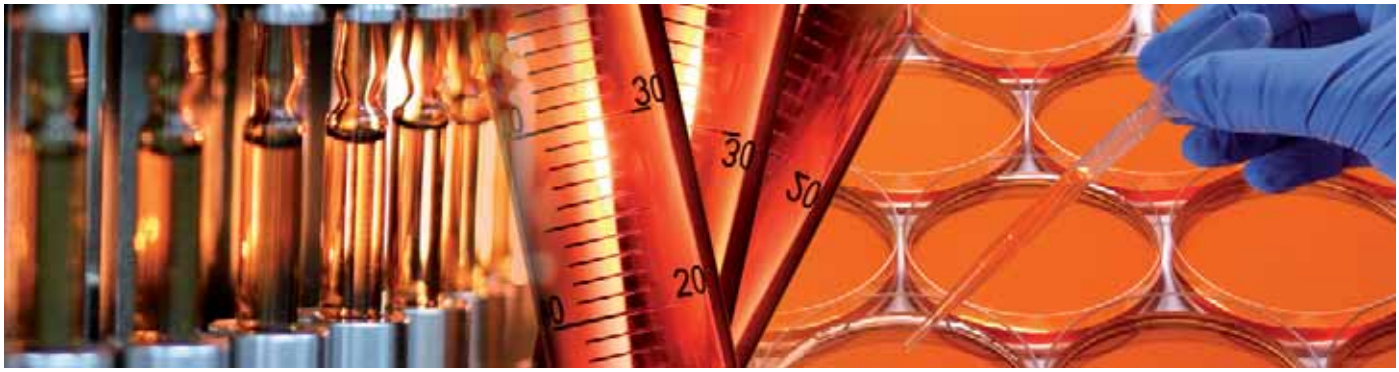


2 Grinding bowls for planetary micro mill PULVERISETTE 7 *premium line*

Fritsch

Description	Capacity ml	PK	Cat. No.
Stainless steel*	20	1	**9.738 455**
Stainless steel*	45	1	**9.738 454**
Stainless steel*	80	1	**9.738 453**
Sintered corundum*	20	1	**9.738 459**
Sintered corundum*	45	1	**9.738 460**
Sintered corundum*	80	1	**9.738 461**
Zirconium oxide*	20	1	**9.738 458**
Zirconium oxide*	45	1	**9.738 457**
Zirconium oxide*	80	1	**9.738 456**
Hardmetal tungsten carbide*	20	1	**6.237 286**
Hardmetal tungsten carbide*	45	1	**9.738 231**
Hardmetal tungsten carbide*	80	1	**9.738 232**

* Grinding bowl in a steel casing.
Special gassing lids for grinding in an inert atmosphere and for mechanical alloying as well as the EASY GTM - Gas pressure and temperature measuring system, for measuring gas pressure and temperature during the grinding process and for controlling the grinding process are available.



1 Mini mill PULVERISETTE 23

Fritsch

Ideal for fine comminution of smallest quantities for wet and dry grinding as well as for cryogenic grinding. Its special spherical grinding bowl ensures much better performance in grinding, mixing and homogenising compared with similar models for example in chemical analysis, chromatography, mass spectrometry or x-ray structural analysis, preparation of samples for genetic research, homogenising of active ingredients, preparation of extracts in the forensic analysis, grinding of pigments and precious materials.

Max. feed size:	6mm
Max. sample quantity:	up to 5ml
Final fineness:	5µm
Supply requirements:	100-240V/1~, 50-60Hz
Dimensions (WxDxH):	200 x 300 x 300mm
Net weight	7kg

Type	PK	Cat. No.
Mini Mill PULVERISETTE 23	1	**9.739 345**

Grinding bowls and grinding balls must be ordered additionally.



2 Grinding bowls and grinding balls for mini mill PULVERISETTE 23

NEW!

Fritsch

Type	PK	Cat. No.
Grinding bowl, PTFE, 5ml	1	**9.739 343**
Grinding bowl, stainless steel, 10ml	1	**9.739 346**
Grinding bowl, stainless steel, 15ml	1	**9.739 347**
Grinding ball, 5mm, stainless steel	1	**9.738 560**
Grinding ball, 10mm, stainless steel	1	**9.738 556**
Grinding ball, 15mm, stainless steel	1	**9.739 165**

Grinding bowls and balls are also offered in zirconium oxide and tempered steel, as well as grinding balls in 15mm diameter (have a look at grinding balls for grinding bowls: planetary micro mill PULVERISETTE 7 *premium line*).



Recommended number of grinding balls per grinding bowl for mini mill PULVERISETTE 23

Grinding bowl Useful capacity (sample volume) Ball diameter	5ml 0.1 - 1ml	10ml 0.2 - 1ml	15ml 0.5 - 5ml
5mm	20	30	60
10mm	1	3	5
15mm	-	1	2

3 Variable Speed Rotor Mill PULVERISETTE 14

NEW!

Fritsch

Ideal for fast, effective comminution of soft to medium-hard, brittle, fibrous materials, as well as difficult-to-mill and temperature-sensitive samples. Cryogenic grinding, dispersion and homogenisation are also one of the areas of operation. The variable speed rotor mill is an ultra-centrifugal mill with variable speed settings between 6.000rpm and 20.000rpm and automatic speed regulation for constant milling in the areas of analytic, biology, chemistry, agriculture and forestry, foodstuffs, plastics and textiles, pharmaceuticals, environment/RoHS. For optimal material feeding the Vibratory Feeder LABORETTE 24 (optional) is recommended.

Specifications

Max. feed size:	10mm
Throughput:	up to 5L/h
Sieve inserts:	0.08 to 6mm
Final fineness (d_{50}):	40µm
Rotor speed:	6.000 to 20.000rpm
Dimensions (WxDxH):	310 x 480 x 470mm
Net weight:	20kg



Type	Supply requirements	PK	Cat. No.
Variable Speed Rotor PULVERISETTE 14	100-120 V/1~, 50-60 Hz, 1200 watt	1	**9.738 276**
Variable Speed Rotor PULVERISETTE 14	230-240 V/1~, 50-60 Hz, 1200 watt	1	**9.738 277**

Impact rotor and sieve ring must be ordered additionally.
The variable speed rotor mill PULVERISETTE 14 is also available as *premium line* model and can be used as impact mill, cutting mill and knife mill due to a multi-functional tool system. Instrument also available in other voltages.

1



9.738 421

Cutting mill PULVERISETTE 15 and universal cutting mill PULVERISETTE 19

Fritsch

Ideal for pre and fine grinding of soft to medium-hard as well as fibrous or tough materials. They are essential for the areas of plastics, textiles, agriculture and forestry, environmental, construction materials, chemistry, foodstuffs and for sample preparation for RoHS analysis. All grinding parts can be removed for cleaning in just a few seconds without tools, unbeatable fast, simple and efficient. Different rotors, various knife geometries and replaceable blades ensure maximum flexibility and durability. For controlling the abrasion properties, the grinding tools are offered in different materials. The optimum airflow ensures fast grinding and secure protection against clogging. The patented FRITSCH sample exhauster with cyclone separator (optional) ensures simple feeding, fast throughput and good cooling.

2



9.739 300

Max. feed size:	up to 70 x 80mm*
Throughput:	up to 60L/h*
Sieve inserts:	0.2 to 20mm*
Supply requirements:	400V/3~, 50-60Hz
Dimensions (WxDxH):	420 x 480 x 690mm resp. 440 x 550 x 630mm*

* depending on the instrument type

Type	Feed size up to mm	Throughput max. l/h	Rotation speed rpm	Weight kg	PK	Cat. No.
Cutting mill PULVERISETTE 15	70 x 70	50	2800-3400	42	1	**9.738 421** 1
Universal cutting mill PULVERISETTE 19	70 x 80	60	2800-3400	56	1	**9.739 300** 2

Instruments also available in other voltages.
Funnels, rotors, sieve inserts/sieve cassettes and collecting vessels must be ordered separately.
Further Cutting mills available on request.

3



3 Accessories for cutting mill PULVERISETTE 15

Fritsch

Type	PK	Cat. No.
Protected funnel with sample pusher	1	**7.900 140**
Rotor with straight cutting edges and fixed knives made of tool steel	1	**9.738 424**
Sieve insert, trapezoidal perforation 0.25mm	1	**9.738 432**
Sieve insert, trapezoidal perforation 0.5mm	1	**9.738 433**
Sieve insert, trapezoidal perforation 1mm	1	**9.738 435**
Sieve insert, trapezoidal perforation 2mm	1	**9.738 437**
Sieve insert, square perforation 4mm	1	**9.738 441**
Sieve insert, square perforation 6mm	1	**9.738 442**
Collecting vessel, 3.5L	1	**6.231 269**
Collecting vessel, 60L with filter hose	1	**9.738 449**
Universal support stand	1	**9.738 429**

Alternative funnels as well as sieve inserts made of stainless steel are also available in other perforations. Rotors as well as the sieve inserts are also offered in chromium-free steel.

4



4 Accessories for universal cutting mill PULVERISETTE 19

Fritsch

Type	PK	Cat. No.
Standard funnel for long and bulk solids	1	**6.510 319**
Standard rotor with V-cutting edges and fixed knives made of hardened stainless steel	1	**9.739 321**
Sieve cassette, trapezoidal perforation 0.5mm	1	**9.739 331**
Sieve cassette, trapezoidal perforation 1mm	1	**9.739 333**
Sieve cassette, trapezoidal perforation 2mm	1	**9.739 335**
Sieve cassette, square perforation 4mm	1	**9.739 340**
Sieve cassette, square perforation 6mm	1	**9.739 341**
Collecting vessel, 3L	1	**9.739 350**
Large collecting vessel, 10L	1	**9.739 351**
Universal support stand	1	**9.738 429**

Alternative funnels, rotors in other materials and designs, sieve cassettes in other perforations and materials as well as a sample exhauster with cyclone separator are available on request.

Batch mill Tube Mill control

NEW!

IKA

The world's first patented Tube Mill control is a batch mill for disposable and reusable grinding chambers (please order separately). Eliminates the possibility of cross-contamination and the effort of cleaning. The grinding chamber and cover are made from a transparent material so grinding tests can be observed at any time. The mill can be used for hard (Mohs hardness up to 3), dry and brittle materials. It is especially suitable for grinding seeds, such as corn and wheat. During development of the mill, particular emphasis was placed on security. The mill will only start when the hood is closed. When the grinding chamber is not inserted properly or not closed properly, the drive unit will display an error message and the drive will not start. During operation, the grinding chamber cannot be opened. The drive and the grinding chambers are secured with a labyrinth seal. No dust can escape from the chamber or penetrate the drive.

- Clearly arranged, multilingual OLED-display
- USB interface for control and documentation of all the parameters
- Interval operation available
- Various operating modes
- Adjustable safety speed
- Adjustable safety time
- Programmable and storable test conditions
- Error Code Display
- Reproducible test results
- Easy operation with touch keypad
- Dust proof sealed housing
- Quiet operation

Specifications

Operating principle	cutting/impact
Motor rating input/output:	100/80W
Speed:	5000 to 25000rpm
Chamber vol.:	40ml
Timer:	5s to 3min
Interval timer:	5s to 60s
Overload protection:	yes
Circumferential speed:	65m/s
Max. feed hardness:	5Mohs
Dimensions (WxDxH):	180 x 300 x 170mm
Weight:	2.7kg
Protection class according to DIN EN 60529:	IP 30
Power supply:	220-240V, 50/60Hz

Type	PK	Cat. No.	
Tube Mill control	1	**9.737 790**	1
Disposable grinding chamber MT 40	10	**9.737 791**	2
Grinding chamber MMT 40.1	1	**7.639 994**	3
Spare parts set for grinding chamber MMT 40.1*	1	**4.653 944**	

*Supplied with: 100 x sealing, 10 x beater, 10 x coupling

1



9.737 790

2



9.737 791

3



7.639 994

1



1 Grinding mill, A 10 basic

NEW!

IKA

Newly designed batch mill for grinding of hard, brittle, soft and fibrous materials for volumes up to 50 ml. Because samples may be embrittled directly in the grinding chamber; tough, oily and aqueous samples can also be grinded. During development of the mill, particular emphasis was placed on safety. The mill will only start when the lid is closed and it can only be opened at standstill. A quick stop feature further increases the safety of user.

- Digital timer
- Counter: Display of grinding time
- Interval operation
- Brushless motor for long life and low noise
- Integrated cooling connections
- Error Code Display
- Easy handling with keypads
- Easy exchangeable beater/cutter for a variety of applications
- Grinding chamber reduction for small sample amounts (included with delivery)
- Easy opening and closing of the lid with a bayonet lock

Specifications

Motor rating input/output:	300/240W
Speed:	25 000rpm
Chamber vol.:	50ml
Power-on time ON/OFF:	5/10min
Auto power off:	yes
Tangential speed:	73m/s
Max. sample granule size:	6mm
Dimensions (WxDxH):	130 x 145 x 250 mm
Weight:	2.9 kg
Protection class DIN EN 60529:	IP 21
Supply requirements:	220 - 240 V 50/60 Hz

Type	PK	Cat. No.
A 10 basic	1	**4.653 943**
A 10 basic S2 UK	1	**6.265 902**
A 10 basic S3 CH	1	**6.265 903**

2



2 Grinding mill, A11 basic

IKA

Batch mill for 2 different grinding procedures:
Impact grinding of hard, brittle or non-elastic grinding materials with high-grade stainless steel beater. This beater can be used for a Mohs hardness up to 6 (incl. with delivery).
Cutting grinding for pulverizing soft, fibrous materials with a cutting blade (not incl. with delivery).
- Moist and gluey materials can be pulverized by adding water
- Grinding chamber made of Tefcel (PTFE, glass fibre-reinforced) with stainless steel inlet (1.4571), useful volume 80ml (incl. with delivery). For embrittlement of grinding materials with liquid nitrogen in the grinding chamber
- Optionally, a 250ml grinding chamber is available

Specifications

Motor rating input/output:	160/100W
Speed:	28000rpm (off load)
Chamber vol.:	80ml
Power-on time ON/OFF:	1/10 min
Auto power off:	yes
Tangential speed:	53m/sec.
Max. sample granule size:	10mm
Dimensions (WxDxH):	85 x 85 x 240mm
Weight:	1.5kg
Protection class DIN EN 60529:	IP 43
Supply requirements:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
A 11 basic	1	**9.737 801**
A 11 basic UK	1	**6.202 305**

Accessories please order separately.

1 Universal mill M20



IKA

Batch mill suitable for dry grinding of hard and brittle substances.
- Double-walled grinding chamber can be cooled with water through two hose adapters
- Removable grinding chamber, easy to clean
- Two grinding chambers can be alternately operated using one drive
- M 21 blade incl. with delivery

Specifications

Motor rating input/output:	440/225W
Speed:	max. 20000rpm. off load
Overload protection:	current limiter
Throughput/Charge max:	250ml
Material:	stainless steel (AISI 304)
Feed size:	max. 5 to 7mm
Dimensions (WxDxH):	170 x 170 x 350mm
Weight:	6.6kg
Supply requirements:	230V 50/60Hz
Protection class DIN EN 60529:	IP21
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
M 20	1	**9.737 828**
M 20 UK	1	**4.007 942**

2 Accessories for Grinding mill, A10 basic



IKA

A 10.1 Cutter, stainless steel
For most brittle materials with a Mohs hardness up to 5.
A 10.3 Cutter, hard metal
Made from tungsten carbide for hard materials with a Mohs hardness up to 9.
A 10.2 Star-shaped Cutter, stainless steel
For specific lightweight materials like paper, dried plant parts, plastics and for smooth-elastic materials.
A 10.4 Grinding chamber reduction
For small grinding volumes.

Type	Description	PK	Cat. No.
A 10.1	Cutter, stainless steel*	1	**6.265 588**
A 10.3	Cutter, hard metal	1	**6.265 589**
A 10.2	Star-shaped cutter, stainless steel	1	**6.265 590**
A 10.4	Grinding chamber reduction*	1	**6.265 591**

*included in delivery

3 Accessories for Grinding mill, A11 basic



IKA

A 11.1 Spare beater
For pulverising substances with a Mohs hardness up to 6.
A 11.2 Cutter
For pulverising soft, fibrous grinding materials.
A 11.3 Beater, hard metal
For pulverising substances with a Mohs hardness up to 9, chrome-carbide coated
A 11.4 Grinding container, 250ml
Made of polycarbonate with stainless steel inlet. Not suitable for cooling with N_2, only applicable with double beater A 11.6.
A 11.5 Spare grinding container, 80ml
Made of Tefcel (PTFE, glass faser-reinforced) with stainless steel inlet. Excellent resistance to chemicals and low temperatures (- 200°C).
A 11.6 Dubbel beater
For use up to Mohs hardness 3. Only applicable with grinding chamber A 11.4.
A 11.7 Funnel
Prevents splashing by pouring in liquid nitrogen in the grinding chamber A 11.5.

Type	Description	PK	Cat. No.
A 11.1	Spare beater*	1	**9.737 815**
A 11.2	Cutter	1	**9.737 806**
A 11.3	Beater	1	**9.737 807**
A 11.4	Grinding container, 250ml	1	**9.737 805**
A 11.5	Spare grinding container, 80 ml*	1	**9.737 816**
A 11.6	Double beater	1	**9.737 817**
A 11.7	Funnel	1	**9.737 818**

*included in delivery

1



1 Universal mill M 20, accessories and spares

IKA

Type	Description	PK	Cat. No.
M 21	Spare cutter for M 20*	1	**9.737 829**
M 22	Hard metal cutter (tungsten carbide)	1	**9.737 830**
M 23	Star-shaped cutter (stainless steel)	1	**9.737 831**
M 20.1	Grinding chamber	1	**9.737 832**

*included in delivery

Drive unit MF 10 basic

IKA

Universal laboratory grinder, comprising powerful drive unit for use with a choice of accessory grinding heads. The user can choose between the impact grinding head for milling hard, brittle materials (see fig.) and the cutting head for processing fibrous material.
The maximum granule size output can be set by using various insert sieves (with apertures between 0.25mm and 3mm) placed above the outlet.
There is an NS29 standard ground joint at the outlet for attachment of receiving flasks. Grinding/cutting heads not included.

Specifications

Motor rating input/output:	1000/500W
Speed range:	3000 to 6500rpm.
Tangential speed with impact grinding head:	31.4 m/sec.
Tangential speed with cutting head:	22.5 m/sec.
Material in contact with product:	Stainless steel AISI 316 L
Power-on time ON/OFF:	120/130mins.
Auto power off:	yes
Dimensions with grinding head (WxDxH):	320 x 300 x 380mm
Weight with grinding head:	9.7kg
Protection class DIN EN 60529:	IP22
Supply requirements:	230V 50/60Hz.
Tested to DIN EN IEC 61010-1.	

Type	Description	PK	Cat. No.
MF 10 basic	Drive unit without head	1	**9.737 780** 2

Accessories please order separately.

2



9.737 780

3



3 Accessories for microfine grinder MF10 basic, for in-line processes

IKA

Type	Description	PK	Cat. No.
MF 10.1	Cutting head	1	**9.737 781**
MF 10.2	Impact grinding head	1	**9.737 782**
MF 0.25	Sieve	1	**9.737 783**
MF 0.5	Sieve	1	**9.737 784**
MF 1.0	Sieve	1	**9.737 785**
MF 2.0	Sieve	1	**9.737 787**
MF 3.0	Sieve	1	**9.737 788**
MF 4.0	Sieve	1	**9.737 789**

E & OE.

1 2 Analytical Sieve Shakers AS 200 basic/digit/control, AS 300 control, AS 450 basic/control

Sieve shakers are used in research & development, quality control of raw materials, interim and finished products as well as in production monitoring. *Retsch*

Features:
- Sieving with 3D effect
- For wet and dry sieving
- Short sieving times
- Low-noise, maintenance-free

Please order clamping device, test sieves and collecting pan separately.

AS 200 basic: favourably priced basic model.

AS 200 digit: powerful comfort model with touch-sensitive keypad, digital display, interval sieving.

AS 200 control: like AS 200 digit, but microprocessor-controlled, with freely selectable intervals and digital vibration amplitude setting. It can be calibrated and, for the first time, allows 100% reproducible sieving results worldwide, even if different instruments are used. The AS 200 control has an integrated interface for the evaluation software EasySieve®. At the same time it also offers all the requirements for test materials monitoring according to ISO 9000.

AS 300 control: like AS 200 control; also suitable for sieves up to 315mm diameter and for higher loads.

AS 450 basic: budget-priced basic model for sieving up to 15kg of material.

AS 450 control: like AS 200 control but only suitable for 400mm diam. and 450mm diam. sieves. The optimized electromagnetic drive with RETSCH's CET technology allows for an amplitude up to 2.2mm even with maximum loads up to 25kg. Manual re-sieving is no longer required.

Specifications

Max. number of fractions (depending on sieve size):	
AS 200, AS 300:	9/17
AS 450 basic:	11/7
AS 450 control:	13/9
Movement of sample:	orbital with vibration
Height of sievetower	
AS 200, AS 300:	up to approx. 450mm
AS 450 basic:	up to approx. 830mm
AS 450 control:	up to approx. 960mm
Max. charge/quantity of sample:	
AS 200:	3kg
AS 300:	6kg
AS 450 basic:	15kg
AS 450 control:	25kg
Timer:	
AS 200 digit, control, AS 300, AS 450:	digital
AS 200 basic:	analog

Type	Measuring range	Dimensions (W x D x H) mm	Weight kg	For Sieve sizes (diam.) mm	PK	Cat. No.
AS 200 basic	20µm to 25mm	400 x 350 x 230	30	100 / 150 / 200 / 203	1	**9.739 223**
AS 200 digit	20µm to 25mm	400 x 350 x 230	30	100 / 150 / 200 / 203	1	**9.739 224**
AS 200 control	20µm to 25mm	400 x 350 x 230	30	100 / 150 / 200 / 203	1	**9.739 273**
AS 300 control	20µm to 40mm	400 x 400 x 235	35	100 / 150 / 200 / 203 / 305 / 315	1	**9.739 241**
AS 450 basic	25µm to 125mm	680 x 680 x 280	140	400 / 450	1	**9.739 278**
AS 450 control	25µm to 125mm	715 x 658 x 435	200	400 / 450	1	**9.739 277**

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2



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9.739 242

2



6.238 947

3



6.238 239

Analytical Sieve Shakers AS 400 control, AS 200 tap/ jet

Retsch

AS 400 control:

The AS 400 control is used for the sieving of dry goods with test sieves of a diameter up to 400mm. The uniform, horizontal circular motion ensures exact separation of the product to be sieved.

- Sieving with circular sieving motion according to DIN 53477
- Free digital adjustment of all process parameters (time, speed or sieve acceleration, interval)
- Memory for up to 9 SOPs
- Integrated interface for evaluation software EasySieve®
- Electrical supply data: 100-240 V, 50/60 Hz

Please order clamping device, test sieves and collecting pan separately.

The clamping devices of AS 200 and AS 300 are also suitable for the AS 400.

AS 200 tap:

For sieve analysis of certain products such as activated carbon, abrasives, coal, spices and diamonds, as specified in the corresponding standards.

- Horizontal, circular sieving motion with vertical taps
- Suitable for dry sieving
- Robust and maintenance-free
- Electrical supply data: 230 V, 50 Hz

Please order test sieves and collecting pan separately.

AS 200 jet:

The air jet sieving machine AS 200 jet is particularly suitable for light materials with particle sizes in the lower micron range which tend to agglomerate.

- Open Mesh Function to reduce the number of near-mesh particles
- Operation with standard Retsch sieves, 203 mm (8") diameter, 1" or 2" high
- Adapter for 200mm sieves optional
- Free manual (standard) or automatic (accessory) pressure regulation
- High flexibility through adjustable nozzle speed
- Memory for up to 9 SOPs, additional Quick Start mode
- Electrical supply data: 230 V, 50/60 Hz

Please order test sieve and vacuum cleaner separately.

Specifications

Max. number of fractions (depending on sieve size):	
AS 400 control:	7/9/17
AS 200 tap:	7/13
AS 200 jet:	1 (2 with cyclone)
Movement of sample:	
AS 400 control:	circular
AS 200 tap:	circular with taps
AS 200 jet:	dispersion by air jet
Height of sievetower	
AS 400 control:	up to approx. 450mm
AS 200 tap:	up to approx. 350mm
AS 200 jet:	up to approx. 50mm
Max. charge/quantity of sample:	
AS 400 control:	5kg
AS 200 tap:	3kg
AS 200 jet:	0.3 to 100g
Timer:	digital

Type	Measuring range	Dimensions (W x D x H) mm	Weight kg	For Sieve sizes (diam.) mm	PK	Cat. No.	
AS 400 control	45 µm to 63 mm	540 x 507 x 260	70	100 /150 / 200 /203 / 305 / 315 / 400	1	**9.739 242**	1
AS 200 tap*	20 µm to 25 mm	735 x 530 x 675	92	200 / 203	1	**6.238 947**	2
AS 200 jet	10 µm to 4 mm	460 x 305 x 288	14	203	1	**6.238 239**	3

*with sound protection cabinet

Test sieve sets for Sieve Shakers AS series

Each set with one collecting pan.

Retsch

For	Diam. mm	Description	PK	Cat. No.
AS 200	200	45µm, 63µm, 125µm, 250µm, 500µm, 1mm, 2mm, 4mm	1	**9.739 255**
AS 300	305	630µm, 1.25mm, 2.5mm, 5mm, 10mm, 20mm, 31.5mm	1	**9.739 256**
AS 400	400	500µm, 1mm, 2mm, 5mm, 10mm, 20mm	1	**9.739 257**
AS 450	450	63µm, 125µm, 250µm, 500µm, 1mm, 2mm, 4mm	1	**9.739 279**

Other accessories, such as sieve lids and intermediate receivers, are available on request.

1 Vibratory sieve shaker ANALYSETTE 3 PRO and SPARTAN



Fritsch

For quantitative particle size analysis of dry samples and suspensions of all kind by dry and wet sieving with woven test sieves. FRITSCH Sieve Shakers satisfy all requirements for accurate and reproducible sieving analysis and perform automatic sieve analysis with the control and evaluation software AUTOSIEVE. The top model ANALYSETTE 3 PRO guarantees absolutely reproducible sieving results due to automatic amplitude control, programme selection, can be integrated as testing device into any quality management systems, has an RS232-interface, to mention only some of its innovative and practical features.

Sieving:	dry or wet
Sieve diameters:	100mm, 150mm, 200mm or 8"
Maximum number of sieves:	10 x 50mm (full) or 18 x 25mm (half) height
Sieves:	woven mesh metal sieves
Measuring range:	Dry sieving: 32µm to 63mm Wet sieving: 20µm to 10mm
Sample quantity:	Dry sieving: up to 2kg (depending on the sample material and sieve used) Wet sieving: 20 to 100g
Sieving time:	Dry sieving: 3 to 20 min Wet sieving: 5 to 10 min
Power supply:	100-240V/1~, 50-60Hz
Dimensions (WxDxH):	370 x 400 x 200mm
Net weight:	21kg

Type	PK	Cat. No.
Sieve Shaker ANALYSETTE 3 PRO	1	**9.826 402**
Sieve Shaker ANALYSETTE 3 SPARTAN	1	**9.826 403**

Clamping lid, sieve pan and sieves must be ordered separately.
Further sieve shakers available on request.

Accessories for sieve shakers ANALYSETTE 3 PRO and SPARTAN

Fritsch

Type	For	PK	Cat. No.
Clamping lid, Plexiglas for 8" / 200mm diam. sieves	Dry sieving	1	**9.826 404**
Clamping lid, polyamide (without window) for all test sieves up to 200mm / 8" diam.	Dry sieving	1	**9.826 405**
Sieve tensioning system TorqueMaster (incl. clamping lid and electrical tool)	Dry sieving	1	**9.826 943**
Interposed sieve pan made of stainless steel 200mm diam., 50mm height	Dry sieving	1	**9.826 939**
Interposed sieve pan made of stainless steel 8" diam., 2" height	Dry sieving	1	**9.826 940**
Sieve pan, stainless steel 200mm diam., 50mm high	Dry sieving	1	**9.826 444**
Sieve pan, stainless steel 8" diam., 2" high	Dry sieving	1	**9.826 406**
Clamping lid, Plexiglas with 2 rotation nozzles for test sieves 8" / 200mm diam.	Wet sieving	1	**9.826 401**
Sieve pan, stainless steel with outlet 200mm diam., 50 mm high	Wet sieving	1	**9.826 446**
Interposed sieve ring with 3 nozzles for test sieves 200mm diam.	Wet sieving	1	**9.826 447**
Sieve pan, stainless steel with outlet, 8" diam., 2" high	Wet sieving	1	**9.826 449**
Interposed sieve ring with 3 nozzles for test sieves 8" diam.	Wet sieving	1	**9.826 450**

Test sieves as well as accessories for micro-precision sieving and for use of the ANALYSETTE 3 as Micro Mill (for grinding small sample quantities) on request.
Sieves, clamping lid and sieve pans with and without outlet are also available for 100 mm sieves.



Test Sieves

Features: *Retsch*

- Previously unattained product quality owing to advanced manufacturing processes and continuous optical inspection.
- High quality joining technology guarantees permanently taut wire mesh.
- High level of corrosion resistance and easy to clean owing to the use of high-alloy stainless steel.
- "one-piece cast" sieve frame and seamless mesh joint prevent cross contamination.
- Maximum stability and optimum density of the sieve stack.
- 15% lighter than traditional sieves whilst at the same time having larger sieving area.
- Clear sieve marking and traceability by individual laser engraving on each sieve.

Test sieves with height 25mm available on request.



1 Test Sieves, 200 x 50 mm.

Retsch

Mesh size µm	PK	Cat. No.
20	1	**9.226 650**
25	1	**9.226 651**
32	1	**9.226 652**
36	1	**9.226 653**
38	1	**9.226 654**
40	1	**9.226 655**
45	1	**9.226 656**
50	1	**9.226 657**
53	1	**9.226 658**
56	1	**9.226 659**
63	1	**9.226 660**
71	1	**9.226 661**
75	1	**9.226 662**
80	1	**9.226 663**
90	1	**9.226 664**
100	1	**9.226 665**
106	1	**9.226 666**
112	1	**9.226 667**
125	1	**9.226 668**
140	1	**9.226 669**
150	1	**9.226 670**
160	1	**9.226 671**
180	1	**9.226 672**
200	1	**9.226 673**
212	1	**9.226 674**
224	1	**9.226 675**
250	1	**9.226 676**
280	1	**9.226 677**
300	1	**9.226 678**
315	1	**9.226 679**
355	1	**9.226 680**
400	1	**9.226 681**
425	1	**9.226 682**
450	1	**9.226 683**
500	1	**9.226 684**
560	1	**9.226 685**
600	1	**9.226 686**
630	1	**9.226 687**
710	1	**9.226 688**
800	1	**9.226 689**
850	1	**9.226 690**
900	1	**9.226 691**



2 Sieving aids

For difficult to separate materials which require dry sieving. *Retsch*
Different aids are used according to mesh size.

Type	PK	Cat. No.
Steatite ball, 6mm dia., 150g	1	**9.739 238**
Nylon brushes (pack of 3)	1	**9.826 131**
Vulkollan cube 12 x 12 x 12mm	10	**9.826 132**
Rubber ball, 20mm dia.	5	**9.826 133**
Agate ball, dia. 10mm	10	**9.826 134**
Test sieve rack for max. 10 sieves up to 203mm dia., 50mm height	1	**9.739 243**

E & OE.

1 Test Sieves, 200 x 50mm

DIN ISO 3310-1 and BS 410-1. Dimensions (dia. x h): 200mm x 50mm. *Retsch*
Test sieves with height 25mm available on request.



Aperture size mm	PK	Cat. No.
1.00	1	**9.226 692**
1.12	1	**9.226 693**
1.18	1	**9.226 694**
1.25	1	**9.226 695**
1.40	1	**9.226 696**
1.60	1	**9.226 697**
1.70	1	**9.226 698**
1.80	1	**9.226 699**
2.00	1	**9.226 700**
2.24	1	**9.226 701**
2.36	1	**9.226 702**
2.50	1	**9.226 703**
2.80	1	**9.226 704**
3.15	1	**9.226 705**
3.35	1	**9.226 706**
3.55	1	**9.226 707**
4.00	1	**9.226 708**
4.50	1	**9.226 709**
4.75	1	**9.226 710**
5.00	1	**9.226 711**
5.60	1	**9.226 712**
6.30	1	**9.226 713**
6.70	1	**9.226 714**
7.10	1	**9.226 715**
8.00	1	**9.226 716**
9.00	1	**9.226 717**
9.50	1	**9.226 718**
10.00	1	**9.226 719**
11.20	1	**9.226 720**
12.50	1	**9.226 721**
13.20	1	**9.226 722**
14.00	1	**9.226 723**
16.00	1	**9.226 724**
18.00	1	**9.226 725**
19.00	1	**9.226 726**
20.00	1	**9.226 727**
22.40	1	**9.226 728**
25.00	1	**9.226 729**
26.50	1	**9.226 730**
28.00	1	**9.226 731**
31.50	1	**9.226 732**
35.50	1	**9.226 733**
37.50	1	**9.226 734**
40.00	1	**9.226 735**
45.00	1	**9.226 736**
50.00	1	**9.226 737**
53.00	1	**9.226 738**
56.00	1	**9.226 739**
63.00	1	**9.226 740**
71.00	1	**9.226 741**
75.00	1	**9.226 742**
80.00	1	**9.226 743**
90.00	1	**9.226 744**
100.00	1	**9.226 745**
106.00	1	**9.226 746**
112.00	1	**9.226 747**
125.00	1	**9.226 748**

2 Analytical Sieve Test Sand

Test materials can be used to check analytical sieves between the schedulded calibration dates and to demonstrate the presence of the required properties, as well as the suitability of analytical sieves. A test material for analytical sieves with frequent mesh widths (2.0mm - 1.0mm - 0.5mm - 0.25mm - 0.125mm). *Normensand*
- Pack of 3 bottles, 202g each
- Grain size : from 0.125mm to 2.00mm
- Data sheet for the use of traceability for analytical sieves

Each bottle contains a mixture of different sizes.



Description	PK	Cat. No.
Analytical Sieve Test Sand	3	**9.739 500**

1



1 Ultrasonic sieve-bath Sonorex Super ultrasonic bath RK 106

NEW!

Ultrasonic bath for cleaning of 1 test sieve with 200 mm diameter

Bandelin

- Tank: stainless steel
- Housing: stainless steel drip-proof
- Outlet: ball valve, right side
- Degree of protection: IP 32
- Time switch: 1-15 min and ∞

Type	Description	PK	Cat. No.
RK 106	Ultrasonic bath for 1 test sieve EU-Plug	1	**9.877 106**
RK 106	Ultrasonic bath for 1 test sieve UK-Plug	1	**9.877 105**
RK 106	Ultrasonic bath for 1 test sieve CH-Plug	1	**9.877 107**
D 6	Lid for RK 106	1	**9.877 606**
SH 7	Sieve holder	1	**9.877 784**

2



3



4



2 3 4 Mesh, polyester

Thermo-fixed PE mesh with temperature resistance from 75°C to +150°C (short). For long term heating max. 125°C. Resistant to acids but not alkalis.
Dimensions: Minimum width 102cm, Length 100cm.

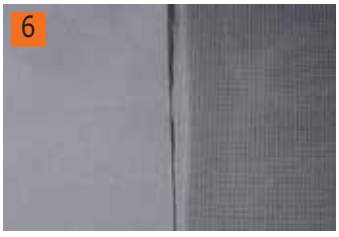
Other sizes available on request.

Mesh size µm	PK	Cat. No.
1	1	**9.068 210**
5	1	**9.068 211**
6	1	**9.068 212**
10	1	**9.068 213**
15	1	**9.068 214**
20	1	**9.068 215**
30	1	**9.068 216**
50	1	**9.068 218**
60	1	**9.068 220**
100	1	**9.068 224**
150	1	**9.068 226**
200	1	**9.068 227**
250	1	**9.068 228**
300	1	**9.068 229**

5



6



7



5 6 7 Mesh, Polyamide

Thermo-fixed Polyamide (Nylon) mesh is temperature stable from -40°C to +115°C. Dry in water from 95°C to 100°C. Stability in acids is limited and dependant on concentration and temperature. Nylon exhibits outstanding stability in alkalis, including sodium and potassium solutions. Its chemical behaviour with respect to organic solvents is moderate to good. Minimum mesh width: 102cm, Length: 1m

Other sizes available on request.

Mesh size µm	PK	Cat. No.
1	1	**9.068 276**
5	1	**9.068 277**
10	1	**9.068 279**
30	1	**9.068 282**
40	1	**9.068 283**
50	1	**9.068 284**
60	1	**9.068 285**
80	1	**9.068 287**
90	1	**9.068 288**
100	1	**9.068 289**
125	1	**9.068 290**
150	1	**9.068 291**
200	1	**9.068 292**
250	1	**9.068 293**
300	1	**9.068 294**
400	1	**9.068 295**
500	1	**9.068 296**

1 Sample Splitters, RT series

To provide separation of pourable powders and bulk materials on site and in the laboratory. Operates independently of mains supply. Available in 6 sizes. Number of samples: 2.

Retsch



Type	Feed size up to mm	Maximum Throughput/ Charge	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
RT 6.5	4	3 l	300 x 270 x 250	3.50	1	**9.739 200**
RT 12.5	8	3 l	300 x 270 x 250	3.50	1	**9.739 201**
RT 25	16	16 l	620 x 420 x 260	21.50	1	**9.739 202**
RT 37.5	25	16 l	620 x 420 x 260	21.50	1	**9.739 203**
RT 50	33	16 l	620 x 420 x 260	21.50	1	**9.739 204**
RT 75	50	16 l	620 x 420 x 260	21.50	1	**9.739 205**

2 Sample Divider PT 100 with vibratory feeder DR 100

Rotary tube divider for the representative sample division with an extremely high division accuracy. Rapid and easy handling of sample vessels thanks to quick-release clamps.
DR100/40: approx. 10kg, 220-240V, 50Hz

Retsch



Supplied with: PT 100 incl. dividing head with 8 quick-release sample outlets, vibratory feeder DR 100/40 and 10 sample bottles (250ml).

Specifications PT 100

Feed size:	up to 10mm
Number of samples:	8 (6 or 10 heads also available on request)
Throughput/charge:	up to 5000ml
Dimensions (WxDxH):	580 x 420 x 910mm
Weight: approx.:	34kg
Supply requirements:	230V, 50Hz

Type	PK	Cat. No.
Sample Divider PT 100	1	**9.739 147**

3 Rotary cone sample divider LABORETTE 27

Creates the optimal basis for reliable analysis of a representative sample! Representative samples division is the foundation for every precise analysis. The rotary cone sample divider LABORETTE 27 achieves due to its unique combination of three methods previously unheard of dividing precision. Variable division ratios and the design in several variants guarantee adaptation to a wide range of applications with a dividing accuracy of up to 99.9%. For optimal sample feeding the vibratory feeder LABORETTE 24 (optional) is recommended.

Fritsch



Division:	of solid samples and suspensions, without modification
Division ratio:	1:8, 1:10, 1:30
Number of sub-sets:	8, 10, 3
Max. particle size:	10mm, 2.5mm
Max. feed volume:	4000ml, 2500ml, 300ml
Sample bottle capacities:	15, 20, 25, 30, 250, 500ml
Power supply:	230V/1~, 50-60Hz
Dimensions (WxDxH):	270 x 450 x 460mm
Net weight:	7.7kg

Type	PK	Cat. No.
Rotary cone sample divider LABORETTE 27	1	**9.738 310**

Instrument also available in other voltages.
Dividing heads must be ordered separately.

Dividing heads for rotary cone sample divider LABORETTE 27

Fritsch

Division ratio	Material	Sample bottles ml	PK	Cat. No.
1:8	POM plastic	500	1	**9.738 316**
1:8	aluminium	500	1	**9.738 313**
1:10	POM plastic	250	1	**9.738 317**
1:10	aluminium	250	1	**9.738 318**
1:30	POM plastic	15	1	**9.738 319**
1:30	aluminium PTFE-coated	15	1	**9.738 314**

All dividing heads are delivered inclusive of sample bottles and funnels.

1



1 Homogeniser, POLYTRON® PT 1200 E

KINEMATICA GmbH

This handheld homogeniser is ideal for quick processing of small sample quantities and volumes, for example in Life science or genetic.

Application volume: 0.05 to 250ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 12 m/s
- Ergonomic design and various models of dispersing aggregates in Easy-to-Clean design

Applications:
- General homogenisation applications (dispersion and emulsification)
- Sample preparation for subsequent extraction of pharmaceutical agents (API)
- Cell disruption, RNA/DNA isolation from tissue
- Dispersion of small quantities from plants, animals or human tissue

Please order tools separately.

Specifications

Application volume:	0.05 to 250ml
Motor input power:	100W
Aggregates:	dia. 3, 5, 7 and 12mm and dia. 20mm X EC-E116 Aggregat
Speed range:	Stepless up to 25.000min^{-1}
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	220 x 44 x 55 mm
Weight drive:	440g
Tested to:	EN/IEC 61010, 61326-1

Type	PK	Cat. No.
PT 1200 E, 230V (with EU-plug)	1	**9.571 492**

2



9.571 493

Homogeniser, POLYTRON® PT 1300 D

KINEMATICA GmbH

This digital Homogeniser, is ideal for quick processing of small sample quantities and volumes, for example in Life science or genetic. Storing the desired speed ensures repetitive and reproducible homogenisations. When the unit is switched off, the last stored speed is saved. This drive can be controlled using our KIN software from a PC via USB or RS232.

- Application volume 0.05 to 250ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 14 m/s
- Speed remains constant even when viscosity changes
- PC interfaces (RS 232 and USB)
- MEMO function of the stored speed
- Ergonomic design and various models of dispersing aggregates in Easy-to-Clean design

Applications look also at PT 1200 E:
- Reproducible processes

Specifications

Application volume:	0.05 to 250ml
Motor input power:	100W
Aggregates:	dia. 3, 5, 7 and 12mm and dia. 20mm X EC-E116 Aggregate
Speed range:	Stepless up to 30.000min^{-1}
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	210 x 40 x 45mm Drive, 230 x 205 x 95mm Base
Weight drive:	620g
Tested to:	IEC/EN 61000-6-2/EN 61000-6-3/IEC/EN 61010-2-51

Type	PK	Cat. No.
PT 1300 D, 230V (with EU-plug)	1	**9.571 493** 2

Suitable tools - please see page 549

E & OE.

1 Homogeniser, POLYTRON® PT 2500 E

NEW!

KINEMATICA GmbH

The PT2500 E is the ideal solution for cost-conscious laboratories. It is able to perform a lot of applications.

- Application volume 0.05 to 2500ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 32 m/s
- Speed remains constant even when viscosity changes
- Various models of dispersing aggregates in Easy-to-Clean design

Applications:
- General homogenisation applications (dispersion and emulsification)
- Formulation of lotions, creams and food
- Production of oil-water emulsions

Please order tools separately.

Specifications

Application volume:	0.05 to 2500ml
Motor input power:	500W
Aggregates:	dia. 3, 5, 7 and 12mm and dia. 20mm and 25mm
Speed range:	Stepless up to 30.000min^{-1}
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	157 x 76 x 236mm
Tested to:	IEC/EN61326-1/IEC/EN 61000-6-2/EN 61000-6-4 IEC/EN 61010-2-51

1



Type	PK	Cat. No.
POLYTRON® PT 2500 E	1	**4.013 108**

Dispersing aggregates for Homogeniser POLYTRON® 1200 E, 1300 D and 2500 E

KINEMATICA GmbH

For model	Type	Length mm	Diam. mm	Working volume ml	PK	Cat. No.
PT 1200 E / PT 1300 D / PT 2500 E	PT-DA 03/2 EC-E050	50	3	0.05 - 2	1	**6.258 269** 2
PT 1200 E / PT 1300 D / PT 2500 E	PT-DA 05/2 EC-E085	85	5	0.1 - 5	1	**9.570 223**
PT 1200 E / PT 1300 D / PT 2500 E	PT-DA 07/2 EC-E107	107	7	0.3 - 10	1	**6.258 271**
PT 1200 E / PT 1300 D / PT 2500 E	PT-DA 07/2SYN-E082	82	7	0.3 - 10	25	**6.258 273** 3
PT 1200 E	PT-DA 12/2SYN-E126			0.05 - 250	10	**6.261 033**
PT 2500 E	PT-DA 12/2 EC-E157	157	12	2- 250	1	**9.570 225**
PT 2500 E	PT-DA 20/2 EC-E192	192	2	100 - 2500	1	**6.258 234**
PT 1200 E / PT 1300 D / PT 2500 E	PT-DA 20/2X EC-E116	116	20	10 - 250	1	**9.570 226**
PT 2500 E	PT-DA 25/2 EC-E192	192	25	100 - 2500	1	**9.570 227**

2



6.258 269

3



6.258 273

Dispersing aggregates for Homogeniser POLYTRON® 10-35 GT, 3100 D and 6100 D

KINEMATICA GmbH

For model	Type	Length mm	Diam. mm	Working volume ml	PK	Cat. No.
PT 10-35 GT / PT 3100 D / PT 6100 D	PT-DA 20/2 EC-E192	192	2	100 - 2500	1	**6.258 234**
PT 10-35 GT / PT 3100 D / PT 6100 D	PT-DA 30/2 EC-F250	250	2	100 - 4000	1	**9.570 228**
PT 10-35 GT / PT 3100 D / PT 6100 D	PT-DA 30/4 EC-F250	250	4	100 - 4000	1	**6.258 233**
PT 10-35 GT / PT 3100 D / PT 6100 D	PT-DA 36/2 EC-F250	250	2	200 - 4500	1	**9.570 229**
PT 3100 D / PT 6100 D	PT-DA 40/2 EC-F250	250	2	200 - 5000	1	**9.570 230**
PT 3100 D / PT 6100 D	PT-DA 45/2 EC-F250	250	2	200 - 6000	1	**9.570 231**
PT 3100 D / PT 6100 D	PT-DA 45/6 EC-F250	250	6	200 - 6000	1	**9.570 232**
PT 3100 D / PT 6100 D	PT-DA 50/2 EC-F250	250	2	1000 - 10000	1	**9.570 233**

1



1 Homogeniser, POLYTRON® PT 10-35 GT

The powerfull motor is useful for sample preparation and also for formulation in scaleup matters *KINEMATICA GmbH*

- Application volume 0.1 up to 10.000ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 32m/s
- Speed remains constant even when viscosity changes
- Various models of dispersing aggregates in Easy-to-Clean design

Applications:
- General homogenisation applications (dispersion and emulsification)
- Formulation of lotions, creams and food
- Production of oil-water emulsions
- Dispersion of small quantities from plants, animals or human tissue

Specification

Application volume:	0.1 to 10.000ml
Motor input power:	1200W
Aggregates:	ø 20, 30, 36mm
Speed range:	Stepless up to 30.000min^{-1}
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	95 x 210 x 247mm
Tested to:	IEC/EN 61000-6-2/EN 61000-6-3/IEC/EN 61010-2-51

Type	PK	Cat. No.
PT-MR 10-35 GT, 230V/EU package with ST-P10/600, drive holder, vessel holder, safety pos. ring	1	**9.571 490**

2



2 Homogeniser, POLYTRON® PT 3100 D/PT 6100 D

These dispersion units are a unique class. Applications with highest demands on reproducibility or requiring a scale-up step are excellently served by this unit. The complete digitalised control and regulating system can be easily operated using the membrane keyboard. The bright and informative display shows all parameters. Via PC interface, diverse parameters such as speed profile or times can be specified using the enclosed KIN software. Results can be recorded as an Excel file. *KINEMATICA GmbH*

- Application volume 0.1 up to 30.000ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 32m/s
- Speed remains constant even when viscosity changes
- PC interfaces (RS 232 and USB)
- Digital display for showing different process parameters and messages
- Various models of dispersing aggregates in Easy-to-Clean design

Applications (see also POLYTRON® PT10-35-GT):
- reproducibility of work routine
- testing for scale-up

Specification

Application volume:	PT 3100 D 0.1 to 10 litres PT 6100 D 0.1 to 30 litres
Motor input power:	PT 3100 D with 1200W PT 6100 D with 1700W
Aggregates:	ø 20, 30, 36, 40, 45, 50mm
Speed range:	Stepless up to 30.000min^{-1}
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	PT 3100 D 240 x 130 x 265mm PT 6100 D 360 x 164 x 313mm
Tested to:	IEC/EN 61000-6-2/EN 61000-6-3/IEC/EN 61010-2-51

Type	PK	Cat. No.
PT-MR 3100 D, 230V/EU package with ST-F10/600	1	**6.235 534**
PT-MR 6100 D, 230V/EU package with ST-F11/855	1	**9.571 491**

E & OE.

4 Disperser System Ultra-Turrax® Tube Drive

NEW!

IKA

Disperse, stir and grind using a single drive unit. Patented disposable disperser system for volumes from 2ml to 50ml with hermetically sealable, disposable sample tubes.
Provides protection and safety from: Infectious samples, toxic substances, strong-smelling materials.
- no possibility of cross-contamination
- suitable for individual or serial operations
- increased safety due to low voltage (24V) power
- chemically resistant plastic containers
- anti-locking function
- patented
- worldwide service guaranteed by Ika®

ULTRA-TURRAX® Tube Drive Workstation additionally with:
- USB interface for experiment control and documentation
- Collecting tray for protection against leaking liquids
- Simple, precise and multilingual menu navigation with OLED display
- Programmable sample conditions (library)
- Tubo button for short-term, intensive mixing, dispersing and grinding
- Adjustable reverse operation

ULTRA-TURRAX® Tube Drive Workstation supplied with:
Ultra Turrax® Tube Drive, 2 x DT-20 dispersing tubes incl. hook for removing the rotor-stator unit, 2 x ST-20 stirring tubes, 2 x BMT-20 G/S Ball-mill-tubes (with glass balls/stainless steel balls, respectively), power supply and 1 x removal hook for removal the rotor-stator unit.
Dispersing tubes (20ml and 50ml) with pierceable membrane and γ-sterilised are available on request.

ULTRA-TURRAX® Tube Drive control Workstation supplied with:
ULTRA-TURRAX® Tube Drive control , 1 x ST-20, 1 x DT-20 incl. 1 removal hook for removal the rotor-stator unit, 2 x BMT-20 G/S, power supply.

Specifications

Motor rating input/output	
ULTRA-TURRAX® Tube Drive:	20/17 W
ULTRA-TURRAX® Tube Drive control:	28/17 W
Volume:	2ml to 50ml
Viscosity max.:	5000mPas
Speed range	
ULTRA-TURRAX® Tube Drive:	300rpm to 6000rpm
ULTRA-TURRAX® Tube Drive control:	400rpm to 8000rpm
Noise without element:	50dB(A)
Timer	
ULTRA-TURRAX® Tube Drive:	1 to 59sec. (300 to 6000rpm) 1 to 29min. (300 to 4000rpm)
ULTRA-TURRAX® Tube Drive control:	1 sec. up to 30min. (continuously adjustable)
Protection class according to DIN EN 60529:	IP20
Supply requirements:	100v - 240V /50/60Hz
Tested to DIN EN IEC 61010-1.	

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9.570 500

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9.570 506

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4.008 150

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Description	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
Ultra-Turrax® Tube Drive	100 x 160 x 40	0.75	1	**9.570 500** 1
Ultra-Turrax® Tube Drive Workstation	100 x 160 x 40	0.75	1	**9.570 506** 2
ULTRA-TURRAX® Tube Drive control	122 x 178 x 54	0.90	1	**4.008 150** 3
ULTRA-TURRAX® Tube Drive control Workstation	122 x 178 x 54	0.90	1	**4.008 135**
DT-20 Dispersing Tube with dispersing unit, 20ml			25	**9.570 507**
DT-20 eco Dispersing Tube with dispersing unit, 20ml			25	**6.265 701**
ST-20 Stirring Tube, 20ml			25	**9.570 508**
BMT-20 G Ball-Mill-Tube (with glass balls), 20ml			25	**9.570 509**
BMT-20 S Ball-Mill-Tube (with stainless steel balls), 20ml			25	**9.570 510**

50 ml tubes available on request.

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1 Homogeniser T 10 basic ULTRA-TURRAX®

IKA

Small dispersing instrument for volumes from 0.5ml to 100ml (H_2O). It offers a wide speed range from 8000rpm to 30000rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements guarantees a wide range of applications.

- Quick-connect coupling for changing dispersing elements easily
- Ideal for manual operation due to its light weight and ergonomic design
- Extremely mobile due to direct line power (no transformer required)
- Stainless steel dispersing elements can be cleaned quickly and easily as they can be dismounted without tools
- Plastic disposable dispersing elements are available in two sizes, particularly suitable for PCR analysis
- High performance drive ensures immense speed stability
- Quiet operation

Specifications

Motor rating input/output:	125W/75W
Working volume range (H_2O):	0.5ml to 100ml
Viscosity max.:	5000mPas
Speed range:	8000rpm to 30000rpm
Speed display:	scale
Speed control:	stepless
Noise without element:	65dB(A)
Extension arm diam./length:	8mm/130mm
Dimensions (WxDxH):	56 x 66 x 178mm
Weight:	0.5kg
Power supply:	230V, 50/60Hz
Protection class DIN EN 60529:	IP 30

Type	PK	Cat. No.
T 10 basic ULTRA-TURRAX®	1	**9.570 940**
T 10 basic S2 ULTRA-TURRAX® UK	1	**9.570 941**
T 10 basic S3 ULTRA-TURRAX® CH	1	**9.570 942**

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2 3 Dispersing instrument T 10 standard ULTRA-TURRAX® PCR Kit

NEW!

IKA

Competitively priced dispersing instrument for volumes of 0.5ml to 100ml.
A wide speed range allows you to work at high circumferential speeds.
- maintains speed with various media thanks to high performance 125W drive
- ideal for manual operation thanks to its light weight and ergonomic form
- extremely mobile thanks to direct mains operation (no transformer required)
- stainless steel dispersing elements (5mm, 8mm and 10mm diameter) can be cleaned quickly and easily as they can be dismantled without tools
- plastic disposable dispersing elements in two sizes, particularly suitable for PCR analysis
- quick-release coupling makes changing the dispersing elements easy

Supplied with: storage case incl. drive, clamp and plastic dispersing elements.

Specifications

Motor rating input/output:	125/75W
Working volume range (H_2O):	0.5 to 100ml
maximum viscosity:	5000mPas
Speed range:	8000 to 30000rpm
Speed adjustment:	stepless
Speed display:	Scale (1 to 6)
Clamping rod diameter/length:	8 mm/100mm
Dimensions:	46 x 57 x 201mm
Weight:	0.4kg
Protection rating to DIN EN 60529:	IP30
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
T 10 standard ULTRA-TURRAX® PCR Kit	1	**9.570 959**

E & OE.

Dispersing heads Ultra Turrax® T 10 standard/T 10 basic

Dispersing heads, plastic: Autoclavable. Dispersing heads, stainless steel: Ultimate fineness emulsions 1 to 10µm and suspensions 5 to 25µm, sterilisable by all methods.

IKA

Type	Material	Diam. rotor / stator mm	Max. immersion depth mm	Working volume ml	PK	Cat. No.	
S 10 D-7 G-KS - 65	PC, PSU	4,8 / 7	65	1 - 20	24	**6.262 140**	
S 10 D-7 G-KS - 110	PC, PSU	4,8 / 7	110	1 - 40	24	**9.570 878**	1
S 10 N - 5 G	PTFE, AISI 316L	3,8 / 5	75	0,5 - 10	1	**7.631 964**	2
S 10 N - 8 G	PTFE, AISI 316L	6,1 / 8	95	1 - 50	1	**6.225 614**	3
S 10 N - 10 G	PTFE, AISI 316L	7,6 / 10	100	1 - 100	1	**6.225 477**	4

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6.225 477

5 Homogeniser T 18 digital ULTRA-TURRAX®

Competitively priced dispersing instrument for volumes from 1ml to 1500ml (H_2O) with digital speed display. It offers a wide speed range from 500rpm to 25000rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements guarantees a wide range of applications.

IKA

- Digital speed display
- Electronic speed control
- Electronic overload protection
- Stainless steel dispersing elements can be cleaned quickly and easily
- Plastic disposable dispersing elements are available in two sizes
- Error code display
- Quiet operation

Specifications

Motor rating input/output:	500W/300W
Working volume range (H_2O):	1ml to 1500ml
Viscosity max.:	5000mPas
Speed range:	500rpm to 25000rpm
Speed display:	LED
Speed control:	stepless
Noise without element:	75dB(A)
Extension arm diam./length:	13mm/160mm
Dimensions (WxDxH):	87 x 106 x 271mm
Weight:	2.5kg
Power supply:	200-240 V, 50/60Hz
Protection class DIN EN 60529:	IP 20

5



Type	PK	Cat. No.
T 18 digital ULTRA-TURRAX®	1	**9.570 943**
T 18 digital S2 ULTRA-TURRAX® UK	1	**9.570 944**
T 18 digital S3 ULTRA-TURRAX® CH	1	**9.570 945**
T 18 digital ULTRA-TURRAX® Package	1	**9.570 946**
T 18 digital S2 ULTRA-TURRAX® Package UK	1	**9.570 947**
T 18 digital S3 ULTRA-TURRAX® Package CH	1	**9.570 948**

6 Dispersing heads for Ultra Turrax® T18 digital

Plastic dispersing heads: Autoclavable
Stainless steel dispersing heads: Ultimate fineness emulsions 1 to 10µm and suspensions 10 to 50µm, sterilisable by all methods.

IKA

Type	Diam. rotor / stator mm	Max. immersion depth mm	Working volume ml	Material	PK	Cat. No.
S 18 D-10 G-KS	6.75 / 10	85	10 to 100	PC, PEEK	12	**9.570 855**
S 18 D-14 G-KS	9.5 / 14	85	10 to 500	PC, PEEK	12	**9.570 857**
S 18 N - 10 G	7.5 / 10	70	1 to 100	PTFE, AISI 316L	1	**9.570 841**
S 18 N - 19 G	12.7 / 19	170	10 to 1500	PTFE, AISI 316L	1	**9.570 842**

6



Stands and fittings - please see page 556

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1 Homogeniser T 25 digital ULTRA-TURRAX®

IKA

High-performance dispersing instrument for volumes from 1 to 2000ml (H_2O) with digital speed display. It offers a wide speed range from 500 to 25000rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements adds versatility. Applications ranges from homogenizing waste water samples, use in laboratory reactors, dispersion tasks under vacuum/pressure and sample preparation in medical diagnostics.

- Digital speed display
- Electronic speed control
- Electronic overload protection
- Stainless steel dispersing elements can be cleaned quickly and easily
- Plastic disposable dispersing elements are available in two sizes
- Error code display
- Quiet operation

Specifications

Motor rating input/output:	800/500W
Working volume range (H_2O):	1 to 2000ml
Viscosity max.:	5000mPas
Speed range:	500 to 25000rpm
Speed display:	LED
Speed control:	stepless
Noise without element:	75dB(A)
Extension arm diam./length:	13mm/160mm
Dimensions (WxDxH):	87 x 106 x 271mm
Weight:	2.5kg
Power supply:	200-400 V, 50/60Hz
Protection class DIN EN 60529:	IP 20

Type	PK	Cat. No.
T 25 digital ULTRA-TURRAX®	1	**9.570 949**
T 25 digital S2 ULTRA-TURRAX® UK	1	**9.570 950**
T 25 digital S3 ULTRA-TURRAX® CH	1	**9.570 951**

Dispersing heads for T25 basic Ultra-Turrax®

NEW!

IKA

Plastic dispersing heads: Autoclavable.
Stainless steel dispersing heads: Ultimate fineness: emulsions 1µm to 10µm and suspensions 5µm to 50µm, sterilisable by all methods.

Type	Diam. rotor / stator mm	Max. immersion depth mm	Working volume ml	Material	PK	Cat. No.
S 25 D-10 G-KS	6.75 / 10	85	10 - 100	PC, PEEK	12	**9.570 859** 2
S 25 D-14 G-KS	9.5 / 14	85	10 - 500	PC, PEEK	12	**9.570 861** 3
S 25 N - 8 G	6.1 / 8	85	1 - 50	PTFE, AISI 316L	1	**9.571 098**
S 25 N - 10 G	7.5 / 10	85	1 - 100	PTFE, AISI 316L	1	**9.571 207**
S 25 N - 18 G	12.7 / 18	165	10 - 1500	PTFE, AISI 316L	1	**9.571 119**
S 25 NK - 19 G	12.7 / 19	165	25 - 1500	PTFE, AISI 316L	1	**9.571 121**
S 25 KV - 25 G	17.0 / 25	225	50 - 2000	FFPM / SIC, AISI 316L	1	**9.571 198**
S 25 N - 25 G	17.0 / 25	165	50 - 2000	PTFE, AISI 316L	1	**9.571 200** 4
S 25 N - 25 F	18.0 / 25	165	100 - 2000	PTFE, AISI 316L	1	**9.571 201**
S 25 KV - 25 F	18.0 / 25	225	100 - 2000	FFPM / SIC, AISI 316L	1	**9.571 199**
S 25-KR-18 G	12.7 / 18	185	10 - 1500	FKM, PTFE, AISI 316L	1	**4.653 931**
S 25-KR-25 G	17.0 / 25	185	50 - 2000	FKM, PTFE, AISI 316L	1	**4.653 932**
S 25-KR-18 G-ST	13.4 / 18	185	10 - 1500	FKM, PTFE, AISI 316L	1	**4.653 933**
S 25-KR-25 G-ST	20.0 / 25	185	50 - 2000	FKM, PTFE, AISI 316L	1	**4.653 934**
S 25-KR-25 F	18.0 / 25	185	100 - 2000	FKM, PTFE, AISI 316L	1	**4.653 935**

Further dispersing heads are available on request.

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9.570 859

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9.570 861

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9.571 200

Cleaning tool TS 25-3 for Dispersing heads

NEW!

For dispersing heads S25N-18G/18G-ST, S25N-25G/F/25G-ST, S25KR-18G/18G-ST, S25KR-25G/25F/25G-ST and S25KV-18G/25G/25F. *IKA*

Type	PK	Cat. No.
TS 25-3	1	**6.265 708**

1 High-power homogeniser T 50 digital ULTRA-TURRAX®

Powerful dispersing instrument for volumes from 0.25 to 30l (H_2O) with digital speed display. It offers a wide speed range from 500 to 10000rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements guarantees a wide range of applications. Reproducible operations due to constant speed even with changes in viscosities. *IKA*

- Digital speed display
- Electronic speed control
- Electronic overload protection
- Stainless steel dispersing elements can be cleaned quickly and easily
- Smooth start
- Error code display

Specifications

Motor rating input/output:	1100W/700W
Working volume range (H_2O):	0.25 to 30l
Viscosity max.:	5000mPas
Speed range:	500 to 10000rpm
Speed display:	LED
Speed control:	stepless
Noise without element:	72dB(A)
Extension arm diam./length:	16mm/220mm
Dimensions (WxDxH):	115 x 139 x 355mm
Weight:	5.76kg
Power supply:	200-240 V, 50/60Hz
Protection class DIN EN 60529:	IP 20

Type	PK	Cat. No.
T 50 digital ULTRA-TURRAX®	1	**9.570 952**
T 50 digital S2 ULTRA-TURRAX® UK	1	**9.570 953**
T 50 digital S3 ULTRA-TURRAX® CH	1	**9.570 954**

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Dispersing heads for T50 digital ULTRA-TURRAX®

NEW!

Stainless steel dispersing heads *IKA*

Type	Diam. rotor / stator mm	Max. immersion depth mm	Working volume l	Ult. fineness suspensions / emulsions µm	Material	PK	Cat. No.
S 50 KG - HH - G 45 G, FDA	36.0 / 45	260	0.5 - 20	40 - 100 / 10 - 30	FFPM/SIC, AISI 316L	1	**4.653 936**
S 50 KG - HH - G 45 G - ST, FDA	36.0 / 45	260	0.5 - 20	40 - 100 / 10 - 30	FFPM/SIC, AISI 316L	1	**4.653 937**
S 50 KG - HH - G 45 M, FDA	40.5 / 45	250	0.5 - 15	25 - 50 / 5 - 20	FFPM/SIC, AISI 316L	1	**4.653 938**
S 50 KG - HH - G 45 F, FDA	40.0 / 45	250	0.25 - 10	10 - 30 / 1 - 10	FFPM/SIC, AISI 316L	1	**4.653 939**
S 50 KG - HH - G 45 F	40.0 / 45	250	0.25 - 10	10 - 30 / 1 - 10	FFPM/SIC, AISI 316L	1	**9.570 898**
S 50 N - G 45 G*	36.0 / 45	250	0.5 - 20	40 - 100 / 10 - 30	PTFE, AISI 316L	1	**9.570 882** 2
S 50 N - G 45 M*	40.5 / 45	250	0.5 - 15	25 - 50 / 5 - 20	PTFE, AISI 316L	1	**9.570 886** 3
S 50 N - G 45 F*	40.0 / 45	250	0.25 - 10	10 - 30 / 1 - 10	PTFE, AISI 316L	1	**9.570 896** 4

* sterilisable by all methods

Further dispersing heads are available on request.

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9.570 896

Special dispersing heads for disperser T50 digital

IKA

R 50 "high speed" stirring shaft

Using the R 50 stirring shaft, the T50 digital is quickly converted into a high speed stirrer. 700W power and 10000rpm are provided for rapid mixing, dissolving, and breaking up pigment agglomerates. The conical shaft is supported by means of ball bearings, the mixing elements have a screw connection. For operational safety a protective cage is fitted around the mixing element.

S 50 N - W 80 SMK Jet mixer head

For shortening mixing and dissolving times. The vertical flow and the high tangential speed, up to 10000rpm, ensure intensive mixing. The head is used for adding gases or liquids, for lump-free suspension of difficult to dissolve powders or for dissolving sedimented, accreted substances.

S 50 N - W 65 SK Cutting head

To crush large pieces (up to 50mm) of fibrous materials, such as plant matter, vegetables and fruit.

Type	Max. immersion depth mm	Working volume l	PK	Cat. No.	
R 50	180	0.25 to 30	1	**9.571 350**	1
S 50 N - W 80 SMK	350	1 to 50	1	**9.570 926**	2
S 50 N - W 65 SK	350	1 to 10	1	**9.570 922**	3

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9.571 350

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9.570 926

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9.570 922

Stands and fittings for Dispersers T 10/T 18/T 25/T 50

NEW!

IKA

Type	Description	Rod diam. mm	Height mm	For model	PK	Cat. No.	
R 104	Stand	10	370	T 10	1	**7.631 971**	4
H 44	Bosshead			T 10	1	**9.232 994**	5
R 200	Clamp			T 10	1	**6.225 158**	6
R 1825	Stand with baseplate	16	560	T 18 / T 25	1	**9.224 031**	7
RH 5	Strap clamp			T 50	1	**9.224 762**	
R 1826	Stand with baseplate	16	800	T 18 / T 25	1	**9.224 032**	
R 1827	Stand with baseplate	16	1000	T 18 / T 25	1	**9.224 033**	
R 182	Bosshead			T 18 / T 25	1	**9.224 292**	8
RH 3	Strap clamp			T 18 / T 25	1	**9.224 761**	9
R 2722	H-stand	34	1010	T 50	1	**9.224 026**	
R 2723	Telescopic stand	34	620 - 1010	T 50	1	**9.224 028**	
R 271	Bosshead			T 50	1	**9.224 266**	

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7.631 971

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9.232 994

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6.225 158

7



9.224 031

8



9.224 292

9



9.224 761

1 Ultrasonic Homogeniser SONOPULS mini20

Bandelin

Ready-to-operate for volumes from 0.1 ml to 25ml, consisting of HF generator mini20, ultrasonic converter mini20 and microtip MS 2.5, diameter 2.5mm. Max. 12W_{eff} HF output. Automatic amplitude control.
- pulse: ON cycles 0.1 to 60 secs.; OFF cycles 0.2 to 60 secs.
- time modes, safety shut down: 59min, 59s
- energy monitoring in kJ
- remote control with PC: RS232 (infrared)
- HF power: max. 20W_{eff}
- processing frequency 30kHz
- electrical supply data: 230 V~, 50/60 Hz

HF generator	**GM mini20**
Dimensions:	250 x 256 x 154mm
Weight:	2.0kg
Converter	**UW mini20**
Dimensions, dia. x H:	Approx. 50mm x 160mm
Weight:	270g
Titanium probes:	Ø 1.5, 2.0, 2.5mm diameter

Type	PK	Cat. No.
SONOPULS mini20	1	**9.650 160**

1



2 Ultrasonic homogenisers, Sonopuls HD 2070/HD 2200

Bandelin

For cell disruption, emulsification and homogenising of materials, liquid degassing, dispersion, extraction and for sonochemistry. Amplitude adjustable from 10 to 100%.
Values can be monitored on the digital display. Pulsation time and data can be stored in the integrated memory. Processing frequency: 20 kHz, which is particularly effective. Fail-safe protection against operating when sample vessel empty and during continuous operation. For 230V 50/60Hz supplies, alternatively available for 115V~, 50/60Hz supplies on request. CE-marked, also as a medical device compliant to the in-vitro diagnostics directive 98/79/EG.

On/off switch control:	Possible directly at the converter, at the ultrasonic generator or via remote control (foot switch)
Amplitude adjustment:	Electronically stabilised from 10 to 100%, ±1%
Pulsation control:	10 to 100% permits heat dissipation when processing sensitive samples
Timer:	1 sec. to 99 mins. : 59 sec. or continuous operation

2



3 Ultrasonic homogeniser, SONOPULS HD 2070

Bandelin

For volumes from 2ml to 50ml. Ready to operate, standard unit with GM 2070 generator, UW 2070 ultrasonic converter, SH 70 G titanium stepped horn probe with external thread and MS 73 3 mm diameter micro tip. HF-output: max. 70 W_{eff}. Titanium probes for other volumes (1ml to 200ml) are available with probes from 2mm to 13mm diameter.

Type	PK	Cat. No.
SONOPULS HD 2070	1	**9.650 180**

HD 2070 (stand and vessel are not included in delivery).

3



4 Ultrasonic homogeniser, SONOPULS HD 2200

Bandelin

For volumes from 20ml to 900ml. Ready-to-operate standard unit with GM 2200 generator, UW 2200 ultrasonic converter, SH 213 G booster horn with external thread and diameter 13mm titanium tip TT 13. HF-output: max. 200 W_{eff}. Titanium probes for other volumes (2ml to 1000ml) are available with probes from diameter 2mm to 25mm.

Type	PK	Cat. No.
SONOPULS HD 2200	1	**9.650 185**

HD 2200 (stand and vessel are not included in delivery).

4



Noise protection - please see page 201.

Ultrasonic homogenisers, SONOPULS HD 3100/3200/3400

Bandelin

- Amplichron® control
- amplitude setting adjustable in % or alternatively power control in W
- Working frequency 20 kHz
- Pulsation: operation intervals from 0.2 s up to 600 secs, rest intervals from 0.3 secs up to 600 secs
- Timer 9 h: 59 min: 59 secs
- Display of energy delivered to the sample in kJ
- 9 user programmes
- Probe monitoring (of specific probes)
- Automatic amplitude limiting after preselection of the probe
- Temperature indication from 0 up to 120°C (248°F), either with unit shutdown or alarm indication when the maximum temperature is exceeded, using optional temperature sensor
- WINPULS® remote control for process organisation with PC via RS232 and IR interfaces with IR adapter
- Backlit graphics LCD readout
- 230V~, 50/60Hz or 115V~, 50/60Hz

SONOPULS ultrasonic homogenisers are CE-marked, also as a medical device compliant to the in-vitro diagnostics directive 98/79/EG.

Applications: Disruption of highly-resistant bacteria, cells or tissues - Production of fine emulsions - Homogenization - Degassing of liquids - Sample preparation for grain size analysis - Catalysis of chemical reactions

1



1 Ultrasonic homogeniser, Sonopuls HD 3100

Bandelin

High-Tech for research - using small volumes.
For samples from 2 ml to 50ml, ready-to-operate standard set with GM 3100 generator, UW 3100 ultrasonic converter , SH 70 G standard horn and MS 73 microtip, diameter 3 mm.

Max. 100W HF-output. - Processing frequency 20kHz. - for 230V 50/60Hz or 115V 50/60Hz supplies - For volumes from 1 ml to 200ml - 5 titanium probes, 2mm to 13mm diameter, are available.

HF generator	**GM 3100**
Dimensions:	250 x 256 x 154mm
Weight:	2.0kg
Converter	**UW 3100**
Dimensions:	70 x 120mm diameter
Weight:	1kg
Titanium probes:	2mm, 3mm, 6mm, 13mm diameter (not supplied)

Type	PK	Cat. No.
SONOPULS HD 3100	1	**9.650 170**

HD 3100 (stand and vessel are not included in delivery)

2



2 Ultrasonic homogeniser, SONOPULS HD 3200

Bandelin

High-Tech for research - using larger volumes
For volumes from 20ml to 900ml, ready-to-operate standard set with generator GM 3200, ultrasonic converter UW 3200, booster horn SH 213 G and flat titanium tip TT 13 diameter 13 mm.

Max. 200W HF-output. - Processing frequency 20kHz. - For 230V 50/60Hz or 115V 50/60Hz supplies - For volumes from 2ml to 1000ml - 8 titanium probes available from 2mm to 25mm diameter.

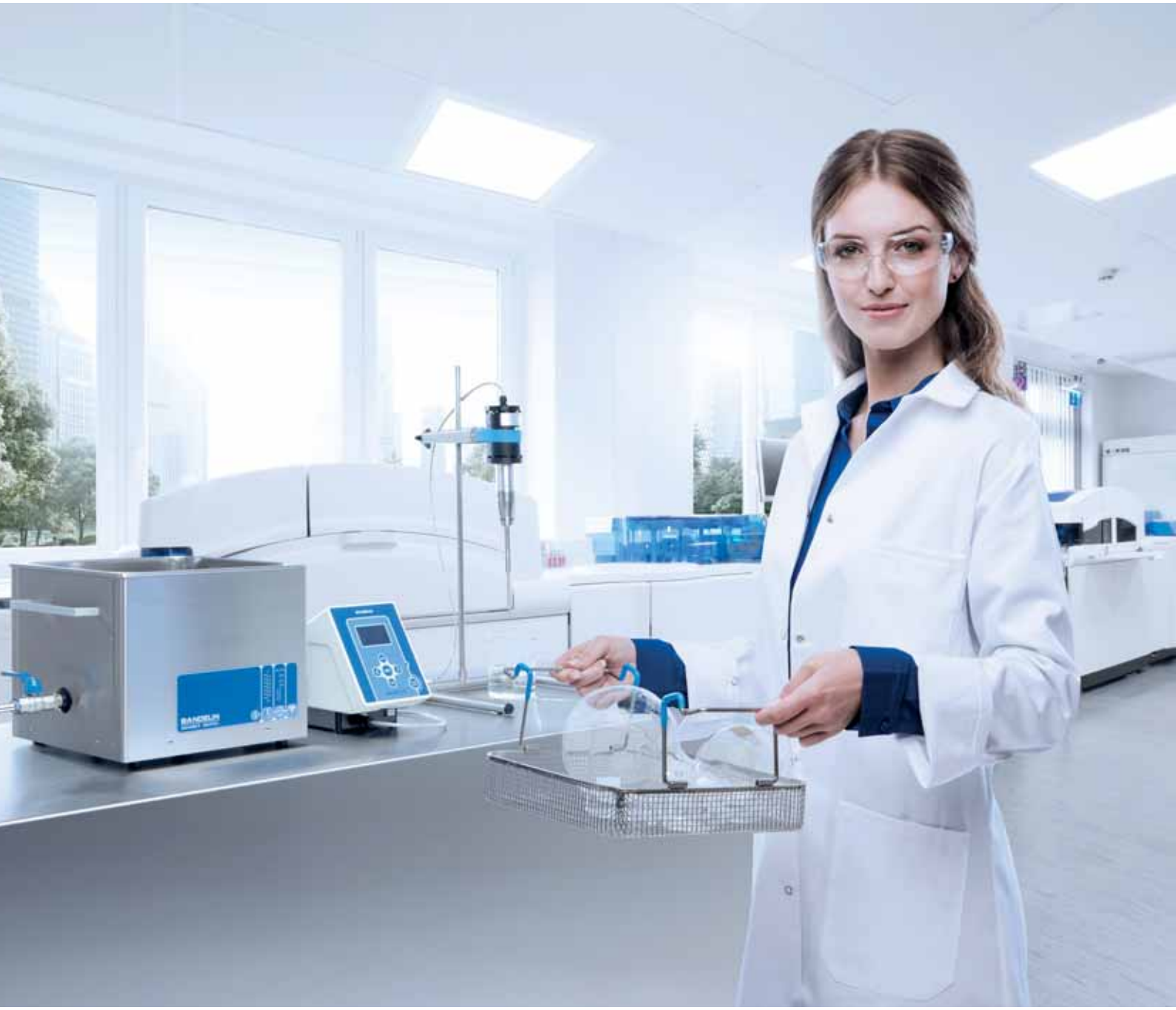
HF generator	**GM 3200**
Dimensions:	250mm x 256mm x 170mm
Weight:	2.7kg
Converter	**UW 3200**
Dimensions:	70 diameter x 120mm
Weight:	1kg
Titanium probes (diameter):	2mm, 3mm, 6mm, 13mm, 19mm, 25mm (not supplied)

Type	PK	Cat. No.
SONOPULS HD 3200	1	**9.650 175**

HD 3200 (stand and vessel are not included)

E & OE.

BANDELIN
Ultrasound since1955



SONOREX High-power ultrasonic baths
SONOPULS Ultrasonic homogenizers

- Disinfection and cleaning
- Homogenizing
- Emulsifying
- Degassing
- Preparation of samples

In our laboratory brochure you will find information on our products and a variety of possible applications !

BANDELIN electronic is specialized in the development and manufacturing of ultrasonic devices and is the worldwide only full-service provider of ultrasonic devices and disinfection and cleaning agents, with approvals and certifications according to EN ISO 9001 and 13485 for medical devices.
Benefit from the expertise of the market leader !

NEW

RELAUNCH OF OUR WEBSITE
www.bandelin.com
look for more information about „Ultrasound in the laboratory"

1



1 Ultrasonic Homogeniser Sonopuls HD 3400

High tech for research and pilot plant stations *Bandelin*

Ready-to-operate, basic unit for 100ml to 2500ml volumes consisting of generator GM 3400, ultrasonic converter UW 3400, threaded booster horn SH 3425 G and probe VS 200 T, 25mm diameter VS 190, T 19mm diameter on request. HF out put max. 400W$_{eff}$.

HF generator	**GM 3400**
Dimensions:	324 x 230 x 131mm
Weight:	3.1kg
Converter	**UW 3400**
Dimensions, dia. x H:	90 x 180mm
Weight:	2.2kg
Titanium probes:	19mm; 25mm diameter (not supplied)

Type	PK	Cat. No.
SONOPULS HD 3400	1	**9.650 195**

HD 3100/HD 3200 (stand and glas not included in delivery)

2



2 Ultrasonic homogeniser, SONOPULS HD 4050

NEW!

For volumes up to 100 ml. Ready-to-operate basic equipment for volumes from 0.5 ml to 100 ml consisting of: *Bandelin*

- HF generator GM 4100
- ultrasonic converter UW 50
- titanium probe TS 102, dia. 2 mm

HF output max. 50 Weff

HF generator	**GM 4100**
Dimensions:	150 × 220 × 335mm
Converter	**UW 50**
Dimensions:	45 diameter x 175mm
Titanium probes (diameter):	2mm, 3mm, 4mm, 5mm (not supplied)

Type	PK	Cat. No.
SONOPULS HD 4050	1	**9.650 151**

HD 4050 (stand and vessel are not included)

3



3 Ultrasonic homogeniser, SONOPULS HD 4100

NEW!

For volumes up to 250 ml. Ready-to-operate basic equipment for volumes from 2 ml to 250 ml consisting of: *Bandelin*

- HF generator GM 4100
- ultrasonic converter UW 100
- standard horn SH 100 G
- titanium probe TS 103, dia. 3 mm

HF output max. 100 Weff

HF generator	**GM 4100**
Dimensions:	150 × 220 × 335mm
Converter	**UW 100**
Dimensions:	70 diameter x 150mm
Titanium probes (diameter):	2mm, 3mm, 4mm, 5mm (not supplied)

Type	PK	Cat. No.
SONOPULS HD 4100	1	**9.650 152**

HD 4100 (stand and vessel are not included)

4



9.650 208

5



9.650 218

6



9.650 217

7



9.650 205

Booster horns and stepped horns for SONOPULS Ultrasonic homogenisers, titanium alloy

NEW!

Booster horns, stepped horns (titanium alloy) for connection of interchangeable sonotrodes (probes). Further booster horns are available on request. *Bandelin*

Type	Diam. mm	For	PK	Cat. No.	
Booster horn SH 213 G	13	HD 2200 / HD 3200	1	**9.650 208**	4
Booster horn SH 219 G	19	HD 2200 / HD 3200	1	**9.650 218**	5
Booster horn SH 225 G	25	HD 2200 / HD 3200	1	**9.650 217**	6
Stepped horn SH 70 G	13	HD 2070 / HD 3100	1	**9.650 205**	7
Stepped horn SH 100 G	13	HD 4050 / HD 4100	1	**9.650 156**	
Booster horn SH 3419	19	HD 3400	1	**9.650 204**	
Booster horn SH 3425	25	HD 3400	1	**9.650 209**	

E & OE.

Ultrasonic homogenisers, SONOPULS, accessories

Stainless steel stands HG 5/11, with base plate. *Bandelin*
Clamping device KL 7 with rod, swivelling clamp and quick clamp for reaction vessels of 15mm to 100mm diameter.
Support table AT 7 suitable for KL 7 or in LS 8 and LS 11, for the safe stationing of ultrasonic irradiation vessels.

Type	Description	For	PK	Cat. No.
HG 5	Stainless steel stand	HD 2070/ 3100 / 2200 / 3200	1	**9.650 273** 1
HG 10	Stainless steel stand	HD 3400	1	**9.650 275**
KL 7	Clamping device	HG 5 / HG 10	1	**9.650 276** 2
AT 7	Support table	KL 7 or LS 8 / LS 11	1	**9.650 277** 3

1



9.650 273

2



9.650 276

3



9.650 277

Probes for Sonopuls Ultrasonic homogenisers, titanium

NEW!

Titanium probes. *Bandelin*
For connection to stepped horns/booster horns.

Type	Diam. mm	Tip	For	For bottle ml	For	PK	Cat. No.
MS 72	2.0	microtip	SH 70 G SH 213 G	1 - 25 2 - 30	HD 2070 / 2200 HD 3100 / 3200	1	**9.650 244**
MS 73	3.0	microtip	SH 70 G SH 213 G	2 - 50 5 - 90	HD 2070 / 2200 HD 3100 / 3200	1	**9.650 245** 4
KE 76	6.0	tapered tip	SH 70 G SH 213 G	5 - 100 10 - 350	HD 2070 / 2200 HD 3100 / 3200	1	**9.650 246** 5
TT 13	13.0	titanium flat tip	SH 70 G SH 213 G	10 - 200 20 - 900	HD 2070 / 2200 HD 3100 / 3200	1	**9.650 250**
TT 13 FZ	13.0	titanium flat tip with hole	FZ 5 G FZ 7 G	-	HD 2200 / 3200	1	**9.650 247**
TT 19	19.0	titanium flat tip	SH 219 G	25 - 900	HD 2200 / 3200	1	**9.650 248**
TT 25	25.0	titanium flat tip	SH 225 G	30 - 1000	HD 2200 / 3200	1	**9.650 249**
VS 70 T	13.0	probe long	SH 70 G SH 213 G	10 - 200 20 - 900	HD 2070 / 2200 HD 3100 / 3200	1	**9.650 239** 6
VS 190 T	19.0	probe long	SH 219 G SH 3419	25 - 900 500 - 1500	HD 2200 / 3200 HD 3400	1	**9.650 243**
VS 200 T	25.0	probe long	SH 225 G SH 3425	30 - 1000 500 - 2500	HD 2200 / 3200 HD 3400	1	**9.650 240**
MS 1.5	1.5	microtip	UW mini20	0,1 - 10	Sonpuls mini20	1	**9.650 165**
MS 2.0	2.0	microtip	UW mini 20	0,25 - 20	Sonpuls mini20	1	**6.251 521**
MS 2.5	2.5	microtip	UW mini20	0,5 - 25	Sonpuls mini20	1	**9.650 166**
TS 102	2.5	titanium probe	SH 100 G	-	HD 4000 series	1	**9.650 157**
TS 103	3.0	titanium probe	SH 100 G	-	HD 4000 series	1	**9.650 158**
TS 104	4.5	titanium probe	SH 100 G	-	HD 4000 series	1	**9.650 159**

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9.650 245

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9.650 246

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9.650 239

1



1 Flow-through standard horn for Sonopuls Ultrasonic homogenisers

- Flow-through standard horn FZ 5 G with external screwthread and titanium flat tip TT 13 FZ. *Bandelin*
- Flow-through standard horn FZ 7 G with external screwthread and titanium flat tip TT 13 FZ.

Type	For	PK	Cat. No.
FZ 5 G	HD 2070 / HD 3100	1	**9.650 241**
FZ 7 G	HD 2200 / HD 3200	1	**9.650 242**

2



2 Flow-through cell for SONOPULS Ultrasonic homogenisers, stainless steel

Flow-through cell for continuous flow-through processing. Stainless steel, sealed, vibration-free reaction vessel with cooling jacket. For connection to SH 70 G or SH 213 G with TT 13. For HD 2070, HD 2200, HD 3100 and HD 3200 homogenisers. Flow rate up to 50 L/hr. *Bandelin*

Type	PK	Cat. No.
DG 4 G (flow-through)	1	**9.650 269**

3



3 Ultrasonic processing vessels for SONOPULS Ultrasonic homogenisers, plastic

Ultrasonic processing vessels. Plastic. For indirect ultrasonic irradiation. If BB 2 G is ordered, titanium flat tip TT 13 is required. BB 6 fits directly to UW 2200/UW 3200. *Bandelin*
Microtube holder EH6. Stainless steel. For simultaneous, contact-free ultrasonic irradiation of up to 6 samples using the ultrasonic homogeniser HD 2200/HD 3200 and ultrasonic processing vessel BB 6.

Type	For	PK	Cat. No.
BB 6	HD 2200 / HD 3200	1	**9.650 254**
EH 6	BB6	1	**9.650 258**

4



4 Sleeve adapters for Sonopuls Ultrasonic homogenisers, PTFE

PTFE sleeve adapters for mounting probes into standard ground joint vessels. *Bandelin*
For use with HD 2070/2200/3100/3200 homogenisers
- NA 29 G: for vessels with standard ground joint 29/32 and for SH 70/213 G horns
- NA 45 G: for vessels with standard ground joint 45/40 and for SH 70/213/219/225 G horns

Type	PK	Cat. No.
NA 29 G	1	**9.650 228**
NA 45 G	1	**9.650 229**

5



9.650 190

Ultrasonic homogeniser cup booster BR 30 for SONOPULS HD 2070/ 2200/ 3100/ 3200

For Sonopuls HD 2070, HD 2200, HD 3100 and HD 3200. *Bandelin*
- BR 30 cup booster enables highly intensive sonication of small samples, disruption of cells or sonification of pathogenic or toxic substances.
- EH 3: Microtube holder for BR 30 for simultaneous sonification of up to 3 samples.

Specifications

Beaker capacity:	12ml
Int. height:	15mm
Int. diameter:	32mm
Max. ultrasound intensity:	3100 W/L (HD 2200/3200)
Material:	Titanium alloy

6



9.877 745

Type	PK	Cat. No.
BR 30	1	**9.650 190** 5
EH 3	1	**9.877 745** 6

Converter and stand are not included.

E & OE.

Accessories for SONOPULS Ultrasonic homogenisers HD 2200, glass

Glass sample vessels for direct ultrasonic irradiation. *Bandelin*

Type	For probes up to Ø mm	Capacity ml	For	PK	Cat. No.
KG 3 cooling vessel	13	15	HD 2070/2200/3100/3200	1	**9.650 235** 1
KG 5 cooling vessel	25	70	HD 2200/3200	1	**9.650 223**
DG 3 flow-through vessel with cooling jacket	13	15	HD 2070/2200/3100/3200	1	**9.650 236** 2
DG 5 flow vessel with cooling jacket	25	70	HD 2200/3200	1	**9.650 224**
RZ 1 rosett cell	13	25	HD 2070/2200/3100/3200	1	**9.650 267**
RZ 2 rosett cell	13	40	HD 2070/2200/3100/3200	1	**9.650 268**
RZ 3 rosett cell	13	110	HD 2070/2200/3100/3200	1	**9.650 261** 3
RZ 4 rosett cell	25	390	HD 2200/3200/3400	1	**9.650 260**
RZ 5 rosett cell	25	660	HD 2200/3200/3400	1	**9.650 264**

1



9.650 235

2



9.650 236

3



9.650 261

4 Sound proof boxes LS series

Provides considerable noise level reduction. *Bandelin*

LS 4: Made of plastic-coated walls. 10dB(A) damping.
LS 8/11: Made of stainless steel, with damping plates. 20dB(A) damping. With rod, swivelling clamp and bosshead for height adjustment of sample vessels.

Type	For	PK	Cat. No.
LS 4	HD 2070 / 2200 / 3100 / 3200	1	**9.650 271**
LS 8	HD 2070 / 2200 / 3100 / 3200	1	**9.650 281**
LS 11	HD 3400	1	**9.650 282**

4



For our Life Science product range - please see page 1180

Accessories for sound proof box LS 8

For sonification using the BR 30 cup booster, support frame UG 6 allows BB 6 or BB 2G acoustic irradiation cups to rotate through 180° within the LS 8 noise protection box (not included with main instrument). Material: PTFE-coated, lacquered aluminium support with PTFE feet. Ultrasonic converter UW 2070/2200/3100/3200 can be securely attached using the rapid snap fastener. *Bandelin*

Description	PK	Cat. No.
Support UG 6 for LS 8	1	**9.650 238** 5
Spacer AH 6 for LS 8*	1	**9.650 225** 6

* Required for direct sonification using long probes.

5



9.650 238

6



9.650 225

Noise protection - please see page 201.

3 Ultrasonic Processor UP50H/UP100H

For manual operation or for stand use, frequency 30kHz, automatic frequency tuning system, amplitude adjustable 20% to 100%, pulse 0 to 100%, dry running protected, in portable case, with mounting for stand STH-16 and mounting tools, 230V a.c.

Hielscher Ultrasonics

Type	Rating W	PK	Cat. No.
UP50H	50	1	**9.106 600** 1
UP100H	100	1	**6.235 231** 2

1



9.106 600

2



6.235 231

3



Accessories for Ultrasonic Processor UP50H/UP100H

Hielscher Ultrasonics

Sonotrode MS1, made of titanium, approx. length 80mm
Sonotrode MS3, made of titanium, approx. length 80mm
Sonotrode MS7, made of titanium, approx. length 80mm
Sonotrode MS10, made of titanium, approx. lenght 80mm (only for UP100H)

Stand ST1-16, pole diameter 16mm, made of stainless steel, base (L x W x H) 300 x 150 x 600mm
Sound Protection Box SB2-16, with adjustable table and 16mm stand pole
Timer T1, from 00:00 to 99:59 (min:sec)

Type	Tip	For bottle ml	PK	Cat. No.
MS1	dia. 1mm	0,1 - 5,0	1	**9.106 602**
MS3	dia. 3mm	5,0 - 100	1	**4.005 989**
MS7	dia. 7mm	10,0 - 250	1	**9.106 604**
MS10	dia. 10mm	20,0 - 500	1	**4.005 990**
ST1-16			1	**6.226 573**
SB2-16			1	**6.235 330**
T1			1	**6.235 003**

4



4 Ultrasonic Homogeniser UP200St-G

NEW!

Hielscher Ultrasonics

Digital ultrasonic generator, UP200St-G, 200 watts, frequency 26kHz (auto-scan), amplitude 20-100%, pulse 10-100%, handheld and stand-mounted use, colored touch-screen, dry running protected, Ø45mm, approx. length 230mm, titanium horn Ø10mm (max. amplitude at horn 70µm), start/stop button, LEDs for sample illumination, simplified exchange sonotrodes, IP65 grade, amplitude or power control, countdown (timer): 0.1sec to 99 days, shutdown when final energy input reached (Ws, Wh, kWh), autom. Calibration of the amplitude-dependent idle power, data recording: amplitude, power, time, temperature on internal SD/USB ComboCard (1GB), display and remote control via browser on PC/MAC without software installation, remote control via PLC, with temperature sensor, temperature indication: °C/°F (-50°C to 200°C), temperature monitoring, power supply 100-240V~, 50-60Hz, IP51 grade, Carrying case incl. fixture for stand St1-Clamp and 3m network cable.

Type	PK	Cat. No.
Ultrasonic-Generator UP200St-G	1	**9.106 621**
Ultrasonic transducer UP200St-T	1	**9.106 622**

E & OE.

1 Ultrasonic Homogeniser UP200Ht

NEW!

Hielscher Ultrasonics

Digital ultrasonic processor, 200 watts, for handheld and stand-mounted use, frequency 26kHz (auto-scan), amplitude 20-100%, pulse 10-100%, titanium horn Ø10mm (max. amplitude at horn 70µm), colored touch-screen, amplitude or power control, countdown (timer): 0.1sec to 99 days, shutdown when final energy input reached (Ws, Wh, kWh), autom. Calibration of the amplitude-dependent idle power, data recording: amplitude, power, time, temperature on internal SD/USB ComboCard (1GB), display and remote control via browser on PC/MAC without software installation, remote control via PLC, with temperature sensor, temperature indication: °C/°F (-50°C to 200°C), temperature monitoring, dry running protected, sample illumination, anti-bacterial plastic housing, simplified exchange sonotrodes, power supply 100-240V~, 50-60Hz, IP41 grade, set weight: 1300g, Carrying case incl. fixture for stand STH-12 and 3m network cable

1



Type	PK	Cat. No.
UP200Ht	1	**9.106 620**

2 Accessories for Ultrasonic Homogeniser UP200St and UP200Ht

NEW!

Hielscher Ultrasonics

Sonotrode S26d2, titanium, approx. length 120mm
Sonotrode S26d7, titanium, approx. length 95mm
Sonotrode S26d14, titanium, approx. length 80mm
Sonotrode S26d40, titanium, approx. length 80mm
Sonotrode S26d7D, titanium, approx. length 95mm
Sonotrode S26d26G glass (DURAN®), approx. total length 200mm, approx. length of glass part 100mm

Flow Cell Reactor FC7K
stainless steel flow cell reactor with cooling jacket, for sonotrodes S26d2D or S26d7D, with NBR O-rings (19×3.2mm), hose connection, plastic clamps, and hose (2m), autoclavable

Sound Protection Box SPB-L
sound protection box, acryl glass, with divisible rod Ø12mm, vertically adjustable table, anti-slip mat, dimensions (LxWxH): 29x20x35cm, weight: 13kg, sound insulation: 22dB (A) open air measurement

2



Type	Tip	For bottle ml	PK	Cat. No.
Sonotrode S26d2	diam. 2mm	0,15 - 50	1	**9.106 623**
Sonotrode S26d7	diam. 7mm	20 - 500	1	**7.980 806**
Sonotrode S26d14	diam. 14mm	50 - 1000	1	**7.980 807**
Sonotrode S26d40	diam. 40mm	100 - 1000	1	**7.970 924**
Sonotrode S26d7D	diam. 7mm	20 - 500	1	**9.106 625**
Sonotrode S26d26G	diam. 26mm	50 - 1000	1	**7.980 808**
Flow Cell Reactor FC7K	-	-	1	**9.106 626**
Sound Protection Box SPB-L	-	-	1	**7.980 809**

Laboratory paddle blender MiniMix® 100

interscience

MiniMix® 100 paddle blenders, from the BagMixer® range, guarantees a quick and accurate blending of small samples. Thanks to the adjustable paddle system, blending is at its best. MiniMix® 100 is ideal for medical, veterinary and microbiological analysis.

Type	Volume ml	PK	Cat. No.
MiniMix® 100 P CC®	80-100	1	**6.240 509** 3
MiniMix® 100 W CC®	80-100	1	**6.241 090** 4

3



6.240 509

4



6.241 090

1



9.570 098

Laboratory mixer, BagMixer®

interscience

For sample preparation with easily adjustable paddle system. The BagMixer® is available in 3 sizes and blends all sample types prior to their microbial analysis. Thanks to their unique adjustable paddle system the blending chamber can be adjusted to the sample volume. Combined with the variable speed, a higher bacterial recovery rate is achieved. All BagMixer® units are fitted with a timer. Constructed in stainless steel. The fully opening door enables easy cleaning.

BagMixer® 400 P with stainless steel door.
BagMixer® 400 W and 400 CC with see through glass door.

Click & clean® System (only BagMixer® 400 CC): removable and autoclavable paddles.

All units have a 3-year warranty and life guarantee for shock absorbers and window door.

Type	Volume ml	Length mm	Width mm	Height mm	PK	Cat. No.
BagMixer® 400 P	50 to 400	390	260	290	1	**6.204 551**
BagMixer® 400 W	50 to 400	390	260	290	1	**6.224 287**
BagMixer® 400 CC	50 to 400	420	260	265	1	**9.570 098** 1

Laboratory mixer, BagMixer® Series S

NEW!

interscience

BagMixer® 400 S/400 SW is a new generation of lab blenders, silent, easy-to-use and new design.
With great new features, along with the silent blending, it is adapted to all kinds of applications and with a guarantee of optimal bacterial extraction, it is a great tool for lab analyses avoiding all risks of cross-contamination.
BagMixer® 400 S without viewing window, BagMixer® 400 SW with viewing window.

All units have a 3-year warranty and life guarantee for shock absorbers and window door.

Type	Volume ml	Length mm	Width mm	Height mm	PK	Cat. No.
BagMixer® 400 S	50 to 400	290	450	370	1	**6.261 704** 2
BagMixer® 400 SW	50 to 400	290	450	370	1	**6.261 705** 3

2



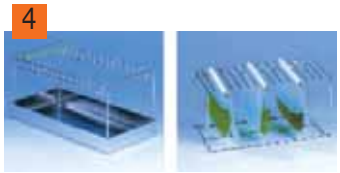
6.261 704

3



6.261 705

4



5



4 5

Rack form u for 14 stomacher bags, Stainless steel, seal bag clipsac, clips

Dimensions (LxDxH) : 360x180x195 mm

Description	PK	Cat. No.
Rack for 14 stomacher bag	1	**9.570 018**
Seal bag, stomacher clipsac green	50	**9.570 017**
Clips, blue for stomacher bag	10	**9.570 016**

E & OE.

Blender bags, BagSystem®

interscience

These highly resistant bags provide increased safety. The filter bags automatically filter the sample during the blending process, withholding particles behind the filter.

The sterile BagPage® has a full-width membrane filter.

The sterile BagFilter® P has a non-woven lateral filter.

Sample bags, RollBag®
Sterile bags with seal reinforced with metal wire for BagMixer® lab blender and for collecting samples in the food, dairy, water, sewage, medical, veterinary, environmental, soil and industrial fields. By whirling, the RollBag® becomes a leakproof bag. RollBag® is also thick and robust in order to resist bursting when handling a variety of samples.

Specifications Blender bags, BagSystem®

Capacity:	450ml
Blended volume:	5 to 50ml
Capacity:	1300ml
Blended volume:	50 to 300ml

Type	Description	Width mm	Height mm	PK	Cat. No.	
BagLight® 100	plain bag, sleeve 25	110	185	500	**9.570 075**	1
BagLight® 400	plain bag, sleeve 25	175	300	1000	**9.570 097**	
BagLight® 3500	plain bag, sleeve 25	380	510	500	**9.570 077**	
BagFilter® 400 P	side filter bag, sleeve 25	190	300	500	**9.570 078**	2
BagFilter® 3500 P	side filter bag, sleeve 10	380	510	100	**9.570 079**	
BagPage® 100	full-size filter bag, sleeve 25	180	95	500	**9.570 080**	
BagPage® Plus 400	full-size filter bag, sleeve 25	190	300	500	**9.570 081**	
BagPage® 3500	full-size filter bag, sleeve 10	380	510	100	**9.570 082**	
RollBag® 1300 ml	plain single bags	175	290	500	**9.570 096**	3

1



9.570 075

2



9.570 078

3



9.570 096

4 5 6 7 Accessories for blender BagSystem®

interscience

Type	Description	PK	Cat. No.
BagOpen® 80/100	bag opener	1	**9.570 083**
BagOpen® 400	bag opener	1	**9.570 084**
BagOpen® 3500	bag opener	1	**9.570 085**
BagRack® 80/100	bag storage for 11 bags	1	**9.570 086**
BagRack® 400	bag storage for 10 bags	1	**9.570 087**
BagClip® 80/100	bag closure clip	50	**9.570 088**
BagClip® 400	bag closure clip	50	**9.570 089**
BagClip® 3500	bag closure clip	50	**9.570 090**
BagPipet®	pipette with 3 fixed graduations: 0.1, 0.9, 1.0ml	1	**9.570 091**
BagTips® Regular	straws for BagPipet®, 19cm, sterile	1000	**9.570 092**
BagTips® Jumbo	straws for BagPipet®, 24cm, sterile	1000	**9.570 093**

4



5



6



7



Adhesive Labels - please see page 156

1



1 Gravimetric dilutor DiluFlow®, 1 or 2 pumps

NEW!

interscience

All stainless steel with a new design, ultra-low profile for easy use under laminar flow. USB port.

Available in 1 or 2 pumps.
- Quick and accurate
- Compact and user-friendly
- RS232 output for LIMS and printer, USB

Supplied with
1 BagOpen® 400 DiluFlow®, 1 fixed arm, 1 power cord, 1 ø 6.4 mm tubings set per pump for GL45 bottle, 1 drip tray, 1 user's manual, guarantee

Specifications

Range:	from 0.1 g to 3000g
Dilution Precision:	>98%
Dimensions (W x L x H):	310 x 415 x 400mm
Weight:	10.5kg

Type	PK	Cat. No.
DiluFlow® with single pump	1	**9.569 991**
DiluFlow® with double pump	1	**9.569 992**

2



2 Gravimetric dilutor DiluFlow® Pro, 1 or 2 pumps

NEW!

interscience

Fast and accurate gravimetric dilutor for the dilution of the sample. All stainless steel. Its robotic arm enables the secureness of the analyses and great user-comfort.

Available in 1 or 2 pumps.
- Quick and accurate
- High-speed robotic arm
- RS232 output for printer, USB (B) for computer, Jack plug for pedal

Supplied with
1 BagOpen® 400 DiluFlow®, 1 fixed arm, 1 power cord, 1 ø 6.4 mm tubings set per pump for GL45 bottle, 1 drip tray, 1 user's manual, guarantee

Specifications

Range:	from 0.1 g to 5000g
Dilution Precision:	>98%
Dimensions (W x L x H):	310 x 415 x 375mm
Weight:	12.5kg

Type	PK	Cat. No.
DiluFlow® Pro with single pump	1	**9.569 993**
DiluFlow® Pro with double pump	1	**9.569 994**

3



3 Gravimetric dilutor DiluFlow® Elite, 1 or 2 pumps

NEW!

interscience

Fast and accurate gravimetric dilutor for the dilution of the sample. All stainless steel. Its robotic arm enables the secureness of the analyses and great user-comfort. Use up to 6 pumps with bi-directional connectivity. Patented multi-dispenser mode.

Available in 1 or 2 pumps.
- Quick and accurate
- High-speed robotic arm
- 2 USB (A) port, 1 USB (B) port, Jack plug, Ethernet port for LIMS

Supplied with
1 BagOpen® 400 Diluflow®, 1 cap for 2 ends, 1 power cord, 1 ø 6.4 mm tubings set per pump for GL45 bottle, 1 drip tray, 1 user's manual, guarantee

Specifications

Range:	from 0.1 g to 5000g
Dilution Precision:	>98%
Dimensions (W x L x H):	310 x 415 x 375mm
Weight:	13kg

Type	PK	Cat. No.
DiluFlow® Elite with single pump	1	**9.569 995**
DiluFlow® Elite with double pump	1	**9.569 996**

E & OE.

Distillation, synthesis 570

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Syringe filters ... 670
In-Line filter ... 683
Filtration apparatus ... 685

1



6.237 702

Round bottom flasks, borosilicate glass 3.3

Manufactured from borosilicate glass 3.3. Resistant to heat and almost all chemicals. According to DIN 12394. Reinforced rims are used to prevent breaking during washing and transportation.

Isolab

Capacity ml	Socket NS	Flask diam. mm	Height mm	Neck diam. approx. mm	PK	Cat. No.
50	14/23	51	105	22	1	**6.236 508**
50	19/26	51	100	22	1	**4.008 379**
50	24/29	51	100	30	1	**4.008 380**
50	29/32	51	105	34	1	**6.238 345**
100	14/23	64	115	22	1	**6.236 346**
100	19/26	64	110	22	1	**4.008 381**
100	24/29	64	110	30	1	**4.008 382**
100	29/32	64	115	34	1	**6.236 774**
250	19/26	85	140	22	1	**4.008 383**
250	24/29	85	140	30	1	**4.008 384**
250	29/32	85	145	34	1	**6.236 303**
500	24/29	105	170	30	1	**4.008 385**
500	29/32	105	175	34	1	**6.240 426**
1000	24/29	131	210	42	1	**6.237 702** 1
1000	29/32	131	200	42	1	**6.242 240**
2000	29/32	166	260	34	1	**6.238 472**

2



9.011 850

Round bottom flasks with conical ground joint, DURAN®

According to DIN EN ISO 4797 and in addition to standard (*), with inscription label, material: DURAN®.

Lenz

Capacity ml	Socket NS	Flask diam. mm	PK	Cat. No.
5	14/23*	30	1	**6.201 199**
10	14/23*	35	1	**9.011 801**
25	14/23	41	1	**9.011 802**
25	19/26	41	1	**7.021 797**
50	14/23	51	1	**9.011 805**
50	19/26	51	1	**6.302 116**
50	24/29	51	1	**7.019 181**
50	29/32	51	1	**9.011 835**
100	14/23	64	1	**9.011 810**
100	19/26	64	1	**6.200 675**
100	24/29	64	1	**7.019 182**
100	29/32	64	1	**9.011 840**
250	14/23*	85	1	**9.011 815**
250	19/26*	85	1	**6.800 202**
250	24/29	85	1	**6.800 214**
250	29/32	85	1	**9.011 845**
250	45/40*	85	1	**9.011 867**
500	24/29	105	1	**6.800 215**
500	29/32	105	1	**9.011 850** 2
500	45/40	105	1	**9.011 868**
1000	24/29	131	1	**6.800 235**
1000	29/32	131	1	**9.011 855**
1000	45/40	131	1	**9.011 869**
2000	29/32	166	1	**9.011 860**
2000	45/40	166	1	**9.011 870**
3000	29/32*	185	1	**6.077 738**
3000	45/40*	185	1	**6.901 617**
4000	29/32	207	1	**9.011 865**
4000	45/40	207	1	**9.011 875**
5000	29/32*	223	1	**9.011 864**
5000	45/40	223	1	**9.011 877**
6000	29/32*	236	1	**9.011 866**
6000	45/40	236	1	**9.011 880**
10000	45/40	279	1	**9.011 885**



Round bottom flasks, borosilicate glass 3.3, amber

Manufactured from borosilicate glass 3.3., amber. Resistant to heat and almost all chemicals. According to DIN 12394. Reinforced rims are used to prevent breaking during washing and transportation. *Isolab*

Capacity ml	Socket NS	Flask diam. mm	Height mm	PK	Cat. No.
50	29/32	51	105	1	**9.141 091**
100	29/32	64	115	1	**7.980 357**
250	29/32	85	145	1	**7.980 358**
500	29/32	105	175	1	**9.141 092** 1
1000	29/32	131	200	1	**9.141 093**

1



9.141 092

Round bottom flasks with conical ground joint, amber, DURAN®

According to DIN EN ISO 4797, with inscription label, material: DURAN®. *Lenz*

Capacity ml	Socket NS	Flask diam. mm	PK	Cat. No.
50	29/32	51	1	**6.242 163**
100	29/32	64	1	**9.011 827**
250	29/32	85	1	**9.011 828**
500	29/32	105	1	**9.011 829** 2
2000	29/32	166	1	**6.253 256**

2



9.011 829

Kjeldahl flasks with ground neck

Manufactured from borosilicate glass 3.3. NS necks are in compliance with DIN 12242 standards. *Isolab*

Capacity ml	Socket NS	PK	Cat. No.
100	19/26	1	**9.140 385**
250	29/32	1	**9.140 386**
500	29/32	1	**9.140 387** 3
750	29/32	1	**9.140 388**
1000	29/32	1	**9.140 389**

3



9.140 387

Kjeldahl Flasks, DURAN®

NEW!

For the determination of nitrogen in organic compounds. With centre neck and conical joint. *Lenz*

Capacity ml	NS	Flask diam. mm	PK	Cat. No.
50	19/26	51	1	**9.141 860**
100	19/26	60	1	**9.141 861**
250	29/32	81	1	**6.073 310** 4
500	29/32	101	1	**6.057 941**
750	29/32	115	1	**6.233 275**
1000	29/32	126	1	**7.608 178**

4



6.073 310

1



1 Pear shape flasks, borosilicate glass 3.3

Manufactured from borosilicate glass 3.3. Conformed to DIN 12383 standards.
NS neck is in compliance with DIN 12242 standards.

Isolab

Capacity	Socket	PK	Cat. No.
ml	NS		
10	14/23	1	**6.236 347**
25	14/23	1	**6.237 164**
50	14/23	1	**6.237 165**
100	14/23	1	**6.237 166**
250	14/23	1	**9.140 302**
25	19/26	1	**9.140 303**
50	19/26	1	**9.140 304**
100	19/26	1	**9.140 305**
250	19/26	1	**9.140 306**
50	24/29	1	**9.140 307**
100	24/29	1	**9.140 308**
250	24/29	1	**9.140 309**
50	29/32	1	**9.140 310**
100	29/32	1	**6.257 941**
250	29/32	1	**9.140 311**

2



2 Pear shape flasks with conical ground joints, DURAN®

In addition to DIN standard, with inscription label, material: DURAN®

Lenz

Capacity	Socket	Flask diam.	PK	Cat. No.
ml	NS	mm		
10	14/23	33	1	**9.012 021**
25	14/23	42	1	**9.012 022**
50	14/23	51	1	**9.012 023**
100	14/23	64	1	**9.012 024**

3



3 Pear shape flasks with side neck, borosilicate glass 3.3

NEW!

Manufactured from borosilicate glass 3.3 which is resistant to heat and almost all chemicals.
They meet the highest quality standards according to DIN 12383 standards.
NS necks are in compliance with DIN 12242 standards and side neck has an angle of 25° with the center neck.

Isolab

Capacity	Socket	Side necks	PK	Cat. No.
ml	NS	NS		
25	14/23	14/23	1	**9.140 312**
50	14/23	14/23	1	**9.140 313**
100	14/23	14/23	1	**9.140 314**
250	14/23	14/23	1	**9.140 315**
25	19/26	14/23	1	**9.140 316**
50	19/26	14/23	1	**9.140 317**
100	19/26	14/23	1	**9.140 318**
250	19/26	14/23	1	**9.140 319**



E & OE.

Round bottom flasks with two necks, angled arm, borosilicate glass 3.3

Manufactured from borosilicate glass 3.3. Conformed to DIN 12394. The side arms are 45 degree angled with each other. NS necks are in compliance with DIN 12242 standards. Two-necked round-bottomed flask available with parallel side arm on request. *Isolab*

Capacity ml	Centre neck NS	Angled side necks NS	PK	Cat. No.
50	14/23	14/23	1	**9.140 320**
100	14/23	14/23	1	**9.140 321**
250	14/23	14/23	1	**9.140 322**
100	24/29	14/23	1	**9.140 323**
250	24/29	14/23	1	**9.140 324**
500	24/29	14/23	1	**9.140 325**
1000	24/29	19/26	1	**9.140 326**
100	24/29	19/26	1	**9.140 327**
250	24/29	19/26	1	**9.140 328**
500	24/29	19/26	1	**9.140 329**
100	29/32	14/23	1	**6.243 616**
1000	24/29	14/23	1	**9.140 330**
250	29/32	14/23	1	**4.008 386**
500	29/32	14/23	1	**4.008 387**
1000	29/32	14/23	1	**4.008 388** 1
2000	29/32	14/23	1	**9.140 331**
100	29/32	19/26	1	**9.140 332**
250	29/32	19/26	1	**9.140 333**
500	29/32	19/26	1	**9.140 334**
1000	29/32	19/26	1	**9.140 335**
2000	29/32	19/26	1	**9.140 336**
100	29/32	29/32	1	**9.140 337**
250	29/32	29/32	1	**6.243 617**
500	29/32	29/32	1	**6.243 618**
1000	29/32	29/32	1	**6.243 619**
2000	29/32	29/32	1	**6.243 620**
6000	29/32	29/32	1	**9.140 339**

1



4.008 388

Round bottom flasks with two necks, side neck angled, DURAN®

DIN 12394 and in addition to standard (*). With one central and one 20° side angled ground joint necks as outlined below. *Lenz*

Capacity ml	Centre neck NS	Side necks NS	Flask diam. mm	PK	Cat. No.
25	14/23	14/23*	41	1	**9.011 901**
50	14/23	14/23*	51	1	**9.011 902**
100	14/23	14/23*	64	1	**9.011 903**
100	29/32	14/23*	64	1	**9.011 904**
100	29/32	19/26*	64	1	**6.233 114**
100	29/32	29/32*	64	1	**6.204 819**
250	14/23	14/23*	85	1	**9.011 905**
250	24/29	19/26*	85	1	**6.206 139**
250	29/32	14/23	85	1	**9.011 906**
250	29/32	19/26	85	1	**6.225 989**
250	29/32	29/32*	85	1	**9.011 907**
500	29/32	14/23	105	1	**9.011 908** 2
500	29/32	19/26	105	1	**6.233 091**
500	29/32	29/32*	105	1	**9.011 910**
1000	29/32	14/23	131	1	**9.011 915**
1000	29/32	19/26	131	1	**6.231 953**
1000	29/32	29/32*	131	1	**9.011 920**
2000	29/32	14/23	166	1	**6.072 288**
2000	29/32	29/32*	166	1	**6.056 856**
4000	29/32	29/32*	207	1	**6.201 298**

2



9.011 908

Round bottom flasks with two necks, with parallel neck available on request

1



6.243 662

Round bottom flasks with three necks, NS joints, parallel arms, borosilicate glass 3.3

Manufactured from borosilicate glass 3.3. Conformed to DIN 12394. The flasks have thick walls, heavy bases and reinforced rims which prevent breaking. The side arms are parallel to the centre neck. NS necks are in compliance with DIN 12242 standards. *Isolab*

Capacity ml	Centre neck NS	Parallel side necks NS	PK	Cat. No.
100	14/23	14/23	1	**9.140 361**
250	14/23	14/23	1	**9.140 362**
100	24/29	14/23	1	**9.140 363**
250	24/29	14/23	1	**9.140 364**
500	24/29	14/23	1	**9.140 365**
1000	24/29	14/23	1	**9.140 366**
100	24/29	19/26	1	**9.140 367**
250	24/29	19/26	1	**9.140 368**
500	24/29	19/26	1	**9.140 369**
1000	24/29	19/26	1	**9.140 370**
2000	24/29	19/26	1	**9.140 371**
100	29/32	14/23	1	**9.140 372**
250	29/32	14/23	1	**6.243 654**
500	29/32	14/23	1	**6.243 655**
1000	29/32	14/23	1	**6.243 656**
2000	29/32	14/23	1	**9.140 373**
100	29/32	19/26	1	**9.140 374**
250	29/32	19/26	1	**6.243 657**
500	29/32	19/26	1	**6.243 658**
1000	29/32	19/26	1	**6.243 659**
2000	29/32	19/26	1	**9.140 375**
250	29/32	29/32	1	**6.243 660**
500	29/32	29/32	1	**6.243 661**
1000	29/32	29/32	1	**6.243 662** 1
2000	29/32	29/32	1	**6.243 663**
4000	29/32	29/32	1	**9.140 377**
6000	29/32	29/32	1	**9.140 378**

2



9.011 938

Three neck round bottom flasks, side necks parallel, DURAN®

DIN 12392 and in addition to DIN standard (*). All necks are parallel. *Lenz*

Capacity ml	Centre neck NS	Side necks NS	Flask diam. mm	PK	Cat. No.
100	24/29	19/26*	64	1	**6.205 694**
100	29/32	14/23*	64	1	**9.011 933**
100	29/32	19/26*	64	1	**6.306 275**
100	29/32	29/32	64	1	**6.235 645**
250	24/29	19/26*	85	1	**7.021 838**
250	29/32	14/23*	85	1	**9.011 935**
250	29/32	29/32*	85	1	**9.011 936**
500	24/29	19/26*	105	1	**7.021 840**
500	29/32	14/23*	105	1	**9.011 938** 2
500	29/32	19/26*	105	1	**7.019 244**
500	29/32	29/32*	105	1	**9.011 939**
1000	29/32	14/23*	131	1	**9.011 941**
1000	29/32	19/26*	131	1	**6.203 572**
1000	29/32	29/32	131	1	**9.011 942**
1000	45/40	29/32*	131	1	**9.011 943**
2000	29/32	14/23*	166	1	**9.011 945**
2000	29/32	19/26*	166	1	**6.203 571**
2000	29/32	29/32	166	1	**9.011 946**
2000	45/40	29/32	166	1	**9.011 947**
3000	29/32	29/32*	185	1	**6.203 569**
4000	29/32	14/23*	207	1	**6.238 532**
4000	29/32	29/32*	207	1	**7.200 347**
4000	45/40	29/32	207	1	**9.011 950**
5000	29/32	29/32*	223	1	**6.306 286**
5000	45/40	29/32*	223	1	**9.011 949**
6000	29/32	14/23*	236	1	**6.803 543**
6000	29/32	29/32	236	1	**6.072 558**
6000	45/40	29/32	236	1	**9.011 951**
10000	45/40	29/32*	279	1	**9.011 952**

E & OE.

1 Round bottom flasks with three necks, NS joints, angled arms, borosilicate glass 3.3

NEW!

Manufactured from borosilicate glass 3.3. Conformed to DIN 12394.
The side arms are at 45 degree angles with the centre neck.
The NS necks are in compliance with DIN 12242 standards.

Isolab

Capacity ml	Centre neck NS	Angled side necks NS	Flask diam. mm	PK	Cat. No.
100	29/32	14/23	85	1	**9.141 090**
250	29/32	14/23	85	1	**4.008 390**
250	29/32	19/26	85	1	**4.008 393**
250	29/32	29/32	85	1	**6.240 976**
500	29/32	14/23	105	1	**4.008 391**
500	29/32	19/26	105	1	**4.008 394**
500	29/32	29/32	105	1	**6.240 977**
1000	29/32	14/23	131	1	**4.008 392**
1000	29/32	19/26	131	1	**4.008 395**
1000	29/32	29/32	131	1	**6.240 978**
2000	29/32	29/32	166	1	**4.008 396**

1



Round bottom flasks with ground glass joint, three neck, angled, DURAN®

NEW!

DIN 12394 and in addition to standard (*). Central neck with 2 x 20° angled side necks.

Lenz

Capacity ml	Centre neck NS	Side necks NS	Flask diam. mm	PK	Cat. No.
50	19/26	14/23*	51	1	**6.202 804**
100	24/29	19/26*	64	1	**6.204 321**
100	29/32	14/23*	64	1	**9.011 953**
100	29/32	19/26*	64	1	**6.204 852**
100	29/32	29/32*	64	1	**7.019 272**
250	24/29	19/26*	85	1	**6.204 322**
250	29/32	14/23	85	1	**9.011 955**
250	29/32	19/26	85	1	**9.011 957**
250	29/32	29/32	85	1	**9.011 956**
500	29/32	14/23*	105	1	**9.011 958**
500	29/32	19/26	105	1	**9.011 960**
500	29/32	29/32	105	1	**9.011 959**
1000	29/23	14/23	131	1	**9.011 961**
1000	29/32	19/26	131	1	**9.011 964**
1000	29/32	29/32*	131	1	**9.011 962**
1000	45/40	29/32*	131	1	**9.011 963**
2000	29/32	14/23	166	1	**9.011 965**
2000	29/32	29/32*	166	1	**9.011 966**
2000	45/40	29/32*	166	1	**9.011 967**
3000	29/32	29/32*	185	1	**6.203 014**
4000	29/32	29/32*	207	1	**7.615 379**
4000	45/40	29/32*	207	1	**9.011 968**
5000	45/40	29/32*	223	1	**9.011 971**
6000	45/40	29/32*	236	1	**9.011 969**
10000	45/40	29/32*	279	1	**9.011 970**

2



9.011 958

Nitrogen flasks with stopcock, borosilicate glass 3.3

Manufactured from borosilicate glass 3.3. NS necks are in compliance with DIN 12242 standards.
With angled side neck with PTFE stopcock (2.5 mm hole).

Isolab

Capacity ml	Socket NS	PK	Cat. No.
25	14/23	1	**9.140 390**
50	14/23	1	**9.140 391**
100	14/23	1	**9.140 392**
250	14/23	1	**9.140 393**
50	29/32	1	**9.140 394**
100	29/32	1	**9.140 395**
250	29/32	1	**9.140 396**
500	29/32	1	**9.140 397**
1000	29/32	1	**9.140 398**

3



9.140 397

1



6.307 327

Nitrogen Round-bottom Flasks (Schlenk-Flasks), DURAN®

With an angled side arm with 2.5 mm glass stopcock. *Lenz*

Capacity ml	Socket NS	Bore mm	PK	Cat. No.	
25	14/23	2.5	1	**6.800 337**	
50	14/23	2.5	1	**6.307 820**	
50	29/32	2.5	1	**6.802 978**	
100	14/23	2.5	1	**6.307 327**	1
100	29/32	2.5	1	**6.307 821**	
250	14/23	2.5	1	**6.206 524**	
250	29/32	2.5	1	**6.073 481**	
500	29/32	2.5	1	**6.307 822**	
1000	29/32	2.5	1	**6.307 823**	

2



7.610 673

Nitrogen Tubes (Schlenk-Tubes), DURAN® tubing

Made of DURAN® tubing. With conical joint and NS glass stopcock. *Lenz*

Capacity ml	Centre neck NS	Bore mm	PK	Cat. No.	
10	14/23 Socket	2.5	1	**7.610 673**	2
25	14/23 Socket	2.5	1	**7.610 674**	
50	14/23 Socket	2.5	1	**6.901 799**	
100	14/23 Socket	2.5	1	**6.401 203**	
250	14/23 Socket	2.5	1	**7.200 160**	

3



6.240 425

Flat bottom flasks, NS joint neck, borosilicate glass 3.3

Borosilicate glass 3.3. Resistant to heat and almost all chemicals. According to DIN 12394. *Isolab*

Capacity ml	Socket NS	Height mm	PK	Cat. No.	
50	19/26	100	1	**6.243 607**	
50	24/29	100	1	**6.243 608**	
50	29/32	100	1	**4.008 377**	
100	14/23	110	1	**6.243 609**	
100	19/26	110	1	**6.243 610**	
100	24/29	110	1	**6.243 611**	
100	29/32	110	1	**6.236 773**	
250	19/26	140	1	**6.243 612**	
250	24/29	140	1	**6.243 613**	
250	29/32	140	1	**6.238 346**	
500	24/29	170	1	**6.243 614**	
500	29/32	170	1	**6.240 425**	3
1000	24/29	200	1	**6.243 615**	
1000	29/32	200	1	**4.008 378**	
2000	29/32	250	1	**6.237 704**	

4



9.011 985

Flat bottom flasks with conical ground joint, DURAN®

According to DIN EN ISO 4797 and in addition to standard, with inscription label, material: DURAN® *Lenz*

Volume ml	Socket NS	Flask external diam. mm	PK	Cat. No.	
50	29/32	51	1	**9.011 982**	
100	29/32	64	1	**9.011 983**	
250	29/32	85	1	**9.011 984**	
500*	29/32	105	1	**9.011 985**	4
1000	29/32	131	1	**9.011 986**	

*Supplementary to DIN.

E & OE.

Erlenmeyer flasks, NS neck, borosilicate glass 3.3

Borosilicate glass 3.3. Conformed to DIN EN ISO 4797. *Isolab*
NS necks are in compliance with DIN 12242 standards.
Inscriptions are in white enamel which is specially designed for glass use.

Capacity	Socket	Height	PK	Cat. No.
ml	NS	mm		
50	14/23	85	1	**9.141 105**
50	19/26	85	1	**9.141 106**
50	29/32	85	1	**9.141 107**
100	14/23	100	1	**9.141 108**
100	29/32	100	1	**9.141 109**
250	29/32	140	1	**9.141 110**
300	29/32	156	1	**9.141 111**
500	29/32	175	1	**9.141 112**
1000	29/32	220	1	**9.141 113** 1

1



9.141 113

Erlenmeyer flasks with ground glass joint, DURAN®

Acc. to DIN EN ISO 4797 and in addition to standard (*), with scale (approx. volume/ml), with inscription label, material: DURAN®. *Lenz*

Capacity	Socket	Flask diam.	PK	Cat. No.
ml	NS	mm		
10	14/23	42	1	**6.200 447**
25	14/23	42	1	**9.012 001**
25	19/26	42	1	**7.019 150**
50	14/23	51	1	**9.012 002**
50	24/29	51	1	**7.019 155**
50	29/32	51	1	**9.012 012**
100	14/23	64	1	**9.012 003**
100	24/29	64	1	**7.019 156**
100	29/32	64	1	**9.012 013**
200	29/32*	79	1	**9.012 017**
250	24/29	85	1	**6.200 677**
250	29/32	85	1	**9.012 014**
250	45/40*	85	1	**9.012 006**
300	29/32*	87	1	**9.012 018**
500	29/32	105	1	**9.012 015** 2
500	45/40*	105	1	**9.012 008**
1000	29/32	131	1	**9.012 016**
1000	45/40*	131	1	**9.012 009**
2000	29/32	166	1	**9.012 019**
2000	45/40*	166	1	**9.012 010**
3000	45/40	185	1	**6.900 828**
5000	45/40	223	1	**7.607 913**

2



9.012 015

Erlenmeyer flasks, NS neck, borosilicate glass 3.3, amber

Borosilicate glass 3.3, amber. Conformed to DIN EN ISO 4797. *Isolab*
NS necks are in compliance with DIN 12242 standards.

Capacity	Socket	Height	PK	Cat. No.
ml	NS	mm		
100	29/32	100	1	**6.258 244**
250	29/32	140	1	**6.258 150**
500	29/32	175	1	**6.255 806** 3
1000	29/32	220	1	**9.140 401**

3



6.255 806

Iodine determination flasks, with and without collar, DURAN®

- With overflow collar and NS29/32 iodine stopper. *Lenz*
- Without overflow collar, with NS29/32 hollow hexagonal stopper.

Capacity	Flask external diam.	Version	Description	PK	Cat. No.
ml	mm				
100	64	hollow	without collar	1	**6.072 077**
250	85	hollow	without collar	1	**6.401 428**
300	87	hollow	without collar	1	**7.614 642** 4
500	105	hollow	without collar	1	**6.226 757**
1000	131	hollow	without collar	1	**6.230 605**
100	64	iodine stopper	with collar	1	**6.258 682**
250	85	iodine stopper	with collar	1	**6.230 826** 5
500	105	iodine stopper	with collar	1	**7.980 791**

4



7.614 642

5



6.230 826

1



1 Distilling Adapters, borosilicate glass 3.3

NEW!

Isolab

Manufactured from borosilicate glass 3.3. Suitable to be used in distillation assemblies for connecting flasks to condenser. Upper socket designed to accept thermometer either by screw thread adapter or by thermometer socket.
With side cone at 75° angled to the center socket.

Cone vertical NS	Cone obliquely NS	Socket NS	PK	Cat. No.
14/23	14/23	14/23	1	**9.043 301**
19/26	19/26	14/23	1	**9.043 302**
29/32	29/32	14/23	1	**9.043 305**

2



9.012 173

Distilling heads, DURAN® tubing

Lenz

Made of DURAN® tubing. Acc. to DIN 12594 and in addition to standard, with one NS 14/23 socket and two NS cones (descending angle: 75°), for distillation thermometers of 55 mm built-in length.

Cone vertical NS	Cone obliquely NS	Socket NS	PK	Cat. No.
29/32	29/32	14/23	1	**9.012 173** 2

3



9.043 311

Distilling Adapters, Claisen heads, borosilicate glass 3.3

NEW!

Isolab

Manufactured from borosilicate glass 3.3. Suitable to be used in distillation assemblies for connecting flasks to condenser. Upper socket designed to accept thermometer either by screw thread adapter or by thermometer socket. Claisen type has a similar use as a standard still head adapter but it is supplied with an extra socket to accept dropping funnels, stirrers and so on.

Cone vertical NS	Cone obliquely NS	Socket NS	PK	Cat. No.
14/23	14/23	14/23	1	**9.043 306**
19/26	19/26	14/23	1	**9.043 307**
29/32	14/23	14/23	1	**9.043 310**
29/32	29/32	14/23	1	**9.043 311** 3

4



9.012 183

Distilling heads acc. to Claisen, sloping, DURAN® tubing

Lenz

Made of DURAN® tubing. Acc. to DIN 12594 and in addition to standard (*), with two parallel NS 14/23 sockets and two NS cones (descending angle: 75°), for distillation thermometers of 55 mm built-in length.

Cone vertical NS	Cone obliquely NS	Socket NS	PK	Cat. No.
29/32	14/23	14/23*	1	**9.012 182**
29/32	29/32	14/23	1	**9.012 183** 4

5



5 Distilling links without condenser, borosilicate glass 3.3

NEW!

Isolab

Manufactured from borosilicate glass 3.3 which is resistant to heat and almost all chemicals.

Cone NS	Effective length mm	Description	PK	Cat. No.
14/23	150	Standard	1	**9.012 287**
29/32	350	Standard	1	**9.012 288**
14/23	150	with socket for thermometers	1	**9.012 289**
29/32	350	with socket for thermometers	1	**9.012 290**

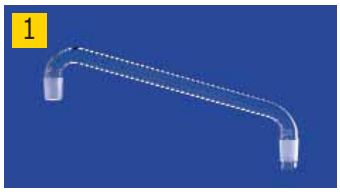
E & OE.

Distilling Links, DURAN® tubing

Made of DURAN® tubing. Distilling links without condenser, with two vertical NS-cones. With or without socket NS14/23 for distillation thermometers of 55mm built-in length. *Lenz*

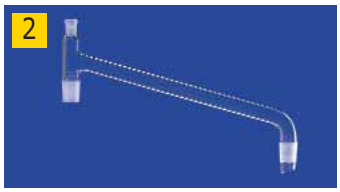
Cone	Socket	Effective length	PK	Cat. No.	
NS	NS	mm			
29/32	-	350	1	**9.012 203**	1
29/32	14/23	350	1	**9.012 213**	2

1



9.012 203

2



9.012 213

3 Stillheads, ground glass joint, with integral Liebig condenser

NEW!

Manufactured from borosilicate glass 3.3 which is resistant to heat and almost all chemicals. With liebig condenser and socket NS 14/23 for distillation thermometers. Available with or without vacuum receiver adapter. *Isolab*

Cone	Socket	Effective length	Description	PK	Cat. No.
NS	NS	mm			
14/23	14/23	160	without vacuum receiver adapter	1	**9.012 291**
14/23	14/23	250	without vacuum receiver adapter	1	**9.012 292**
29/32	14/23	250	without vacuum receiver adapter	1	**9.012 293**
29/32	14/23	400	without vacuum receiver adapter	1	**9.012 294**
14/23	14/23	160	with vacuum receiver adapter	1	**9.012 295**
14/23	14/23	250	with vacuum receiver adapter	1	**9.012 296**
29/32	14/23	250	with vacuum receiver adapter	1	**4.008 375**
29/32	14/23	400	with vacuum receiver adapter	1	**9.012 297**

3



Distilling links with Liebig condenser, DURAN® tubing

Made of DURAN® tubing. DIN 12596. With Liebig condenser at 75° and vertical outlet with NS cone and vacuum connection with glass olives or thread GL14. With socket NS 14/23 for distillation thermometers of 55mm built-in length. *Lenz*

Cone	Socket	Effective length	Connection	PK	Cat. No.	
NS	NS	mm				
14/23	14/23	160	GL	1	**6.203 415**	
29/32	14/23	250	GL	1	**6.203 416**	
14/23	14/23	250	GL	1	**9.012 264**	
29/32	14/23	250	olive	1	**9.012 266**	4
29/32	14/23	400	olive	1	**9.012 268**	

4



9.012 266

5 Distilling links with Liebig condenser and GL thread, DURAN® tubing

NEW!

Made of DURAN® tubing. Distilling links with Liebig condenser, outlet with NS cone, water connection with thread GL14, with socket NS 14/23 for distillation thermometers of 55mm built-in length. *Lenz*

Cone	Socket	Effective length	PK	Cat. No.
NS	NS	mm		
14/23	14/23	160	1	**6.202 281**
14/23	14/23	250	1	**6.243 055**
29/32	14/23	250	1	**6.230 719**
29/32	14/23	400	1	**6.243 056**

5



Distilling links acc. to Claisen, with olive, DURAN® tubing

Made of DURAN® tubing. With Liebig condenser and Claisen head, water connection with glass olives, with two sockets NS 14/23 for distillation thermometers of 55mm built-in length. *Lenz*

Cone	Socket	Effective length	PK	Cat. No.	
NS	NS	mm			
14/23	14/23	250	1	**9.012 282**	
29/32	14/23	250	1	**9.012 285**	6

6



9.012 285

1



1 Distilling links with Liebig condenser and Claisen head

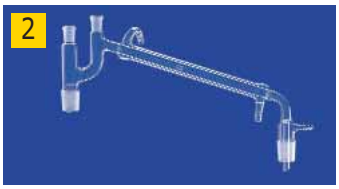
NEW!

With Liebig condenser and Claisen head and socket NS 14/23 for distillation thermometers, 55 mm fitting length. Available with or without vacuum receiver adapter.

Isolab

Cone	Socket	Effective length	Description	PK	Cat. No.
NS	NS	mm			
14/23	14/23	160	distilling link standard	1	**9.012 247**
14/23	14/23	250	distilling link standard	1	**9.012 248**
29/32	14/23	250	distilling link standard	1	**9.012 249**
29/32	14/23	400	distilling link standard	1	**9.012 250**
14/23	14/23	160	distilling link with vakuum adapter	1	**9.012 216**
14/23	14/23	250	distilling link with vakuum adapter	1	**9.012 217**
29/32	14/23	250	distilling link with vakuum adapter	1	**9.012 218**
29/32	14/23	400	distilling link with vakuum adapter	1	**9.012 219**

2



9.012 276

Distilling links acc. to Claisen with vacuum receiver adapter, DURAN® tubing

Made of DURAN® tubing. According to DIN 12594. With Liebig condenser (angled 75°) and vertical Claisen head, water and vacuum connection with olives. With two sockets NS 14/23 for distillation thermometers of 55mm built-in length.

Lenz

Cone	Socket	Effective length	PK	Cat. No.
NS	NS	mm		
14/23	14/23	160	1	**9.012 271**
29/32	14/23	250	1	**9.012 276** 2

3



3 Distilling links acc. to Claisen with vacuum receiver adapter and GL thread, DURAN® tubing

NEW!

Made of DURAN® tubing. Distilling links acc. to DIN 12594, with Liebig condenser and Claisen head, thread connections: GL 14 (water) and GL 18 (vacuum), with two sockets NS 14/23 for distillation thermometers of 55mm built-in length.

Lenz

Cone	Effective length	PK	Cat. No.
NS	mm		
14/23	160	1	**9.012 272**
14/23	250	1	**9.012 274**
29/32	250	1	**9.012 275**
29/32	400	1	**9.012 279**

4



4 Distillation adapters

NEW!

Manufactured from borosilicate glass 3.3. Suitable for feeding distillate from condensers into receiving flasks. Stem length is either 65 mm or 200 mm.
Socket inclined 105° with outer tube of 12 mm diameter.

Isolab

Socket	Length outlet pipe	PK	Cat. No.
NS	mm		
14/23	65	1	**6.244 591**
29/32	65	1	**6.244 592**
14/23	200	1	**6.244 593**
29/32	200	1	**6.244 594**

5



9.012 603

6



9.012 606

Delivery adapters, short bent, DURAN® tubing

Made of DURAN® tubing. With socket and outlet tube angled at 105°, 12mm diameter.

Lenz

Socket	Length outlet pipe	PK	Cat. No.
NS	mm		
29/32	65	1	**9.012 603** 5
29/32	200	1	**9.012 606** 6

E & OE.

1 Bends

NEW!

Manufactured from borosilicate glass 3.3 which is resistant to heat and almost all chemicals. Suitable for the usage of assembling various reactor systems. Available in two shapes: bend with angle 75° or 90°.

Isolab

Angle	Cone NS	PK	Cat. No.
75	14/23	1	**9.012 653**
75	29/32	1	**9.012 654**
90	14/23	1	**9.012 655**
90	29/32	1	**9.012 656**

1



Bends, DURAN® tubing

Made of DURAN® - tubing. Bent 75° or 90°. With two NS cones.

Lenz

Angle	NS	PK	Cat. No.
75	14/23	1	**9.012 141**
75	29/32	1	**9.012 143** 2
90	14/23	1	**6.306 285**
90	19/26	1	**7.018 680**
90	24/29	1	**7.018 681**
90	29/32	1	**9.012 153** 3

2



9.012 143

3



9.012 153

4 Adapters bent or straight, borosilicate glass 3.3

NEW!

Manufactured from borosilicate glass 3.3. Bent adapters are available as plain bend or bend with vent with 105° angled body shape.

Isolab

Description	Socket NS	Cone NS	PK	Cat. No.
Adapter, bent	14/23	14/23	1	**6.243 602**
Adapter, bent	29/32	29/32	1	**6.243 603**
Adapter, bent, with ventilation	14/23	14/23	1	**9.012 657**
Adapter, bent, with ventilation	29/32	29/32	1	**9.012 658**
Adapter, straight, with vacuum connector	14/23	14/23	1	**9.012 659**
Adapter, straight, with vacuum connector	29/32	29/32	1	**9.012 660**

4



Delivery adapter, DURAN® tubing

Made of DURAN® tubing. Delivery adapter, bent (105°), with NS socket and NS cone, with drain tip.

Lenz

Description	Socket NS	Cone NS	PK	Cat. No.
Adapter, bent	14/23	14/23	1	**9.012 625**
Adapter, bent	29/32	29/32	1	**9.012 626** 5

5



9.012 626



1 Distillation adapters, borosilicate glass 3.3

NEW!

Manufactured from borosilicate glass 3.3. Suitable for the usage of assembling with vacuum connections. Available in two shapes: straight or angled 105°.

Isolab

Description	Socket NS	Cone NS	PK	Cat. No.
adapters straight	14/23	14/23	1	**6.243 604**
adapters straight	29/32	29/32	1	**4.008 370**
adapters bend	14/23	14/23	1	**4.008 371**
adapters bend	29/32	29/32	1	**4.008 372**



9.012 621



9.012 623

Receiver adapter, DURAN® tubing

Made of DURAN® tubing. Acc. to DIN 12594, straight or bent (105°), with NS socket and cone, with drain tip, vacuum connection: glass olive.

Lenz

Description	Socket NS	Cone NS	PK	Cat. No.
adapters straight	14/23	14/23	1	**9.012 611**
adapters bend	14/23	14/23	1	**9.012 613**
adapters straight	29/32	29/32	1	**9.012 621** 2
adapters bend	29/32	29/32	1	**9.012 623** 3



4 Receiver adapters, with GL thread, DURAN® tubing

NEW!

Made of DURAN® tubing.Receiver adapters acc. to DIN 12594, straight or bent (angle: 105°), with NS socket and NS cone, with drain tip, vacuum connection: thread GL18.

Lenz

Description	Socket NS	Cone NS	PK	Cat. No.
adapters straight	14/23	14/23	1	**7.930 030**
adapters straight	29/32	29/32	1	**6.900 523**
adapters bend	14/23	14/23	1	**9.012 607**
adapters bend	29/32	29/32	1	**9.012 608**



5 Distilling adapters, Bredt type, borosilicate glass 3.3

NEW!

Manufactured from borosilicate glass 3.3. Suitable to be used in distillation assemblies to be connected to distilling distributor. Straight or bend 105° shape with vacuum connection.

Isolab

Description	Socket upper NS	Socket down NS	PK	Cat. No.
adapter straight	29/32	29/32	1	**9.012 635**
adapter bend	14/23	19/26	1	**9.012 636**



6 Distributors for Distilling Receivers to Bredt, DURAN® tubing

NEW!

Made of DURAN® tubing. With four cones NS 14/23, for round bottom flasks up to 250ml volume.

Lenz

Cone NS	PK	Cat. No.
19/26	1	**9.012 695**
29/32	1	**9.012 696**

E & OE.

1 Distilling receivers acc. to Bernauer, DURAN® tubing

Made of DURAN® tubing. With 3 cones NS 14/23,vacuum connection with glass olive. *Lenz*

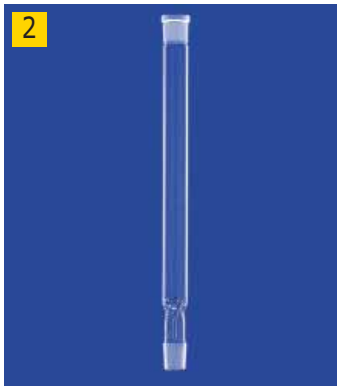
Type	Socket NS	Cone NS	PK	Cat. No.
Distilling Receivers, without flask	14/23	14/23	1	**6.210 168**
Distilling Receivers, without flask	29/32	14/23	1	**6.236 954**



Columns, ground glass joint, Hempel, DURAN® tubing

Made of DURAN® tubing. With packing material support, ground glass cone and socket *Lenz*

Socket NS	Cone NS	Fill height mm	PK	Cat. No.
14/23	14/23	300	1	**9.012 321**
29/32	29/32	300	1	**9.012 322** 2
29/32	29/32	800	1	**9.012 326**



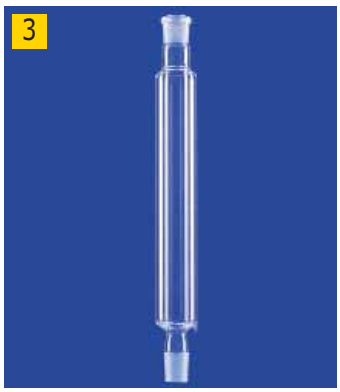
9.012 322

3 Columns acc. to Hempel with fixed vacuum jacket, DURAN® tubing

NEW!

Made of DURAN® tubing. For packings like Raschig rings or glass beads, with NS socket and NS cone, with fixed vacuum jacket. *Lenz*

Socket NS	Cone NS	Fill height mm	PK	Cat. No.
14/23	14/23	200	1	**6.241 715**
29/32	29/32	300	1	**9.012 327**
29/32	29/32	500	1	**9.012 328**
29/32	29/32	800	1	**9.012 329**



4 Glass beads

Type AR soda lime glass. Supplied in packs of approx. 1kg. *Lindner*

Ø mm	PK	Cat. No.
0,09 - 0,15	1	**6.079 803**
0,40 - 0,60	1	**6.074 805**
0,50 - 0,75	1	**6.901 962**
1,00 - 1,30	1	**6.239 547**
1,5 - 2	1	**9.012 402**
3	1	**9.012 403**
4	1	**9.012 404**
4,5	1	**6.254 325**
5	1	**9.012 405**
6	1	**9.012 406**
7	1	**6.254 523**
8	1	**9.012 407**
10	1	**9.012 408**
14	1	**9.012 410**



5 Raschig rings, glass

Pack of 1 kg. *Hecht*

Type	PK	Cat. No.
3x3	1	**9.012 413**
4x4	1	**9.012 414**
5x5	1	**9.012 415**
6x6	1	**9.012 416**
8x8	1	**9.012 417**



Glass wool - please see page 1370.

1



9.012 336

2



9.012 330

Columns acc. to Vigreux, with or without removable glass jacket

Made of DURAN® tubing. *Lenz*

Type	NS	Effective length mm	PK	Cat. No.
without jacket	14/23	200	1	**6.304 939**
without jacket	14/23	300	1	**6.900 157**
without jacket	29/32	300	1	**9.012 336** 1
without jacket	29/32	600	1	**9.012 337**
with jacket	14/23	200	1	**6.070 046**
with jacket	14/23	300	1	**6.079 073**
with jacket	29/32	300	1	**9.012 330** 2
with jacket	29/32	600	1	**7.628 209**

3



3 Columns acc. to Vigreux with fixed vacuum jacket, DURAN® tubing.

Made of DURAN® tubing. With NS socket and NS cone, with fixed vacuum jacket. *Lenz*

Fill height mm	NS	PK	Cat. No.
200	14/23	1	**7.613 796**
300	14/23	1	**9.012 333**
300	29/32	1	**6.073 183**
600	29/32	1	**6.226 643**

4



4 Drying tubes, PE-LD

Removable stoppers at both tube ends. With tubing nozzles, 4mm to 9mm o.d. *Kartell*

Length mm	PK	Cat. No.
100	1	**9.253 131**
150	1	**9.253 135**
200	1	**9.253 140**

5



5 Drying tubes, U-pattern

NEW!

Made of borosilicate glass 3.3. DIN 12610. Drying tubes with NS incl. interchangeable ground joint stopcocks. U-shape. Hose connectors 6mm in diameter. *Isolab*

Length mm	NS	Diam. mm	Description	PK	Cat. No.
100	-	13	without stopcock	1	**9.140 515**
130	-	13	without stopcock	1	**9.140 516**
180	-	18	without stopcock	1	**9.140 517**
100	14/23	13	with stopcock	1	**9.140 518**
130	14/23	13	with stopcock	1	**9.140 519**
180	19/26	18	with stopcock	1	**9.140 520**

6



6 Drying tubes

NEW!

Made of borosilicate glass 3.3. Angled to 90°. *Isolab*

Length mm	Diam. mm	PK	Cat. No.
100	13	1	**9.140 513**
150	13	1	**9.140 514**

7



9.012 703

Drying tubes, DURAN® tubing

Made of DURAN® tubing. Angled to 75°. *Lenz*

Cone NS	PK	Cat. No.
14/23	1	**9.012 701**
29/32	1	**9.012 703** 7

Desiccant - please see page 993.

E & OE.

Multiple Adapters, 2 Necks

NEW!

Made from borosilicate glass 3.3. With two sockets and one cone.
One neck 105° upwards.

Isolab

Cone	Socket	Socket lateral	PK	Cat. No.
NS	NS	NS		
14/23	14/23	14/23	1	**6.243 740** 1
19/26	19/26	19/26	1	**6.243 741**
29/32	29/32	14/23	1	**9.140 502**
29/32	29/32	29/32	1	**9.140 503**

1



6.243 740

2 Multiple Adapters, 2 Necks

Made of DURAN® tubing. With two sockets and one cone.
One neck 105° upwards.

Lenz

Cone	Socket	Socket lateral	PK	Cat. No.
NS	NS	NS		
14/23	14/23	14/23	1	**9.012 101**
19/26	19/26	19/26	1	**6.232 027**
29/32	29/32	14/23	1	**7.610 631**
29/32	29/32	29/32	1	**9.012 103**

2



Multiple Adapters, 2 Necks

NEW!

Made of borosilicate glass 3.3. Side neck parallel with centre neck. 2 x sockets 1 x cone.

Isolab

Cone	Socket	Socket lateral	PK	Cat. No.
NS	NS	NS		
14/23	14/23	14/23	1	**6.243 738**
19/26	19/26	19/26	1	**9.140 504**
14/23	29/32	14/23	1	**9.140 507**
29/32	29/32	29/32	1	**6.243 739** 3

3



6.243 739

4 Chemistry Set

NEW!

Chemistry kit contains 16 pieces of various glassware all with common 14/23 NS sizes.
Allows many micro experiments to be perfomed under vacuum or atmospheric pressure.
Designed for the usage with relatively low quantites of 10 - 25 ml.
Supplied in a sturdy hard plastic box with foam inserts to protect the parts.

Isolab

Product descriptions of the set are shown as the below list.
1 x filter funnel, 1 x receiver adapter - short stem, 1 x stillhead with screwcap adapter, 1 x receiver adapter - with vent, 1 x pear shape flask with three necks - 25 ml, 1 x erlenmeyer flask - 25 ml, 1 x seperating funnel - with PTFE key - 30 ml, 1 x vigreux fractionating column, 1 x measuring cylinder - 10 ml, 1 x beaker - low form - 25 ml, 1 x liebig condenser, 1 x flat bottom flask - 10 ml, 1 x keck clip, 1 x pressure equalising funnel - 10 ml, 2 x hexagonal stoppers.

4



Description	PK	Cat. No.
Mini volume chemistry kit	1	**9.140 512**

Adapters, ground glass joint, multiple, 2 neck

Made of DURAN® tubing. Acc. to DIN 12594 and in addition to DIN Standard (*).
Side neck parallel with centre neck. 2 x sockets 1 x cone.

Lenz

Cone	Socket	Socket lateral	PK	Cat. No.
NS	NS	NS		
29/32	14/23	14/23*	1	**6.232 074**
14/23	14/23	14/23	1	**9.012 121**
29/32	29/32	29/32	1	**9.012 123** 5

5



9.012 123

Splash head adapter, ground glass joint, borosilicate glass 3.3

Borosilicate glass 3.3. Suitable to be used in distillation assemblies to prevent raw liquid step over from flask to condenser. *Isolab*

Socket NS	Cone NS	Description	PK	Cat. No.	
14/23	14/23	straight	1	**4.008 373**	1
29/32	29/32	straight	1	**6.255 503**	
14/23	14/23	bend	1	**9.140 508**	2
29/32	29/32	bend	1	**9.140 511**	

1



4.008 373

2



9.140 508

Splash heads acc. to Stutzer, straight or bent, DURAN® tubing

NEW!

Made of DURAN® tubing. *Lenz*
Two versions available:
- straight, with cone and socket
- bent with two cones at 75°.

Splash heads are directly placed onto distillation flasks for separation of drops.

Cone NS	Socket / core bent NS	Description	PK	Cat. No.	
14/23	29/32	straight	1	**6.202 459**	
29/32	29/32	straight	1	**9.012 193**	3
29/32	29/32	bent	1	**9.012 138**	4

3



9.012 193

4



9.012 138

5



5 Bellows, PTFE

NEW!

Strainless connection of ground joint equipment; for compensating vibrations from vacuum pumps; for length compensation of heated columns; angular misalignment. *BOLA*
Made of PTFE, with sharp folds and sealing rings on the outside; maximum deflection: 120°.

Socket NS	Cone NS	Overall length mm	PK	Cat. No.
14/23	14/23	90	1	**9.012 161**
29/32	29/32	120	1	**9.012 163**

E & OE.

1 Vacuum sublimation apparatus

Enables effective cleaning of chemicals and substances that turn from solids to vapours directly without liquidifying first and solidifying again on cooling. The cleaned sublimate can be fully recovered from the conical cooler without difficulty once the sublimation process is complete.



Type	PK	Cat. No.
Micro apparatus, complete, sublimate quantity 1g to 2g	1	**9.305 367**
Semi-micro apparatus, complete, sublimate quantity 5g to 7g	1	**9.305 368**
Macro apparatus, complete, sublimate quantity 10g to 25g	1	**9.305 369**

2 Reaction flasks, flat flange, DURAN®

Flanged neck with groove for vacuum use. 500ml and 1000ml vessels are completely cylindrical. Capacities indicated are brim-full volumes. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*



Capacity ml	DN	Capacity ml	Flange diam. mm	Body diam. mm	Height mm	Pressure bar	PK	Cat. No.
100	60	195	100	70	85	2,5*	1	**9.142 024**
250	60	315	100	70	125	2,5*	1	**9.142 036**
500	100	740	138	106	120	1,5*	1	**9.142 044**
1000	100	1395	138	106	205	1,5*	1	**9.142 054**
2000	100	2620	138	140	270	1,5*	1	**9.142 063**
4000	150	5765	184	200	290	1,0*	1	**9.142 071**
6000	150	7320	184	215	320	1,0*	1	**9.142 076**

* Maximum permissable operating pressure measured at 250°C.

3 Flat flange beakers, DURAN®

Flanged neck with groove for vacuum use. Maximum 0.5bar working pressure at 250°C. Capacities indicated are brim-full volumes. We recommend that these beakers are heated in water or oil baths. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*



Flange diameter: 158mm
Beaker diameter: 130mm

Capacity ml	DN	Capacity ml	Height mm	PK	Cat. No.
1000	120	1360	125	1	**9.142 271**
2000	120	2200	200	1	**9.142 272**
3000	120	3220	290	1	**9.142 273**

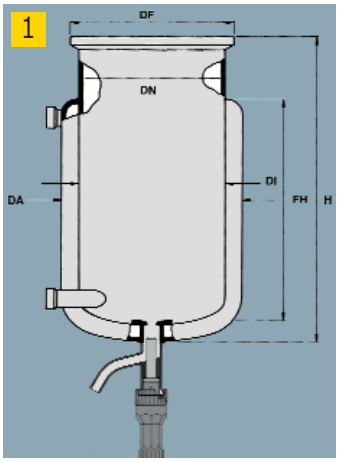
4 Flat ground flange lids, DURAN®

With four ground joint necks as outlined below. Centre neck NS 29/32. 1bar max. operating pressure at 250°C. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*



DN	Flange diam. mm	Height mm	Side necks NS	PK	Cat. No.
100	138	125	3 x 29/32 angled	1	**9.142 246**
100	138	105	2 x 29/32 angled, 1 x 14/23 parallel	1	**9.142 476**
120	158	130	2 x 29/32 angled, 1 x 14/23 parallel	1	**9.142 251**
150	184	130	3 x 29/32 parallel	1	**9.142 257**
150	184	130	2 x 29/32 angled, 1 x 14/23 parallel	1	**9.142 259**

1



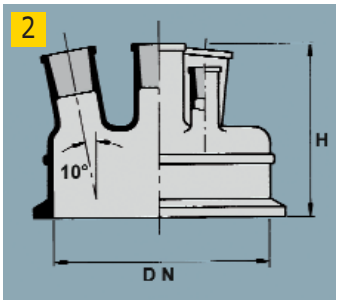
1 Flat ground flange reaction vessels, jacketed

Flange with groove in accordance with DIN 12214.
Flask with thermostatic jacket and type "T" 10mm bore PTFE drain valve.
Form
A = cylindrical form
B = short form

Capacity ml	DN mm	Form	Widest A.-Ø mm	Flange diam. mm	Height mm	Fill height mm	PK	Cat. No.
250	100	A	140	138	140	50	1	**9.142 037**
500	100	A	140	138	165	75	1	**9.142 038**
1000	100	A	140	138	230	140	1	**9.142 039**
1000	120	A	160	158	210	110	1	**9.142 040**
2000	120	A	160	158	300	200	1	**9.142 041**
3000	120	A	160	158	390	290	1	**9.142 042**
2000	150	A	200	184	230	130	1	**9.142 043**
3000	150	A	200	184	295	190	1	**9.142 045**
4000	150	A	200	184	355	250	1	**9.142 046**
5000	150	A	200	184	400	300	1	**9.142 047**
6000	150	A	200	184	450	350	1	**9.142 048**
6000	150	B	250	184	360	260	1	**9.142 049**
10000	150	A	200	184	675	575	1	**9.142 050**
10000	150	B	300	184	450	290	1	**9.142 051**

Further accessories and spare parts available on request.

2

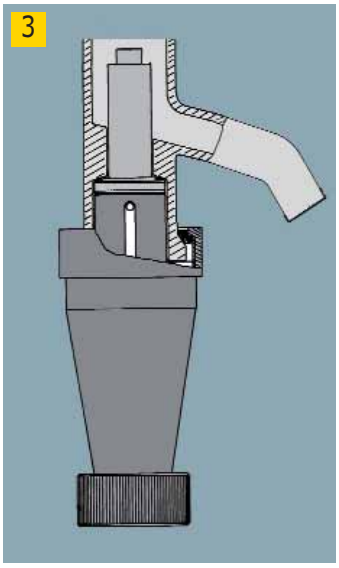


2 Flat flange lids

Flange in accordance with DIN 12214.

Flange DN mm	Centre neck NS	Angled side necks NS	Parallel side necks NS	Height mm	PK	Cat. No.
100	29/32	2 x 29/32	-	125	1	**9.142 120**
100	29/32	-	2 x 29/32	125	1	**9.142 121**
100	29/32	2 x 29/32	1 x 14/23	125	1	**9.142 122**
100	29/32	2 x 29/32	2 x 29/32	125	1	**9.142 123**
100	45/40	2 x 29/32	-	150	1	**9.142 124**
100	45/40	2 x 29/32	1 x 14/23	150	1	**9.142 126**
100	45/40	2 x 29/32	2 x 29/32	150	1	**9.142 127**
120	29/32	2 x 29/32	-	125	1	**9.142 128**
120	29/32	-	2 x 29/32	125	1	**9.142 129**
120	29/32	2 x 29/32	1 x 14/23	125	1	**9.142 130**
120	29/32	2 x 29/32	2 x 29/32	125	1	**9.142 131**
120	45/40	2 x 29/32	-	150	1	**9.142 132**
120	45/40	-	2 x 29/32	150	1	**9.142 133**
120	45/40	2 x 29/32	1 x 14/23	150	1	**9.142 134**
120	45/40	2 x 29/32	2 x 29/32	150	1	**9.142 135**
150	29/32	2 x 29/32	-	125	1	**9.142 136**
150	29/32	-	2 x 29/32	125	1	**9.142 137**
150	29/32	2 x 29/32	1 x 14/23	125	1	**9.142 138**
150	29/32	2 x 29/32	2 x 29/32	125	1	**9.142 139**
150	45/40	2 x 29/32	-	150	1	**9.142 140**
150	45/40	-	2 x 29/32	150	1	**9.142 141**
150	45/40	2 x 29/32	1 x 14/23	150	1	**9.142 142**
150	45/40	2 x 29/32	2 x 29/32	150	1	**9.142 143**

3



3 Reaction vessel accessories

PTFE drain valves, complete:
Model "T" (Standard for vessels with NW 100 to NW 200 flanges): PTFE, 10mm bore drain valve with no dead volume, key plug that seals on the base of the vessel, with maximum opening 35mm, self-adjusting, centring hub, visible wear indication and integral glass angled outlet.
For standard applications with liquids of different viscosity.
Model "H"
generally as Model "T", but with 20mm bore and max. opening 70mm.
Model "H/PT 100"
generally as Model "H", but with integral Pt100 sensor to enable easy measurement of sump temperature.

Type	PK	Cat. No.
Model "T" standard	1	**9.142 001**
Model "H" added price for execution	1	**9.142 002**
Model "H/Pt 100" added price for execution	1	**9.142 003**

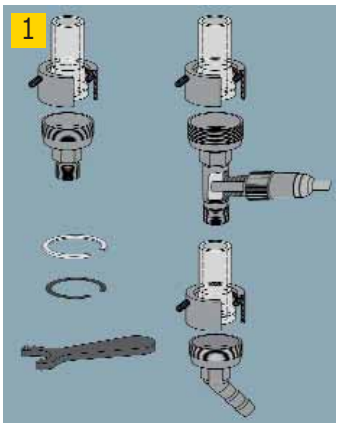
Further accessories and spare parts available on request.

E & OE.

1 Tubing adapters for heating and cooling connection

For metal or standard tubing connectors with secure, quick attachment/release, using spring insert technology.

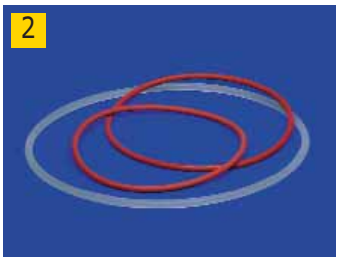
Type	PK	Cat. No.
For DN 15, M 16 x 1 thread	1	**9.142 004**
For DN 15, M 24 x 1.5 thread	1	**9.142 005**
For DN 15, M 16 with integral Pt100	1	**9.142 006**
For DN 15, D11 olive-shaped connection	1	**9.142 007**
For DN 15, D13 olive-shaped connection	1	**9.142 008**
PTFE comb seal DN 15	1	**9.142 009**
Graphited flat seal for temperatures above +150°C	1	**9.142 010**
Pin spanner for DN 15 metal adapter to ensure secure mounting	1	**9.142 011**



2 O-rings

VMQ silicone. With, or without, FEP coating. *Lenz*

Type	For flange DN	Diam. mm	Thickness mm	PK	Cat. No.
VMQ	60	75	4	1	**9.142 834**
VMQ	100	110	4	1	**9.142 846**
VMQ	150	150	5	1	**9.142 857**
VMQ + FEP	60	75	4	1	**9.142 866**
VMQ + FEP	100	110	4	1	**9.142 867**
VMQ + FEP	150	150	5	1	**9.142 868**
VMQ + FEP	200	215	5	1	**9.142 869**



Quick-acting closures

Stainless steel. With three-part caliper clamps. *Lenz*

For flange DN	PK	Cat. No.
60	1	**9.142 934**
100	1	**9.142 946** 3
120	1	**9.142 951**
150	1	**9.142 957**
200	1	**9.142 964**



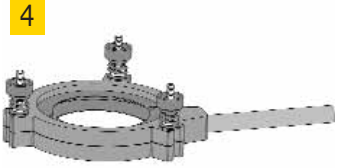
9.142 946

4 Supporting ring

NEW!

H.W.S.

Description	PK	Cat. No.
Supporting ring DN 60 Polyester, with support DIN	1	**6.229 692**
Supporting ring DN 100 Polyester, with support DIN	1	**6.229 695**
Supporting ring DN 120 Polyester, with support DIN	1	**9.011 736**
Supporting ring DN 150 Polyester, with support DIN	1	**9.011 735**









1 2 KPG stirrer shafts, DURAN®

DURAN®. Interchangeable. Bearing surface ground and polished. *DURAN Group*
WG: 4 fixed blades
WS: 2 movable blade
KPG diameter: 10mm
KPG length: 160mm.

Type	Length mm	For neck diam. mm	PK	Cat. No.
WG 10	320	60	1	**9.197 321**
WG 10	370	60	1	**9.197 322**
WS 10	320	25	1	**9.197 311**
WS 10	370	25	1	**9.197 312**
WS 10	410	25	1	**9.197 313**
WS 10	440	25	1	**9.197 314**



3 KPG stirrer bearings, DURAN®

Interchangeable. Bearing surface ground, polished. *DURAN Group*
With or without standard ground cone NS 29/32.

Type	Cone NS	Diam. mm	Height mm	PK	Cat. No.
HA 10	no	10	65	1	**9.197 251**
HB 10	no	10	75	1	**9.197 252**
HB 16	no	16	90	1	**9.197 257**
HQ 10	yes	10	75	1	**9.197 253**
HT 10	yes	10	65	1	**9.197 256**
HT 16	yes	16	85	1	**9.197 258**



9.198 050

Stirrer with stirrer adapter, DURAN® tubing

Made of DURAN® tubing. For round bottom flasks 250 to 2000ml. *Lenz*
Stirrer shaft, with PTFE stirrer blade and fixing screw. Seals vacuum stirring apparatus gas-tight to 10^{-3} mbar up to a permanent load of 800rpm.

Type	PK	Cat. No.
Stirrer with Stirrer Bearing, complete	1	**9.198 050** 4
Shaft, Dia. 10 x L 400mm	1	**6.802 957**
Blade, PTFE, 70x24x3mm	1	**6.204 794**
Screw, PTFE	1	**6.204 795**
Sealing, PTFE	1	**7.616 277**
Closure, thread GL 25, cone NS 29/32	1	**6.258 683**
Pressure spring, stainless steel	1	**6.258 684**
Screw cap GL 25, PP	1	**6.258 685**



5 Stirrer bearings with cooling jacket, DURAN® tubing

NEW!

Made of DURAN® tubing. Stirrer bearings with NS cone and cooling water connections (thread GL14), bearing surface ground and polished. *Lenz*

Cone NS	For diam. stirring rod mm	PK	Cat. No.
29/32	10	1	**6.234 956**
45/40	16	1	**6.234 957**



9.197 355

Stirrer bearings with GL male thread, DURAN® tubing

Made of DURAN® tubing. *Lenz*
Other materials used: PTFE (bearing), silicone (gasket) and stirrer guides, GL male thread.
Cone size 29/32. Guide bore 10mm i.d.

Neck thread GL	Cone NS	Ø agitator shaft mm	Overall length mm	PK	Cat. No.
25	29/32	10	90	1	**9.197 355** 6
25	45/40	10	110	1	**6.223 283**
32	45/40	16	118	1	**9.197 356**

E & OE.

1 Stirrer Bearings, PTFE

The sealing rings on these bearings ensure a perfect sealing. The ground joint no longer sticks, the danger of breaking is reduced and the cone can be removed easily from the socket. *BOLA*
A special gasket made of PTFE and an FPM o-ring which is compressed by a GL screw cap provide a good sealing of the stirrer shaft. This gasket can be exchanged after wearing. Suitable for vacuum, perfect bearing for stainless steel, glass and BOLA Stirrer Shafts.



Cone NS	For diam. stirring rod mm	Overall length mm	Neck thread GL	PK	Cat. No.
29/32	6	72	18	1	**6.087 538**
29/32	8	74	25	1	**6.076 532**
29/32	10	72	25	1	**6.088 058**

2 Stirrer bearings with dynamic double seal

NEW!

Stirrer bearings for applications under vacuum or under slight overpressure. *Lenz*
With extended guidance for reduced vibrations and a longer lifetime.
Material: borosilicate glass 3.3 (closure), PTFE (sealings)



For diam. stirring rod mm	NS	PK	Cat. No.
10	29/32	1	**7.629 417**
10	45/40	1	**9.197 359**
16	29/32	1	**9.197 363**
16	45/40	1	**9.197 364**

Dropping funnels, cylindrical, with or without pressure equalizing tube, borosilicate glass 3.3

Borosilicate glass 3.3, cylindrical shape, with or without pressure equalising tube. *Isolab*
DIN 12451 and DIN 12567.

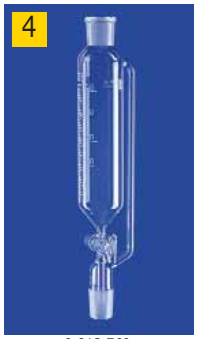


4.008 428

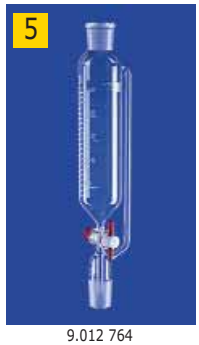
Capacity ml	NS	Type	PK	Cat. No.
50	19/26	with relief tube	1	**9.140 415**
100	19/26	with relief tube	1	**4.008 428** 3
250	29/32	with relief tube	1	**6.240 982**
500	29/32	with relief tube	1	**6.240 983**
1000	29/32	with relief tube	1	**9.140 416**
50	19/26	without with relief tube	1	**9.140 410**
100	19/26	without with relief tube	1	**9.140 411**
250	29/32	without with relief tube	1	**9.140 412**
500	29/32	without with relief tube	1	**9.140 413**
1000	29/32	without with relief tube	1	**9.140 414**

Dropping funnels, cylindrical, with pressure equalising tube, borosilicate glass 3.3

Borosilicate glass 3.3. Cylindrical shape, with pressure equalising tube. *Lenz*
With NS socket and interchangeable PE stopper, plug with retaining device.
With graduations for reading of the approx. volume.
Two types available:
- With solid glass key
- With PTFE key



9.012 769



9.012 764

Capacity ml	NS	Bore mm	Grad. ml	Keys	PK	Cat. No.
25	14/23	2.5	1	solid	1	**6.072 172**
50	14/23	2.5	1	solid	1	**9.012 755**
50	29/32	2.5	1	solid	1	**9.012 767**
100	14/23	2.5	2	solid	1	**9.012 756**
100	29/32	2.5	2	solid	1	**9.012 768**
250	14/23	4.0	5	solid	1	**9.012 757**
250	29/32	4.0	5	solid	1	**9.012 769** 4
500	29/32	4.0	10	solid	1	**9.012 770**
1000	29/32	6.0	20	solid	1	**7.601 147**
25	14/23	2.5	1	PTFE	1	**9.012 751**
50	14/23	2.5	1	PTFE	1	**9.012 752**
50	29/32	2.5	1	PTFE	1	**6.223 427**
100	14/23	2.5	2	PTFE	1	**9.012 753**
100	29/32	2.5	2	PTFE	1	**6.900 312**
250	29/32	4.0	5	PTFE	1	**9.012 764** 5
500	29/32	4.0	10	PTFE	1	**9.012 765**
1000	29/32	6.0	20	PTFE	1	**9.012 766**

1



9.012 471

Air condensers without jacket, DURAN® tubing

Made of DURAN® tubing. For easily condensable vapours. With NS cone and drain ring. *Lenz*

Length mm	Cone NS	PK	Cat. No.
700	14/23	1	**9.012 470**
1000	29/32	1	**9.012 471** 1

2



2 Condensers, ground glass joint, Dimroth, borosilicate glass 3.3, PP-olive

Made of borosilicate glass 3.3. Resistant to heat and almost all chemicals. According to DIN 12591. Supplied with polypropylene side arm, which has a screw thread connector for easy and safe fitting of the tubing. The side arms accept tubing with 8/9mm bore size. *Isolab*

Effective length mm	NS	Description	PK	Cat. No.
250	29/32	with PP side arm	1	**9.012 547**
400	29/32	with PP side arm	1	**9.012 545**

3



3 Condensers, ground glass joint, Dimroth, borosilicate glass 3.3.

NEW!

Made of borosilicate glass 3.3. Resistant to heat and almost all chemicals. According to DIN 12591. Supplied with glass side arms. The side arms accept tubing with 8/9mm bore size. *Isolab*

Effective length mm	Cone NS	Socket NS	PK	Cat. No.
160	14/23	14/23	1	**9.012 525**
160	29/32	29/32	1	**9.012 526**
250	14/23	14/23	1	**9.012 527**
250	29/32	29/32	1	**6.258 228**
400	14/23	14/23	1	**9.012 528**
400	29/32	29/32	1	**6.243 670**

4



9.012 533

Condensers acc. to Dimroth, ground glass joint, PP-olive, DURAN® tubing

Made of DURAN® tubing. DIN 12591. With NS cone and socket. *Lenz*
Water connection GL14 threads with two threaded plastic olives.

Effective length mm	Cone NS	Socket NS	PK	Cat. No.
160	14/23	14/23	1	**9.012 530**
250	29/32	29/32	1	**9.012 533** 4
400	29/32	29/32	1	**9.012 534**

5



5 Condensers, ground glass joint, Allihn

NEW!

Manufactured from borosilicate glass 3.3 according to DIN 12581 standard. *Isolab*
Supplied with glass side arm.The side arms accept tubings with 8/9 mm bore size.

Effective length mm	Cone NS	Socket NS	PK	Cat. No.
160	14/23	14/23	1	**9.012 507**
250	14/23	14/23	1	**9.012 509**
250	29/32	29/32	1	**6.253 331**
400	14/23	14/23	1	**9.012 510**
400	29/32	29/32	1	**6.243 669**

Extraction apparatus - please see page 1149.

1 Condensers, ground glass joint, Allihn, borosilicate glass 3.3

Borosilicate glass 3.3 which is resistant to heat and almost all chemicals. According to DIN 12581. *Isolab*
Polypropylene side arm has a screw thread connector for easy and safe fitting of the tubing. The side arms accept tubings with 8/9mm bore size.

Effective length mm	NS	Description	PK	Cat. No.
160	29/32	with PP side arm	1	**4.008 406**
400	29/32	with PP side arm	1	**4.008 408**



Condensers acc. to Allihn, ground glass joint, PP-olive, DURAN® tubing

Made of DURAN® tubing. DIN 12581. For condensing vapours. *Lenz*
With NS cone and socket water connection GL14 threads with two threaded plastic olives.

Effective length mm	Cone NS	Socket NS	Bulbs	PK	Cat. No.
160	14/23	14/23	4	1	**9.012 511**
160	19/26	19/26	4	1	**9.012 516**
250	29/32	29/32	5	1	**9.012 517** 2
400	29/32	29/32	8	1	**9.012 515**
250	19/26	19/26	5	1	**6.236 022**
250	14/23	14/23	5	1	**6.251 366**
160	29/32	29/32	4	1	**9.012 518**



9.012 517

For all condensers are other sizes available on request.

3 Spiral condensers, borosilicate glass 3.3

Made of borosilicate glass 3.3 which is resistant to heat and almost all chemicals. *Isolab*
According to DIN 12592. Supplied with either glass side arm or polypropylene side arm.
Polypropylene side arm has a screw thread connector for easy and safe fitting of the tubing.
The side arms accept tubings with 8/9mm bore size.

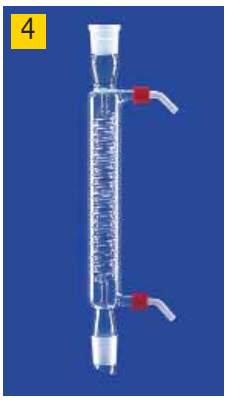
Effective length mm	NS	Description	PK	Cat. No.
160	14/23	with glass side arm	1	**9.012 548**
250	29/32	with glass side arm	1	**6.257 821**
400	29/32	with glass side arm	1	**4.008 411**
160	14/23	with PP side arm	1	**4.008 412**
250	29/32	with PP side arm	1	**6.257 820**
400	29/32	with PP side arm	1	**4.008 414**



Spiral condensers, PP-olive, DURAN® tubing

Made of DURAN® tubing. For cooling condensates. Water connections with glass olives or GL14 threads with two threaded plastic olives. *Lenz*

Effective length mm	Cone NS	Socket NS	Connection	PK	Cat. No.
160	14/23	14/23	GL14	1	**9.012 522**
400	29/32	29/32	GL14	1	**6.225 557**
250	29/32	29/32	GL14	1	**9.012 523** 4
500	29/32	29/32	GL14	1	**9.012 524**



9.012 523

1



9.012 543

Coil condensers, DURAN® tubing

Made of DURAN® tubing. DIN 12593. With jacketed cooling coil. Water connection with glass olives or GL14 thread , with two threaded, plastic olives. *Lenz*

Effective length mm	Cone NS	Socket NS	Connection	PK	Cat. No.
160	29/32	29/32	glas	1	**7.635 816**
250	29/32	29/32	glas	1	**6.227 832**
400	29/32	29/32	glas	1	**6.240 342**
500	29/32	29/32	glas	1	**7.970 241**
160	14/23	14/23	GL14	1	**6.900 522**
160	29/32	29/32	GL14	1	**9.012 542**
250	29/32	29/32	GL14	1	**9.012 543** 1
400	29/32	29/32	GL14	1	**9.012 544**

2



3



2 3 Condensers acc. to Davies, DURAN® tubing

NEW!

Made of DURAN® tubing. For condensing vapours, with NS socket and cone, with double sized cooling area, water connection: GL14 or glass olive threads with two threaded plastic olives. *Lenz*

Effective length mm	NS	Connection	PK	Cat. No.
250	19/26	nozzle	1	**6.800 239**
250	24/29	nozzle	1	**6.228 159**
250	29/32	GL 14	1	**6.803 017**

4



4 Condensers, ground glass joint, Liebig, borosilicate glass 3.3

Made of borosilicate glass 3.3 which is resistant to heat and almost all chemicals. According to DIN 12576. *Isolab*
Polypropylene side arm has a screw thread connector for easy and safe fitting of the tubing.
The side arms accept tubings with 8/9mm bore size.

Effective length mm	NS	Description	PK	Cat. No.
250	29/32	with PP side arm	1	**9.012 546**
400	29/32	with PP side arm	1	**4.008 405**
250	29/32	with glass side arm	1	**7.970 278**
400	29/32	with glass side arm	1	**6.236 239**
160	14/23	with glass side arm	1	**9.012 535**
250	14/23	with glass side arm	1	**9.012 536**
400	14/23	with glass side arm	1	**9.012 537**

5



9.012 505

Condensers acc. to Liebig, ground glass joint, DURAN® tubing

Made of DURAN® tubing. DIN 12576 and in addition to DIN standard (*). *Lenz*
With NS cone and socket.
Water connection: glass olives or GL14 threads with two threaded plastic olives.

Effective length mm	Socket NS	Cone NS	Ext. diam. mm	Int. diam. mm	Connection	PK	Cat. No.
160	14/23	14/23	20	12	GL	1	**9.012 502**
160	19/26	19/26	24	16	GL	1	**9.012 501**
250	29/32	29/32	24	16	GL	1	**9.012 505** 5
400	29/32	29/32	24	16	GL	1	**9.012 506**

6



6 Keck adapters KA 14

Glass fibre reinforced thermoplastic polyester (PBT).
Melting point 225°C. Temperature and chemically resistant. For quick, secure, tight connection of tubing with glass screwthreads and ferrules.

For	Colour	PK	Cat. No.
Glass ferrule GL 14 complete	yellow	1	**9.208 931**
Glass ferrule RD 14 complete	red	1	**9.208 941**
Glass screwthread GL 14	yellow	1	**9.208 930**
Glass screwthread RD 14	red	1	**9.208 940**

1 Air leak rod, DURAN®

With bulb (Diameter: 6mm, Wall thickness: 1.5mm).

Length mm	Diam. mm	PK	Cat. No.
180	4	1	**9.012 302**



Gas inlet tubes, straight, ground glass joint, DURAN® tubing

Made of DURAN® tubing. Straight air leak tubes, built-in length: 200mm, with NS cone and thin capillary (easily to draw by burner). *Lenz*

Cone NS	Diam. mm	Length mm	PK	Cat. No.
14/23	6	200	1	**9.012 301** 2
29/32	8	200	1	**6.239 812**

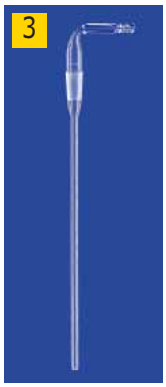


9.012 301

Gas inlet tubes, bent, DURAN® tubing

Made of DURAN® tubing. Bent air leak tubes (angle: 90°), built-in length: 250mm, with NS cone and thin capillary (easily to draw by burner). *Lenz*

Cone NS	Diam. mm	Length mm	PK	Cat. No.
14/23	6	250	1	**9.012 303** 3
29/32	8	250	1	**9.012 305**



9.012 303

4 Gas inlet tube with valve stopcock, DURAN® tubing

NEW!

Made of DURAN® tubing. With valve stopcock for dosing, with glass olive (angle: 90°), with cone NS14/23, tube length from top of the joint: approx. 150mm. *Lenz*

NS	PK	Cat. No.
14/23	1	**6.200 985**



5 Air regulator Type HM-2

For tubes:
8mm to 15mm diameter, 6mm to 12.5mm diameter
For air-leak capillary tubes. Acts as a fine regulation valve (needle valve).
Plastic body. Brass needle with fine thread.

Type	PK	Cat. No.
HM-2	1	**9.194 011**



6 Boiling stones, Type A

Developed for use in preparatory work. For distillation and reflux in aqueous, neutral and alkaline solvents, even under a vacuum. Effective in even the smallest volumes of liquid and after multiple interruptions. Prevents any bumping. Natural product.

Capacity g	PK	Cat. No.
250	1	**9.012 306**



1



1 Boiling stones, Type B

Specifically for analytical work. Can be used for distillation in a clean, neutral and basic environment.
Not suitable for vacuum distillation.
Effective in the smallest amounts of liquid, also after multiple distillations.
Prevents " bumping". Ceramic product with relatively high level of purity and abrasion resistance.

Capacity g	PK	Cat. No.
200	1	**9.012 307**

2



2 Boiling stones behrotest®

Behr

behrotest® boiling stones are made from a ceramic material. Compared to conventional boiling stones made of glass, they provide optimum protection against defervescence due to their porosity and their shape, even with badly blended samples.
behrotest® boiling stones are chemically pure and guarantee unadulterated results when determining the COD, the Kjeldahl nitrogen etc.

Capacity g	PK	Cat. No.
100	1	**9.920 710**

3



3 Boiling chips, type Resistent

Developed for preparatory and analytical purposes. Suitable for biochemistry, biotechnology, microbiology, microanalysis. Can even be used in strong acids and alkalis, and in all solvents and oxidants.
Suitable for vacuum and high-vacuum distillation. Reduces distillation times in rotary evaporators. No abrasion, absorption of substances or solvents. Softening (evaporation) occurs at 2500°C. Can be sterilised by dry heating.
Effective in even the smallest volumes of liquid, even after multiple interruptions. Prevents any bumping.
Highly resistant.

Capacity g	PK	Cat. No.
50	1	**9.012 308**

Hotplates - please see page 775.

We can supply this
manufacturer's whole product range !

partner of the LLG Lab Logistics Group

behr Labor-Technik

1 Separating funnels, Squibb-pattern, borosilicate glass 3.3

Supplied with PTFE stopcock, graduated or ungraduated. According to DIN 12452. *Isolab*
With PP conical stopper.

Capacity	NS	Description	Bore	PK	Cat. No.
ml			mm		
50	19/26	ungraduated	2.5	1	**4.008 422**
100	19/26	ungraduated	2.5	1	**6.241 670**
250	29/32	ungraduated	4.0	1	**6.238 526**
500	29/32	ungraduated	4.0	1	**6.238 527**
1000	29/32	ungraduated	6.0	1	**6.241 669**
2000	29/32	ungraduated	6.0	1	**6.241 668**
50	19/26	graduated	2.5	1	**6.236 317**
100	19/26	graduated	2.5	1	**6.236 318**
250	29/32	graduated	4.0	1	**6.236 319**
500	29/32	graduated	4.0	1	**6.236 320**
1000	29/32	graduated	6.0	1	**6.236 321**
2000	29/32	graduated	6.0	1	**6.240 412**

1



Separating funnels acc. to Squibb, borosilicate glass 3.3

With PTFE plug. Available with or without graduations to read the approximate volume. *Lenz*
With PE-stopper and PTFE plug .

Capacity	Socket	Description	Bore	PK	Cat. No.
ml	NS		mm		
50	19/26	ungraduated	2.5	1	**9.203 322**
100	19/26	ungraduated	2.5	1	**9.203 323**
250	29/32	ungraduated	4.0	1	**9.203 325**
500	29/32	ungraduated	4.0	1	**9.203 328**
1000	29/32	ungraduated	6.0	1	**9.203 330**
2000	29/32	ungraduated	6.0	1	**9.203 332**
50	19/26	graduated	2.5	1	**9.203 372**
100	19/26	graduated	2.5	1	**9.203 373**
250	29/32	graduated	4.0	1	**9.203 375** 2
500	29/32	graduated	4.0	1	**9.203 376**
1000	29/32	graduated	6.0	1	**9.203 377**
2000	29/32	graduated	6.0	1	**9.203 378**

2



9.203 375

Separating funnels, conical, borosilicate glass 3.3

Supplied with PTFE stopcock, graduated or ungraduated. According to DIN 12451. *Isolab*
With PP conical stopper.

Capacity	NS	Description	Bore	PK	Cat. No.
ml			mm		
50	19/26	ungraduated	2.5	1	**4.008 423**
100	19/26	ungraduated	2.5	1	**4.008 424**
250	29/32	ungraduated	4.0	1	**6.242 395**
500	29/32	ungraduated	4.0	1	**4.008 425**
1000	29/32	ungraduated	6.0	1	**6.242 694**
2000	29/32	ungraduated	6.0	1	**4.008 426**
50	19/26	graduated	2.5	1	**4.008 427**
100	19/26	graduated	2.5	1	**6.241 980**
250	29/32	graduated	4.0	1	**6.241 671**
500	29/32	graduated	4.0	1	**6.241 981**
1000	29/32	graduated	6.0	1	**6.244 011** 3
2000	29/32	graduated	6.0	1	**6.242 394**

3



6.244 011



1



9.203 486

Separating funnels, conical, borosilicate glass 3.3

Conical pattern. With glass stopcock, PTFE key and retaining device. *Lenz*
Available with or without, graduations to read the approximate volume. With PP conical stopper.

Capacity ml	NS	Description	Bore mm	PK	Cat. No.
50	19/26	ungraduated	2.5	1	**9.203 462**
100	19/26	ungraduated	2.5	1	**9.203 463**
250	29/32	ungraduated	4.0	1	**9.203 465**
500	29/32	ungraduated	4.0	1	**9.203 466**
1000	29/32	ungraduated	6.0	1	**9.203 467**
2000	29/32	ungraduated	6.0	1	**9.203 468**
50	19/26	graduated	2.5	1	**9.203 482**
100	19/26	graduated	2.5	1	**9.203 483**
250	29/32	graduated	4.0	1	**9.203 485**
500	29/32	graduated	4.0	1	**9.203 486** 1
1000	29/32	graduated	6.0	1	**9.203 487**
2000	29/32	graduated	6.0	1	**9.203 488**

2



2 Separating funnels with screw cap, Type 4301, FEP

Transparent. Teflon® FEP, Tefzel® ETFE stopcock and ETFE screw cap. Impact resistant. *Thermo Scientific*
Non-wetting surfaces ensure no liqiud residue adhesion. Chemically stable.
Length of stem under stopcock 65mm. Autoclavable.

Type	Capacity ml	Screw cap diam. mm	PK	Cat. No.
4301	125	28	1	**9.203 531**
4301	250	33	1	**9.203 532**
4301	500	43	1	**9.203 533**
4301	1000	53	1	**9.203 534**
4301	2000	53	1	**9.203 535**

Teflon® and Tefzel® are registered trademark of DuPont.

3



3 Separating funnel holder PP

Manufactured from best quality polypropylene. Suitable to hold all types of laboratory funnels and also separatory funnels with diameter up to 150mm. *Isolab*
Two tapered wedges are provided to ensure firm grip.

Description	PK	Cat. No.
Separating funnel holder	1	**9.251 559**

4



4 Water estimator to Dean Stark, borosilicate glass 3.3

NEW!

Manufactured from borosilicate glass 3.3 according to DIN 12420. Suitable for xylol method. *Isolab*
System completed with 500 ml (NS 29/32) flask + Liebig condenser with jacket length 400 mm + measuring tube (10:0.1 ml) with PTFE stopcock.

Description	PK	Cat. No.
Water estimator to Dean Stark	1	**9.303 005**

Support rings - please see page 168.

For complete distillation systems, please see page 1154.

1 Extractors acc. to Knöfler-Böhm, DURAN® tubing

NEW!

Lenz

The condensate passes the extraction sample and flows back into the flask continuously without interrupting the extraction process, i.e. the solvent is recirculated continuously.
The complete apparatus consists of:
Jacketed extractor head made of DURAN® tubing, Dimroth condenser with thread GL 14, made of DURAN® tubing,
Round bottom flask material: DURAN®

Extractor ml	Condenser NS	Round bottom flasks Capacity ml	PK	Cat. No.
30	29/32	100	1	**6.237 313**
150	45/40	250	1	**6.237 312**
250	45/40	500	1	**9.043 010**
500	60/46	1000	1	**9.043 020**

1



2 Soxhlet extractors, without stopcock

Isolab

Borosilicate glass 3.3 which is resistant to heat and almost all chemicals. According to DIN 12602.
The side arms accept tubings with 8/9mm bore size.

Capacity ml	Cone NS	Socket NS	PK	Cat. No.
30	29/32	29/32	1	**4.008 417**
70	29/32	34/35	1	**4.008 418**
100	29/32	45/40	1	**4.008 419**
150	29/32	45/40	1	**4.008 420**
250	29/32	45/40	1	**4.008 421**
500	29/32	45/40	1	**6.243 673**

2



Complete serial extraction systems - please see page 1149.

Extraction thimbles - please see page 1147.

Soxhlet Extraction stillheads

Soxhlet Extraction stillheads, made of DURAN® tubing.
Extractor heads acc. to DIN 12602 and in addition to DIN standard.

For extractor ml	Cone NS	Socket NS	PK	Cat. No.
30	29/32	29/32	1	**9.043 011**
70	29/32	34/35	1	**9.043 012**
100	29/32	45/40	1	**9.043 013** 3
150	29/32	45/40	1	**9.043 014**
200	29/32	45/40	1	**9.043 018**
250	29/32	45/40	1	**9.043 015**
300	29/32	60/46	1	**9.043 019**
500	29/32	60/46	1	**9.043 016**
1000	29/32	71/51	1	**9.043 017**

3



9.043 013

Accessories for Extractors for specific light solvents, DURAN® tubing

Lenz

Extractor heads for the extraction of liquids with specific light solvents, with insert filter (porosity: 0), made of DURAN® tubing.
Distribution tubes with frit (porosity: 0), for specific light solvents, made of DURAN® tubing.

Type	Extractor ml	Condenser NS	PK	Cat. No.
Extractor Head	100	45/40	1	**6.801 962** 4
Extractor Head	250	45/40	1	**6.258 695**
Extractor Head	500	60/46	1	**6.902 445**
Distribution Tube	100	-	1	**6.258 692**
Distribution Tube	250	-	1	**6.258 693**
Distribution Tube	500	-	1	**6.902 444** 5

4



6.801 962

5



6.902 444

Complete extraction systems - please see page 1148.

1



1 Extractor heads for specific heavy solvents, DURAN® tubing

NEW!

Made of DURAN® tubing. For the extraction of liquids with specific heavy solvents, with insert filter (porosity: 0).

Lenz

Extractor ml	Condenser NS	PK	Cat. No.
100	45/40	1	**6.258 697**
250	45/40	1	**6.258 698**
500	60/46	1	**6.258 699**

2



2 Distribution tubes with frit, DURAN® tubing

NEW!

Made of DURAN® tubing. Distribution tubes with frit (porosity: 0), for specific heavy solvents.

Lenz

Extractor ml	PK	Cat. No.
100	1	**6.235 019**
250	1	**6.235 065**
500	1	**6.258 696**

3



3 Dimroth condensers for Soxhlet

NEW!

Manufactured from borosilicate glass 3.3 with glass side arm. The side arms accept tubings with 8/9 mm bore size.

Isolab

For bottle ml	Cone NS	PK	Cat. No.
30	29/32	1	**9.012 538**
70	34/35	1	**9.012 539**
100/250	45/40	1	**6.254 108**

4



4 Condensers, ground glass joint, Dimroth, for soxhlet

Borosilicate glass 3.3. Resistant to heat and almost all chemicals. According to DIN 12591. Supplied with polypropylene side arm. Polypropylene side arm has a screw thread connector for easy and safe fitting of the tubing. The side arms accept tubings with 8/9mm bore size.

Isolab

Volume ml	NS	PK	Cat. No.
100 - 250	45/40	1	**7.629 955**

5



9.043 023

Condensers acc. to Dimroth, for extractors with GL threads, DURAN® tubing

Made of DURAN® tubing. For extractors and for condensing vapours. With cone. Water connection with thread GL14, with two threaded plastic olives.

Lenz

Volume ml	Cone NS	PK	Cat. No.
30	29/32	1	**9.043 021**
70	34/35	1	**9.043 022**
100 - 250	45/40	1	**9.043 023** 5
300 - 500	60/46	1	**9.043 026**
1000	71/51	1	**9.043 027**

E & OE.

1 Dimroth condensers for extractors

NEW!

Lenz

For condensing vapours, with NS cone, water connection: glass olives, made of DURAN® tubing.

Cone NS	Volume ml	PK	Cat. No.
29/32	30	1	**6.204 562**
34/35	70	1	**6.207 176**
45/40	100 - 250	1	**7.085 191**
60/46	300 - 500	1	**7.604 610**
71/51	1000	1	**6.266 984**



2 Allihn condensers for Soxhlet

NEW!

Isolab

Manufactured from borosilicate glass 3.3 with glass side arm.
The side arms accept tubings with 8/9 mm bore size.

For bottle ml	Cone NS	PK	Cat. No.
30	29/32	1	**9.012 540**
70	34/35	1	**9.012 541**
100/250	45/40	1	**6.254 106**



Condensers, Allihn for Extractors

Lenz

Made of DURAN® tubing. DIN 12581. For condensing vapours. With cone, water connection with nozzle or GL 14 thread and two threaded plastic tubing nozzles.

Extractor ml	Cone NS	Effective length mm	Connection	PK	Cat. No.
30	29/32	160	Olive	1	**6.204 890**
100-250	45/40	250	Olive	1	**7.200 489** 3
30	29/32	160	GL 14	1	**6.242 774**
100-250	45/40	250	GL 14	1	**6.224 397** 4



7.200 489



6.224 397

Condensers in other sizes available on request.



1 Gas washing bottle, PP

Graduated 250ml polypropylene cylinder with a stable extended base for use in precipitating elements from gas. *Bel-Art Products*

- Gas is dispersed through a removable fitting that has a coarse grade porosity, polyethylene dispersion disc
- Silicone stopper holds 6.3mm O.D. tubes for entrance and exit of gas
- 0.5 psi maximum pressure

Description	Capacity ml	Height mm	PK	Cat. No.
Gas washing bottle	250	273	1	**9.110 290**



2 Gas washing columns, FEP/PTFE

NEW!

PTFE top with two threaded connections. The standard PTFE frit has a pore size of approx. 3µm and is screwed on the riser tube with an M8x1 thread. It can be exchanged with the PTFE gas distributor with fine bores which needs a lower primary pressure. *BOLA*

Temperature resistance: from -200°C to +250°C

- transparent
- unbreakable
- frit easily exchangeable

Type	Capacity ml	Height mm	For external tube/pipe mm	PK	Cat. No.
Column	500	400	8	1	**9.110 306**
Column	1000	700	8	1	**9.110 308**



9.110 473 9.110 472

Gas washing bottle reservoirs, Drechsel, Borosilicate glass 3.3

In accordance with Drechsel. Ground joint 29/32. DIN 12463. Flask height 200 mm, working height 250 mm. *Rettberg*

Description	NS	Capacity ml	Porosity	PK	Cat. No.
Gas washing bottle reservoirs	29/32	100	-	1	**9.110 473** 3
Gas washing bottle reservoirs	29/32	250	-	1	**9.110 474**
Gas washing bottle reservoirs	29/32	500	-	1	**6.240 962**
Gas washing bottle head, without frit disk	29/32		-	1	**6.240 963**
Gas washing bottle head, with frit disk	29/32		1	1	**9.110 472** 4



5 Gas wash bottle reservoirs, Drechsel, borosilicate glass 3.3

NEW!

According to DIN 12596. Manufactured from borosilicate glass 3.3 which is resistant to heat and almost all chemicals. Bottle heads are supplied with or without sintered glass support (porosity 0) which enables efficient gas dispensing. *Isolab*

Bottle and selected head should be ordered seperately.

Description	NS	Capacity ml	Porosity	PK	Cat. No.
Gas wash bottle reservoirs	29/32	125	-	1	**9.140 530**
Gas wash bottle reservoirs	29/32	250	-	1	**9.140 531**
Gas wash bottle reservoirs	29/32	500	-	1	**9.140 532**
Gas wash bottle head, without frit disk, with glass-olive	29/32		-	1	**4.008 376**
Gas wash bottle head, without frit disk, with PP side-olive	29/32		-	1	**9.140 533**
Gas wash bottle head, with frit disk, with glass side-olive	29/32		0	1	**9.140 534**
Gas wash bottle head, with frit disk, with PP side-olive	29/32		0	1	**9.140 535**



6 Gas wash bottle reservoirs, borosilicate glass 3.3

NEW!

In accordance with Drechsel.

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
100	40	200	1	**9.110 190**
250	54	200	1	**6.237 076**
500	75	200	1	**9.110 191**
1000	110	200	1	**9.110 192**

E & OE.

Gas Washing bottles acc. to Drechsel, complete DURAN® tubing

Bottle, DURAN®. Head made from DURAN® tubing, with screw connections. *Lenz*
Head available with or without porosity 1 filter disc, insert height adjustable, capacity: 500ml, central screw cap: GL 45, lateral screw caps: GL 14.

Description	Capacity ml	Porosity	PK	Cat. No.
Gas Washbottle without filter disc	500	-	1	**6.073 489** 1
Gas Washbottle with filter disc	500	1	1	**7.635 908** 2

1

6.073 489

2

7.635 908

3 Gas washing bottles, Borosilcate glass 3.3

Head with fritted disc, standard taper joint.

Capacity ml	Porosity	NS	Int. diam. mm	Height mm	PK	Cat. No.
100	1	29/32	25	250	1	**6.228 324**
250	1	29/32	25	250	1	**9.110 452**

3


Gas washing bottle heads, DURAN® tubing

NEW!

Acc. to DIN 12596. DURAN® tubing. Cone NS 29/32. With or without filter disc. *Lenz*

Description	NS	Porosity	PK	Cat. No.
With filter disc, thread GL 14	29/32	1	1	**6.401 362**
Without filter disc, olives	29/32	-	1	**9.110 380** 4
With filter disc, olives	29/32	0	1	**9.110 390** 5
With filter disc, olives	29/32	1	1	**9.110 391**

4

9.110 380

5

9.110 390

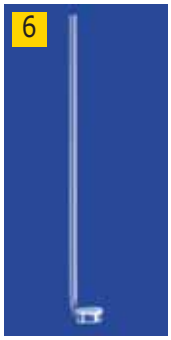
6 Gas distribution tubes, lateral ring or central ring, borosilicate glass 3.3

NEW!

Lenz

Porosity	Tube diam. mm	Diam.	Height mm	PK	Cat. No.
0	6.0	ring diam. 22mm	250	1	**6.253 537**
1	6.0	ring diam. 22mm	250	1	**6.254 890**
2	6.0	ring diam. 22mm	250	1	**9.052 625**
0*	9.0	ring diam. 25mm	250	1	**6.253 538**
1*	9.0	ring diam. 25mm	250	1	**7.652 008**
2*	9.0	ring diam. 25mm	250	1	**7.651 831**

* central ring

6


7 Bubble counter

DURAN®.

Height mm	PK	Cat. No.
100	1	**9.014 100**

7


1



9.140 539

Connectors with stopcock, borosilicate glass 3.3

NEW!

Manufactured from borosilicate glass 3.3.
Supplied with PTFE stopcock with different key bore diameters.

Isolab

Socket NS	Cone NS	PK	Cat. No.
14/23	14/23	1	**9.140 536**
19/26	19/26	1	**9.140 537**
24/29	24/29	1	**9.140 538**
29/32	29/32	1	**9.140 539** 1

2



2 Connectors with NS stopcock, DURAN® tubing

NEW!

Made of DURAN® tubing. Connectors with NS stopcock, with solid glass plug, with NS socket and NS cone.

Lenz

Socket NS	Cone NS	Bore mm	PK	Cat. No.
14/23	14/23	2.5	1	**7.622 815**
29/32	29/32	8.0	1	**7.626 118**

3



4



3 4 Expansion and reduction adapters, borosilicate glass 3.3

Manufactured from borosilicate glass 3.3 which is resistant to heat and almost all chemicals. They meet the highest quality standards according to DIN 12257. They have excellent grinding to prevent airleaks. The bottom part of the ground joints are fire polished.

Isolab

Socket NS	Cone NS	PK	Cat. No.
14/23	19/26	1	**6.243 581**
14/23	24/29	1	**6.243 582**
14/23	29/32	1	**9.011 740**
19/26	14/23	1	**4.008 341**
19/26	24/29	1	**4.008 342**
19/26	29/32	1	**4.008 343**
19/26	34/35	1	**6.243 583**
24/29	29/32	1	**6.241 533**
24/29	34/35	1	**6.243 584**
24/29	45/40	1	**6.243 585**
29/32	14/23	1	**6.235 966**
29/32	19/26	1	**4.008 344**
29/32	24/29	1	**4.008 345**
29/32	34/35	1	**6.243 586**

5



9.011 755

6



9.011 750

Expansion and reduction adapters, DURAN® tubing

NEW!

Made of DURAN® tubing. DIN 12257 and in addition to DIN standard (*). Reduction and expansion adapters with ground joint.

Lenz

Socket NS	Cone NS	DIN	PK	Cat. No.
14/23	29/32	12257	1	**9.011 755** 5
19/26	14/23	12257	1	**9.011 766**
29/32	14/23	12257	1	**9.011 750** 6
29/32	19/26	12257	1	**9.011 767**
29/32	24/29	12257	1	**6.073 246**
29/32	45/40	12257	1	**9.011 765**
34/35	29/32	12257	1	**6.079 832**
45/40	29/32	12257	1	**9.011 760**

7



7 Adapter for thermometer, borosilicate glass 3.3

Manufactured from borosilicate glass 3.3 according to DIN 12257 standard, ideal to use for thermometers with Ø 6 - 8 mm. Screw joint provides easy depth adjustment of thermometer.
Seal material: NBR

Isolab

Neck thread GL	Cone NS	Adapter bore diam. mm	PK	Cat. No.
14	14/23	6 - 8	1	**4.008 360**
14	29/32	6 - 8	1	**6.244 589**

E & OE.

1 Threaded tube connectors, borosilicate glass 3.3

Borosilicate glass 3.3 according to DIN 12257 standard. *Isolab*

Neck thread GL	Cone NS	PK	Cat. No.
14	14/23	1	**4.008 355**
14	29/32	1	**4.008 358**
18	14/23	1	**4.008 356**
18	29/32	1	**4.008 357**
25	29/32	1	**6.241 693**

1



2 Tubing adapters, , borosilicate glass 3.3

NEW!

Manufactured from borosilicate glass 3.3 with two different shapes: straight or 90° angled. *Isolab*
Tubing adapter is suitable for up to 10 mm tubings.

Description	Socket NS	Diam.	PK	Cat. No.
straight	14/23	Olive 8 mm	1	**9.012 184**
straight	29/32	Olive 10 mm	1	**9.012 185**
bend	14/32	Olive 8 mm	1	**9.012 186**
bend	29/32	Olive 10 mm	1	**9.012 187**
straight with PTFE stopcock	14/32	Olive 8 mm	1	**9.012 188**
straight with PTFE stopcock	29/32	Olive 10 mm	1	**9.012 189**
bend with PTFE stopcock	14/32	Olive 8 mm	1	**9.012 190**
bend with PTFE stopcock	29/32	Olive 10 mm	1	**9.012 191**

2



Cone: flexible tubing adapter

Made of DURAN® tubing. Adapter, NS cone to 10mm bore tubing connector. Straight or angled (90°). *Lenz*
Available with or without. Solid glass plug, bore 2.5mm.

Cone NS	Form	Stopcock	PK	Cat. No.
14/23	straight	with	1	**9.012 316**
14/23	straight	without	1	**9.012 312**
14/23	bent	with	1	**9.012 315**
14/23	bent	without	1	**9.012 311**
29/32	straight	with	1	**9.012 319** 3
29/32	straight	without	1	**9.012 314**
29/32	bent	with	1	**9.012 317**
29/32	bent	without	1	**9.012 313** 4

3



9.012 319

4



9.012 313

5 Adapter for tubing, borosilicate glass 3.3

NEW!

Manufactured from borosilicate glass 3.3 in two different forms, straight or 90° angled. *Isolab*
Supplied with PTFE stopcock which has of 2.5mm diameter bore key.
Tubing adapter is suitable for up to 10mm tubings.

Cone NS	Form	Stopcock	PK	Cat. No.
14/23	straight	with	1	**4.008 365**
14/23	bent	with	1	**4.008 367**
14/23	bent	without	1	**4.008 362**
29/32	straight	with	1	**4.008 366**
29/32	straight	without	1	**4.008 361**
29/32	bent	with	1	**4.008 369**
29/32	bent form	without	1	**4.008 364**

5



Silicone sealing rings - please see page 606.

1



9.209 517

Threaded tube connectors, DURAN® tubing

Made of DURAN® tubing. DIN 12257 and in addition to DIN standard. Double ended. With GL thread and NS cone.

Lenz

Neck thread GL	Cone NS	PK	Cat. No.
14	14/23	1	**9.209 514**
14	29/32	1	**9.209 517** 1
18	14/23	1	**9.209 518**
18	29/32	1	**9.209 529**
25	14/23	1	**6.300 168**
25	29/32	1	**9.209 559**
32	24/29	1	**9.209 581**
32	29/32	1	**9.209 582**

2



2 Adapters NS cone to spherical joint socket, DURAN® tubing

NEW!

Made of DURAN® tubing. Adapters from ground joint cone to spherical joint socket.

Lenz

Cone NS	Socket NS	PK	Cat. No.
14/23	19	1	**9.011 768**
29/32	19	1	**9.011 769**
29/32	29	1	**6.900 648**

3



9.011 771

Adapters NS socket to spherical joint ball, DURAN® tubing

NEW!

Made of DURAN® tubing. Adapters from spherical joint ball to ground joint socket.

Lenz

Socket NS	Socket/Ball	PK	Cat. No.
14/23	19	1	**9.011 770**
29/32	29	1	**9.011 771** 3

4



4 Screw connector caps, PBT

Red. PBT. With central hole (diameter outlined below). Temperature resistance to max. 180°C.

DURAN Group

Neck thread GL	Bore mm	PK	Cat. No.
14	9.5	1	**9.209 114**
18	11.0	1	**9.209 118**
25	15.0	1	**9.209 125**
32	20.0	1	**9.209 132**
45	34.0	1	**9.209 135**

5



5 Screwthread couplings, PBT

DIN screwthread. For flexible connection of two glass screwthreads. With integral PTFE-faced silicone (VMQ) seals. Temperature resistant to max. 180°C.

DURAN Group

Neck thread GL	PK	Cat. No.
14	1	**9.209 004**
18	1	**9.209 005**

6



6 Silicone cap wads/septa, VMQ

For GL-screwthread caps. Overall diameter and wad thickness as outlined below. Thermical resistance: 130°C (steam)/200°C (heat). Autoclavable.

DURAN Group

For thread size GL	Diam. mm	Thickness mm	PK	Cat. No.
14	12	2	1	**9.209 414**
18	16	2	1	**9.209 418**
25	22	2	1	**9.209 425**
32	29	2	1	**9.209 432**
45	42	3	1	**9.209 435**

E & OE.

1 Silicone sealing rings, VMQ

With vulcanized PTFE sleeve. For screwthread caps.
Thermical resistance: 130°C (steam), 200°C (heat). Autoclavable.

DURAN Group



For thread size GL	Int. diam. mm	Ext. diam. mm	For tubes diam. mm	PK	Cat. No.
14	6	12	5.5 to 6.5	1	**9.209 146**
18	6	16	5.5 to 6.5	1	**9.209 186**
18	8	16	7.5 to 9.0	1	**9.209 188**
18	10	16	9.0 to 11.0	1	**9.209 190**
25	8	22	7.5 to 9.0	1	**9.209 258**
25	10	22	9.0 to 11.0	1	**9.209 260**
25	12	22	11.0 to 13.0	1	**9.209 262**
32	10	29	9.0 to 11.0	1	**9.209 320**
32	12	29	11.0 to 13.0	1	**9.209 322**
32	14	29	13.0 to 15.0	1	**9.209 324**
32	16	29	15.0 to 17.0	1	**9.209 326**
32	18	29	17.0 to 19.0	1	**9.209 327**
45	26	42	25.0 to 27.0	1	**9.209 329**
45	32	42	31.0 to 33.0	1	**9.209 331**

2 Plastic ferrule, angled, PP

PP. For screw connector caps GL 14. With silicone seal (VMQ).
Temperature resistant up to max. +140°C. Autoclavable.

DURAN Group



Diam. mm	Neck diam. mm	PK	Cat. No.
8.6	4	1	**9.051 308**

3 GL screwthread ferrules

Fluoroplastics, for tubing connection. Straight and curved models available, screw connector caps made of PPS reinforced with glass fibre (max. +250°C), ferrules made of PFA, with flexible PFA sealing rim and FPM O-ring. When in use, the contents only comes into contact with PFA (or PTFE - GL25 and GL32).

BOLA



Type	Neck thread GL	Ext. diam. mm	Int. diam. mm	PK	Cat. No.
Straight 35 mm	14	8.7	6.00	1	**9.051 320**
Straight 39 mm	18	10.5	7.00	1	**9.051 321**
Angled 40 mm	14	8.7	6.00	1	**9.051 324**
Angled 54 mm	18	10.5	7.00	1	**9.051 325**



1



1 NS stoppers, PP

Isolab

NS	PK	Cat. No.
10/19	1	**4.008 495**
12/21	1	**4.008 496**
14/23	1	**4.008 497**
19/26	1	**4.008 498**
24/29	1	**4.008 499**
29/32	1	**4.008 500**

2



2 Stoppers, hollow , PE

Fits standard conical joints. Supplied singly.

NS	PK	Cat. No.
7/16	1	**9.230 107**
10/19	1	**9.230 110**
12/21	1	**9.230 112**
14/23	1	**9.230 114**
19/26	1	**9.230 119**
24/29	1	**9.230 124**
29/32	1	**9.230 129**
45/40	1	**9.230 145**
60/46	1	**9.230 160**

3



3 Conical stoppers, PE

Polyethylene. Stoppers manufactured to DIN standard 12242 ensuring an effective seal, even on non-standard surfaces.

NS	Bottom diam. mm	Colour	PK	Cat. No.
7/16	5.9	violet	1	**9.230 161**
10/19	8.1	blue	1	**9.230 162**
12/21	10.4	green	1	**9.230 163**
14/23	12.2	brown	1	**9.230 164**
19/26	16.4	yellow	1	**9.230 165**
24/29	21.1	red	1	**9.230 166**
29/32	25.8	black	1	**9.230 167**
34/35	30.9	white	1	**9.230 168**

4



4 NS-Glass stoppers, hollow borosilicate glass 3.3

Isolab

Manufactured from borosilicate glass 3.3 which is resistant to heat and almost all chemicals. They meet the highest quality standards according to DIN 12252.
Lower closed end of stopper features a "drip-tip" to ensure adhered liquid is returned to the flask.
Hexagonal flat head prevents the stopper from rolling and allows stopper to be stood on end preventing contamination of the ground surface.

NS	Description	PK	Cat. No.
10/19	clear	1	**7.900 483**
12/21	clear	1	**6.242 396**
14/23	clear	1	**9.229 990**
19/26	clear	1	**9.229 991**
24/29	clear	1	**6.240 333**
29/32	clear	1	**9.229 992**
34/35	clear	1	**6.240 060**
10/19	amber	1	**7.900 484**
12/21	amber	1	**6.258 416**
14/23	amber	1	**7.900 486**
19/26	amber	1	**7.970 573**
24/29	amber	1	**6.258 415**
29/32	amber	1	**7.629 440**
34/35	amber	1	**6.258 417**

E & OE.

1 2 NS-Glass stoppers, DURAN®, SWB and Borosilicate glass

DIN 12252. Hollow stoppers, hexagonal plate, pointed or flat bottom and stoppers, octagonal plate, solid or semi-hollow.



NS	Material	Stopper NS	Form	Figure	PK	Cat. No.
7/16	Borosilicate glass 3.3	hollow	hexagonal	a	1	**9.230 002**
10/19	Borosilicate glass 3.3	hollow	hexagonal	a	1	**9.230 003**
12/21	Borosilicate glass 3.3	hollow	hexagonal	a	1	**9.230 004**
14/23	Borosilicate glass 3.3	hollow	hexagonal	a	1	**9.230 006**
19/26	Borosilicate glass 3.3	hollow	hexagonal	a	1	**9.230 007**
29/32	Borosilicate glass 3.3	hollow	hexagonal	a	1	**9.230 009**
45/40	Borosilicate glass 3.3	hollow	hexagonal	a	1	**9.230 012**
10/19	DURAN®	solid	octagonal	b	1	**9.230 053**
12/21	DURAN®	solid	octagonal	b	1	**9.230 054**
14/23	SBW	solid	octagonal	b	1	**9.230 056**
19/26	SBW	solid	octagonal	b	1	**9.230 057**
24/29	SBW	solid	octagonal	b	1	**9.230 058**
29/32	SBW	semi solid	octagonal	b	1	**9.230 059**
34/35	DURAN®	semi solid	octagonal	b	1	**9.230 061**
45/40	DURAN®	semi solid	octagonal	b	1	**9.230 062**

3 Clips for joints, POM

Manufactured from POM and has excellent chemical resistance as well as a very good mechanical strength. They are perfect tools to join two ground joints. *Isolab*



NS	Colour	PK	Cat. No.
10/19	black	1	**4.008 347**
12/21	purple	1	**4.008 348**
14/23	yellow	1	**4.008 349**
19/26	blue	1	**4.008 350**
24/29	green	1	**4.008 351**
29/32	red	1	**4.008 352**
34/35	orange	1	**4.008 353**
45/40	brown	1	**4.008 354**

4 Conical joint clips for joints, POM, connections, plastic

POM. Melting point 175°C. For conical ground joints.
Excellent chemical resistance. Rigid.



NS	Colour	PK	Cat. No.
10/19	green	1	**9.011 773**
12/21	violet	1	**9.011 774**
14/23	yellow	1	**9.011 775**
19/26	blue	1	**9.011 776**
24/29	green	1	**9.011 777**
29/32	red	1	**9.011 778**
34/35	orange	1	**9.011 779**
40/42	yellow	1	**9.011 780**
45/40	brown	1	**9.011 781**

5 Spherical joint clips, plastic

POM. Melting point 175°C. For spherical ground joints.
Excellent chemical resistance. Rigid.



NS	PK	Cat. No.
13	1	**9.011 793**
19	1	**9.011 794**
29	1	**9.011 795**
35	1	**9.011 796**



1 Ground joint clips for sleeve connections, wire, Chrome-nickel steel

Chrome-nickel steel.

NS	PK	Cat. No.
10/19	1	**9.011 703**
12/21	1	**9.011 704**
14/23	1	**9.011 705**
19/26	1	**9.011 706**
24/29	1	**9.011 707**
29/32	1	**9.011 708**
45/40	1	**9.011 710**





2 3 Clipox® Clips for NS ground glass joints



Clipox

Clipox® Clips are safe, universal clips for NS conical ground glass joints.
Available to secure NS conical ground glass joints including stopcocks, vacuum-stopcocks and reagent bottles with glass stoppers.

Clipox® simplifies the daily laboratory work and increases the safety of glassware.
- Easy to mount and to remove due to two-sided handles
- To be used with stand clamps
- Secures horizontal and vertical in case of pressure overload
- Longevity of suspension and shape due to spring steel wire
- Outstanding thermal, chemical and acid resistance
- Material: high grade stainless steel, V4A (1.4568)
- Made in Germany, production certified according to ISO 9001

Pack of 5 pieces.

Joint size NS	PK	Cat. No.
10	5	**9.011 400**
12	5	**9.011 401**
14	5	**9.011 402**
19	5	**9.011 403**
24	5	**9.011 404**
29	5	**9.011 405**
34	5	**9.011 406**
40	5	**9.011 407**
45	5	**9.011 408**
60	5	**9.011 409**



4 Joint clips for conical joint sleeve connections

Chrome-nickel steel. For tapered ground joints as outlined below. With, or without, locking screw.

NS	Type	PK	Cat. No.
14/23	with locking screw	1	**9.011 675**
19/26	with locking screw	1	**9.011 676**
24/29	with locking screw	1	**9.011 677**
29/32	with locking screw	1	**9.011 678**
45/40	with locking screw	1	**9.011 680**
14/23	without locking screw	1	**9.011 685**
19/26	without locking screw	1	**9.011 686**
24/29	without locking screw	1	**9.011 687**
29/32	without locking screw	1	**9.011 688**
45/40	without locking screw	1	**9.011 690**



5 PTFE sealing rings for jointed glassware

An effective alternative to common PTFE joint sleeves and PTFE stoppers.
- Air leakage <10^{-8} to 10^{-6} mBar l/s (vacuum and pressure).
- Solvent leakage from containers < 0.1 to 0.03mg/day.
- Temperature range: -196 to 300°C

NS	PK	Cat. No.
10	50	**9.011 663**
12	50	**7.622 596**
14	50	**9.011 664**
19	50	**9.011 665**
24	50	**9.011 666**
29	50	**9.011 667**
34	50	**7.700 004**
45	50	**9.011 668**

E & OE.

1 Sleeves, PTFE, disposable

Seals without grease - no grease residues are left in the analysis. Excellent chemical resistance. Can be used in temperatures from -200 to +260°C. Wall thickness only 0.05mm. Wide range of applications, also suitable for vacuums down to 0.1mbar, e.g. for rotary evaporators.

BRAND



NS	PK	Cat. No.
7/16	1	**9.011 316**
10/19	1	**9.011 317**
12/21	1	**9.011 318**
14/23	1	**9.011 319**
19/26	1	**9.011 320**
24/29	1	**9.011 321**
29/32	1	**9.011 322**
34/35	1	**9.011 323**
40/38	1	**9.011 330**
45/40	1	**9.011 324**
50/42	1	**9.011 325**
55/44	1	**9.011 326**
60/46	1	**9.011 327**

2 Sleeves with ribs, PTFE

For use with ground glass joints. Suitable for vacuums up to 0.1mbar. Reusable and long lasting. The sealing ribs grip on the inside wall of the glass socket, sealing without the need for grease and enabling the cone to be freed easily when required.

BOLA



NS	PK	Cat. No.
12/21	1	**9.011 653**
14/23	1	**9.011 655**
19/26	1	**9.011 656**
24/29	1	**9.011 657**
29/32	1	**9.011 658**
45/40	1	**9.011 660**

3 Sleeves, cone joint, PTFE

With knurled gripping ring at the top of the cone for easy removal. For gas, liquid and vacuum-tight cone joint connections with sizes as outlined below. Reusable.
With reinforced external ribs for a high-vacuum tight seal (leakage rate: < $1x10^{-4}$ mbar x I x s^{-1}).
No joint sealant or grease required.

BOLA



NS	PK	Cat. No.
14/23	1	**9.011 642**
19/26	1	**9.011 643**
24/29	1	**9.011 644**
29/32	1	**9.011 645**
45/40	1	**9.011 647**

4 Sealing tape, PTFE

For covering areas which require protection against chemicals of all types at temperatures of -150 to +260°C. Non-swelling. Easy loosening of seams even after continuous operation. Supplied in rolls as outlined below.



Width mm	Length cm	Wall thickness mm	PK	Cat. No.
12.8	670	0.1	1	**9.404 952**
24.0	670	0.1	1	**9.404 955**

5 Baysilone® silicone high vacuum grease

For use up to 10^{-6} mbar. -50 to +200°C. Supplied in 35g tube.



Type	PK	Cat. No.
Low viscosity	1	**9.116 902**
Medium viscosity	1	**9.116 903**
High viscosity	1	**9.116 904**

1



1 BUDDE - joint grease

For all glass joints. Transparent, vacuum tight, water washable and water soluble. Maintains practically the consistency between -30°C and +200°C, non-solidifying. Compatible with most elastomers. Biodegradable. Tube of 80g.

Buddeberg

Weight g	PK	Cat. No.
80	1	**9.116 950**

2



2 Silicone high vacuum grease

Silicone high vacuum grease are used for ground joints and taps at low ultimate pressure. Like vacuum grease LOSOID is very stable during temperature changes, though its lubricating properties at high and low temperature are not as good. At temperures above 200°C the silicone grease continue to be polymerized and begins to outgas.
100g tube.

Type	PK	Cat. No.
Silicone high vacuum grease	1	**9.116 901**

3



3 Silicone high vacuum grease

For use up to 10^{-6} mbar. Temperature range from -40 to +150°C. 100g tube.

Type	PK	Cat. No.
Silicone high vacuum grease	1	**9.116 911**

Silicone grease OKS 1112

NEW!

Kahmann & Ellerbrock

Description	PK	Cat. No.
Silicone grease, 100g tube	1	**9.116 909**

4



4 Joint grease, K.W.S

Without silicone. Designed as vacuum and high vacuum grease. No silicone derivatives, polymerisation or gumming. Excellent adhesion and viscosity. Acid/alkaline resistant. Locked joints can be loosened by brief, gentle heating. Can be used to make temporary glassware repairs. Biodegradable. Non-toxic in normal use.

Working temperature range: -40 to +200°C
Vapour pressure: 0.00001 mbar.

Capacity ml	PK	Cat. No.
30	1	**9.116 924**

5



5 Rotating joint grease, silicone-free, Alsirol

Silicone-free stopcock grease. No silicone derivatives, polymerisation or gumming. Excellent adhesion and viscosity. Stable grease film enables safe, long term use. Low heat-up occurs during rotation even if operation is continuous. When sealing glassware systems with glass and metal stirrers and shafts Alsirol protects rotating, precision-ground sockets and stirring shafts against glass abrasion. Also suitable for lubricating rotating metal and glass components. Acid and alkali resistant. For use under vacuum and high vacuum. Biodegradable. Non-toxic in normal use.

Working temperature range: -40 to +200°C
Vapour pressure: 0.00001 mbar

Capacity ml	PK	Cat. No.
50	1	**9.116 925**

6



9.209 714

Screwthread tubes for glassblowers, DURAN®

Acc. to DIN 12216 and in addition to standard (*), with DIN thread (GL), material: DURAN®.

Lenz

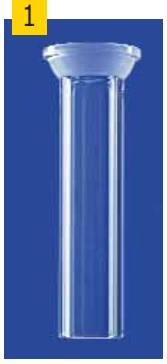
Neck thread GL	Diam. mm	Length mm	PK	Cat. No.
14	12	100	1	**9.209 714** 6
18	16	100	1	**9.209 718**
25	22	100	1	**9.209 725**
32	28	140	1	**9.209 732**
45	40	180*	1	**9.209 735**

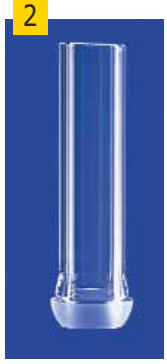
E & OE.

Spherical ground glass joints, Socket and ball members, inch range, DURAN® tubing

Made of DURAN® tubing. DIN 12264 and in addition to DIN standard (*). *Lenz*
With ground glass ball (male) and socket (female) joints. Socket joints have a beaded reinforcement rim.

Type	Socket/Ball	Tube diam. mm	Overall length mm	PK	Cat. No.	
Socket	S 13/5	8.0	100	1	**9.011 603**	
Socket	S 19	13.0	120	1	**9.011 605**	
Socket	S 29	19.0	120	1	**9.011 609**	
Socket	S 35*	28.0	120	1	**9.011 613**	1
Ball	S 13/5	8.0	100	1	**9.011 623**	
Ball	S 19	13.0	120	1	**9.011 625**	
Ball	S 29	19.0	120	1	**9.011 629**	
Ball	S 35*	28.0	120	1	**9.011 630**	2

1

9.011 613

2

9.011 630

6 Sockets/Cones with NS joint, DURAN® tubing

NEW!

Made of DURAN® tubing. DIN 12249 and in addition to DIN standard (*). Annealed edges. Joint rims slightly rounded. *Lenz*
Other sizes on request.

Description	NS	Ext. diam. mm	Length mm	PK	Cat. No.	
Socket	5/13	8	120	1	**9.011 521**	
Socket	14/23	17	130	1	**9.011 525**	
Socket	19/26	22	130	1	**9.011 526**	
Socket	19/38*	22	120	1	**7.606 907**	
Socket	29/32*	32	210	1	**6.303 190**	
Socket	29/32	33	130	1	**9.011 528**	4
Socket	40/38*	44	130	1	**6.202 446**	
Socket	45/40*	48	280	1	**6.303 189**	
Socket	45/40	50	145	1	**9.011 530**	
Socket	71/51	75	165	1	**9.011 532**	
Socket	85/55	90	185	1	**9.011 533**	
Cone	5/20*	4	115	1	**6.070 542**	
Cone	10/30*	8	115	1	**6.222 104**	
Cone	12/21	11	130	1	**9.011 504**	
Cone	12/21	11	130	1	**6.072 920**	
Cone	14/35*	13	140	1	**6.900 898**	
Cone	14/23	13	130	1	**9.011 505**	
Cone	19/26*	17	120	1	**6.072 150**	
Cone	19/38*	17	140	1	**7.606 908**	
Cone	19/26	17	130	1	**9.011 506**	
Cone	29/32	26	130	1	**9.011 508**	3
Cone	29/42*	26	140	1	**6.203 538**	
Cone	34/45*	30	140	1	**6.401 432**	
Cone	40/38*	36	145	1	**6.202 386**	
Cone	45/40	40	145	1	**9.011 510**	
Cone	50/42*	46	145	1	**7.630 287**	
Cone	55/44*	50	145	1	**7.630 288**	
Cone	60/46*	54	160	1	**6.073 068**	
Cone with outlet	14/23	13	130	1	**9.011 545**	
Cone with outlet	29/32	26	130	1	**9.011 548**	5

3

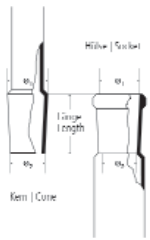
9.011 508

4

9.011 528

5

9.011 548

6


3-way stopcocks, T-bore, borosilicate glass 3.3

Acc. to DIN 12554 and in addition to DIN standard, T-bore, with solid glass plug or PTFE plug and screw thread retaining device. Material: borosilicate glass 3.3, leakage rate to DIN 12540-1. *Lenz*

Description	Stopcock type NS	Bore mm	PK	Cat. No.	
Solid Glass Key	14,5	1.5	1	**9.116 011**	7
Solid Glass Key	14,5	2.5	1	**9.116 012**	
Solid Glass Key	18,8	2.5	1	**9.116 013**	
Solid Glass Key	18,8	4.0	1	**9.116 014**	
Solid Glass Key*	24,0	4.0	1	**9.116 015**	
Solid Glass Key*	29,2	6.0	1	**9.116 017**	

* with rubber ring retaining device

7

9.116 011

1



9.115 611

Stopcocks, straight bore with solid glass plug, borosilicate glass 3.3

NEW!

DIN 12541-1 in addition to DIN standard. With solid glass plug and retaining device. Straight bore. Leakage rate acc. to DIN 12540-1.

Lenz

Description	NS	Bore mm	DIN	Material	PK	Cat. No.
With solid glass key	12.5	1.5	12541-1		1	**9.115 611** 1
With solid glass key	12.5	2.5			1	**9.115 642**
With solid glass key	14.5	2.5	12541-1		1	**6.079 648**
With solid glass key	14.5	4.0			1	**9.115 614**
With solid glass key	18.8	4.0	12541-1		1	**9.115 644**
With solid glass key	18.8	6.0			1	**9.115 615**
With solid glass key	24*	8.0			1	**9.115 618**
Spare key, solid glass	12.5	1.5		SBW	1	**7.018 947**
Spare key, solid glass	12.5	2.5		SBW	1	**7.018 936**
Spare key, solid glass	14.5	2.5		SBW	1	**7.018 948**
Spare key, solid glass	14.5	4.0		SBW	1	**6.093 232**
Spare key, solid glass	24	8.0		DURAN®	1	**7.657 852**
Spare key, solid glass	29.2	10.0			1	**6.266 986**

*with rubber retaining device

2



2 Vacuum stopcocks, glass, Vendura-Nova

Vendura-Nova DURAN®. With PP safety device. Adjustable seal. Comprises of glass stopcock body, PTFE needle with sealing ring and FKM O-rings. Fine control gives precise flow metering.
Available in straight or 90° angle patterns.
Leak rate: $<1 \times 10^{-6}$ mbar x l/s

DURAN Group

Temperature resistant to
with safety device: 140°C
without safety device: 180°C

Type	Tube diam. mm	Flow rate ml / min.	PK	Cat. No.
straight	9.0	0 to 2.5	1	**9.117 002**
straight	10.0	0 to 4.0	1	**9.117 003**
straight	10.0	0 to 6.0	1	**9.117 004**
90° angle	9.0	0 to 2.5	1	**9.117 012**
90° angle	10.0	0 to 4.0	1	**9.117 013**
90° angle	10.0	0 to 6.0	1	**9.117 014**

3



3 One-way stopcocks, straight bore, with PTFE plug, borosilicate glass 3.3

NEW!

Acc. to DIN 12541-1 and in addition to DIN standard, with PTFE plug and screwthread retaining device, one straight bore, material: borosilicate glass 3.3, leakage rate acc. to DIN 12540-1.

Lenz

Description	NS	Bore mm	DIN	Material	PK	Cat. No.
With PTFE key	12.5	1.5	DIN 12541-1		1	**9.115 631**
With PTFE key	12.5	2.5			1	**6.070 033**
With PTFE key	14.5	2.5	DIN 12541-1		1	**9.115 648**
With PTFE key	14.5	4.0			1	**9.115 634**
With PTFE key	18.8	4.0	DIN 12541-1		1	**9.115 635**
With PTFE key	18.8	6.0			1	**6.222 868**
With PTFE key	21.5	6.0	DIN 12541-1		1	**9.115 637**
With PTFE key	24	8.0			1	**9.115 638**
With PTFE key	29.2	10.0	DIN 12541-1		1	**9.115 639**
With PTFE key	12.5*	1.5	DIN 12541-1		1	**9.115 632**
With PTFE key	14.5*	2.5	DIN 12541-1		1	**9.115 633**
Spare key	12.5	1.5		PTFE	1	**7.072 146**
Spare key	12.5	2.5		PTFE	1	**6.306 550**
Spare key	14.5	2.5		PTFE	1	**6.801 361**
Spare key	14.5	4.0		PTFE	1	**6.306 551**
Spare key	18.8	4.0		PTFE	1	**7.018 955**
Spare key	18.8	6.0		PTFE	1	**7.630 235**
Spare key	21.5	6.0		PTFE	1	**7.603 864**
Spare key	24	8.0		PTFE	1	**7.657 006**
Spare key	29.2	10.0		PTFE	1	**6.266 985**

* with capillary side arms.

E & OE.

Rotary Evaporator Rotavapor® R-300

BÜCHI

The rotary evaporator R-300 meets the highest needs in convenience, productivity and versatility. The rotation speed, heating temperature and lift position is shown digitally on the heating bath.

Lift System
Option 1: Manual lift
Option 2: Electronic lift

Heating Bath
Option 1: B-301. Temperature range of 20°C to 95°C (water). Max. evaporating flasks size: 1000mL (3kg). Cordless connection. Digital display of set and actual temperature, rotation speed, lift position. Lock of heating temperature. Fast heat up time.
Option 2: B-305. Temperature range of 20°C to 220°C. Max. evaporating flasks size: 5000mL (3kg). Cordless connection. Digital display of set and actual temperature, rotation speed, lift position. Lock of heating temperature.

Standard Joint
SJ 29/32

Glass Assembly
Option V: Vertical condenser (V): Vertical condenser used along with a recirculating chiller or tab water.
Option C: Cold trap (C): Cold trap used for low boiling solvents along with e.g. dry ice for cooling.
Other glass assembly configuration on request

Protective Coating
Option: Transparent PLASTIC+GLAS (P+G) safety coating. Protect against mechanical damage. In the event of breakage there is no loss of sample.

1 Rotavapor® R-300 with heating bath B-301

NEW!

BÜCHI

Type	Lift	Capacitor	Coating	PK	Cat. No.
R-300	manually	vertical	no	1	**6.267 887**
R-300	electric	vertical	yes	1	**6.267 888**
R-300	electric	cold trap	yes	1	**6.267 889**

2 Rotavapor® R-300 with heating bath B-305

NEW!

BÜCHI

Type	Lift	Capacitor	Coating	PK	Cat. No.
R-300	manually	vertical	no	1	**6.267 890**
R-300	electric	vertical	yes	1	**6.267 891**
R-300	electric	cold trap	yes	1	**6.267 892**

1



2



Rotary Evaporator Rotavapor® R-300 Configuration

BÜCHI

Every Rotary Evaporator Rotavapor® R-300 will be delivered with a transparent PLASTIC+GLAS (P+G) safety coating, a vertical glass assembly (V), NS29/32, and a vacuum pump V-300. Interface, heating bath and recirculating chiller could be chosen from below options.

Interface
Option S: I-300, with VacuBox, Woulff bottle. Operation by navigation knob and function keys. Wide range of operating modes (manual, timer, solvent library, automatic distillation, drying). Compatible with BUCHI Rotavapor App for mobile push notifications and remote monitoring.
Option P: I-300 Pro, with VacuBox, Woulff bottle. Operation by touch screen or navigation knob. Wide range of operating modes (methods, manual, timer, solvent library, automatic distillation, drying). Charting and recording possibilities (on SD card). Compatible with BUCHI Rotavapor App for mobile push notifications and remote monitoring (including charting).

Vacuum pump
V-300 (1.8m³/h, 5mbar) is a chemically resistant PTFE diaphragm vacuum pump with transparent front panel to observe the membrane for highest distillation efficiency. Final vacuum: 5 mbar (±2 mbar). Suction capacity: 1.8 m³/h. Speed-controlled operation.

Recirculating chiller F-305
Ecological recirculating chiller. Cooling capacity: 550 W at 15°C. Temperature range: - 10°C to +25°C. Rotation knob for set temperature in steps of 0.1°C. Lock of cooling temperature. In combination with Interfaces I-300/I-300 Pro: Temperature setting/monitoring via interface, energy-saving eco-mode and automatic ON/OFF.

Heating Bath
Option 1: B-301. Temperature range of 20°C to 95°C (water). Max. evaporating flasks size: 1000 mL (3 kg). Cordless connection. Digital display of set and actual temperature, rotation speed, lift position. Lock of heating temperature. Fast heat up time.
Option 2: B-305. Temperature range of 20°C to 220°C. Max. evaporating flasks size: 5000 mL (3 kg). Cordless connection. Digital display of set and actual temperature, rotation speed, lift position. Lock of heating temperature.

1 Rotavapor® R-300 System with Interface I-300 without recirculating chiller F-305

NEW!

BÜCHI

Type	Lift	Capacitor	Coating	Heating bath	PK	Cat. No.
R-300S	manually	vertical	yes	B-301	1	**6.267 893**
R-300S	electric	vertical	yes	B-301	1	**6.267 894**
R-300S	electric	vertical	yes	B-305	1	**6.267 895**

2 Rotavapor® R-300 System with Interface I-300 Pro without recirculating chiller F-305

NEW!

BÜCHI

Type	Lift	Capacitor	Coating	Heating bath	PK	Cat. No.
R-300P	electric	vertical	yes	B-301	1	**6.267 896**
R-300P	electric	vertical	yes	B-305	1	**6.267 897**

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2



E & OE.

1 Rotavapor® R-300 System with Interface I-300 and recirculating chiller F-305

NEW!

BÜCHI

Type	Lift	Capacitor	Coating	Heating bath	PK	Cat. No.
R-300S	electric	vertical	yes	B-301	1	**6.267 898**
R-300S	electric	vertical	yes	B-305	1	**6.267 899**

1



2 Rotavapor® R-300 System with Interface I-300 Pro and recirculating chiller F-305

NEW!

BÜCHI

Type	Lift	Capacitor	Coating	Heating bath	PK	Cat. No.
R-300P	electric	vertical	yes	B-301	1	**6.268 000**
R-300P	electric	vertical	yes	B-305	1	**6.268 001**

2



Rotary Evaporator Rotavapor® R-100

BÜCHI

The Rotavapor® R-100 is a high-quality rotary evaporator to meet the essential needs in classical laboratory applications. It is capable of a manually adjusting the rotation speed from 20 to 280 rpm and is equipped with an action jack lift for manual lifting of the evaporating flask.

Heating Bath B-100
Temperature range of 20°C to 95°C. Max. evaporating flask size: 4000mL (3kg). Digital display of set and actual temperature (alternating).

Standard Joint
SJ 29/32

Glass Assembly
Option V: Vertical condenser (V): Vertical condenser used along with a recirculating chiller or tab water.
Option C: Cold trap (C): Cold trap used for low boiling solvents along with e.g. dry ice for cooling.

Protective Coating
Option 1: Without coating
Option 2: Transparent PLASTIC+GLAS (P+G) safety coating. Protect against mechanical damage. In the event of breakage there is no loss of sample.

3 Rotavapor® R-100 with vertical glass assembly

NEW!

Heating bath B-100, manual lift.

BÜCHI

Type	Capacitor	Coating	PK	Cat. No.
R-100	vertical	no	1	**6.268 002**
R-100	vertical	yes	1	**6.268 003**

3



1



1 Rotavapor® R-100 with cold trap

NEW!

Heating bath B-100, manual lift. *BÜCHI*

Type	Capacitor	Coating	PK	Cat. No.
R-100	cold trap	no	1	**6.268 004**
R-100	cold trap	yes	1	**6.268 005**

Rotary evaporator System Rotavapor® R-100

BÜCHI

The Rotavapor® R-100 can be completed to a rotary evaporator system including a vacuum pump, interface and recirculating chiller. The Vacuum Pump V-100 and Recirculating Chiller F-105 are ON/OFF regulated by the Interface I-100. Heating bath, glass assembly and coating are similar to the Rotavapor® R-100.

Interface
I-100, with Woulff bottle. Operation by function keys. Two operating modes (manual, timer), display of set and actual pressure. ON/OFF regulation of Vacuum Pump V-100 and Recirculating Chiller F-105.

Vacuum Pump
V-100 is a chemically resistant PTFE diaphragm vacuum pump. Final vacuum: 10 mbar (±2 mbar). Suction capacity: 1.5 m³/h. ON/OFF regulation.

Recirculating Chiller
Option: F-100. Ecological recirculating chiller. Cooling capacity: 300 W at 10°C. Fix temperature: 10°C.
Option: F-105. Ecological recirculating chiller. Cooling capacity: 500 W at 15°C. Temperature range: -10°C to +25°C. Rotation knob for set temperature in steps of 1°C. In combination with Interface I-100: ON/OFF regulation.

2 Rotavapor® R-100 system configuration

NEW!

Heating bath B-100, manual lift, Interface I-100, vacuum pump V-100. *BÜCHI*

Type	Capacitor	Coating	PK	Cat. No.
R-100	vertical	no	1	**6.268 006**
R-100	vertical	yes	1	**6.268 007**
R-100	cold trap	no	1	**6.268 008**
R-100	cold trap	yes	1	**6.268 009**

3 Rotavapor® R-100 system configuration with recirculating chiller F-105

NEW!

Heating bath B-100, manual lift, Interface I-100, vacuum pump V-100, recirculating chiller F-105. *BÜCHI*

Type	Capacitor	Coating	PK	Cat. No.
R-100	vertical	no	1	**6.268 010**
R-100	vertical	yes	1	**6.268 011**

2



3



E & OE.

1 Industrial Rotavapor® R-220 SE

NEW!

BÜCHI

The Rotavapor® R-220 SE is designed for distillation, concentration, drying or solvent recycling in the industrial environment. Key benefits are safety, robustness and easy handling.
The integrated vacuum controller and the large display allow for convenient control and supervision, as well as reproduction of the process.
Different glass assemblies are available to cover different needs. A wide range of accessories enables different grades of automation.
R-220 SE R: 1 x 10 L receiving flask, 20 L evaporating flask and Vacuum Controller V-850.
R-220 SE DW: For foaming or low boiling products, two receiving flasks, 20 L evaporating flask and Vacuum Controller V-850.

1



Specification

Glass assemblies:	7 configurations
Evaporating flask:	6 L, 10 L or 20 L
Heating:	3.6 kW heating capacity for up to 180°C
Bath lift:	electronically
Rotation:	electronically, 5-150 rpm
Protective coating:	Safety PLASTIC+GLAS coating
Voltage:	200 V, 230 V (single phase) or 400 V (3 phase)

Type	Description	PK	Cat. No.
R-220 SE R, 20L, V-850, 230V	With reflux assembly	1	**6.267 853**
R-220 SE DW, 20L, V-850, 230V	With descending assembly	1	**6.267 854**
R-220 SE R, 20L, V-850, 400V	With reflux assembly	1	**6.267 855**
R-220 SE DW, 20L, V-850, 400V	With descending assembly	1	**6.267 856**

2 Rotary Evaporator RV 8

IKA

The IKA Rotary Evaporator range gets a new family member - the RV 8. This distilling system completes the existing series by adding a functional basic model. The manual lift, with ambidextrous design, allows for precise positioning of the glassware. Digital displays for rotation speed and heating bath temperature allow for optimal control of all distilling processes. New clamp mechanism to simplify the changing of evaporation flasks.

- Manual lift with integrated safety "lift-out-function"
- Water/oil heating bath with integrated ergonomic carrying handles
- Key-button with locking function for the heating bath temperature
- Adjustable immersion angle
- Digital displays for rotation speed and heating bath temperature
- Single-hand operation; ambidextrous design
- Speed range 5 - 300rpm
- Additional user safety through reduced 24 V power requirements within the unit
- Compatible with the complete range of IKA RV 10 glassware
- New clamp mechanism

2



Specifications

Drive	
Motor rating input	50W
Speed:	5 to 300rpm
Speed display:	digital
Adjustable head angle:	0 to 45°
Stroke displacement:	130mm, manual
Heating bath	
Bath volume:	3l
Temperature range:	RT to +180°C
Heating power:	1300W
General data	
Dimensions (WxDxH):	510 x 345 x 490mm
Protection class according to DIN EN 60529:	IP 20
Power supply	220-240V, 50/60Hz

Type	Description	PK	Cat. No.
RV 8 Flex	with heating bath HB 10 and Woulff bottle	1	**9.813 001**
RV 8 V	with heating bath HB 10 and vertical glassware, RV 10.1	1	**9.813 002**
RV 8 V-C	with heating bath HB 10 and vertical glassware, coated RV 10.10	1	**9.813 003**

Rotary evaporator RV 10 digital

NEW!

IKA

The RV 10 digital is a robust and reliable lab companion. Its optimized bath volume allows for fast heat-up times. The condenser unit has specially designed glass tubes that utilize the 1500 cm² surface extremely efficiently. That's why the RV 10 digital delivers reliable and reproducible process results usually seen on much more costly systems. Additional features such as smooth start, left-right interval or timer function capability support the users in their daily lab work. Another important aspect of the RV 10 digital is the sophisticated safety features. The motorized lift has an automated lift-out function in case of power outage to prevent superheating of the solvent. Safety temperature circuits can be set individually. Dry-run protection, adjustable lower end stop and lock function of bath setting complete the line of safety features. Furthermore, IKA offers a choice of coated glassware for increased safety needs.
The RV 10 digital has a RS232 interface which allows for remote control via IKAs "labworldsoft". The heating bath is controlled via the IR interface from the main unit.

- Universal (water/oil) heating bath
- Vertical Glassware as standard
- Motorized lift with "safety-stop" function
- Optimized heating bath volume for fast heat-up
- Highly efficient 1500 cm² condenser unit
- Rugged design
- Ergonomically placed handles on heating bath
- Smooth start
- Left-right interval
- Timer function
- Dry-run protection
- Safety temperature circuits
- Lower-end stop
- Choice of coated glassware
- Push-off mechanism to loosen tight fitted glassware
- Easy and safe operation due to ergonomically designed user interface
- RS-232 interface for remote control



9.813 012

Specifications

Drive:	
Motor rating input:	50W
Speed range:	20 to 280 rpm
Speed display:	digital
Head angle adjustable:	0 to 45°
Stroke displacement:	140mm, motorised
Setting of lower end stop:	60mm, contact-free
Heating bath:	
Temperature range:	Ambient up to 180°C
Heating power:	1.300W
Protection class acc. to DIN EN 60529:	IP 20
Power supply:	220-240V/50/60Hz

Type	Description	PK	Cat. No.
RV 10 digital V	with heating bath HB 10, vertical glassware RV 10.1, vapor tube RV 10.70	1	**9.813 012** 1
RV 10 digital V-C	with heating bath HB 10, vertical glassware, coated RV 10.10, vapor tube RV 10.70	1	**9.813 014**
RV 10 digital V FLEX	with heating bath HB 10, Woulf bottle, spherical joint clip RV 05.10, clamp, NS 29 RV 10.88, vapor tube RV 10.70	1	**9.813 015**
RV 10.70	Vapor tube made of borosilicate glass, NS 29/32	1	**6.237 535**
RV 10.8001	Lip-seal from a PTFE compound with a built-in stainless steel spring	1	**4.008 136**

Heating bath liquid - please see page 774.

We can supply this
manufacturer's whole product range !
IKA®
partner of the LLG Lab Logistics Group

E & OE.

Rotary evaporator RV 10 control

IKA

The RV 10 control is the flagship of the rotary evaporator series by IKA®. It stands out by virtue of use with color graphic display, integrated vacuum controller, cooling water monitoring and sophisticated safety standards. But the IKA® RV 10 control goes one step further. Like the RV 10 digital, it can be precisely controlled via the RS 232 interface for remote PC operation with IKA®s labworldsoft® and is thus ideal for automatic operation, but thats not all; the control functions also enable completely automatic distillation both for volume based processes and full drying depending on the area of application.
The expandable solvent library also allows you to incorporate new processes.

Same properties as RV 10 digital, with the following additional functions:

Integrated vacuum controller with central display for automatic distilling and ramp programming
- Integrated solvent library, which can be extended by the user
- Distillation specific parameters stored for standard distillations
- Automatic transfer of measurements and distillation type with one key press
- Programmable volume controlled distillation
- Colour graphic display for safe and comfortable operation
- Display of distillation curves
- Multiple languages
- Automatic ventilation at the end of each test
- Cooling water switched off automatically at the end of the test
- Integrated cooling water monitoring
- Heating bath safety management; automatic heating bath monitoring with distillation stop in case of temperature errors
- Heating bath switched off automatically at the end of the test
- USB interface
- 5 years warranty after registration
- New: Now RV 10.4002 Magnetic valve included in delivery

Type	Description	PK	Cat. No.
RV 10 control V	with heating bath HB 10, vertical glassware RV 10.1 and RV 10.4002 Magnetic valve laboratory vacuum	1	**9.813 004** 1
RV 10 control V-C	with heating bath HB 10, vertical glassware, coated RV 10.10 and RV 10.4002 Magnetic valve laboratory vacuum	1	**9.813 005**
RV 10 control FLEX	with heating bath HB 10, incl. Woulff bottle and RV 10.4002 Magnetic valve laboratory vacuum, glassware - please order separately	1	**9.813 006**
RV 10 control V auto	with heating bath HB 10, speed-controlled pump N 920, vertical glassware RV 10.1	1	**9.813 007** 2
RV 10 control V-C auto	with heating bath HB 10, speed-controlled pump N 920, vertical glassware, coated RV 10.1	1	**9.813 008**

1



9.813 004

2



9.813 007

Accessories for Rotary evaporators RV 8/RV 10 digital/RV 10 control

NEW!

IKA

Type	Description	PK	Cat. No.
MVP 10 basic	Vacuum pump	1	**9.813 010**
N 920 KT.29.18	Vacuum pump	1	**6.229 964**
LVS105T-10 ef	Vacuum pump	1	**4.008 149**
VCV 1	Vacuum control valve	1	**9.813 016**
RV 10.4001	Magnetic valve in-house vacuum	1	**6.237 539**
RV 10.4002	Magnetic valve laboratoy vacuum	1	**6.237 538**
RV 10.4003	Pump control incl. magnetic valve	1	**6.237 330**
RV 10.5001	Choke water valve	1	**6.237 540**
RV 10.5002	Filter	1	**6.237 541**
RV 10.5003	Pressure regulating valve	1	**6.237 542**

1 Rotary evaporator RC 900

NEW!

KNF

- Sleek design, small footprint
- Whisper quiet for a pleasant working environment
- Versatile use, simple operation

Features
- Chilled condenser is straightforward to detach by turning the tension nut. The chilled condenser is also extremely easy to clean.
- Relevant parameters for distillation and for the heating bath are easily set by touching and turning.
- Cordless heating bath with drain for safe bleeding and emptying without spillages.
- Hose guide inside the tower - tidy and safe, with hoses no longer an obstruction.
- Straight-forward flask exchange - glass flask simply locks into place - and can be done with one hand.
- Convenient, fully adjustable flask angle set via a control knob.

Specifications

Heating bath: heating bath temperature	20 - 180°C
Coolant supply (chilled condenser)	
Permissible pressure:	3bar
Permissible temperature:	15°C bis +20°C
Cooled surface area:	1230cm²
Parameters of evaporation flask	
Size of evaporation flask:	50 - 3000ml
Rotational speed:	25 - 250 min^{-1}
Length of stroke:	150mm
Lifting speed:	approx 38mm/s
Dimensions (L x H x W)	
Without glass:	447 x 464 x 431mm
With glass:	447 x 823 x 487mm
Weight:	9.1kg

Type	PK	Cat. No.
Rotary evaporator RC 900	1	**7.660 052**
Protective cover for heating bath	1	**7.660 053**

1



Suitable Vacuum pumps - please see page 974.

E & OE.

1 Bladder for rotary evaporators for venting with inert gas

Football bladder — *Deutsch & Neumann*

Type	PK	Cat. No.
Bladder for rotary evaporators	1	**9.115 515**



Evaporator flask pear shape, borosilicate glass 3.3

Manufactured from borosilicate glass 3.3, according to DIN 12383 — *Isolab*

Capacity ml	NS	PK	Cat. No.
100	29/32	1	**6.237 167**
250	29/32	1	**6.237 711**
500	29/32	1	**6.243 664**
1000	29/32	1	**6.236 112** 2



6.236 112

Evaporating flasks with conical ground joint, DURAN®

Especially for rotary evaporators, with center neck and conical joint, pear-shaped, material: DURAN® — *Lenz*

Capacity ml	Socket NS	Flask diam. mm	PK	Cat. No.
50	29/32	56	1	**9.196 020**
100	29/32	60	1	**9.196 024**
250	29/32	81	1	**9.196 036**
500	29/32	101	1	**9.196 044** 3
1000	29/32	126	1	**9.196 054**
2000	29/32	158	1	**9.196 063**

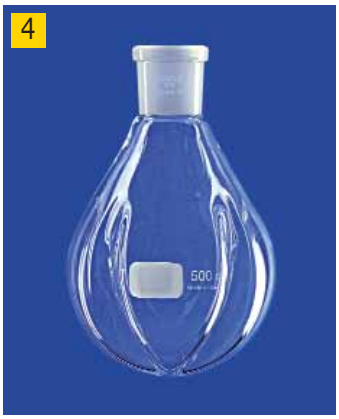


9.196 044

Powder flasks with conical ground joint, DURAN®

Specially for rotary evaporators. For the drying of powder-like substances . With centre neck and conical joint, with inscription label. — *Lenz*

Capacity ml	Socket NS	Flask diam. mm	PK	Cat. No.
100	29/32	60	1	**6.205 965**
250	29/32	81	1	**6.205 966**
500	29/32	101	1	**6.205 512** 4
1000	29/32	126	1	**6.206 195**
2000	29/32	158	1	**6.205 692**



6.205 512

Receiving flasks, with spherical ground glass joint, borosilicate glass 3.3

Manufactured from borosilicate glass 3.3 and meeting quality standards according to DIN 12383 standards. — *Isolab*

Capacity ml	Socket NS	Flask diam. mm	PK	Cat. No.
100	35	64	1	**6.243 665**
250	35	85	1	**6.243 666**
500	35	105	1	**6.243 667**
1000	35	131	1	**6.243 668** 5



6.243 668

1



9.196 244

Receiving flasks, DURAN®

Especially for rotary evaporators, with spherical joint socket S 35, with and without, transparent PUR coating, autoclavable, material: DURAN®. *Lenz*

Capacity ml	Socket NS	Description	Flask diam. mm	PK	Cat. No.
100	35	uncoated	64	1	**9.196 224**
250	35	uncoated	85	1	**9.196 236**
500	35	uncoated	105	1	**9.196 244** 1
500	35	PUR coating	105	1	**7.653 714**
1000	35	uncoated	131	1	**9.196 254**
1000	35	PUR coating	131	1	**9.812 217**
2000	35	uncoated	166	1	**9.196 263**
2000	35	PUR coating	166	1	**6.200 782**

2



9.011 698

Fork clamps for spherical joints

Material: stainless steel. For spherical ground joint connections. With set screw. *Lenz*

Size	PK	Cat. No.
S 13	1	**9.011 693**
S 19	1	**9.011 694**
S 29	1	**9.011 695**
S 35	1	**9.011 698** 2
S 40 / 41	1	**9.011 696**
S 65	1	**9.011 697**

PUR Coating, autoclavable

Lenz

Physical Properties

Autoclavable	121°C/2.05 bar/20 minutes - max. 100 cycles
Transmission	absorption up to 380nm
Long-term heat resistance	up to 140°C
Max. heat resistance	up to 190°C for a short time
Suitable for freezing	-30°C
Suitable for microwave use:	yes
Chemical Properties (Resistance)	
Water	up to 100°C
Organic solvents	room temperature/5 min. constant exposure
- alcohol	
- acetone	
- tetra	
Inorganic acids, bases	room temperature/5 min. constant exposure
- hydrochloric acid (up to 20%)	
- nitric acid (up to 20%)	
- sulphuric acid (up to 20%)	
- caustic soda (up to 20%)	
Cleaning resistance	Standard disinfectants and detergents
- industrial washers/clinic	up to 50 cycles/ max. 95°C
- household dishwashers	up to 50 cycles/ max. 65°C

3



6.246 010

Evaporating flasks with conical ground joint, DURAN®, with PUR coating

NEW!

Especially for rotary evaporators, with center neck and conical joint, with highly transparent PUR coating, autoclavable, pear-shaped, material: DURAN® *Lenz*

Capacity ml	Socket NS	Flask diam. mm	PK	Cat. No.
50	29/32	56	1	**6.246 006**
100	29/32	60	1	**6.246 007**
250	29/32	81	1	**6.246 008**
500	29/32	101	1	**6.246 009**
1000	29/32	126	1	**6.246 010** 3
2000	29/32	158	1	**6.242 495**
3000	29/32	175	1	**6.246 011**

E & OE.

Please note that the maximum speed of a centrifuge can be decreased due to the maximum speed value of the rotor. Maximum speed and also the reachable g-value always depends on the rotor's values.

1 LLG mini centrifuge uni*CFUGE* 2 with universal rotor

NEW!

1



A compact and reasonably priced mini centrifuge with a universal rotor for 6x 1.5/2.0ml, 6x 0.5ml tubes or 2 times 8x 0.2ml PCR-stripes. Speed can be adjusted to 4000rpm or 6000rpm. Powerful motor for fast starting. Quick stop when the lid is opened. 3 years warranty.

Specifications

Max. RCF:	1200xg and 2000xg
Max. speed:	4000rpm and 6000rpm
Max. load:	6 x 0.5/1.5/2ml or 2 x 8-tube PCR strips (0.2ml)
Dimensions (diam. x H):	140 x 120mm
Weight:	0.7kg
Power supply:	100 - 240V, 50/60Hz, 1A
Guarantee:	3 years

Description	PK	Cat. No.
uni*CFUGE* 2 with EU-plug	1	**6.263 510**
uni*CFUGE* 2 with UK-plug	1	**6.263 511**

2 LLG mini centrifuge uni*CFUGE* 3 with timer and digital display

NEW!

2



A compact and reasonably priced mini centrifuge with brushless and non-wearing high-efficiency motor. Stepless speed adjustment from 0 to 6000rpm. Microprocessor controlled regulation for load-independent accuracy and integrated imbalance control. Integrated timer (0-25 minutes) and high speed- constancy for reproducible results. Quick stop when the lid is opened. 2 flow-optimised rotors for 8 x 1.5/2ml or 16 x 0.2ml tubes reduce noise level and heat generation. Supplied with suction feet for a stable operation. 3 years warranty.

Supplied with: Centrifuge, rotor for 8 x 1.5/2ml tubes, rotor for 16 x 0.2ml tubes, adapter for 8 x 0.2/0.4/0.5ml tubes

Specifications

Max. RCF:	2000xg
Max. speed:	variable up to 6000rpm
Accuracy speed:	±25rpm
Motor:	brushless DC motor
Max. load:	8 x 1.5/2ml or 16 x 0.2ml PCR tubes
Dimensions (diam. x H):	160 x 116mm
Weight:	1.1kg
Power supply:	100 - 240V, 50/60Hz
Guarantee:	3 years

Description	PK	Cat. No.
uni*CFUGE* 3 with EU-plug	1	**6.263 520**
uni*CFUGE* 3 with UK-plug	1	**6.263 521**



1 2 3

LLG mini centrifuge uni*CFUGE* 5 with timer and digital display

NEW!

Compact microcentrifuge with excellent price-performance ratio and a performance of up to 15.595xg.
Microprocessor controlled brushless motor for speeds up to 15.000rpm.
Operation possible in RPM or RCF mode. Short-spin mode with selectable RZB and RPM values.
Fixed angle rotor with lid, made of aluminium for 12 x 1.5/2ml tubes with optimised aerodynamics which minimize heat generation and noise during use.
Large LCD readout with intuitive and user-friendly interface. Integrated imbalance-detection with automatic shutdown.
Wide suction feet provide a stable base.
The centrifuge can be controlled via computer by using the included software that can store up to 99 user-defined programmes.
Operational record output to Excel.
3 years warranty.

Item consists of:
- Centrifuge with rotor (incl. lid) for 12 x 1.5/2ml tubes
- Power supply with USB cable
- 12 Adapters for 0.4/0.5ml tubes
- 12 Adapters for 0.2ml tubes
- Allen wrench with T handle
- Software CD
- User manual

Optional:
- Rotor (Cat. No. 6.263 535) for 16 x 0.2ml tubes or 2 x 8 PCR-stripes

Specifications

Max. RCF:	15.595xg
Max. speed:	variable from 500 up to 15.000rpm
Accuracy speed:	±100rpm
Motor:	brushless DC motor
Max. load:	12x2ml PCR tubes
Dimensions (WxDxH):	262 x 230 x 131mm
Weight:	4kg
Power supply:	100 - 240V, 50/60Hz
Guarantee:	3 years

Type	PK	Cat. No.
uni*CFUGE* 5 with EU-plug	1	**6.263 530**
uni*CFUGE* 5 with UK-plug	1	**6.263 531**
Rotor for 16 x 0,2ml tubes or 2 x 8 PCR-stripes	1	**6.263 535**

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3



E & OE.

1 2 3 Mini-Centrifuge Sprout®

Heathrow Scientific

New SnapSpin™ rotors - a new approach to compact centrifuge use!
Introducing the next generation of the Sprout® mini-centrifuge loaded with new features for increased efficiency in the lab. Two new SnapSpin rotors (a six-place standard rotor and an eight-place strip rotor) snap-in and out for fast and easy changes! Plus, two sets of adapters accommodate all major microtube and PCR® tube styles (2.0, 1.5, 0.5, 0.2 mL) for customized use. The Sprout is ideal for microfilter cell separations and HPLC samples. With most spins lasting around 20 seconds, the ergonomically designed lid is specifically designed to fit in the palm of your hand for easy repeat opening and use. Made with UV resistant plastic.
Operation is now faster and easier: Snap in rotor, load and close. For repeated spins, simply close the lid to reactivate. An internal safety switch ensures the Sprout will not operate without the lid open.
Small size offers minimal benchtop space and removable cord for compact storage.

- Low noise and vibration
- Small size
- Quick Spin feature for short spins.
- Numbered tube positions
- Unit will not operate without lid in place
- Power Adapter with power cords for worldwide usage
- CE certified.
- RoHS2 compliant

Sprout® includes:

- Two easy change, tool-free rotors. 1. Circular, one-size rotor for six 1.5- and 2.0ml tubes or use with adapters to spin six 0.5ml tubes. 2. Strip rotor for two 8 x 0.2ml PCR tube strips or 16 x individual 0.2ml PCR tubes. Six 0.2 mL and six 0.5 mL adapters for customized use.
- Storage Case, PP - Keeps rotors and adapters contained and dust-free
- Tube Rack, PP - Convenient for handling samples before and after quick spins. For 16 x 2.0/1.5ml micro centrifuge tubes (diam. 12mm).
- 4 replacement lid o-rings

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Specifications

Max. RCF:	2000xg
Max. speed:	6000rpm
Max. capacity:	6 x 1.5/2.0ml tubes or 2 x 8-strips PCR
Power consumption:	7.3W
Dimensions:	153 x 128 x 104mm
Weight:	1.45kg
Power supply:	100-240VAC, 50/60Hz, 0.6A

3



Type	PK	Cat. No.
Sprout®	1	**6.254 604**

4 5 High-Speed Mini-Centrifuge Gusto™

Heathrow Scientific

Maximum speed with minimal space. This compact centrifuge is ideal for most protocols calling for fast spins (up to 12500 rpm/9100 rcf) and quick spindowns. Useful for PCR®, microfilter cell separation, clinical applications, and HPLC protocols. Operation is extremely simple for this high-level of sophistication: Insert tubes, close lid, adjust speed/time, and press Start. For duplicate spins, simply reload rotor and push Start. Designed with quick-spin option for commonly used 20-second spins. Also includes a tool-free, quick-change rotor system.
Safety features ensure the unit will not operate with an open lid, a jammed rotor or when out of balance. Gusto™ provides the option of setting and displaying in rpm or rcf. Efficiently designed for minimum bench top space. Included features typically found on more expensive units.

Supplied with:

- 12 place standard rotor with lid for 1.5/2ml tubes
- 8-place strip rotor for four 0.2ml tube strips or 32 single tubes
- Twelve 0.2ml and twelve 0.5ml adapters for customized use
- Power Adapter with power cords for e.g. EU, UK, CH, USA

4



5



Specifications

Max. RCF:	9800 x g
Max. speed:	12500rpm
Max. capacity	12 x 1.5/2.0ml tubes or 4 x 8 strips PCR
Timer:	1sec to 30min in 1sec steps
Power consumption:	96W
Dimensions:	203 x 171 x 114mm
Weight:	2.7kg
Power supply:	100 - 240 V, 50/60 Hz

Type	PK	Cat. No.
Gusto™	1	**6.254 597**

1



1 Centrifuge/vortexer, Combi-spin PCV-2400

Grant

Combined centrifuge/vortex mixer for microtubes and 0.2ml strips. For independent centrifuge and vortex mixing, or mixing of an individual tube concurrently with spinning of multiple tubes.
The vortex cup, located at the top of the central shaft, emerges through an opening in the closed lid.
In spin-mix-spin applications, the Combi-spin can be used with very low reagent volumes.

- interchangeable rotors for 2.0ml, 1.5ml, 0.5ml, 0.2ml microtube combinations and 0.2ml stripes.
- continuous operation or short spin
- supplied with 2 rotors: 12 x 1.5/2.0ml and 12 x 0.5ml plus 12 x 0.2ml

Specifications

Max. RCF:	700 x g
Max. speed:	fixed at 3.500rpm
Max. capacity:	12 x 1.5/2.0ml or 12 x 0.5ml plus 12 x 0.2ml or 2 x 0.2ml strips of 8
Power consumption:	25W
Dimensions (WxDxH):	190 x 235 x 125mm
Weight:	2.1kg
Power supply:	230V, 50/60Hz

Type	PK	Cat. No.
PCV-2400	1	**9.721 001**

2



9.721 004

Centrifuge Multi-spin PCV-6000

Grant

Combined centrifuge/vortex mixer for microtubes and 0.2ml strips. For independent centrifuge and vortex mixing operations, or a programmable sequence of spin and mix phases of multiple tubes.

- Vortex mixing intensity: three stage adjustment (soft, medium and hard)
- Interchangeable rotors for 2.0ml, 1.5ml, 0.5ml, 0.2ml microtube combinations and 0.2ml strips
- Timed vortex mixing: 1sec to 20sec
- Supplied with 2 rotors: 12 x 1.5/2.0ml and 12 x 0.5ml plus 12 x 0.2ml

Specifications

Max. RCF(bottom of tubes)	2350xg
Max. speed	6000rpm
Max. capacity:	12 x 1.5/2.0ml or 12 x 0.5ml plus 12 x 0.2ml or 2 x 0.2ml strips of 8
Spin Timer	1sec to 30min
Power consumption	24W
Dimensions (WxDxH):	190 x 235 x 125mm
Weight:	2.5kg
Power supply:	100 - 240V, 50/60Hz
Input voltage	24V

Type	Description	PK	Cat. No.
PCV-6000	Centrifuge Multi-spin	1	**9.721 004** 2
PR2-05	Rotor for 8 x 1.5/2.0ml plus 8 x 0.5ml tubes	1	**9.721 006**
PR2-05-02	Rotor for 6 x 1.5/2.0ml plus 6 x 0.5ml plus 6 x 0.2ml tubes	1	**9.721 007**
PSR-16	Rotor for 2 x 8-well 0.2ml microtube strips	1	**9.721 008**

3



3 Mini Plate Spinner MPS 1000

Labnet

- quickly spin down droplets and condensation
- use before and after thermal cycling to increase PCR yield
- accepts skirted, non-skirted and all standard PCR plates
- less than ¼ x the size of most plate centrifuges

Specifications

Max. RCF:	500xg
Max. speed:	2500rpm
Max. capacity:	2 PCR Plates
Power consumption:	75W
Dimensions (WxDxH):	483 x 534 x 465mm
Weight:	3kg
Power supply:	230V 50/60Hz

Type	PK	Cat. No.
MPS 1000	1	**9.945 790**

E & OE.

1 Mini Centrifuge Prism™ Mini

1



Labnet

The Prism Mini can be used for a wide range of molecular biology separations and quick spins.
The centrifuge was designed to be extremely compact with an exceptionally small footprint.
It includes 2 quick release interchangeable rotors, which spin up to 6000rpm's.
The electronic brake and self opening lid allow for quick deceleration to reduce handling time.
The Prism Mini's maintenance-free drive is remarkably quiet and the unique design allows for excellent airflow, to protect temperature sensitive samples.

- Quick release rotor exchange
- Increased sample capacity
- Rapid sample processing
- One-step sample retrieval

Supplied with: Mini Centrifuge incl. 8 place tube rotor for 1.5/2.0ml microcentrifuge tubes, incl. adapters for 0.5ml and 0.4ml tubes and PCR strip rotor for 4 strips with 8 x 0.2ml tubes or 32 x 0.2ml single tubes.

Further adapters available on request.

Specifications

Max. RCF:	2000 x g
Max. speed:	6000rpm
Max. capacity:	8 x 1.5/2.0ml or 4 strips with 8 x 0.2ml
Power consumption:	5W
Dimensions (WxDxH):	132 x 132 x 112mm
Weight:	0.55kg
Power supply:	230V, 50/60Hz

Type	PK	Cat. No.
Mini Centrifuge Prism™ Mini	1	**9.945 789**
Individual adapters for 0.5/0.6ml tubes	8	**9.945 781**
Individual adapters for 0.4/0.25ml tubes	8	**9.945 782**
Individual adapters for 0.2ml thermal cycling tubes	8	**9.945 783**

2 Micro Centrifuge Microspin 12

2



Grant

Compact high-speed benchtop micro centrifuge with a built-in rotor for 12 x 1.5/2ml microtubes.
Ideal for biomedical laboratories.

- Fixed angular aluminium rotor accommodates 12 x 1.5/2 ml microtubes, supplied with 12 adapters for 0.2ml and 0.5ml tubes and fixing lid (rotor autoclavable, lid not autoclavable)
- Timed operation (1 to 30 minutes), with automatic switch-off
- Suitable to use in cold rooms, operating temperature ambient +4°C to 25°C
- Metal protective inserts inside the lid and casing, automatic imbalance switch-off and locking of a lid provide safe operation
- Constant airflow around the rotor reduces risk of samples overheating during centrifugation
- Simple push-buttons and a clear 2-line LCD status display shows actual and set values of time, set and actual speed and relative centrifugal force (g-force)
- Low voltage cord easily fits through refrigerator or workstation door gaskets
- Compact design and quiet in operation
- Fits neatly and unobtrusively into the workspace

Specifications

Max. RCF:	12.400xg
Max. speed:	14.500rpm
Max. capacity:	12 x 0.2/0.5/1.5/2ml tubes
Timer:	1 to 30 min
Power consumption:	60W
Dimensions (WxDxH):	200 x 240 x 125mm
Weight:	3.5kg
Power supply:	230V, 50/60Hz

Type	PK	Cat. No.
Microspin 12	1	**9.721 003**

1



1 MiniSpin® and MiniSpin® Plus personal centrifuges

Eppendorf

Features:
- Extremely compact and small footprint
- Especially quiet due to its carefully balanced drive
- Maintenance-free motor
- Clear digital display
- Minimal sample heating (after 20min. at max. speed only 12°C max.)
- Separate short-spin button
- Automatic lid opening
- Integral power supply unit
- Capacity: 12 x 1.5/2ml containers
- Autoclavable rotor (121°C, 20min.)
- Start-up/slow-down time less than 13 secs. (to/from max. speed).

Additional features of MiniSpin®
- Includes standard anodised aluminium rotor
- Timer can be set for up to 30 minutes

Additional features of MiniSpin® Plus
- Includes premium "Black Line" aluminium rotor
- Speed/rcf display switch
- Timer can be set for up to 99 minutes
- Permanent centrifuging option

Specifications

Max. RCF	
MiniSpin®:	12.400 x g
MiniSpin® plus:	14.100 x g
Max. speed	
MiniSpin®:	13.400rpm
MiniSpin® plus:	14.500rpm
Max. capacity:	12 x 1.5/2ml tubes
Timer	
MiniSpin®:	0 - 30min
MiniSpin® plus:	0 - 90min, continuous run
Power consumption	
MiniSpin®:	70W
MiniSpin® plus:	85W
Dimensions (WxDxH):	225 x 240 x 120mm
Weight:	4.3kg
Power supply:	230V, 50/60Hz

Type	PK	Cat. No.
MiniSpin®	1	**9.776 500**
MiniSpin® plus	1	**9.776 501**
Rotor F-55-16-5-PCR incl. lid	1	**9.776 521**
Lid, stainless steel for F-55-16-5-PCR	1	**9.776 522**
Adapter for 0.5ml microcentrifuge tubes and 0.6ml microtainers	6	**9.776 488**
Adapter for 0.4ml microcentrifuge tubes	6	**9.776 487**
Adapter for 0.2ml PCR-vessels	6	**9.776 504**

2



2 Mini-centrifuge mini G

IKA

Mini-centrifuge for all applications which do not require high speeds, e.g. micro-filtrations and cell separation. Transparent cover allows constant observation of centrifuge.
The mini-centrifuge can be used for both PCR-vessels and PCR-strips.
As a safety feature, the centrifuge will run only when the lid is closed. Lid opens easily with the press of a button.

- Fixed speed of 6000rpm
- Digital timer adjustable from 1 to 99min
- Integrated quick stop
- Fast start-up of speed
- Compact design and quiet operation
- Rotor exchangeable without tools
- Easy operation with touch keypad

Specifications

Max. RCF:	2000xg
Max. speed:	6000rpm
Max. capacity:	8 x 2.0ml
Timer:	1 to 99min
Power consumption:	12W
Dimensions (WxDxH):	155 x 175 x 105mm
Weight:	1.4kg
Power supply:	24V DC voltage

Type	PK	Cat. No.
mini G incl. plug for UK/CH	1	**9.570 480**

E & OE.

1 Microcentrifuge Spectrafuge™ 24D

NEW!

1



Labnet

The Spectrafuge™ 24D combines innovations such as a unique, easy access rotor, exclusive multi-flow air cooling system and high performance drive with a digital microprocessor that precisely regulates operation. Parameters are selected with two "smart" knobs and values are shown on large, easy to read, LED displays. Speed can be set and displayed in rpm or g-force while runs may be timed, continuous or momentary.
The unique design of the 24-place rotor allows easy access to the tops of the tubes. An optional StripSpin™ adapter fits onto the rotor for spinning 0.2ml tubes and strips. A powerful, brushless motor quickly accelerates the rotor to set speed. Air enters the centrifuge through vents on the back of the housing and it is circulated in multiple directions to maximize cooling. The result is a cool running microcentrifuge that keeps samples close to ambient temperature, even during extended runs at maximum speed. For samples that require below ambient temperatures, the Spectrafuge 24D may be used in a cold room.

Specifications

Max. RCF:	16.300xg
Max. speed:	13.300rpm
Max. capacity:	24 x 1.5ml/2.0ml
Timer:	1 to 30min
Power consumption:	210 W
Dimensions (WxDxH):	235 x 293 x 216mm
Weight:	8.1kg
Power supply:	230V/50Hz or 120V/60Hz

Type	PK	Cat. No.
Spectrafuge™ 24D, blue accents	1	**9.945 799**
Spectrafuge™ 24D, purple accents	1	**6.260 731**

Microcentrifuge Prism™/Prism™ R

2



9.945 795

Labnet

Operation can be timed, continuous or momentary, using the "quick" button.
Vibration free operation is ensured by an isolation system. In the event of a significant imbalance, operation of the centrifuge is automatically stopped. Deceleration at the end of a run is very quick, but will not disrupt samples. Supplied with a uniquely designed 24 x 1.5ml/2.0ml rotor that allows easy access to the tops of the sample tubes. Individual tube slots in the solid aluminum rotor support tubes along their length and contain the sample in the event of tube failure. The rotor is seated on a tapered shaft which facilitates easy removal for cleaning and autoclaving.

Adapters for smaller tubes and PCR strips -please oder separately.

3



9.945 793

Specifications

Max. RCF	
Prism™:	21.200xg
Prism™ R:	17.135xg
Max. speed	
Prism™:	15.000rpm
Prism™ R:	500 to 13.500rpm
Max. capacity:	24 x 1.5/2.0ml
Cooling temperature Prism™ R:	-10 to +40°C
Timer:	0.5 to 99 minutes or continuous "Quick" button for momentary operation
Power consumption	
Prism™:	210W
Prism™ R:	500 W
Dimensions (WxDxH)	
Prism™:	240 x 350 x 190mm
Prism™ R:	277 x 450 x 247.5mm
Weight	
Prism™:	9.6kg
Prism™ R:	20kg
Power supply:	230V, 50Hz or 120V, 60Hz

Description	PK	Cat. No.
Prism ambient microcentrifuge with 24 place rotor	1	**9.945 795** 2
Prism R ambient microcentrifuge with 24 place rotor and cooling	1	**9.945 793** 3
StripSpin adapter for 0.2ml tubes and strips	1	**9.945 794**
Individual adapter for 0.5/0.6ml tubes	6	**9.945 796**
Individual adapter for 0.4/0.25ml tubes	6	**9.945 797**
Individual adapter for 0.2ml thermal cycling tubes	6	**9.945 798**

Microcentrifuge 5418/5418 R

Eppendorf

Microcentrifuge 5418
- 18 place rotor for 1.5/2.0ml tubes
- Lid opens automatically after spinning
- Very small profile, minimal bench space required
- Remarkably silent, even without rotor lid
- Standard, certified aerosol-tight rotor
- Convenient Eppendorf two-dial operation
- rpm/rcf converter
- Short-spin

Microcentrifuge 5418 R, with additional features:
- The patented compressor technology reduces vibration to a minimum
- Temperature range: 0°C to +40°C
- Low access height of 26cm
- Keeps a constant 4°C at max. speed
- Fast Temp for rapid pre-cooling of the centrifuge

Specifications

Max. RCF:	16 873xg
Max. speed:	14 000rpm
Max. capacity:	18 x 1.5/2.0ml
Cooling temperature 5418 R:	0 to +40°C
Timer:	30sec to 9:59h, with continuous run
Power consumption	
5418:	170W
5418 R:	320W
Dimensions (WxDxH)	
5418:	210 x 300 x 210 mm
5418 R:	300 x 460 x 250 mm
Weight	
5418:	7.7kg
5418 R:	22kg
Power supply:	230V, 50/60Hz

Type	Description	PK	Cat. No.
5418	incl. Rotor F-45-18-11	1	**9.776 700** 1
5418 R	incl. Rotor F-45-18-11, with cooling	1	**9.776 702**
Rotor F-45-18-11	incl. aerosol-tight rotor lid	1	**9.776 705**

1



9.776 700

E & OE.

1 Microcentrifuge 5424/5424 R

NEW!

Eppendorf

Microcentrifuge 5424
- 24-place-centrifuge
- aerosol tight rotors
- 4 different rotors
- very quiet in operation, even without rotor lid
- Choice of analogue dial or membrane keypad control
- adjustable soft ramp acceleration

Microcentrifuge R 5424, additional features:
- The patented compressor technology reduces vibration to a minimum
- Temperature range: -9°C to +40°C
- Small footprint and low access height of 26cm
- Keeps a constant 4°C at max. speed
- Fast Temp for rapid pre-cooling of the centrifuge, for example, from about 21°C to 4°C in 8 mins.

Specifications

Max. RCF	
5424:	20238 x g
5424 R:	21130 x g
Max. speed	
5424:	14680rpm
5424 R:	15000rpm
Max. capacity:	24 x 1.5/2ml
Cooling temperature 5424 R:	-10 to +40°C
Timer:	30sec to 9:59h, with continuous run
Power consumption	
5424:	250W
5424 R:	350W
Dimensions (WxDxH)	
5424:	240 x 320 x 230mm
5424 R:	290 x 480 x 260mm
Weight	
5424:	13.4kg
5424 R:	21kg
Power supply:	230V, 50/60Hz

Type	Description	PK	Cat. No.
5424	with control knobs, with rotor	1	**9.776 710**
5424	with foil keypad, with rotor	1	**9.776 711**
5424	with control knobs, without rotor	1	**9.776 712**
5424	with foil keypad, without rotor	1	**9.776 713**
5424 R	with control knobs, with rotor, aerosol-tight	1	**9.776 762**
5424 R	with foil keypad, with rotor, aerosol-tight	1	**9.776 760**
5424 R	with control knobs, without rotor	1	**9.776 763**
5424 R	with foil keypad, without rotor	1	**9.776 761**
Standard rotor FA 45-24-11	with lid, aerosol tight	1	**9.776 724**
Fixed angle rotor FA 45-24-11	with lid	1	**9.776 723**

Other rotors available on request.

1



1



1 Microcentrifuge 5430/5430 R

Eppendorf

Microcentrifuge 5430
- Choice of 8 different rotors, e.g. MTP rotor, Falcon rotor for max. versatility
- 48 place centrifuge for 1.5ml/2.0ml micro test tubes, 6 x 50ml Falcon® tubes or 2 x MTP plates
- Unique 30 130xg
- Automatic rotor recognition
- Stores up to 50 routine programs
- Menu guided operation in 4 different languages
- Automatic lid opening following application sequence (only 5430)

Microcentrifuge 5430 R, additional features:
- Temp. range: -11°C to +40°C
- +4°C at max. speed with all rotors
- Continues cooling after the centrifugation process
- Fast Temp for achieving required temperature in shortest possible time
- Fast Temp pro for having the centrifuge refrigerated and ready-for-use at your desired pre-set time

Specifications

Max. RCF	30130 xg
Max. speed:	17500rpm
Max. capacity:	48 x 1.5/2.0ml or 6 x 50ml or 2 x MTP
Cooling temperature 5430 R:	-11 to +40°C
Timer:	30sec to 9:59h, with continuous run
Power consumption	
5430:	475 W
5430 R:	1050 W
Dimensions (WxDxH)	
5430:	330 x 420 x 250 mm
5430 R:	380 x 640 x 290 mm
Weight	
5430:	29 kg
5430 R:	56 kg
Power supply:	230V, 50/60Hz

Type	Description	PK	Cat. No.
5430	without rotor, with membrane keypad	1	**9.776 731**
5430	without rotor, with dial setting	1	**9.776 732**
5430	with rotor FA-45-30-11	1	**9.776 730**
5430	with rotor FA-45-30-11, with dial setting	1	**9.776 733**
5430 R	without rotor, with membrane keypad	1	**9.776 734**
5430 R	without rotor, with dial setting	1	**9.776 735**
5430 R	with rotor FA-45-30-11, with membrane keypad	1	**9.776 736**
5430 R	with rotor FA-45-30-11, with dial setting	1	**9.776 737**

2



9.776 923

Rotors for microcentrifuge 5430/5430 R

NEW!

Rotor lids included.

FA-45-48-11: Standard rotor for 48 x 1.5/2.0ml tubes, aerosol-tight, Eppendorf QuickLock® closure
F-45-48-11: Rotor for 48 x 1.5/2.0ml tubes
FA-45-16-17: Fixed angle rotor for 16 x Eppendorf Tubes® 5.0 ml, aerosol-tight, Eppendorf QuickLock® closure
FA-45-30-11: Fixed angle rotor, 30 x 1.5/2.0ml tubes, incl. aluminium lid, coated, aerosol-tight.
Rotor is autoclavable (20min, 121°C)
F-45-30-11: Fixed angle rotor, 30 x 1.5/2.0ml tubes, coated, aerosol-tight. Rotor is autoclavable (20min, 121°C)
FA-45-24-11-Kit: Kit-Rotor for 24 Spin Columns or 1.5/2.0ml tubes, aerosol-tight.
Rotor for centrifugation with open tube lids
F-35-6-30: Falcon® rotor for 6 x 15/50ml tubes, incl. adapter
A-2-MTP: Swing out rotor for MTP or PCR plates, incl. 2 x MTP buckets, max. loading height 29mm
S-24-11-AT: Swing out rotor for 24 x 1.5/2.0 ml tubes, aerosol-tight

3



9.776 751

Type	Max. speed rpm	Max. rcf x g	PK	Cat. No.
FA-45-48-11**	12700	18210	1	**9.776 777**
F-45-48-11	12700	18210	1	**9.776 778**
FA-45-16-17	14200	21191	1	**9.776 923** 2
FA-45-30-11*/**	14000	20800	1	**9.776 776**
F-45-30-11*	14000	20800	1	**9.776 740**
FA-45-24-11-Kit**	13200	19090	1	**9.776 775**
F-35-6-30	7830	7197	1	**9.776 747**
A-2-MTP	4680	2204	1	**9.776 751** 3
S-24-11-AT**	12700	16049	1	**9.776 780**

* PTFE-coated
**aerosol-tight, PTFE-coated
***incl. 2 MPT-supports

E & OE.

Benchtop centrifuges, 5804/5804 R and 5810/5810 R

NEW!

Eppendorf

- Flexible range of medium capacity, benchtop centrifuges and rotors tailored to research and clinical work
- Modular adapter system: accommodates a variety of tube lengths
- Ergonomic access height gives comfortable rotor loading
- Low noise level
- Motorized lid lock
- Reliable cooling at maximum speed*
- Imbalance detector
- Automatic rotor recognition logs rotor performance parameters and prevents these being exceeded
- Optional user setting by speed, rcf or radius correction values
- Values can be changed during centrifugation
- Temperature setting from -9°C to +40°C*
- Standby cooling*
- Selectable programme memory for up to 34 individual user programmes
- Short-spin function, speed can be preselected
- Fast-cool function*for rapid cooling of the centrifuge chamber
- 10 gentle acceleration and braking profiles for sensitive sample material

Specifications

Max. RCF:	20913 x g
Max. speed:	14000
Max. Load	
5804/5804 R:	10 x MTP or 2 x DWP
5810/5810 R	16 x MTP or 4 x DWP
Power consumption	
5804:	750W
5804 R:	1.350W
5810:	850W
5810 R:	1.350W
Dimensions (WxDxH)	
5804:	470 x 550 x 340mm
5804 R:	640 x 550 x 340mm
5810:	540 x 610 x 350mm
5810 R:	700 x 610 x 350mm
Weight	
5804:	55kg
5804 R:	80kg
5810:	68kg
5810 R:	99kg
Mains supply:	230 V, 50/60 Hz

Description	PK	Cat. No.
Centrifuge 5804, without rotor	1	**9.776 400** 1
Centrifuge 5804 R, without rotor	1	**9.776 401** 2
Centrifuge 5804 with rotor S-4-72 and 15/50ml adapter for conical tubes	1	**9.776 396**
Centrifuge 5804 with rotor A-4-44 and 15/50ml adapter for conical tubes	1	**9.776 406**
Centrifuge 5810, without rotor	1	**9.776 404**
Centrifuge 5810 R, without rotor	1	**9.776 405**
Centrifuge 5810 with rotor S-4-104 and 15/50ml adapter for conical tubes	1	**9.776 398**
Centrifuge 5810 with rotor A-4-62 and 15/50ml adapter for conical tubes	1	**9.776 408**
Centrifuge 5810 with rotor A-4-81 and 15/50ml adapter for conical tubes	1	**9.776 409**

*Cooled models 5804 R and 5810 R only

1



9.776 400

2



9.776 401

Manual centrifuge HAND CENTRIFUGE

NEW!

Hettich

Maintenance-free, bench-mounted manually operated centrifuge
This convenient centrifuge can be easily clamped to a bench or table, and operated without electricity. Its self-lubricating gear makes it virtually maintenance-free.

1



9.943 004

Specifications

Max. RCF:	13000 x g
Max. speed:	3000rpm
Max. capacity:	4 x 15ml
Dimensions (WxDxH):	140 x 175 x 285mm
Weight:	approx. 0.9kg

Description	PK	Cat. No.
Manual centrifuge, without rotor	1	**6.050 054**
Manual centrifuge, with rotor 4 x 15ml conical tubes	1	**9.943 004** 1
Rotor 4 x 15ml conical tubes	1	**6.202 087**
Rotor 4 x 15ml conical or round bottom tubes (max. length of 125mm and max. diam. 17mm)	1	**6.233 904**

Benchtop centrifuges EBA 200/EBA 200 S

NEW!

Hettich

The practical and handy EBA 200 and EBA 200 S are supplied with an 8-place angle rotor. Designed for small sample throughput, they are ideal for use in doctors' surgeries or in large laboratories as auxiliary equipment. With impulse key for short centrifuging, one-hand lid locking and lid holding. Easy entry of the parameters time and speed (rpm) via foil keypad. Actual values are displayed during centrifugation. Various tubes (incl. glass tubes) can be centrifuged without an adapter. Adapters for additional blood collection tubes are available on request. Model EBA 200 S is supplied with adapters for 13 x 75mm Vacutainers (1.6ml to 5ml).

2



6.265 303

Specifications

Max. RCF	
EBA 200:	3461xg
EBA 200 S:	6153xg
Max. speed	
EBA 200:	6000rpm
EBA 200 S:	8000rpm
Max. capacity:	8 x 15ml
Timer:	1 to 99min, continuous run, short cycle mode (impulse key)
Power consumption	
EBA 200:	55 W
EBA 200 S:	80 W
Dimensions (WxDxH):	262 x 352 x 228mm
Weight	
EBA 200:	approx. 8kg
EBA 200 S:	approx. 10kg
Power supply:	200 - 240V, 50/60Hz

Type	Description	PK	Cat. No.
EBA 200	with angle rotor	1	**6.265 303** 2
EBA 200 S	with angle rotor	1	**9.943 479**

Accessories available on request.

Benchtop centrifuge EBA 270

Hettich

The EBA 270 is a small centrifuge with a 90 degree swing-out rotor. It accepts common blood or urine tubes up to a volume of 15 ml and accelerates them to a maximum speed of 4.000rpm. Stainless steel chamber for easy cleaning, decontamination and maintenance. With microprocessor controling, impulse key for short time centrifuging, one-hand lid closure and lid lock. Adjustable foil keypad with easy-to-read, multi-view digital display. Indication of the actual state during the run. Unit comes complete with 6-tube rotor and tube carriers (10ml and 15ml).

1



6.242 287

Specifications

Max. RCF:	2254xg
Max. speed:	4000rpm
Max. capacity:	6 x 15ml
Timer:	1 to 99min, continuous run, short cycle mode (impulse key)
Power consumption:	80W
Dimensions (WxDxH):	326 x 389 x 239mm
Weight:	approx. 14kg
Power supply:	200 - 240V, 50/60Hz

Type	Description	PK	Cat. No.
EBA 270	with swing-out rotor	1	**6.242 287** 1

2 Benchtop centrifuge ROTOFIX 32 A

NEW!

Hettich

Microprocessor-controlled benchtop centrifuge with a comprehensive and versatile range of accessories. 11 exchangeable rotors enable a multitude of applications. With frequency drive, impulse key for short period centrifuging, lid locking and holding. An "rcf" key allows display of the rcf during operation, while the key is pressed. Easy entry of rpm (speed) and time via foil keypad. Actual values are displayed during centrifugation.

2



Specifications

Max. RCF:	4226xg
Max. speed:	6000rpm
Max. capacity:	4 x 100ml/32 x 15ml
Timer:	1 to 99min, continuous run, short cycle mode (impulse key)
Power consumption:	180W
Dimensions (WxDxH):	366 x 430 x 257mm
Weight:	approx. 23kg
Power supply:	208 - 240V, 50/60Hz

Type	Description	PK	Cat. No.
ROTOFIX 32 A	without rotor	1	**9.943 119**
1624	Swing-out rotor for max. 4 x 100ml or 4 slide preparations, without carriers	1	**9.943 386**
1481	Round carrier 100ml fitting into swing-out rotor 1624	1	**9.943 339**

Additional accessories on request.

1



9.943 118

Microlitre centrifuges MIKRO 200/200 R

NEW!

Hettich

Refrigerated and non-refrigerated, high-performance microlitre centrifuges. Five exchangeable rotors are available. With frequency drive, microprocessor control with 4 programmable memories, impulse key for short centrifuging, powered lid locking and "open lid" key. Easy entry of the parameters via select keys and a twist knob. A switch key enables entry/display of rpm (speed) or rcf, as required. Actual values are displayed during centrifugation. The refrigerated MIKRO 200 R allows chamber temperature control between -10 to +40°C. With the Fast Cool function it refrigerates to +4°C in 10 to 15 minutes. The "stand-by" mode maintains the set temperature between runs.

Specifications

Max. RCF:	21382xg
Max. speed:	15000rpm
Max. capacity:	30 x 0.2 to 2ml
Cooling temperature Mikro 200 R:	-10 to +40°C
Timer:	1sec to 99min : 59sec, continuous run, short cycle mode (impulse key)
Power consumption	
MIKRO 200:	240 W
MIKRO 200 R:	360 W
Dimensions (WxDxH)	
MIKRO 200:	275 x 344 x 260mm
MIKRO 200 R:	281 x 547 x 260mm
Weight	
MIKRO 200:	approx. 11.5kg
MIKRO 200 R:	approx. 28kg
Power supply:	200 - 240V, 50/60Hz

2



6.237 606

Type	Description	PK	Cat. No.	
MIKRO 200	without rotor	1	**9.943 117**	
MIKRO 200 R	refrigerated, without rotor	1	**9.943 118**	1
2424-B	Angle rotor for 24 x 1.5/2.2 ml ml microtubes with standard lid	1	**6.237 606**	2
2428	Angle rotor for 24 x 0.2 to 2ml microtubes with filter insert	1	**9.943 477**	

Additional accessories on request.

3



9.943 250

Microlitre centrifuges MIKRO 220/220 R

NEW!

Hettich

Microlitre centrifuges with outstanding performance characteristics.
Model MIKRO 220 accommodates 9 alternative rotors, the refrigerated version MIKRO 220 R takes 13 alternative rotors. The MIKRO 220/220 R feature frequency drive, microprocessor control and impulse key for short period centrifuging. Extremely short acceleration and deceleration times, easy entry of the parameters via a foil keypad and digital display. As necessary, a switch key enables entry/display of rpm (speed) or rcf. 10 complete running programmes can be stored and recalled. The refrigerated MIKRO 220 R can control chamber temperature between -20 and +40°C.

Specifications

Max. RCF:	31514xg
Max. speed:	18000rpm
Max. capacity:	60 x 0.2 to 2ml or 6 x 50ml (MIKRO 220 R only)
Cooling temperature MIKRO 220 R:	-20 to +40°C
Timer:	1 sec to 99 min : 59 sec, continuous run, short cycle mode (impulse key)
Power consumption	
MIKRO 220:	240 W
MIKRO 220 R:	360 W
Dimensions (WxDxH)	
MIKRO 220:	330 x 420 x 313mm
MIKRO 220 R:	330 x 650 x 313mm
Weight	
MIKRO 220:	approx. 42kg
MIKRO 220 R:	approx. 21kg
Power supply:	200 - 240V, 50/60Hz

4



9.943 327

Type	Description	PK	Cat. No.	
MIKRO 220	without rotor	1	**9.943 250**	3
MIKRO 220 R	refrigerated, without rotor	1	**9.943 251**	
1195-A	Angle rotor for 24 x 0.2 to 2ml microtubes with bio-containment lid	1	**9.943 327**	4

Additional accessories on request.

E & OE.

2 Benchtop centrifuges UNIVERSAL 320/320 R

NEW!

Hettich

The UNIVERSAL 320/320 R impress with excellent performance in both the high and low speed ranges, and versatile, easily exchangeable accessories. At low speeds, they process standard tubes up to a volume of 100ml, microtitre plates, conical tubes with screw cap, blood collection tubes and cyto accessories. Microlitre tubes can be accelerated to an rcf of 21382. A selection of 19 rotors is available for the UNIVERSAL 320/320 R centrifuges. With frequency drive, microprocessor control, impulse key for short centrifuging, quick-entry foil keypad and digital display. As necessary, a switch key enables entry/display of rpm (speed) or rcf. Ten complete running programmes can be stored and recalled. Temperature in the refrigerated UNIVERSAL 320 R is adjustable within a range of -20 to +40°C.

1



9.943 121

Specifications

Max. RCF:	21382xg
Max. speed:	15000rpm
Max. capacity:	4 x 100ml/32 x 15ml
Cooling temperature UNIVERSAL 320 R:	-20 to +40°C
Timer:	1sec to 99min : 59 sec, continuous run, short cycle mode (impulse key)
Power consumption	
UNIVERSAL 320:	400W
UNIVERSAL 320 R:	800W
Dimensions (WxDxH)	
UNIVERSAL 320:	395 x 520 x 346mm
UNIVERSAL 320 R:	401 x 695 x 346mm
Weight	
UNIVERSAL 320:	approx. 31kg
UNIVERSAL 320 R:	approx. 53kg
Power supply:	200 - 240V, 50/60Hz

2



Type	Description	PK	Cat. No.
UNIVERSAL 320	without rotor	1	**9.943 120**
UNIVERSAL 320 R	without rotor, with refrigeration	1	**9.943 121** 1
1494	Swing-out rotor for max. 4 x 100ml without carriers	1	**9.943 399**
1624	Swing-out rotor for max. 4 x 100ml or 4 slide preparations without carriers	1	**9.943 386**

Additional accessories on request.

4 Benchtop centrifuges ROTINA 380/380 R

NEW!

Hettich

High-performance, benchtop centrifuges with a comprehensive range of accessories especially for applications in the fields of diagnostics, genetics and microbiology.
Both models offer a choice of 11 rotors. With frequency drive, microprocessor control, impulse key for short centrifuging and powered lid locking. The advanced C control panel significantly facilitates daily laboratory routine. Parameter selection is done via the use of symbol keys. Values are set with the control knob, and recorded by pressing the Start key. Digital display. As necessary, a switch key enables entry/display of rpm (speed) or rcf. With 98 programmable memories. Temperature within the chamber of the refrigerated ROTINA 380 R is controllable within a range of -20 to +40°C. The temperature can also be set in degrees Fahrenheit.

3



9.943 129

Specifications

Max. RCF:	24400xg
Max. speed:	15000rpm
Max. capacity:	4 x 290ml
Cooling temperature ROTINA 380 R:	-20 to +40°C
Timer:	1sec to 99min : 59sec, continuous run, short cycle mode (impulse key)
Power consumption	
ROTINA 380:	650 W
ROTINA 380 R:	1150 W
Dimensions (WxDxH)	
ROTINA 380:	457 x 600 x 418mm
ROTINA 380 R:	457 x 750 x 418mm
Weight	
ROTINA 380:	approx. 51kg
ROTINA 380 R:	approx. 81kg
Power supply:	200 - 240V, 50/60Hz

4



Type	Description	PK	Cat. No.
ROTINA 380	without rotor	1	**9.943 129** 3
ROTINA 380 R	without rotor, with refrigeration	1	**9.943 130**
1754	Swing-out rotor for max. 4 x 290ml without carriers	1	**9.943 467**
1752	Round carrier 290ml for swing-out rotor 1754	1	**9.943 468**

Additional accessories on request.

1



9.943 126

2 Benchtop centrifuges ROTINA 420/420 R

NEW!

Hettich

The compact benchtop centrifuges are designed both for high sample throughput and high sample volumes. With a max. capacity of 4 x 600ml, 140 blood collection tubes or 16 microtitre plates they are ideal for applications in clinical chemistry, in biotechnology and in life science research facilities. With frequency drive, microprocessor control and impulse key for short centrifuging and motorised lid locking. The advanced C control panel is ideal for daily routine tasks in the laboratory. Parameter selection is achieved via the use of symbol keys. Values are set with the control knob, and recorded by pressing the Start key. Digital display. 98 programmable memories. Temperature in the refrigerated ROTINA 420 R is adjustable within a range of -20 to +40°C. The temperature can also be set in degrees Fahrenheit.

2



Specifications

Max. RCF:	24400xg
Max. speed:	15000rpm
Max. capacity:	4 x 600ml
Cooling temperature ROTINA 420 R:	-20 to +40°C
Timer:	1sec to 99h : 59min : 59sec, continuous run, short cycle mode
Power consumption ROTINA 420/420 R:	870W/1500W
Dimensions (WxDxH) ROTINA 420/420 R:	506 x 650 x 423mm/713 x 654 x 423mm
Weight ROTINA 420/420 R:	approx. 75kg/approx. 108kg
Power supply:	200 - 240V, 50/60Hz

Type	Description	PK	Cat. No.
ROTINA 420	without rotor	1	**9.943 125**
ROTINA 420 R	without rotor, with refrigeration	1	**9.943 126** 1
4784-A	Swing-out rotor for max. 4 x 600ml or 16 microtitre plates without carriers	1	**9.943 475**

Additional accessories on request.

3



9.943 150

Centrifuges ROTANTA 460 series

NEW!

Hettich

Developed for large volumes, the model offers frequency drive, microprocessor control, impulse key for short centrifuging, and powered lid locking. As necessary, a switch key enables entry/display of RPM (speed) or RCF. All ROTANTA 460 models feature the extended C control panel, which provides up to 98 programmable memories. Temperature in the refrigerated ROTANTA 460 R is controllable within a range of -20°C to +40°C. The refrigerated ROTANTA 460 R can also be supplied in an underbench version or as a floorstanding model.

Without rotors. Please order separately.

Specifications

Max. RCF:	24400xg
Max. speed range:	15000rpm
Max. capacity:	4 x 750ml
Cooling temperature Rotanta 460 R:	-20 to +40°C
Timer:	1sec to 99h : 59min : 59sec, continuous run, short cycle mode
Power consumption	
ROTANTA 460/ROTANTA 460 R,RC,RF:	1000W/1600W
Dimensions (WxDxH)	
ROTANTA 460:	554 x 706 x 456mm
ROTANTA 460 R:	770 x 706 x 456mm
ROTANTA 460 RC:	554 x 697 x 683mm
ROTANTA 460 RF:	554 x 697 x 961mm
Weight	
ROTANTA 460:	approx. 101kg
ROTANTA 460 R,RC:	approx. 141kg
ROTANTA 460 RF:	approx. 164kg
Power supply:	200 - 240V, 50/60Hz

4



9.943 474

Type	Description	PK	Cat. No.
ROTANTA 460	Benchtop centrifuge, classic	1	**9.943 150** 3
ROTANTA 460 R	Benchtop centrifuge, cooled	1	**9.943 152**
ROTANTA 460 RC	Underbench centrifuge, cooled	1	**9.943 154**
ROTANTA 460 RF	Floorstanding centrifuge, cooled	1	**9.943 155**
5699	Swing-out rotor for max. 4 x 750ml or 4 blood bag systems 450ml	1	**9.943 474** 4
4880	Round carrier with single-hand clamp lock for max. 750 ml for swing-out rotor 5699	1	**9.943 486**
4883	Lid with bio-containment for round carrier 4880	1	**9.943 487**

Additional accessories on request.

Microlitre centrifuge Z 216 M/Z 216 MK

The Z 216 M and Z 216 MK are setting new standards in this centrifuge class. Capable of centrifuging up to 44 x 1.5/2.0 ml at each run. *Hermle*
Due to their compact design and quiet running properties they are fitting perfectly in their working area.
The powerful refrigeration system of Z 216 MK keeps samples at temperatures as low as 4°C during a continuous run at 20000 xg.

Specifications:
- Maintenance-free induction drive
- Microprocessor with large LCD Display
- Motor driven lid lock
- Active imbalance-identification and cut off
- Standstill cooling
- Audible signal at the end of each run
- Rapid acceleration and deceleration (see rotor data)
- Lowest sample temperature 4°C at 20000xg
- Noise level < 60 dBA at 20000xg
- Extremely compact with a space saving footprint
- Quick access to samples with a snap on lid
- Aerosol tight rotor option
- Manufactured according to international safety regulations, i.e. IEC 61010
- Distinct control panel

Specifications	**Z 216 M/Z 216 MK**
Max. RCF:	21380xg
Max. speed:	15000rpm
Max. capacity:	44 x 1.5/2.0ml
Cooling temperature Z 216 MK:	-20 to 40°C
Timer:	59min 50sec/10sec increments 99h 59min/1min increments
Power consumption:	560W
Dimensions (WxDxH):	280 x 390 x 290mm/280 x 550 x 290mm
Weight:	17kg/35kg
Power supply:	230V, 50/60Hz

Description	PK	Cat. No.	
Microlitre centrifuge Z 216 M	1	**7.660 217**	1
Refrigerated microlitre centrifuge Z 216 MK	1	**6.231 520**	
Refrigerated microlitre centrifuge Z 216 MK incl. angle rotor	1	**6.230 074**	
Microlitre centrifuge Z 216 MK incl. rotor V14, 24 x 1,5/2,0 ml cooled	1	**9.945 933**	
Angle rotor 24 x 1.5/2.0ml	1	**9.945 715**	
Angle rotor 24 x 1.5/2.0ml, hermetically sealed	1	**9.945 716**	
Angle rotor 30 x 1.5/2.0ml, hermetically sealed	1	**9.945 717**	
Angle rotor 12 x 5ml, closable	1	**9.945 922**	
Angle rotor for 4 x 8 PCR Stripes	1	**9.945 718**	2
Angle rotor for 12 x 5ml reaction vessels, closable	1	**7.660 218**	3

1



7.660 217

2



9.945 718

3



7.660 218

1



6.240 037

Refrigerated high speed centrifuge Z 32 HK

With a wide range of accessories, the Z 32 HK high speed centrifuge is applicable in a wide variety of research settings. In spite of the remarkably small footprint, the Z 32 HK features a powerful refrigeration system capable of maintaining cool sample temperatures even at maximum speed. *Hermle*

Specifications:
- Maintenance-free induction drive
- Microprocessor with large LCD display
- Motor driven lid lock
- Automatic rotor identification system with over speed protection immediately upon rotor installation
- Active imbalance identification and cut off rotor specific
- Imbalance tolerant drive
- CFC-free refrigeration system
- A large variety of rotors and accessories
- Manufactured according to international safety regulations, i.e. IEC 61010
- Audible signal at the end of each run with several melody options
- Quick and easy rotor exchange
- Noise level under 60dBA at max. speed
- Distinct control panel

2



9.945 915

Specifications

Max. RCF:	38012 x g
Max. speed:	20000rpm
Max. capacity:	4 x 100ml
Cooling temperature:	-20 to +40°C in 1°C increments
Timer:	59min 50sec/10sec increments 99h 59min/1 min increments
Power consumption:	1200W
Dimensions (WxDxH):	400 x 700 x 360mm
Weight:	71kg
Power supply:	230V, 50/60Hz

Description	PK	Cat. No.	
Refrigerated High Speed Centrifuge Z 32 HK	1	**6.240 037**	1
Angle rotor for max. 6 x 85ml	1	**9.945 915**	2
Angle rotor for max. 20 x 10ml	1	**9.945 916**	

For further accessories see Z 326/Z326K.

3



9.945 737

Compact centrifuge Z 206 A

Compact centrifuge for physicians and clinical laboratories. *Hermle*

The Z 206 A accepts up to 12 x 15ml conical and round bottom tubes. For tubes with smaller dimensions we offer several adapters. For larger volumes we offer an angle rotor for 6 x 50ml conical and round bottom tubes.

- Microprocessor with LCD display
- Electrical lid lock
- Pre-selection of the rotor type
- Active imbalance-identification and cut off
- Manufactured according to international safety regulations, i.e. IEC 61010
- Noise level under 60dBA at max. speed
- A large variety of rotors and accessoires
- Easy change of rotors
- Distinct control panel

4



9.945 728

Specifications

Max. RCF:	4180xg
Max. speed:	6000rpm
Max. capacity:	6 x 50ml
Timer:	59min 50sec/10sec increments 99h 59min/1min increments
Power consumption:	100W
Dimensions (WxDxH):	280 x 370 x 260mm
Weight:	15kg
Power supply:	230V, 50/60Hz

5



9.945 740

Description	PK	Cat. No.	
Compact centrifuge Z 206 A	1	**9.945 737**	3
Compact centrifuge Z 206 A incl. angle rotor 12x15ml	1	**9.945 738**	
Angle rotor 12 x 15ml	1	**9.945 728**	4
Angle rotor 6 x 50ml	1	**9.945 729**	
Angle rotor 18 x 1.5/2.0ml	1	**9.945 739**	
Swing out rotor 6 x 5ml	1	**9.945 740**	5

E & OE.

Universal centrifuges Z 326/Z 326 K

Universal laboratory centrifuge for medical laboratory, from the large volume (4 x 100ml) to reaction vessels. *Hermle*

Both the table top centrifuge Z 326 and the refrigerated table top centrifuge Z 326 K offer a wide assortment of rotor options, making them ideal for a wide variety of research applications. Rotor exchange between swing out, micro, or high volume angled rotors is very simple and can take place in a matter of seconds. The Z 326 K includes the refrigeration system on the back side of the unit, optimised for the lab bench at only 40cm wide.

Specifications:
- Maintenance-free induction drive
- Microprocessor with large LCD display
- Motor driven lid lock
- Automatic rotor identification system with over speed protection, immediately upon rotor insertion
- Active imbalance-identification and cut off (rotor specific)
- Imbalance tolerant drive
- CFC free refrigeration system (Z 326 K)
- A large variety of rotors and accessories
- Manufactured according to international safety regulations, i.e. IEC 61010
- Audible signal at the end of each run with several melody options
- Rotor exchange is easy to handle
- Noise level under 60dBA at max. speed
- Optimized airflow system keeps the samples cool (Z 326)
- Distinct control panel

Specifications

Max. RCF:	23545xg
Max. speed:	18000rpm
Max. capacity:	4 x 100ml
Cooling temperature Z 326 K:	-20 to +40°C in 1°C increments
Timer:	59min 50sec/10sec increments
	99h 59min/1min increments
Power consumption	
Z 326:	455W
Z 326 K:	660W
Dimensions (WxDxH)	
Z 326:	400 x 480 x 360mm
Z 326 K:	400 x 700 x 360mm
Weight	
Z 326:	43 kg
Z 326 K:	60 kg
Power supply:	230V, 50/60Hz

Description	PK	Cat. No.	
Universal centrifuges Z 326	1	**6.241 114**	1
Universal centrifuges Z 326 K	1	**6.238 613**	
Swing out Rotor, 4 place	1	**6.238 614**	2
Bucket 1 x 100ml	2	**9.945 750**	
Bucket 1 x 50ml Falcon	2	**9.945 752**	
Bucket 2 x 15ml Falcon	2	**9.945 753**	
Bucket 10 x 1.5ml	2	**9.945 771**	
Swing out Rotor, 4 place	1	**6.241 887**	3
Bucket 2 x 50ml Falcon	2	**9.945 772**	
Bucket 3 x 15ml Falcon	2	**9.945 773**	
Bucket hermetic for tube racks	2	**6.241 888**	
Tube racks 1 x 100ml	2	**6.240 595**	
Tube racks 1 x 50ml Falcon	2	**6.902 309**	
Tube racks 2 x 15ml Falcon	2	**6.902 310**	
Tube racks 7 x 5 to 7ml	2	**9.945 903**	
Tube racks 5 x 1.5ml	2	**6.902 308**	
Swing out rotor 2 x 3 Microtiterplates	1	**9.945 910**	4
Angle rotor for max. 12 x 15ml	1	**9.945 912**	
Angle rotor for max. 6 x 50ml	1	**9.945 913**	
Angle rotor for max. 6 x 85ml	1	**6.240 038**	
Angle rotor for max. 24 x 1.5/2.0ml	1	**6.238 615**	5
Angle rotor for 4 x 8 PCR Stripes	1	**9.945 919**	

1



6.241 114

2



6.238 614

3



6.241 887

4



9.945 910

5



6.238 615



1 Centrifuge tubes, round bottom, DURAN®

To DIN 58970 part 2. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. Maximum loading: 4000xg rcf.

DURAN Group

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
6	12	100	1	**9.315 010**
12	16	100	1	**9.315 011**
25	24	100	1	**9.315 014**
50	34	100	1	**9.315 017**
80*	40	115	1	**9.315 024**
80	44	100	1	**9.315 026**
250*	56	147	1	**9.315 036**

* Not to DIN.



2 Centrifuge tubes, conical, DURAN®

Autoclavable. Rimless, with conical base. Maximum loading: 4000xg rcf.

DURAN Group

Volume ml	Diam. mm	Height mm	Angle	PK	Cat. No.
12	16	100	30	1	**9.315 509**
25	24	100	60	1	**9.315 514**
50	34	100	60	1	**9.315 517**



7.920 120



6.803 325

High speed centrifuge tube, borosilicate glass

Borosilicate glass. The tubes have been chemically strengthened to achieve a greater mechanical strength than standard borosilicate centrifuge tubes. These tubes can be centrifuged up to 13.100 RCF when used with an accessory rubber adapter sleeve in a 50ml rotor cavity. They can withstand temperatures up to 300ºC. Autoclavable.

Volume ml	Diam. mm	Height mm	Description	PK	Cat. No.
15	18	102	without rim	6	**6.803 323**
30	24	106	without rim	6	**6.093 022**
15	18	102	screw thread	6	**7.920 120** 3
30	24	106	screw thread	6	**6.234 247**
			Rubber adapter, 15ml	2	**6.803 324**
			Rubber adapter, 30ml	2	**6.803 325** 4



5 Centrifuge tubes, glass, round bottom, graduated, DURAN®

In white enamel, rimless. Maximum loading: 3500xg rcf.

Volume ml	Diam. mm	Height mm	PK	Cat. No.
10 - 15	17	98	1	**9.315 237**
10 - 15	17	107	1	**9.315 240**
25	25	100	1	**9.315 245**





6 7 Centrifuge tubes, round bottom, AR glass®

Round bottom. Graduated or ungraduated. Maximum loading: 3500xg rcf.

Volume ml	Diam. mm	Height mm	Graduations	PK	Cat. No.
10 - 15	17	98	no	1	**9.315 201**
10 - 15	17	107	no	1	**9.315 203**
10 - 15	17	98	yes	1	**9.315 217**
10 - 15	17	107	yes	1	**9.315 220**
25	25	100	yes	1	**9.315 225**
50 - 55	35	98	no	1	**9.315 207**
70 - 100	40	115	no	1	**9.315 210**

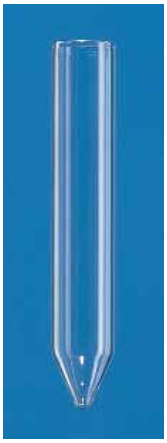
E & OE.

Centrifuge tubes, AR glass®

Wall thickness approx. 1mm. Maximum loading: 3500xg rcf. Outer diameter approx. 17mm. Graduation (9.315 416) 0.1ml. *BRAND*

Volume ml	Height mm	Base	Neck	Graduations	PK	Cat. No.
11	98	conical, short taper	rimless	-	1	**9.315 420** 1
11	98	conical, short taper	rimless	-	100	**9.315 423**
13	98	round	rimless	-	100	**9.315 421**
15	113	conical, long taper	beaded rim	-	100	**9.315 412**
15	113	conical, long taper	beaded rim	0 - 15, white	1	**9.315 416** 2

1



9.315 420

2



9.315 416

3 ASTM centrifuge tube, cylindrical, with conical base, borosilicate glass 3.3

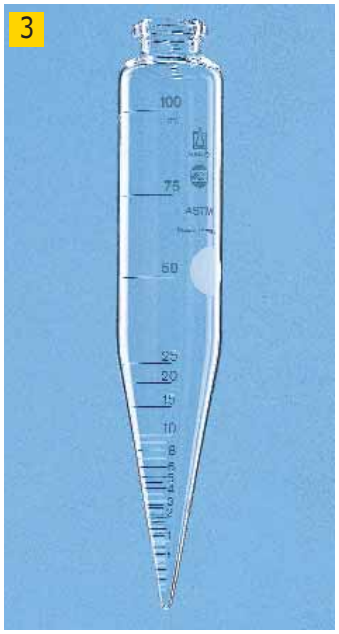
NEW!

BLAUBRAND®. Cylindrical, with conical base. Graduations and labelling in high-contrast blue enamel. Maximum loading 700 xg rcf. Internal diam. neck approx. 17 mm. *BRAND*

Graduated, ml:	In subdivisions, ml:
0 to 0.5	0.05
0.5 to 2	0.10
2 to 3	0.20
3 to 5	0.50
5 to 10	1.00
10 to 25	5.00
25 to 100	25.0

Capacity ml	Length mm	Description	PK	Cat. No.
100	203	acc. to ASTM D 91	1	**9.315 810**
100	167	former standard ASTM D 96	1	**9.315 820**

3



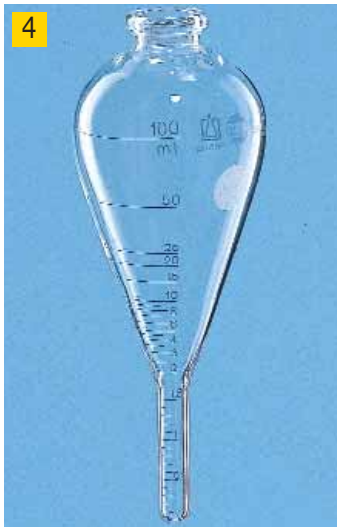
4 ASTM centrifuge tube, pear-shaped with cylindrical base, borosilicate glass 3.3

BLAUBRAND®. Pear-shaped with cylindrical base. Former standard ASTM D 96. Capacity 100ml. Graduations and labelling in high-contrast blue enamel. Maximum loading 700xg rcf. Internal diam. neck approx. 17 mm. *BRAND*

Graduated, ml:	In subdivisions, ml:
0 to 1.5	0.10
1.5 to 3	0.50
3 to 5	0.50
5 to 10	1.00
10 to 25	5.00
25 to 100	25.0

Capacity ml	PK	Cat. No.
100	1	**9.315 815**

4





1 LLG-Microcentrifuge tubes, PP

LLG Microtubes cover standard volumes for a variety of sample tests. They are available in 0.5ml, 1.5ml and 2.0ml volumes. These standard Microtubes withstand high centrifugal forces, are temperature and chemical-resistant and guaranteed against leaks. An innovative and modern new generation of Microtubes with new features. Perfect sealing qualities, excellent chemical stability and optimal construction materials guarantee even better resistance to centrifugal and chemical forces. Easy to open and to close thanks to the improved lid geometry. For visual volume control the 1.5ml tubes are equipped with graduations at 0.5ml, 1.0ml and 1.5ml. The 2.0ml tubes have graduations at 0.5ml, 1.0ml, 1.5ml and 2.0ml. The 0.5ml tubes are without graduations.
Certified DNase-, RNase- and pyrogen free.

Non sterile, clear, in bags. Certified free of DNase, RNase, suitable for microbiology. Guaranteed metal-free.

Specifications
Autoclavability
Temperature: 121°C (250°F)
Pressure: 1.05 bar or 15 psig (pounds)
Time: 20 min or less
Centrifugation
Fixed angle rotor: 25000xg
Swing out rotor: 70000xg

Volume ml	Form	PK	Cat. No.
0.5	conical	1000	**9.409 023**
1.5	conical	1000	**9.409 024**
2.0	round	1000	**9.409 025**



2 LLG-Centrifuge tubes, PP

Polypropylene tubes with very good thermal, mechanical and chemical stability. Sterile tubes fitted with screw-on closure. Packed in boxes or bags. With graduations and labelling area. Cytotoxicity-free, DNase/RNase- and human DNA-free.
Centrifugation capacitiy (Max. RCF): 6000 x g

Capacity ml	Diam. mm	Height mm	Form	Description	PK	Cat. No.
15	17.0	120	conical	sterile, single packed	50	**9.316 062**
15	17.0	120	conical	non-sterile	500	**9.316 063**
50	30.0	120	conical	sterile, single packed	50	**9.316 064**
50	30.0	120	conical	non-sterile	500	**9.316 065**
50	30.0	120	with rim	sterile, single packed	50	**9.316 067**
50	30.0	120	with rim	non-sterile	50	**4.008 506**

3 4 5 LLG-Test and centrifuge tubes rimmed, PS or PP

NEW!

- Made of ultra clear virgin polypropylene or virgin polystyrene
- Polystyrene tubes are transparent. Polypropylene tubes are opaque, break-resistant
- Tubes with cap are ethylene oxide sterilized
- With label

LLG-Dual-Position Caps for test- and centrifuge tubes, PE
- For culture tubes with an O.D. of 12 mm and 17 mm
- 2 locking positions possible
- Closed , but gas exchange is still possible for aerobic growth conditions
- Hermetically sealed for anaerobic growth conditions, for storage or despatch of samples or for centrifugation

Capacity ml	Diam. mm	Height mm	Description	Material	Max. rcf	Max. temp. °C	PK	Cat. No.
4.0	12.0	75	with rim	PS	1400	80	500	**6.265 657**
4.0	12.0	75	with rim	PP	3000	120	500	**6.265 658**
12.0	17.0	100	with rim	PS	3000	80	250	**6.265 659**
12.0	17.0	100	with rim	PP	5500	120	250	**6.265 660**
4.0	12.0	75	with dual-position-cap, sterilized	PS	1400	80	500	**6.265 661**
4.0	12.0	75	with dual-position-cap, sterilized	PP	3000	120	500	**6.265 662**
12.0	17.0	100	with dual-position-cap, sterilized	PS	3000	80	500	**6.265 663**
12.0	17.0	100	with dual-position-cap, sterilized	PP	5500	120	500	**6.265 664**
	12.0		dual-position-cap	PE	-		1000	**6.265 665**
	17.0		dual-position-cap	PE	-		1000	**6.265 666**







E & OE.

1 Test tubes and centrifuge tubes, PP

Round bottom. *Greiner Bio-One*

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
4.0	12.0	55	3600	**9.400 615**
5.0	12.0	75	2000	**9.400 632**
12.0	16.0	100	1600	**9.400 664**
14.0	17.0	100	1500	**9.400 665**

1

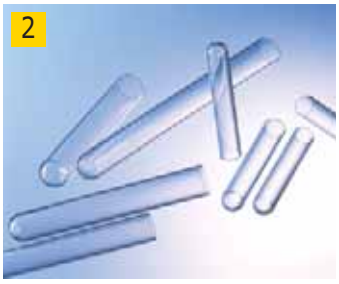


2 Test tubes and centrifuge tubes, PS

Round or conical bottom.

Capacity ml	Diam. mm	Height mm	Description	PK	Cat. No.
2.0	10.5	40	round bottom	3000	**9.400 505**
3.5	11.0	63	round bottom	3000	**9.400 520**
4.0	11.0	70	round bottom	2880	**9.400 530**
4.0	12.0	55	round bottom	3600	**6.510 405**
5.0	12.0	75	round bottom	2000	**9.400 532**
10.0	14.0	100	round bottom	1400	**9.400 562**
12.0	16.0	100	round bottom	1600	**9.400 564**
14.0	17.0	100	round bottom	1500	**9.400 565**
20.0	16.0	152	round bottom	1500	**9.400 590**
4.5	12.0	75	conical bottom	3600	**9.400 901**
13.0	16.5	103	conical bottom	1500	**9.400 908**

2



Graduated centrifuge tubes, conical, PP or PMP

Autoclavable. PP tubes can withstand temperatures up to +120°C. PMP (TPX®) tubes can withstand temperatures up to +170°C. Rimmed. High chemical resistance. Good transparency, especially when in contact with liquids. Cannot be used with naked flame. Can be used as conventional test tubes. *Kartell*

Capacity ml	Diam. mm	Height mm	Grad. ml	Material	PK	Cat. No.
10	16	108		PP	500	**9.315 832** 3
15	18	120		PP	500	**9.315 833**
10	16	107	0.10	PP	100	**6.233 811** 4
15	18	118	0.20	PP	100	**9.315 834**
10	16	107	0.10	PMP (TPX®)	50	**6.075 746** 5
15	18	118	0.20	PMP (TPX®)	50	**6.231 946**

3



9.315 832

4



6.233 811

5



6.075 746

6 Centrifuge tubes, cylindrical, PP

Translucent. PP. Autoclavable. Can withstand temperatures up to +120°C. Rimmed. High chemical resistance. Cannot be used with naked flame. Can also be used as conventional test tubes. *Kartell*

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
7	12	100.0	100	**9.315 830**
16	17	101.0	500	**6.204 878**
31	24	93.0	50	**6.205 839**
48	30	104.0	25	**6.205 674**
70	35	99.5	20	**9.315 831**
110	40	119.0	25	**6.205 169**

6



For stoppers, please see page 28.



1 Centrifuge tubes, PP

Polypropylene tubes with very good thermal, mechanical and chemical stability. Fitted with screw-on closure. Packed in boxes or bags. With graduations and labelling area. Tubes are sterile, cytotoxicity-free, DNase/RNase- and human DNA-free.

Greiner Bio-One

Specifications:

Centrifugation capacitiy (15 - 50 ml): 3215 x g/4500 rpm in swing out rotors
8965 x g/9000 rpm in fixed angle rotors

Capacity ml	Diam. mm	Height mm	Form	PK	Cat. No.
15	17.0	120	conical	50	**9.380 423**
15	17.0	120	conical	500	**7.380 423**
15	17.0	120	conical	1000	**7.053 718**
50	30.0	115	conical	20	**9.380 421**
50	30.0	115	conical	500	**7.380 421**
50	30.0	115	conical	300	**6.049 748**
50	30.0	115	conical, with rim	25	**9.380 422**
50	30.0	115	conical, with rim	450	**7.380 422**
50	30.0	115	conical, with rim	300	**6.054 664**





2 3 Centrifuge tubes, conical tubes, PP/PE-HD

New and improved conical tubes with the largest writing area on the market for increased traceability with additional space for labeling information. Recyclable plastic rack reduces waste in the lab. New conical tubes have higher RCF ratings, which enable more applications from low speed to super speed centrifugation. They meet USP class VI requirements and are non-cytotoxic, non-pyrogenic and RNase/DNase free. Graduated, leak proof and sterile (SAL 10^{-6})

Thermo Scientific

Material tubes: PP
Material caps: PE-HD

Capacity ml	Diam. mm	Height mm	Max. rcf	Description	PK	Cat. No.
15	17	120	10500 x g*	Bulk	500	**9.401 430**
15	17	120	10500 x g*	Racked	500	**9.401 431**
50	30	115	17000 x g*	Bulk	500	**9.401 432**
50	30	115	17000 x g*	Racked	300	**9.401 433**

* When fully supported by conical rotor cavity or conical adaptor. Note the maximum speeds listed are guidelines only. These speeds have been achieved in reliability tests based on sedimentation of 1.2 specific gravity fluid at 18°C.



4 Centrifuge tubes, plastic, round bottom, PC, graduated

Transparent. PC. Rimless, with moulded graduations.
Slightly yellowish in colour. Round bottom. For use with loads up to 20000xg rcf.

BRAND

Note: the strength of Polycarbonate is reduced when it is autoclaved or cleaned using alkaline detergents.

Volume ml	Diam. mm	Height mm	Grad. ml	PK	Cat. No.
50	35	99	1	1	**9.315 329**
100	41	115	2	1	**9.315 339**
100	45	98	2	1	**9.315 340**



Eppendorf Tubes® 5.0 ml, PP

NEW!

Eppendorf

- Ergonomic operation: Simple, practical and ergonomic single-hand operation. Large labelling area.
- Lid design: Hinged lid for minimized sample evaporation during storage and incubation in a wide range of temperatures from -86°C to 80°C
- Material: Exceptionally high-quality, transparent polypropylene, free of plasticizers, biocides or mold release agents, for reliable test results
- Certified purity: Available in lot-tested and certified Eppendorf Quality, PCR clean, Sterile and Eppendorf Biopur® purity levels
- Centrifugation safety: Maximum safety and stability for centrifugation up to 25 000 × g and fast and efficient protocols.
- Conical shape: Compatible with accessories for conical 15 mL tubes - many existing adapters and racks can be used.
- Sample recovery: Available in Eppendorf LoBind® material for maximum recovery of valuable samples

From 80°C on, please use the Tube Clip opener Cat. No. 9.409 294

Description	Package contents	PK	Cat. No.	
Eppendorf Tubes® 5.0 mL, Eppendorf Quality™	2 bags of 100	200	**9.409 277**	1
Eppendorf Tubes® 5.0 mL, PCR clean	2 bags of 100	200	**9.409 278**	
Eppendorf Tubes® 5.0 mL, Sterile	10 bags of 20	200	**9.409 279**	
Eppendorf Tubes® 5.0 mL, Biopur®	bag of 50, single packed	50	**9.409 288**	
Eppendorf Protein LoBind Tube, PCR clean	2 bags of 50	100	**9.409 289**	
Eppendorf DNA LoBind Tube, PCR clean	4 bags of 50	200	**9.409 290**	
Eppendorf Tubes® 5.0 mL, Eppendorf Quality™, amber (light protection)	2 bags of 100	200	**6.265 214**	2
Tube Clip, Eppendorf Quality™		10	**9.409 294**	3

1



9.409 277

2



6.265 214

3



9.409 294

4 Tube Rack for 5ml microcentrifuge tubes, PP

NEW!

Bel-Art Products

Designed specifically for 40 x 5ml microcentrifuge tubes this rack will also accommodate other tubes with a diameter of 13 to 16mm. Made of durable and corrosion resistant white polypropylene. End plates have handles for easy transport and stacking
Steam autoclavable at 121°C
Dimensions (L x W x H): 260 x 113 x 105mm
Rows: 4 x 10

No. of tubes	For tubes diam. mm	PK	Cat. No.
40	13 - 16mm	1	**9.194 026**

4



5 Centrifuge tubes Oak Ridge Typ 3114, FEP

Thermo Scientific

Teflon® FEP with Tefzel® ETFE screw cap. Resistant to all acids, bases and solvents.
Autoclavable. Operating temperature range -100 to +150°C.
Can be used brim-full in refrigerated centrifuges at up to 50000xg rcf. Leak-proof.
Accessory sealing cap assemblies are available for all sizes.

Type	Volume ml	Diam. mm	Height mm	PK	Cat. No.
3114	10	16.0	81.5	1	**9.315 701**
3114	30	25.5	93.7	1	**9.315 702**
3114	50*	28.8	107.7	1	**9.315 703**

* Capacity: 46ml to the brim.
Teflon® and Tefzel® are a registered trademark of DuPont.

5





1 Centrifuge tubes Oak Ridge Typ 3115, PSU

Thermo Scientific

Transparent. Polysulphone (PSU) with PP screw cap. As stable and robust as PC test-tubes, but considerably more resistant to acids and alkalis. Autoclavable.
Can be used in refrigerated or ambient centrifuges at up to 50000xg rcf.
Accessory sealing cap assemblies are available for all sizes.
Notes: If autoclaving, the tubes must be filled to 80% of their total capacity.
Polysulphone must not be used with Tween, as this causes hairline cracks to form.

Type	Volume ml	Diam. mm	Height mm	PK	Cat. No.
3115	30	25.7	94.5	1	**9.315 708**
3115	50*	29.0	107.7	1	**9.315 709**

* Capacity: 43ml to the brim.



2 Nalgene™ Oak-Ridge centrifuge tubes Type 3118, PC

Thermo Scientific

Transparent. PC with PP screw cap. Can be used in suitable refrigerated or ambient centrifuges at up to 50.000xg rcf. Autoclavable. Accessory sealing cap assemblies are available for 10ml, 30ml and 50ml sizes.

Type	Capacity ml	Diam. mm	Height mm	PK	Cat. No.
3118	10	16.1	81.7	1	**9.315 691**
3118	28	25.4	101.8	1	**9.315 692**
3118	30	25.7	94.5	1	**9.315 693**
3118	50*	28.8	107.0	1	**9.315 694**
3118	85**	38.2	105.7	1	**9.315 695**

* Capacity: 43ml to the brim.
**Capacity: 81ml to the brim.



3 Nalgene™ Oak-Ridge centrifuge tubes Type 3119, PP-copolymer

Thermo Scientific

PP-copolymer with PP screw cap. PPCO is more resistant to chemicals than PC. Autoclavable. When wet, the translucent test-tube enables observation of the contents.
Can be used in refrigerated and unrefrigerated centrifuges at up to 50.000xg rcf.
Accessory sealing cap assemblies are available for all sizes.

Type	Volume ml	Diam. mm	Height mm	PK	Cat. No.
3119	10	16.0	81.4	1	**9.315 711**
3119	28	25.4	101.9	1	**9.315 712**
3119	30	25.5	94.3	1	**9.315 713**
3119	50*	28.8	106.7	1	**9.315 714**

* Capacity: 42ml to the brim.



4 Centrifuge bottles Typ 3120, PP-copolymer

Thermo Scientific

PP-copolymer with PP screw cap. Autoclavable.

Type	Volume ml	Diam. mm	Height mm	Max. rcf	PK	Cat. No.
3120	250	61.8	127.7	13,200*	1	**9.315 716**
3120	500	69.5	170.2	13,700	1	**9.315 717**
3120	500	73.8	169.8	4,800	1	**9.315 720**
3120	1000	97.5	184.5	7,100	1	**9.315 718**
3120	1000	97.7	179.0	7,100	1	**9.315 719**

* Up to 27500xg if using the sealing screw cap 9.315 734.

E & OE.

1 Centrifuge bottles Typ 3122, PC

PC with PP screw cap. Crystal clear. Good mechanical strength. Autoclavable. *Thermo Scientific*
Leak-proof even at low speeds.
In order to ensure that the system is leak-proof even at high speeds and when centrifuging dangerous substances, the 250ml and 1000ml sizes must be used in conjunction with sealing screw cap sets.



Type	Volume ml	Diam. mm	Height mm	Max. rcf	PK	Cat. No.
3122	250	61.8	127.6	27.500	1	**9.315 721**
3122	500	69.5	169.6	13.700	1	**9.315 723**
3122	1000	97.6	188.4	7.100	1	**9.315 724**
3122	1000	98.1	180.2	7.100	1	**9.315 725**

2 Sealing cap assemblies Typ DS 3131, PP

PP screw cap with Tefzel® ETFE plug liner and viton O-ring. Leak-proof at recommended maximum speed and rcf for tubes. Suitable for working with aggressive chemicals. *Thermo Scientific*
The 38mm assembly has a PP shoulder reinforcement ring to prevent collapsing of the 250ml bottles.



Type	For tubes ml	Screw cap diam. mm	PK	Cat. No.
DS3131	30	20	1	**9.315 732**
DS3131	50	24	1	**9.315 733**
DS3131	250	38	1	**9.315 734**

Tefzel® is registered trademark of DuPont.

3 Sealing cap assemblies with silicone seal Typ DS 3132, PP

For Oak Ridge centrifuge test tubes made of PP, PC and polysulphone. *Thermo Scientific*



Type	For tubes ml	Screw cap diam. mm	PK	Cat. No.
DS3132	28 / 30	20	2	**9.315 738**
DS3132	50	24	2	**9.315 739**
DS3132	250	58	2	**9.315 740**
DS3132	500 / 1000	63	2	**9.315 741**

4 Wide-mouth centrifuge bottles Typ 3141, PP-copolymer

PP-copolymer with sealing screw cap. Autoclavable. *Thermo Scientific*



Type	Volume ml	Diam. mm	Height mm	Max. rcf x g	PK	Cat. No.
3141	250	60.7	133.4	27500	1	**9.315 763**
3141	450	69.5	160.0	13700	1	**9.315 764**

5 Centrifuge Bottles with Sealing Cap , SuperSpeed, Types 3140, 3141

Designed to boost productivity and pellet recovery in super speed, large volume gross separation applications. *Thermo Scientific*
Process one full Litre in each window-clear bottle at speeds up to 15810xg. Graduated, wide-mouth bottle simplifies decanting, re-suspensions and pellet removal. Smooth inner walls are less likely to shear delicate cells.
Ideal for bacterial, yeast and tissue isolations. Improve viral harvesting in vaccine production. Reduce shearing in mammalian culture separations. PC offers excellent clarity. Ergonomic design facilitates loading, recovery and storage of samples.
Recommended operating temperature range is from 4°C to 22°C; storage to -70°C. Brim capacity is 1.055ml.
Nominal Dimensions (Diam. x H): 96.52 x 195.58mm. Before autoclaving, just set closure on top of bottles without engaging the threads. For proper performance these bottles must be filled to at least 80% of the total capacity.



Type	Capacity ml	Material	Diam. mm	Height mm	PK	Cat. No.
3140	1000	PC	98.0	195.0	1	**9.315 729**
3141	1000	PPCO	97.5	195.3	1	**6.236 915**

LLG-Filter paper, qualitative grades

Made from 100% cellulose.
Ash content 0.06%.
Filtration speed according to DIN 53137.
Capacity of separation according to DIN 53135.



1 LLG-Qualitative filter paper, circles

Fast

Diam. mm	Filtration time secs.	PK	Cat. No.
90	10	100	**9.045 830**
110	10	100	**9.045 831**
125	10	100	**9.045 832**
150	10	100	**9.045 833**
185	10	100	**9.045 834**



2 LLG-Qualitative filter paper, circles

NEW!

Medium speed

Diam. mm	Filtration time secs.	PK	Cat. No.
42.5	50	100	**9.045 820**
90.0	50	100	**9.045 821**
110.0	50	100	**9.045 822**
125.0	50	100	**7.970 266**
150.0	50	100	**7.970 269**
185.0	50	100	**6.242 668**
240.0	50	100	**6.242 631**
42.5	88	100	**9.045 800**
47.0	88	100	**9.045 801**
55.0	88	100	**9.045 802**
70.0	88	100	**9.045 803**
90.0	88	100	**9.045 804**
110.0	88	100	**9.045 805**
125.0	88	100	**9.045 806**
150.0	88	100	**9.045 807**
185.0	88	100	**9.045 808**
240.0	88	100	**9.045 809**



3 LLG-Qualitative filter paper, folded filters

NEW!

Medium speed

Diam. mm	Filtration time secs.	PK	Cat. No.
70.0	50	100	**7.659 027**
125.0	50	100	**9.045 825**
150.0	50	100	**9.045 826**
185.0	50	100	**9.045 827**
240.0	50	100	**6.242 632**



4 LLG-Qualitative filter paper, circles

NEW!

Slow

Diam. mm	Filtration time secs.	PK	Cat. No.
70.0	180	100	**7.970 267**
90.0	180	100	**7.970 268**
110.0	180	100	**6.242 672**
125.0	180	100	**7.970 134**
150.0	180	100	**7.970 139**
185.0	180	100	**6.242 671**



5 LLG-Qualitative filter paper, sheets

Medium speed

Dimensions mm	Filtration time secs.	PK	Cat. No.
460 x 570	88	100	**9.045 810**

E & OE.

1 Filter paper, Grade 4

Circles. Qualitative. Fast flowrate. Excellent retention of coarse and gelatinous precipitants. Smooth. Supplied in packs of circles as outlined below. *GE Healthcare*

Flowrate: Fast
Retention: High
Wet strength: Low
Thickness: 0.21mm
Ash: 0.06%

Diam. mm	PK	Cat. No.
42.5	100	**9.056 231**
55	100	**9.056 233**
70	100	**9.056 235**
90	100	**9.056 196**
110	100	**9.056 230**
125	100	**9.056 232**
150	100	**9.056 234**
185	100	**9.056 236**
240	100	**9.056 237**
320	100	**9.056 239**
460 x 570	100	**9.056 334**



2 Filter paper, Grade 113

Circles. Qualitative. Fast flow. Excellent retention of coarse and gelatinous precipitates, creped. *GE Healthcare*

Flow rate: Fast
Retention: Medium
Wet strength: High
Thickness: 0.42mm
Ash: 0.06%

Diam. mm	PK	Cat. No.
90	100	**9.049 015**
125	100	**9.049 016**
150	100	**9.049 017**
185	100	**9.049 018**
240	100	**9.049 019**



3 Filter paper, Grade 114

Circles. Qualitative. Thin and very strong. Smooth surface. *GE Healthcare*

Flow rate: Fast
Retention: Medium
Wet strength: High
Thickness: 0.19mm

Diam. mm	PK	Cat. No.
150	100	**9.049 027**



4 Filter paper, Grade 542

Circles. Qualitative. Hardened. Ashless. Highly retentive for fine precipitates. *GE Healthcare*

Flow rate: Slow
Retention: Medium
Wet strength: High
Thickness: 0.15mm
Ash: <0.006 %

Diam. mm	PK	Cat. No.
55	100	**9.056 500**
70	100	**9.056 461**
90	100	**9.056 502**
110	100	**9.056 503**
125	100	**9.056 504**
150	100	**9.056 505**
185	100	**9.056 506**
240	100	**9.056 507**



1



1 Filter paper, Grade 1

Circles and sheets. Qualitative. The most widely used grade of filter paper. *GE Healthcare*

Flowrate: Medium
Retention: Medium
Wet strength: Low
Thickness: 0.18mm

Diam. mm	PK	Cat. No.
20	400	**9.048 942**
25	400	**9.048 943**
30	400	**9.048 944**
32	100	**9.048 937**
42.5	100	**9.056 199**
47	100	**9.048 945**
55	100	**9.056 200**
70	100	**9.056 201**
85	100	**9.048 946**
90	100	**9.056 202**
110	100	**9.056 203**
125	100	**9.056 204**
150	100	**9.056 205**
185	100	**9.056 206**
240	100	**9.056 207**
270	100	**9.056 208**
320	100	**9.056 209**
400	100	**9.056 278**
500	100	**9.056 279**
26 x 31	1000	**9.056 337**
460 x 570	100	**9.056 331**
460 x 570	500	**9.056 340**
580 x 680	100	**9.056 341**
75 x 100	500	**9.056 338**

2



2 Filter paper, Grade 2

Circles and sheets. Qualitative. Slightly thicker and more retentive than number 1. *GE Healthcare*

Flowrate: Medium
Retention: Medium
Wet strength: Low
Thickness: 0.19mm
Ash: 0.06%

Diam. mm	PK	Cat. No.
42.5	100	**9.056 198**
55	100	**9.056 210**
70	100	**9.056 211**
90	100	**9.056 212**
110	100	**9.056 213**
125	100	**9.056 214**
150	100	**9.056 215**
185	100	**9.056 216**
240	100	**9.056 217**
320	100	**9.056 219**
460 x 570	100	**9.056 332**

3



3 Filter paper, Grade 91

Circles and sheets. Qualitative. General purpose schools grade, creped. *GE Healthcare*

Flowrate: Medium
Retention: Medium
Wet strength: High
Thickness: 0.205mm

Diam. mm	PK	Cat. No.
110	100	**9.048 938**
125	100	**9.048 933**
150	100	**9.048 939**
185	100	**9.048 934**
240	100	**9.048 940**

E & OE.

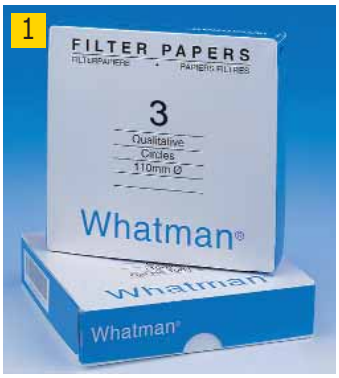
1 Filter paper, Grade 3

Circles and sheets. Qualitative. Very thick. Double the thickness of number 1. *GE Healthcare*

Flowrate: Medium
Retention: High
Wet strength: High
Thickness: 0.39mm
Ash: 0.06%

Diam. mm	PK	Cat. No.
55	100	**9.056 220**
70	100	**9.056 221**
90	100	**9.056 222**
110	100	**9.056 223**
125	100	**9.056 224**
150	100	**9.056 225**
185	100	**9.056 226**
240	100	**9.056 227**
460 x 570	100	**9.056 333**

1



2 Qualitative filter paper, Grade 595, circles

Medium fast 4 to 7µm *GE Healthcare*
- thin filter paper
- for medium to fine precipitates and general laboratory work
- Weight: 68g/m²
- Thickness: 0.150mm

Diam. mm	PK	Cat. No.
110	100	**9.062 303**
125	100	**9.062 304**
150	100	**9.062 305**

2



3 Qualitative filter paper, Grade 597, circles and sheets

Medium fast, 4 to 7µm *GE Healthcare*
- thicker and faster than 595
- for medium to fine precipitates
- Weight 81g/m²
- Thickness 0.180mm

Diam. mm	PK	Cat. No.
55	100	**9.062 400**
90	100	**9.062 402**
110	100	**9.062 403**
150	100	**9.062 405**
185	100	**9.062 406**
240	100	**9.062 407**
580 x 580	100	**9.066 597**

3



4 Filter paper, Grade number 5

Circles. Qualitative. Slow flowrate. Retains fine precipitates, grained surface. *GE Healthcare*
Supplied in packs of circles as outlined below.

Flowrate: Slow
Retention: High
Wet strength: High
Thickness: 0.20mm
Ash: 0.06%

Diam. mm	PK	Cat. No.
55	100	**9.056 240**
70	100	**9.056 241**
90	100	**9.056 242**
110	100	**9.056 243**
125	100	**9.056 244**
150	100	**9.056 245**
185	100	**9.056 246**
240	100	**9.056 247**

4



1



1 Filter paper, Grade number 6

Circles. Qualitative. Slow, faster as Grade 5. Supplied in packs of circles as outlined below. *GE Healthcare*

Flowrate:	Slow
Retention:	High
Wet strength:	Low
Thickness:	0.18mm
Ash:	0.20%

Diam. mm	PK	Cat. No.
70	100	**9.056 251**
90	100	**9.056 252**
110	100	**9.056 253**
125	100	**9.056 254**
150	100	**9.056 255**
185	100	**9.056 256**
240	100	**9.056 257**

Qualitative filter paper, Grade 602 h, circles

Slow < 2µm *GE Healthcare*

- thick filter paper
- for fine precipitates
- Weight: 84g/m²
- Thickness: 0.16mm

Diam. mm	PK	Cat. No.
125	100	**9.062 704**
185	100	**9.062 706**

Qualitative filter paper, Grade 604½, folded filters

Fast, 12 to 25µm *GE Healthcare*

- time saving, because folded filters have a larger surface area
- filter faster than comparable circular filters
- for coarse precipitates (e.g. hydroxide and sulphide)
- Weight: 80g/m²
- Thickness: 0.19mm

Diam. mm	PK	Cat. No.
150	100	**9.063 905**
185	100	**9.063 906**
240	100	**9.063 907**
320	100	**9.063 909**

2



2 Qualitative filter paper, Grade 1573½, folded filters

Fast, 12 to 25µm *GE Healthcare*

- wet-strength
- time saving, because folded filters have a larger surface area than circular filters of the same diameter
- Weight: 88g/m²
- Thickness: 0.17mm

Diam. mm	PK	Cat. No.
125	100	**9.065 104**
150	100	**9.065 105**
185	100	**9.065 106**
240	100	**9.065 107**
270	100	**9.065 108**
320	100	**9.065 109**

3



3 Qualitative filter paper, Grade 598½, folded filters

Medium to fast, 8 to 10µm *GE Healthcare*

- thick filter paper
- for fast filtration of coarse precipitates
- Weight: 140g/m²

Thickness: 0.32mm

Diam. mm	PK	Cat. No.
125	50	**9.063 604**
185	50	**9.063 606**
240	50	**9.063 607**
500	50	**9.063 611**
580 x 580	250	**9.066 598**

E & OE.

1 Qualitative filter paper, Grade 595½, folded filters

Medium fast, 4 to 7µm *GE Healthcare*

- time saving, because folded filters have a larger surface area
- filter faster than comparable circular filters
- for medium to fine precipitates and general laboratory work
- Weight: 68g/m²
- Thickness: 0.15mm



Diam. mm	PK	Cat. No.
70	100	**9.063 301**
110	100	**9.063 303**
125	100	**9.063 304**
150	100	**9.063 305**
185	100	**9.063 306**
240	100	**9.063 307**
270	100	**9.063 308**
320	100	**9.063 309**
385	100	**9.063 310**

2 Qualitative filter paper, Grade 597½, folded filters

Medium fast, 4 to 7µm *GE Healthcare*

- time saving, because folded filters have a larger surface area
- for medium to fine precipitates
- Weight: 81g/m²

Thickness: 0.18mm



Diam. mm	PK	Cat. No.
90	100	**9.063 402**
110	100	**9.063 403**
125	100	**9.063 404**
150	100	**9.063 405**
185	100	**9.063 406**
240	100	**9.063 407**
270	100	**9.063 408**
320	100	**9.063 409**
385	100	**9.063 410**
500	100	**9.063 411**

3 Filter paper, Grade number 2 V

Qualitative. Folded (pre-pleated) version of Number 2. *GE Healthcare*

Flowrate:	Medium
Retention:	Medium
Wet strength:	Low
Thickness:	0.19mm
Ash:	0.06%

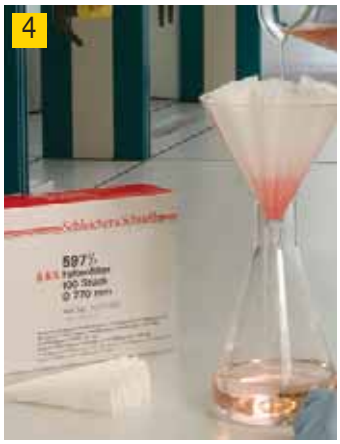


Diam. mm	PK	Cat. No.
125	100	**9.056 304**
150	100	**9.056 305**
185	100	**9.056 306**
240	100	**9.056 307**
270	100	**9.056 308**
320	100	**9.056 309**

4 Qualitative filter paper, Grade 593 ½, folded filters

Medium to slow 2 to 5µm *GE Healthcare*

- time saving, because folded filters have a larger surface area than comparable circular filters
- for medium to fine precipitates and general laboratory work
- Weight: 85g/m²
- Thickness: 0.17mm



Diam. mm	PK	Cat. No.
185	100	**9.063 106**
240	100	**9.063 107**

Qualitative filter paper, Grade 594½, folded filters

Slow 2 to 4µm *GE Healthcare*
- for fine precipitates
- Weight: 75g/m²
- Thickness: 0.15mm

Diam. mm	PK	Cat. No.
185	100	**9.063 206**

Qualitative filter paper, thick, Grade 602eh½, folded filters

Very slow, <2 µm *GE Healthcare*
- thick filter paper
- for fine precipitates
- Weight: 85g/m²
- Thickness: 0.15mm

Diam. mm	PK	Cat. No.
125	100	**9.063 804**
150	100	**9.063 805**



1 Filter paper, grade 113 V

Circles. Prepleated. Qualitative. Excellent retention of coarse and gelatinous precipitates, creped. *GE Healthcare*

Flow rate:	Fast
Retention:	Medium
Wet strength:	High
Thickness:	0.42mm

Diam. mm	PK	Cat. No.
125	100	**9.056 294**
150	100	**9.056 295**
185	100	**9.056 296**
240	100	**9.056 297**
270	100	**9.056 298**
320	100	**9.056 299**
500	100	**9.056 301**



2 Filter paper, grade 114 V

Circles. Prepleated. Qualitative. Thin and very strong. Smooth surface. *GE Healthcare*

Flow rate:	Fast
Retention:	Medium
Wet strength:	High
Thickness:	0.19mm

Diam. mm	PK	Cat. No.
125	100	**9.056 324**
150	100	**9.056 325**
185	100	**9.056 326**
240	100	**9.056 327**



E & OE.

LLG-Filter papers for quantitative analysis

Made from 100% cellulose.
Ash content 0.007%.
Filtration speed according to DIN 53137.
Capacity of separation according to DIN 53135.

1 LLG-Quantitative filter paper, circles



Fast 12 to 25µm
- for coarse, high volume precipitates
- for determinations according to the German Standard Methods for the examination of water, waste water and sludge.
- most frequently used quantitative filter
- ashless, equivalent black tape

Diam. mm	Filtration time secs.	PK	Cat. No.
70	10	100	**9.045 840**
90	10	100	**9.045 841**
110	10	100	**9.045 842**
125	10	100	**9.045 843**
150	10	100	**9.045 844**
185	10	100	**9.045 845**

2 LLG-Quantitative filter paper, circles



Slow < 2µm.
- for very fine precipitates and small particles
- for soil analysis
- for $BaSO_4$ (hot precipitate), $PbSO_4$, Cu_2O, ZnS, NiS
- ashless, equivalent blue tape

Diam. mm	Filtration time secs.	PK	Cat. No.
70	180	100	**7.970 271**
90	180	100	**9.045 850**
110	180	100	**6.242 670**
125	180	100	**9.045 851**
150	180	100	**9.045 852**
185	180	100	**6.242 669**
320	180	100	**7.970 611**

3 LLG-Quantitative filter paper, circles

NEW!



medium fast/fast

Diam. mm	Filtration time secs.	PK	Cat. No.
90	20	100	**7.970 057**
110	20	100	**7.970 000**
125	20	100	**7.970 058**
150	20	100	**7.970 001**
185	20	100	**7.970 002**
200	20	100	**6.242 179**

4 LLG-Quantitative filter paper, circles

NEW!



medium fast

Diam. mm	Filtration time secs.	PK	Cat. No.
55	50	100	**6.256 437**
70	50	100	**7.970 571**
90	50	100	**7.970 032**
110	50	100	**6.242 748**
125	50	100	**7.970 045**
150	50	100	**6.252 765**
185	50	100	**6.242 747**
240	50	100	**7.970 591**

1



1 Quantitative filter paper, Grade 589/1, circles

Fast 12 to 25µm *GE Healthcare*
Black ribbon
- for coarse, high volume precipitates
- for determinations according to the German Standard Methods for the examination of water, waste water and sludge.
- most frequently used quantitative filter
- Weight: 80g/m²
- Thickness: 0.19mm

Diam. mm	PK	Cat. No.
90	100	**9.060 102**
110	100	**9.060 103**
125	100	**9.060 104**
150	100	**9.060 105**
185	100	**9.060 106**

2



2 Quantitative filter paper, grade 41

Circles. Quantitative. Ashless. For filtration of coarse and gelatinous precipitates. *GE Healthcare*
Supplied in box of 100.

Flow rate:	Fast
Retention:	Medium
Wet strength:	Low
Thickness:	0.22mm
Ash:	0.007%

Diam. mm	PK	Cat. No.
55	100	**9.056 410**
60	100	**9.049 045**
70	100	**9.056 411**
90	100	**9.056 412**
110	100	**9.056 413**
125	100	**9.056 414**
150	100	**9.056 415**
185	100	**9.056 416**
240	100	**9.056 417**

3



3 Quantitative filter paper, Grade 589/2

Medium fast, 4 to 12µm. White ribbon. *GE Healthcare*
- for the analysis of foodstuffs
- for carbonates of alkaline earth metals, $(NH_4)_3[P(Mo_3O_{10})_4]$ x aq., $Mg(NH_4)PO_4$, CaC_2O_4 (hot precipitates)
- Weight: 85g/m²
- Thickness: 0.18mm

Diam. mm	PK	Cat. No.
55	100	**9.060 200**
70	100	**9.060 201**
90	100	**9.060 202**
110	100	**9.060 203**
125	100	**9.060 204**
150	100	**9.060 205**
185	100	**9.060 206**
240	100	**9.060 207**

Quantitative filter paper, grade 40

Circles. Quantitative. Ashless. *GE Healthcare*

Flow rate:	Medium
Retention:	Medium
Wet strength:	Low
Thickness:	0.21mm
Ash:	0.007%

Diam. mm	PK	Cat. No.
32	100	**9.049 035**
42.5	100	**9.056 399**
55	100	**9.056 400**
70	100	**9.056 401**
90	100	**9.056 402**
110	100	**9.056 403**
125	100	**9.056 404**
150	100	**9.056 405**
185	100	**9.056 406**
240	100	**9.056 407**

E & OE.

1 Quantitative filter paper, Grade 589/3, circles

1



Slow < 2µm. Blue ribbon. *GE Healthcare*

- for very fine precipitates and small particles
- for soil analysis
- for $BaSO_4$ (hot precipitate), $PbSO_4$, Cu_2O, ZnS, NiS
- Weight: 84g/m²
- Thickness: 0.16mm

Diam. mm	PK	Cat. No.
110	100	**9.060 303**
125	100	**9.060 304**
150	100	**9.060 305**
185	100	**9.060 306**

Filter paper, grade 42

Circles. Quantitative. Ashless. For filtration of fine precipitates. *GE Healthcare*

Flow rate:	Slow
Retention:	High
Wet strength:	Low
Thickness:	0.20mm
Ash:	0.007%

Diam. mm	PK	Cat. No.
42.5	100	**9.056 419**
55	100	**9.056 420**
70	100	**9.056 421**
90	100	**9.056 422**
110	100	**9.056 423**
125	100	**9.056 424**
150	100	**9.056 425**
185	100	**9.056 426**
240	100	**9.056 427**

Phase separators, 1PS

NEW!

A silicone impregnated, water repellent paper which can be used to separate aqueous solutions from immiscible solvents. The aqueous phase is retained and the organic phase passes through. Will retain solid particles. Can be used either flat under suction not exceeding 70mm Hg or quadrant folded in a conical glass funnel. Supplied in box of 100 circles. *GE Healthcare*

Note: This paper contains a small quantity of tin complex catalyst. It is therefore not recommended for use when this complex may cause interference, e.g. with the use of dithizone (diphenylthiocarbazone) reagent.

Flow rate:	Fast
Retention:	Medium
Wet strength:	High
Thickness:	0.16mm
Ash:	0.008%

Diam. mm	PK	Cat. No.
70	100	**9.056 891**
90	100	**9.056 892**
110	100	**9.056 893**
125	100	**9.056 894**
150	100	**9.056 895**
185	100	**9.056 896**
240	100	**9.056 897**
270	100	**9.056 898**



Glass microfibre filters

Glass microfibre filters have a fast filtration and a high loading capacity and particle retention rate.
Manufactured without chemical binder from high grade borosilicate glass. (Exception: GF6, GF9).
They are suitable for gravity or low suction filtration. Filtration speeds generally very much higher than conventional cellulose papers. Efficient retention of micron size particles. Must be used flat. Ideal for use in flat perforated plate Buchner type funnels (not sintered glass models). Can be used up to 500°C.

Wide range of applications including:
- retention of fine analytical precipitates
- retention of biochemical gelatinous precipitates
- water/air pollution analyses
- as prefilters for membranes
- scintillation counting
- radioimmunoassay.

1



1 LLG-Glass microfibre filters, filter circles

NEW!

Diam. mm	Filtration time secs.	Weight g / m²	Thickness mm	PK	Cat. No.
25	60*	52	0.26	100	**9.045 860**
37	60*	52	0.26	100	**7.970 790**
47	60*	52	0.26	100	**9.045 861**
55	60*	52	0.26	100	**6.242 633**
90	60*	52	0.26	100	**6.252 072**
110	60*	52	0.26	100	**7.970 339**
125	60*	52	0.26	100	**7.970 033**
150	60*	52	0.26	100	**9.045 862**
25	100*	52	0.26	100	**9.045 865**
47	100*	52	0.26	100	**6.243 711**
55	100*	52	0.26	100	**6.251 383**
70	100*	52	0.26	100	**9.045 866**
90	100*	52	0.26	100	**9.045 867**
110	100*	52	0.26	100	**9.045 868**
47	310*	75	0.45	100	**7.970 106**
55	310*	75	0.45	100	**7.970 742**
70	310*	75	0.45	100	**6.253 553**

*filtration velocity according to Herzberg

2



2 Glass microfibre filters, grade GF 9, circles

Glass fibre filters are made of 100% borosilicate glass fibres with an inorganic binder. *GE Healthcare*
Temperature resistant up to 500°C.
Glass fibre filters are chemically resistant except against hydrofluoric acids and highly concentrated alkalis.
Application:
- Gas-/air-monitoring
- Water and waste water determination

Retention rate:	99.97%
Filtration time according to Herzberg:	120s
Filtration time according to Gurley:	20s
Weight:	70g/m²
Thickness:	350µm

Diam. mm	PK	Cat. No.
50	200	**9.068 699**
90	100	**9.068 702**
110	100	**9.068 703**

3



3 Glass microfibre filters, grade GF 6, circles

GE Healthcare

Retention rate:	99.97%
Filtration time according to Herzberg:	200s
Filtration time according to Gurley:	40s
Weight:	80g/m²
Thickness:	350µm

Diam. mm	PK	Cat. No.
55	100	**9.068 500**
70	100	**9.068 501**
90	100	**9.068 502**
110	100	**9.068 503**
125	100	**9.068 504**
150	100	**9.068 505**
185	100	**9.068 506**
240	100	**9.068 507**

E & OE.

1 Glass microfibre filters, grade GF/F

This ultra-fine filter has a 98% retention efficiency for particles as small as 0.7µm in liquids. Particle retention to 0.7µm.

GE Healthcare

Diam. mm	PK	Cat. No.
24	100	**9.056 666**
25	100	**9.056 676**
42.5	100	**9.056 716**
47	100	**9.056 726**
55	100	**9.056 780**
70	100	**9.056 781**
90	25	**9.056 782**
110	25	**9.056 783**
125	25	**9.056 784**
150	25	**9.056 785**
257	25	**9.056 787**
570 x 460	25	**9.056 805**

1



2 Glass microfibre filters, grade GF/B

Three times thicker and with greater wet strength than GF/A. Particle retention to 1µm. Supplied in pack quantities as outlined below.

GE Healthcare

Diam. mm	PK	Cat. No.
24	100	**9.056 662**
25	100	**9.056 672**
37	100	**9.056 692**
42.5	100	**9.056 712**
47	100	**9.056 722**
55	100	**9.056 750**
70	100	**9.056 751**
90	25	**9.056 752**
110	25	**9.056 753**
125	25	**9.056 754**
150	25	**9.056 755**
185	25	**9.056 756**
570 x 460	25	**9.056 802**

2



3 Glass microfibre filters, grade GF/C

Extremely efficient filter made to retain fine particles and micro organisms. Particle retention to 1.2µm.

GE Healthcare

Diam. mm	PK	Cat. No.
21	100	**9.056 643**
24	100	**9.056 663**
25	100	**9.056 673**
42.5	100	**9.056 713**
47	100	**9.056 723**
50	100	**9.056 759**
55	100	**9.056 760**
70	100	**9.056 761**
90	100	**9.056 762**
110	100	**9.056 763**
125	100	**9.056 764**
150	100	**9.056 765**
254 x 102	50	**9.056 816**
570 x 460	25	**9.056 803**

3



4 Glass microfibre filters, grade 934-AH

Circles. High retention at high flow rates. Widely used in water pollution monitoring techniques for suspended solids, and is specified in US Method 934-AH. Particle retention to 1.5µm.

GE Healthcare

Diam. mm	PK	Cat. No.
24	100	**9.056 667**
47	100	**9.056 727**
55	100	**9.056 730**
70	100	**9.056 731**
90	100	**9.056 732**
110	100	**9.056 733**
125	100	**9.056 734**

4



1



1 Glass microfibre filters, grade GF/A

The general purpose high efficiency glass microfibre filter. Particle retention to 1.6µm. Supplied in pack quantities as indicated.

GE Healthcare

Diam. mm	PK	Cat. No.
21	100	**9.056 641**
24	100	**9.056 661**
25	100	**9.056 671**
37	100	**9.056 691**
42.5	100	**9.056 711**
47	100	**9.056 721**
50	100	**9.056 725**
55	100	**9.056 740**
60	100	**9.056 739**
70	100	**9.056 741**
90	100	**9.056 742**
110	100	**9.056 743**
125	100	**9.056 744**
150	100	**9.056 745**
254 x 203	100	**9.056 811**
570 x 460	25	**9.056 801**

Glass microfibre filters, grade EPM 2000

For use in high volume air sampling apparatus. Particle retention to 2µm.

GE Healthcare

Diam. mm	PK	Cat. No.
203 x 254	100	**9.049 672**

2



2 Glass microfibre filters, grade GF/D

Thick filter made from less fibres and retaining around 3µm particles with a very high loading capacity. Extremely high speed. Particle retention to 2.7µm.

GE Healthcare

Diam. mm	PK	Cat. No.
25	100	**9.056 674**
47	100	**9.056 724**
70	100	**9.056 771**
90	25	**9.056 772**
110	25	**9.056 773**
125	25	**9.056 774**
150	25	**9.056 775**
257	25	**9.056 777**

3



3 Quartz microfibre filters, grade QM-A

Manufactured from quartz microfibre to withstand high temperatures. Can be used up to 500°C.

GE Healthcare

Flow rate:	Fast
Retention:	Medium
Wet strength:	High
Thickness:	0.475mm

Diam. mm	PK	Cat. No.
25	100	**9.056 679**
37	100	**9.056 699**
47	100	**9.056 729**
203 x 254	25	**9.056 814**

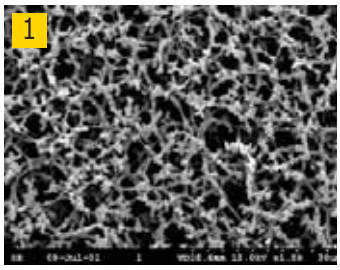
E & OE.

1 Membrane filters, Grade NC, made from cellulose nitrate

GE Healthcare

Applications:
- For prefiltration and dust measurement, clarification and sterile filtration
- For aqueous solutions

Properties:
- Very easily wetted
- Hydrophilic
- Can be used up to 125°C
- Autoclavable up to 121°C



Type	Pore size µm	Diam. mm	PK	Cat. No.
NC 10	0.10	47	100	**9.057 341**
NC 10	0.10	50	100	**9.057 342**
NC 20	0.20	25	100	**9.058 326**
NC 20	0.20	47	100	**9.058 327**
NC 20	0.20	50	100	**9.058 328**
NC 45	0.45	25	100	**9.057 219**
NC 45	0.45	47	100	**9.057 220**
NC 45	0.45	50	100	**9.057 222**
NC 45	0.45	100	50	**9.057 225**
NC 45	0.45	110	50	**9.057 226**
NC 45	0.45	142	25	**9.057 228**

2 Membrane filters, Cellulose nitrate, WCN

Plain white. Circles.

GE Healthcare



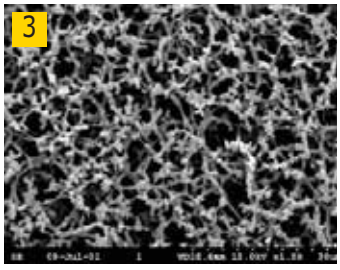
Pore size µm	Diam. mm	PK	Cat. No.
0.10	25	100	**9.950 979**
0.10	47	100	**9.950 980**
0.20	13	100	**9.950 981**
0.20	25	100	**9.950 982**
0.20	47	100	**9.950 983**
0.20	90	25	**9.950 984**
0.20	142	25	**9.950 985**
0.45	13	100	**9.950 988**
0.45	25	100	**9.950 989**
0.45	47	100	**9.950 991**
0.45	50	100	**9.950 992**
0.45	90	25	**9.950 994**
0.45	142	25	**9.950 995**
0.65	47	100	**9.950 998**
0.80	25	100	**9.951 001**
0.80	37	100	**9.951 002**
0.80	47	100	**9.951 003**
0.80	90	25	**9.951 004**
1.00	25	100	**9.951 005**
1.00	47	100	**9.951 006**
1.20	50	100	**9.951 008**
1.20	142	25	**9.951 009**
3.00	25	100	**9.951 010**
3.00	47	100	**9.951 011**
5.00	25	100	**9.951 012**
5.00	47	100	**9.951 013**
5.00	90	25	**9.951 014**

3 Membrane filters, Grade AE, made from pure cellulose nitrate

GE Healthcare

Applications:
For prefiltration and dust measurement, clarification and sterile filtration.

Properties:
- Very easily wetted
- For aqueous solutions
- Hydrophilic
- Can be used up to 125°C
- Autoclavable up to 121°C



Type	Pore size µm	Diam. mm	PK	Cat. No.
AE 98	5.00	47	100	**9.057 041**
AE 98	5.00	50	100	**9.057 042**
AE 99	8.00	25	100	**9.057 005**
AE 99	8.00	47	100	**9.057 011**
AE 99	8.00	50	100	**9.057 012**
AE 100	12.00	47	100	**9.057 191**
AE 100	12.00	50	100	**9.057 193**

1



1 Membrane Filters, Grade RC, Regenerated cellulose

NEW!

GE Healthcare

Application:
For the sterilisation and particle filtration of aqueous and organic solutions

Properties
- spontaneously wetted, very good wet-strength
- high chemical resistance, useful for aqueous and organic media
- hydrophilic
- can be used up to 180°C
- sterilisable by all methods
- suitable for use as sterile filter to ASTM-D 3862-80

Type	Pore size µm	Diam. mm	PK	Cat. No.
RC 58	0.20	47	100	**9.057 771**
RC 55	0.45	47	100	**9.057 791**
RC 58	0.20	50	100	**9.057 772**
RC 55	0.45	50	100	**9.057 792**
RC 60	1.00	50	100	**9.057 712**
RC 55	0.45	100	25	**9.057 795**
RC 55	0.45	142	25	**9.057 798**

2



2 Membrane filters, Grade ME, made from mixed cellulose esters

GE Healthcare

Applications:
- Excellent for gravimetrical analysis
- Especially for aqueous solutions
- Ideally suitable for contamination test

Properties:
- Economical
- Constant weight
- Hydrophilic
- Not sterile
- Can be used up to 125°C
- Autoclavable up to 121°C

Type	Pore size µm	Diam. mm	PK	Cat. No.
ME24	0.20	25	100	**9.058 965**
ME24	0.20	47	100	**9.058 969**
ME24	0.20	50	100	**9.058 987**
ME24	0.20	142	25	**9.058 981**
ME25	0.45	25	100	**9.058 935**
ME25	0.45	47	100	**9.058 939**
ME25	0.45	50	100	**9.058 942**
ME25	0.45	100	50	**9.058 946**
ME25	0.45	110	50	**9.057 812**
ME25	0.45	142	25	**9.058 951**
ME27	0.80	25	100	**9.058 865**
ME27	0.80	47	100	**9.058 869**
ME27	0.80	50	100	**9.058 872**
ME28	1.20	47	100	**9.058 839**
ME28	1.20	50	100	**9.058 842**
ME29	3.00	25	100	**9.057 800**
ME29	3.00	47	100	**9.058 809**
ME29	3.00	50	100	**9.058 812**

3



3 Membrane filters, Grade OE, made from cellulose acetate

GE Healthcare

Very high wet strength and very low ability for protein binding.
For filtration of aqueous, alcohol and oil-based solutions at temperatures up to 180°C.

Description	Pore size µm	Diam. mm	PK	Cat. No.
OE 67	0.45	25	100	**9.057 565**
OE 67	0.45	47	100	**9.057 571**
OE 67	0.45	50	100	**9.057 572**
OE 67	0.45	142	25	**9.057 578**
OE 66	0.20	25	100	**9.057 605**
OE 66	0.20	47	100	**9.057 611**
OE 66	0.20	50	100	**9.057 612**
OE 66	0.20	142	25	**9.057 618**

E & OE.

1 Membrane filters, Cellulose mixed ester

Composed of cellulose acetate (~20%) and cellulose nitrate (~80%). *GE Healthcare*



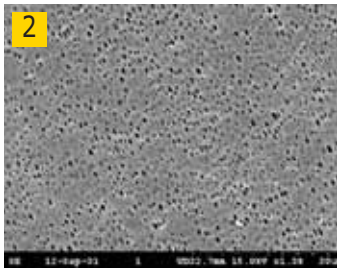
Type	Pore size µm	Diam. mm	PK	Cat. No.
Gridded white	0.45	47	100	**9.951 016**
Gridded white	0.80	25	100	**9.951 018**

2 Membrane filters, Grade NL, made from pure polyamide

GE Healthcare

Application:
- Universal filter, especially in the pharmaceutical section

Properties:
- Mechanically very strong
- For aqueous and organic solutions
- Hydrophilic
- Can be used up to 135°C
- Autoclavable up to 134°C



Type	Pore size µm	Diam. mm	PK	Cat. No.
NL 16	0.20	47	100	**9.057 433**
NL 17	0.45	25	100	**9.057 452**
NL 17	0.45	47	100	**9.057 453**
NL 17	0.45	50	100	**9.057 454**

3 Membrane filters, Nylon

Hydrophilic, durable and compatible with a wide range of aqueous solutions, organic solvents and for the filtration of biological preparations and media. Autoclavable at 121°C. *GE Healthcare*



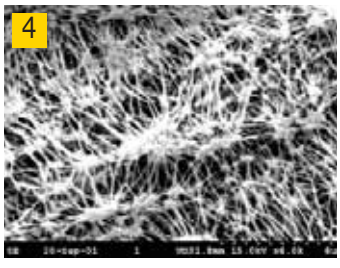
Pore size µm	Diam. mm	PK	Cat. No.
0.20	13	100	**9.951 042**
0.20	47	100	**9.951 043**
0.20	90	50	**9.951 044**
0.45	13	100	**9.951 045**
0.45	25	100	**9.951 046**
0.45	47	100	**9.951 047**
0.45	90	50	**9.951 048**
0.80	47	100	**9.951 049**

4 Membrane filters, Grade TE, PTFE with support

GE Healthcare

Applications:
- Ideal venting filter for all applications
- For aggressive media and cryogenic liquids
- Separation of free water from organic solutions
- Outstanding as gas/liquid barrier
- Filtration of air and (hot) gases

Properties:
- Chemically inert to aqueous and organic solutions as well as concentrated acids and bases
- Hydrophobic - for aqueous filtration the pressure must be higher than the water breakthrough pressure
- Can be used up to 145°C
- Can be sterilised by all methods except gamma radiation



Type	Pore size µm	Diam. mm	PK	Cat. No.
TE 35	0.20	25	50	**9.058 682**
TE 35	0.20	47	50	**9.058 683**
TE 35	0.20	50	50	**9.058 684**
TE 36	0.45	47	50	**9.058 663**
TE 36	0.45	50	50	**9.058 664**
TE 37	1.00	25	50	**9.058 642**
TE 37	1.00	47	50	**9.058 643**
TE 37	1.00	50	50	**9.058 644**
TE 38	5.00	47	50	**9.058 623**
TE 38	5.00	50	50	**9.058 624**

1



1 Membrane filters, PTFE, WTP

With PP backing. *GE Healthcare*

Pore size µm	Diam. mm	PK	Cat. No.
0.20	25	100	**9.951 029**
0.20	47	100	**9.951 030**
0.50	47	100	**9.951 031**
1.00	47	100	**9.951 033**

2



2 Membrane filters, inorganic, Anodisc®

Material: Anopore®. White. *GE Healthcare*

The inorganic membrane Anopore® consists of high-purity aluminium oxide and can be used for a wide range of applications. The unique material has a precise, non-deformable honeycomb structure with a narrow pore size distribution range that guarantees very efficient particle retention.
In addition, the membrane has a low protein binding capacity, minimal autofluorescence, is non-toxic and supports cellular growth.

Pore size µm	Diam. mm	PK	Cat. No.
0.02	13	100	**9.951 034**
0.02	25	50	**9.951 035**
0.02	47	50	**7.604 787**
0.10	13	100	**9.951 036**
0.10	25	50	**6.235 017**
0.10	47	50	**9.951 038**
0.20	13	100	**9.951 039**
0.20	25	50	**9.951 040**
0.20	47	50	**9.951 041**

3



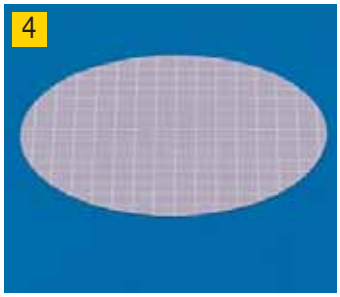
3 Membrane filters, cellulose nitrate

Type 113. White. Very low content of extractable materials. Weight constant after 60 minutes of drying at 105°C. Suitable for residue analysis, microscopic viewing in incident or transmitted light, chemotaxis, x-ray fluorescence, spectrometry and gravimetric analysis. Autoclavable at 121°C.
Other pore sizes and formats are available on request. *Sartorius*

Type	Pore size µm	Diam. mm	PK	Cat. No.
11301	8.00	25	100	**9.053 304**
11301	8.00	47	100	**9.053 308**
11301	8.00	50	100	**9.053 309**
11302	3.00	50	100	**9.053 349**
11303	1.20	25	100	**9.053 364**
11303	1.20	47	100	**9.053 368**
11303	1.20	50	100	**9.053 369**
11304	0.80	25	100	**9.053 384**
11304	0.80	47	100	**9.053 388**
11304	0.80	50	100	**9.053 389**
11306	0.45	25	100	**9.053 424**
11306	0.45	47	100	**9.053 428**
11306	0.45	50	100	**9.053 429**
11306	0.45	142	25	**9.053 432**

Other patterns are available on request.

4



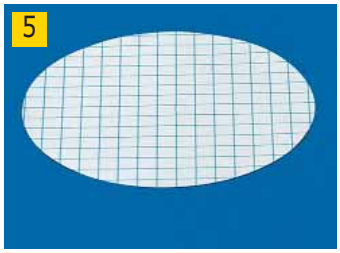
4 Membrane filters Type 13005/13006, series

Cellulose nitrate. Grey membranes (black after wetting) with white grid. *Sartorius*
For detection of yeasts and moulds, particle analysis and microscopy.

Type	Pore size µm	Diam. mm	Description	PK	Cat. No.
13005	0.65	47	sterile	100	**9.054 122**
13006	0.45	47	sterile	100	**9.054 132**
13006	0.45	50	sterile	100	**9.054 133**
13006	0.45	50	non-sterile	100	**9.054 139**

Other types available on request.

5



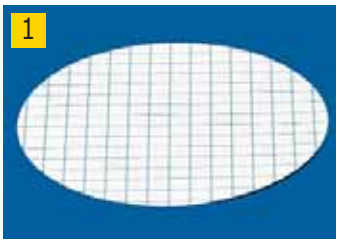
5 Membrane filters, gridded Type 13806

Cellulose nitrate. Sterile, individually packed. Green with dark green grid. *Sartorius*
Optimal contrast to light or white bacteria colonies when colony counting.

Type	Pore size µm	Diam. mm	PK	Cat. No.
13806	0.45	47	100	**9.054 202**
13806	0.45	50	100	**9.054 203**

E & OE.

1 Membrane filters, gridded Type 13906 and 139H6



Cellulose nitrate. Sterile and individually packed. White with green grid. *Sartorius*
For the evaluation of microbiological and particle samples.

Type	Pore size µm	Diam. mm	Description	PK	Cat. No.
13906	0.45	47	Standard	100	**9.054 460**
13906	0.45	50	Standard	100	**9.054 462**
139H6	0.45	47	High flow	100	**9.054 464**
139H6	0.45	50	High flow	100	**9.054 465**

2 Membrane filters, cellulose acetate



Type 111. Resistant to steam sterilisation up to 134°C, or in dry heat up to 180°C. *Sartorius*
Very low adsorption (important when filtering proteinaceous solutions). Suitable for particle removal and ultracleaning of aqueous solutions, methanol, ethanol, high-grade alcohols and residue analysis of fuels and oils.
The extractable content of these filters make up <1% of their weight.
Other pore sizes and formats available on request.

Type	Pore size µm	Diam. mm	PK	Cat. No.
11106	0.45	25	100	**9.053 044**
11106	0.45	47	100	**9.053 048**
11106	0.45	50	100	**9.053 049**
11106	0.45	142	25	**9.053 055**
11107	0.20	25	100	**9.053 064**
11107	0.20	47	100	**9.053 068**
11107	0.20	50	100	**9.053 069**
11107	0.20	142	25	**9.053 075**

Other patterns are available on request.

3 Membrane filters, Polyamide



Type 250. Polyamide, white. For filtration of alkaline solutions and organic solvents. *Sartorius*

Type	Pore size µm	Diam. mm	PK	Cat. No.
2506	0.45	25	100	**9.053 227**
2506	0.45	47	100	**9.053 242**
2506	0.45	50	100	**9.053 243**
2507	0.20	25	100	**9.053 222**
2507	0.20	47	100	**9.053 223**
2507	0.20	50	100	**9.053 224**

Other patterns are available on request.

4 Membrane filters, blotting, Polycarbonate



Type 230. Polycarbonate (PC), white, non-sterile. Ultrapure, polycarbonate membrane with especially smooth surface and fine pore distribution. Applications include COD/TOC testing, particle analysis or epifluorescence microscopy. *Sartorius*

Type	Pore size µm	Diam. mm	PK	Cat. No.
23006	0.40	25	100	**9.049 182**
23006	0.40	47	100	**9.049 183**
23007	0.20	25	100	**9.049 180**
23007	0.20	47	100	**9.049 181**

Other patterns are available on request.



LLG-Syringe Filters

We offer a line of syringe filters especially designed to provide efficient filtration of a broad variety of fluids, solvents, aqueous or inorganic solutions.
Our syringe filters cover most applications in HPLC, pharmaceutical, environmental, biotechnology and food and beverage testing laboratories.

- Housing injected in Polypropylene or MABS
- Multifunctional Syringe filters equipped with Female Luer-Lock/Male Luer Lock or Male Luer Slip connections for different applications
- Pre-sterilised or non-sterile
- Sterile products in individual hard blister
- Superior pressure stability
- Easy to identify because of colour code and printed description

1



9.055 500

LLG Syringe Filter CA, Cellulose acetate

NEW!

Hydrophilic membrane for filtration of aqueous solutions
This membrane features excellent shape stability in aqueous solutions and a very low binding capacity for proteins (21µg per 25 mm Filter).
Ideal for use with biological macromolecules, water soluble oligomers and polymers. With Luer-Lock-outlet.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.	
13	0.20	Acrylic, blue	non sterile	500	**9.055 500**	1
13	0.45	Acrylic, yellow	non sterile	500	**9.055 502**	
13	0.80	Acrylic, green	non sterile	500	**9.055 504**	
25	0.20	Acrylic, blue	non sterile	500	**9.055 501**	
25	0.45	Acrylic, yellow	non sterile	500	**9.055 503**	2
25	0.80	Acrylic, green	non sterile	500	**7.970 389**	
13	0.20	Acrylic, blue	sterile	50	**9.055 510**	
13	0.45	Acrylic, yellow	sterile	50	**9.055 512**	
25	0.20	Acrylic, blue	sterile	50	**9.055 511**	
25	0.45	Acrylic, yellow	sterile	50	**9.055 513**	

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9.055 503

3



9.055 520

LLG Syringe Filter NY, Nylon/Polyamide

NEW!

This is a rather hydrophilic membrane. Recommended for filtration of aqueous and organic/aqueous medium polar liquids.
Excellent chemical compatibility with esters, bases and alcohols.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.	
13	0.20	PP	non sterile	500	**9.055 520**	3
13	0.45	PP	non sterile	500	**9.055 522**	
25	0.20	PP	non sterile	500	**9.055 521**	
25	0.45	PP	non sterile	500	**9.055 523**	

4



9.055 541

LLG Syringe Filter PE, Polyethylene

NEW!

Universal Filter membrane for all analytical requirements. For aqueous and aggressive organic solvent filtration.
Wide application in sample preparation, Ion chromatography.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.	
13	0.20	PP	non sterile	500	**9.055 540**	
13	0.50	PP	non sterile	500	**9.055 542**	
25	0.20	PP	non sterile	500	**9.055 541**	4
25	0.50	PP	non sterile	500	**9.055 543**	

5



9.055 530

LLG Syringe Filter RC, Regenerated cellulose

NEW!

Hydrophilic membrane features very low adsorption. Recommended for filtration of aqueous and organic/aqueous liquids.
For filtration of polar and medium polar liquids.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.	
13	0.20	PP	non sterile	500	**9.055 530**	5
13	0.45	PP	non sterile	500	**9.055 532**	
25	0.20	PP	non sterile	500	**9.055 531**	
25	0.45	PP	non sterile	500	**9.055 533**	

E & OE.

LLG Syringe Filter PTFE, Polytetrafluorethylene

NEW!

Hydrophobic membrane. Ideal for filtration of non-polar liquids and gases.
It is very resistant to various solvents as well as acids and bases.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
13	0.20	PP	non sterile	500	**7.970 402**
13	0.45	PP	non sterile	500	**7.970 385**
25	0.20	PP	non sterile	500	**9.055 535**
25	0.45	PP	non sterile	500	**6.255 331** 1

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6.255 331

LLG Syringe Filter PES, Polyethersulfone

NEW!

Hydrophobic membrane. Ideal for filtration of non-polar liquids and gases.
It is very resistant to varous solvents as well as acids and bases.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
13	0.20	Acrylic	non sterile	500	**9.055 524**
13	0.45	Acrylic	non sterile	500	**9.055 526**
25	0.20	Acrylic	non sterile	500	**9.055 525**
25	0.45	Acrylic	non sterile	500	**7.970 213** 2

2



7.970 213

LLG Syringe Filter PVDF, Polyvinylidene fluoride

NEW!

Hydrophilic membrane for aqueous polar and light unpolar solutions. Very low protein binding.
High flow rates ideal for use with biological macromolecules, water soluble oligomers and polymers.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
13	0.20	PP	non sterile	500	**7.970 258**
13	0.45	PP	non sterile	500	**9.055 534**
25	0.20	PP	non sterile	500	**7.970 387**
25	0.45	PP	non sterile	500	**7.970 286** 3

3



7.970 286

LLG Syringe Filter GF, Glass-fibre

NEW!

Hydrophilic membrane suitable for pre-filtration. They can be used for solutions with high particulate loads
or for highly viscous solutions (e.g. soil samples, fermentation broths) either alone or in combination with other filters.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
25	0.70	PP	non sterile	500	**9.055 550**
25	1.00	PP	non sterile	500	**9.055 551**
25	1.20	PP	non sterile	500	**9.055 552** 4
25	3.10	PP	non sterile	500	**9.055 553**

4



9.055 552



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2



1 2 Syringe filters Puradisc™ PVDF

NEW!

Hydrophilic membrane for aqueous polar and light unpolar solutions. Very low protein binding

GE Healthcare

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
4	0.20	PP	non-sterile	100	**9.951 222**
4	0.20	PP w. tip	non-sterile	50	**9.951 213**
4	0.45	PP	non-sterile	100	**9.951 224**
4	0.45	PP w. tip	non-sterile	50	**9.951 215**
13	0.20	PP	non-sterile	100	**9.951 227**
13	0.20	PP w. tip	non-sterile	50	**9.951 218**
13	0.45	PP	non-sterile	100	**9.951 229**
13	0.45	PP w. tip	non-sterile	50	**9.951 220**
4	0.20	PP	sterile	50	**9.951 221**
13	0.20	PP	sterile	50	**9.951 226**
13	0.20	PP w. tip	sterile	50	**9.951 217**
13	0.45	PP	sterile	50	**9.951 228**

3



3 Syringe filters Puradisc™ PTFE

NEW!

Hydrophobic membrane. Ideal for filtration of non-polar liquids and gases.

GE Healthcare

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
4	0.20	PP	non sterile	100	**9.951 252**
4	0.45	PP	non sterile	100	**9.951 253**
13	0.10	PP	non sterile	100	**9.951 255**
13	0.20	PP	non sterile	100	**9.951 256**
13	0.20	PP w. tip	non sterile	50	**9.951 249**
13	0.45	PP	non sterile	100	**9.951 257**
13	0.45	PP w. tip	non sterile	50	**9.951 250**
13	1.00	PP	non sterile	100	**9.951 258**
25	0.20	PP	non sterile	50	**9.951 069**
25	0.20	PP	non sterile	200	**9.951 070**
25	0.45	PP	non sterile	50	**9.951 071**
25	0.45	PP	non sterile	200	**9.951 072**
25	1.00	PP	non sterile	50	**9.951 073**

4



4 Syringe filters Puradisc™ Nylon

NEW!

Hydrophilic membrane; it is recommended for filtration of aqueous and organic/aqueous medium polar liquids.

GE Healthcare

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
4	0.20	PP	non sterile	100	**9.951 265**
4	0.45	PP	non sterile	100	**9.951 266**
13	0.20	PP	non sterile	100	**9.951 268**
13	0.45	PP	non sterile	100	**9.951 269**
25	0.20	PP	non sterile	50	**9.951 065**
25	0.20	PP	non sterile	200	**9.951 066**
25	0.45	PP	non sterile	50	**9.951 067**
25	0.45	PP	non sterile	200	**9.951 068**
4	0.20	PP	sterile	50	**9.951 264**
13	0.20	PP	sterile	50	**9.951 267**

5



5 Syringe filters Puradisc™ Polyethersulfone

NEW!

Hydrophilic membrane for aqueous and light organic solutions with a low binding capacity for proteins.

GE Healthcare

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
13	0.20	PP	non sterile	100	**9.951 239**
13	0.45	PP	non sterile	100	**9.951 241**
25	0.20	PP	non sterile	200	**9.951 063**
25	0.45	PP	non sterile	200	**9.951 064**
13	0.20	PP	sterile	50	**9.951 238**
13	0.45	PP	sterile	50	**9.951 240**
25	0.20	PP	sterile	50	**9.951 061**
25	0.45	PP	sterile	50	**9.951 062**

E & OE.

1 Syringe filters Puradisc™ Polypropylene

NEW!

Suitable for HPLC sample filtration (water-based) and aggressive water solutions such as acids and alkalis.

GE Healthcare

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
13	0.20	PP	non sterile	100	**9.951 245**
13	0.45	PP	non sterile	100	**9.951 246**
25	0.20	PP	non sterile	50	**9.951 074**
25	0.20	PP	non sterile	200	**9.951 075**
25	0.45	PP	non sterile	50	**9.951 076**
25	0.45	PP	non sterile	200	**9.951 077**

1



Syringe filters Puradisc™ Glass-fibre

NEW!

Hydrophilic membrane suitable for pre-filtration.

GE Healthcare

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
13	0.70	PP-GF/A	non sterile	100	**9.951 278**
13	1.20	PP-GF/A	non sterile	100	**9.951 276**
13	1.60	PP-GF/A	non sterile	100	**9.951 275**
13	2.70	PP-GF/A	non sterile	100	**9.951 277**

2 Syringe filters Puradisc™ FP30

NEW!

For aqueous solutions. Polycarbonate (PC) housing.
Membrane cellulose nitrate (CN) or cellulose acetate (CA)

GE Healthcare

Membrane	Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
CA	30	0.20	PC	non sterile	50	**9.049 934**
CA	30	0.20	PC	non sterile	100	**9.603 585**
CA	30	0.20	PC	non sterile	500	**9.603 584**
CA	30	0.20	PC*	non sterile	500	**9.049 919**
CA	30	0.45	PC	non sterile	50	**9.049 932**
CA	30	0.45	PC	non sterile	100	**9.049 927**
CA	30	0.45	PC	non sterile	500	**9.049 933**
CA	30	0.80	PC	non sterile	50	**9.049 936**
CA	30	0.80	PC	non sterile	500	**9.049 920**
CA	30	1.20	PC	non sterile	50	**9.049 937**
CA	30	1.20	PC	non sterile	500	**9.049 925**
CA	30	5.00	PC	non sterile	50	**9.049 931**
CA	30	5.00	PC	non sterile	100	**9.049 926**
CA	30	5.00	PC	non sterile	500	**9.603 581**
CA	30	0.20	PC	sterile	50	**9.049 913**
CA	30	0.20	PC*	sterile	50	**9.049 917**
CA	30	0.45	PC	sterile	50	**9.049 912**
CA	30	0.80	PC	sterile	50	**9.049 915**
CA	30	1.20	PC	sterile	50	**9.049 916**
CA	30	5.00	PC	sterile	50	**9.049 911**
PTFE	30	0.20	PC	sterile	50	**9.049 918**

* with Luer-Lock outlet

2



3 Syringe filters GD/X®

Whatman GD/X syringe filters are the perfect solution for samples with high viscosity or samples that contain particles. Four filter layers decrease clogging and therefore filter exchange during processing is avoided.
These filters allow 3 to 7 times higher throughput than traditional types.

GE Healthcare

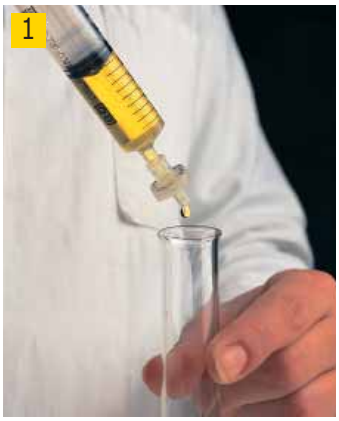
Membrane	Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
Nylon	25	0.20	PP	non sterile	150	**9.056 820**
Nylon	25	0.45	PP	non sterile	150	**9.056 821**
PVDF	25	0.20	PP	non sterile	150	**9.056 822**
PVDF	25	0.45	PP	non sterile	150	**9.056 823**
RC	25	0.20	PP	non sterile	150	**9.056 807**
RC	25	0.45	PP	non sterile	150	**9.056 809**
RC	25	0.45	PP	non sterile	1500	**9.056 810**

3



Disposable syringes - please see page 1358.

1



1 Inorganic membrane syringe filters, Anotop®

GE Healthcare

The Anopore® inorganic membrane consists of high-purity aluminium oxide and can be used for a wide range of applications. This unique material has a precise, non-deformable, honeycomb structure with a relatively consistent pore size that guarantees very efficient particle retention. In addition, the membrane has a low protein binding capacity, minimal autofluorescence, is non-toxic and supports cellular growth.

- Anotop® 10 Plus/25 Plus contains a glass microfiber prefilter
- Housing: PP
- Extractable materials: low
- Inlet connection: Female luer lock
- Outlet connection: Male slip luer

Housing diameter:	10mm
Extractable substances:	low
Retained volume:	< 20µl

Membrane	Filter diam.	Pore size	Type	Residual volume	PK	Cat. No.
	mm	µm		ml		
0.02	1	0.02	non-sterile	0,02	50	**9.951 186**
0.1	10	0.10	non-sterile	0,02	50	**9.951 187**
0.2	10	0.20	non-sterile	0,02	50	**9.951 188**
0.02	10	0.02	non sterile with prefilter	0,03	50	**9.951 192**
0.1	10	0.10	non sterile with prefilter	0,03	50	**9.951 193**
0.2	10	0.20	non sterile with prefilter	0,03	50	**9.951 194**
0.02	25	0.02	non-sterile	0,15	50	**9.951 198**
0.1	25	0.10	non-sterile	0,15	50	**9.951 199**
0.2	25	0.20	non-sterile	0,15	50	**9.951 200**
0.2	25	0.20	non-sterile	0,15	200	**9.951 201**
0.02	25	0.02	non sterile with prefilter	0,20	50	**9.951 205**
0.1	25	0.10	non sterile with prefilter	0,20	50	**9.951 206**
0.2	25	0.20	non sterile with prefilter	0,20	50	**9.951 207**
0.2	25	0.20	non sterile with prefilter	0,20	200	**9.951 208**
0.02	10	0.02	sterile	0,02	50	**9.951 189**
0.1	10	0.10	sterile	0,02	50	**9.951 190**
0.2	10	0.20	sterile	0,02	50	**9.951 191**
0.02	10	0.02	sterile with prefilter	0,03	50	**9.951 195**
0.1	10	0.10	sterile with prefilter	0,03	50	**9.951 196**
0.2	10	0.20	sterile with prefilter	0,03	50	**9.951 197**
0.02	25	0.02	sterile	0,15	50	**9.951 202**
0.1	25	0.10	sterile	0,15	50	**9.951 203**
0.2	25	0.20	sterile	0,15	50	**9.951 204**
0.02	25	0.02	sterile with prefilter	0,20	50	**9.951 209**
0.1	25	0.10	sterile with prefilter	0,20	50	**9.951 210**
0.2	25	0.20	sterile with prefilter	0,20	50	**9.951 211**

2



2 Syringe filters Spartan®, Regenerated cellulose

GE Healthcare

Versatile use - ready-to-use filter units with a hydrophilic, low protein-binding membrane made of regenerated cellulose.
First class chemical resistance against the usual aqueous and organic HPLC solvents

- Spartan® 13 and 30 are tested and certified for UV absorbance substances at wavelengths of 210nm and 254nm with water, methanol and acetonitrile;
- Spartan® 13 has an extremely low hold up volume; <10µl, for optimal filtration

Applications:
Ideal for HPLC sample preparation to achieve reproducible results. Carefully controlled manufacture guarantees lowest traces of UV- absorbing, extractable components.

Filter diam.	Pore size	Housing	Type	PK	Cat. No.
mm	µm				
13	0.20	LLF/LM	non sterile	100	**9.049 948**
13	0.20	LLF/LM	non sterile	500	**9.049 980**
13	0.20	LLF/Mini-Tip	non sterile	100	**9.049 943**
13	0.20	LLF/Mini-Tip	non sterile	500	**9.049 951**
13	0.45	LLF/LM	non sterile	100	**9.049 949**
13	0.45	LLF/Mini-Tip	non sterile	100	**9.049 944**
13	0.45	LLF/Mini-Tip	non sterile	500	**9.049 950**
30	0.20	LLF/LM	non sterile	100	**9.049 941**
30	0.20	LLF/LM	non sterile	500	**9.049 965**
30	0.45	LLF/LM	non sterile	50	**9.049 960**
30	0.45	LLF/LM	non sterile	100	**9.049 942**
30	0.45	LLF/LM	non sterile	500	**9.049 959**

LLF = luer-lock female
LM = luer male

E & OE.

1 Syringe filters, disposable, ReZist® PTFE

GE Healthcare

- Hydrophobic PTFE-membrane, laminated with polypropylene
- first class chemical resistance opposite to common organic HPLC solvents

Application:
Filtration of aggressive solutions.
GF92 membrane to the prefiltration of loaded solutions.



Membrane	Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
PTFE	13	0.20	PP*	non sterile	100	**9.049 981**
PTFE	13	0.45	PP*	non sterile	100	**9.049 982**
PTFE	30	0.20	PP	sterile	50	**9.049 955**
PTFE	30	0.20	PP	non sterile	100	**9.049 961**
PTFE	30	0.20	PP	non sterile	500	**9.049 990**
PTFE	30	0.45	PP	non sterile	100	**9.049 962**
PTFE	30	0.45	PP	non sterile	500	**9.049 991**
PTFE	30	1.00	PP	non sterile	100	**9.049 963**
PTFE	30	1.00	PP	non sterile	500	**9.049 992**
PTFE	30	5.00	PP	non sterile	100	**9.049 964**
PTFE	30	5.00	PP	non sterile	500	**9.049 993**
GF92	30		PP	non sterile	100	**9.049 996**
GF92	30		PP	non sterile	500	**9.049 997**

*with Mini-Tip outlet

2 Syringe filter Minisart NML, Cellulose acetate (CA)

Sartorius

For sterile, particle free, ultrapure filtration of small volumes of liquid up to approx. 100ml. Colour coded pore sizes for ease of identification. With hydrophilic cellulose acetate membrane for minimum adsorption. Ready-to-use immediately. With female luer-lock inlet, male luer slip outlet.

Application:

Sterile filtration	0.2 µm pore size
High purification	0.45 µm pore size
Ultrafiltration	1.2 µm pore size
Pre-filtration	5 µm pore size

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
28	0.20	Acrylic-blue	sterile	50	**9.049 101**
28	0.20	Acrylic-blue	non-sterile	500	**9.049 107**
28	0.45	Acrylic-yellow	sterile	50	**9.049 102**
28	0.45	Acrylic-yellow	non-sterile	500	**9.049 108**
28	0.80	Acrylic-green	sterile	50	**9.049 103**
28	0.80	Acrylic-green	non-sterile	500	**9.049 109**
28	1.20	Acrylic-red	sterile	50	**9.049 104**
28	1.20	Acrylic-red	non-sterile	500	**9.049 122**
28	5.00	Acrylic-brown	sterile	50	**9.049 105**
28	5.00	Acrylic-brown	non-sterile	500	**9.049 123**

2



3 Syringe filters, Minisart® High-Flow Polyethersulfon (PES)

Sartorius

Minisart® High Flow syringe filters for sterile filtration, particle removal and ultra-cleaning. Covers a wide pH range. These independent ready-to-use syringe filters with PES membrane filter feature excellent flow speed and high filterable volume. The Minisart® High Flow is a syringe filter for rapid volume sterilisation with maximum user convenience. Ready-to-use units, which offer flow rates at low inlet pressures, allow for a correspondingly rapid sterile filtration.



Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
28	0.10	Acrylic-aubergine	sterile	50	**9.049 866**
28	0.20	Acrylic-blue	sterile	50	**9.049 129**
28	0.20	Acrylic-blue	non-sterile	500	**9.049 130**
28	0.45	Acrylic-yellow	sterile	50	**9.049 865**

1



1 Syringe filter Minisart-plus, Cellulose acetate/glass-fibre (CA/GF)

NEW!

The only difference between the Sartorius Minisart-plus and the standard Minisart NML is an additional glass fibre pre-filter which enables a greater filtration volume for liquids which are difficult to filter. Available sterile, single-wrapped or non-sterile, bulk-wrapped, in outer packs as indicated.

Sartorius

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
28	0.20	Acrylic-blue	non sterile	500	**9.049 126**
28	0.45	Acrylic-yellow	non sterile	500	**9.049 128**
28	1.20	Acrylic-red	non sterile	500	**7.017 224**
28	0.20	Acrylic-blue	sterile	50	**9.049 118**
28	0.45	Acrylic-yellow	sterile	50	**9.049 127**

2



2 Syringe filter Minisart glass-fibre (GF)

Sartorius Minisart-GF contains a single, binding agent-free, glass fibre pre-filter for ultrafiltration. Available sterile, single-wrapped or non-sterile, bulk-wrapped, in outer packs as indicated with a support achievement of 99% for 40µm spherical particles.

Sartorius

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
28	0.70	Acrylic-white	non sterile	50	**9.049 119**
28	0.70	Acrylic-white	non sterile	500	**9.049 120**

3



3 Syringe filter Minisart Regenerated cellulose (RC)

NEW!

Ready-to-use units with a hydrophilic, solvent-resistant membrane made of regenerated cellulose, making sample preparation quick and easy. Suitable for aqueous/organic solutions. With female luer-lock inlet, male luer slip outlet. Non-sterile.

Sartorius

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
4	0.20	PP	non sterile	50	**9.049 081**
4	0.20	PP	non sterile	500	**9.049 082**
4	0.45	PP	non sterile	50	**9.049 084**
4	0.45	PP	non sterile	500	**9.049 085**
15	0.20	PP	non sterile	50	**9.049 087**
15	0.20	PP	non sterile	500	**9.049 088**
15	0.45	PP	non sterile	50	**9.049 091**
15	0.45	PP	non sterile	500	**9.049 092**
25	0.20	PP	non sterile	50	**9.049 094**
25	0.20	PP	non sterile	500	**9.049 095**
25	0.45	PP	non sterile	50	**9.049 097**
25	0.45	PP	non sterile	500	**9.049 098**
15	0.20	PP	sterile	50	**7.075 954**
25	0.20	PP	sterile	50	**7.076 270**

4



4 Syringe filter Minisart SRP, PTFE

NEW!

With a chemical-resistant, hydrophobic PTFE membrane for high purification of solvents or aggressive liquids in HPLC or GC analysis. Low adsorption. With female luer-lock inlet, male luer slip outlet. Non-sterile.

Sartorius

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
4	0.45	PP	non sterile	50	**9.049 146**
4	0.45	PP	non sterile	500	**9.049 147**
15	0.20	PP	non sterile	50	**9.604 022**
15	0.20	PP	non sterile	500	**7.017 207**
15	0.45	PP	non sterile	50	**9.604 024**
15	0.45	PP	non sterile	500	**9.049 073**
25	0.20	PP	non sterile	50	**9.049 115**
25	0.45	PP	non sterile	50	**9.049 116**
25	0.45	PP	non sterile	500	**9.049 117**
15	0.20	PP	sterile	50	**7.080 155**
25	0.20	PP	sterile	50	**7.076 124**

Minisart SRP 15 and SRP 25 are also available in 0.2µm pore sizes (and sterile).

Disposable syringes - please see page 1358.

E & OE.

Syringe filters CHROMAFIL®

MACHEREY-NAGEL

General
CHROMAFIL® syringe filters are used for filtration of suspended matter from liquid samples.
Advantages:
HPLC-Certification available on the internet
Polypropylene housing
Better solvent stability compared to acrylate and polystyrene filters
Shells ultrasonically sealed, not glued
No extractable components from glues
Filtration in both directions possible, the liquid cannot bypass the membranes
Luer lock on side of entry
Safe connection on the "high pressure" side
Luer exit
Standard luer for 3mm and 25mm filters, minispike luer with low dead volume and small OD for 15mm filters
Deflector
The stream of liquid is broken and distributed, and does not directly hit the membrane: this prevents rupture of the membrane
Star-shaped distribution device
The liquid is evenly distributed to the whole membrane surface: this results in a better utilisation of the total area; the filter is not rapidly clogged up; high flow efficiency
Colour coded
Filters with 0.2µm pores have a yellow upper housing, for filters with 0.45µm pores this is colourless; the different membrane types are distinguished by different colours
Low dead volume
~80µl for 25mm, 12µl for 15mm, 5µl for 3mm.

Specifications
The membrane housing consists of polypropylene (PP). This material is very resistant towards most solvents and has a very low extractable substances content. Thus it can be used with almost all solvents, acids and bases (see table). The especially thick rim of the housing is ideal for use with laboratory robots
(e.g. Benchmate™). Filter inlet and filter outlet can be fitted to the CHROMABOND® columns for selective sample preparation with the aid of a special adaptor. All filters can be autoclaved at 121°C and 1.1bar for 30min.

Chromafil™Xtra:
Labelled for method validation and certification. Colour-free plain polypropylene housing. Imprint for direct identification of the membrane type, diameter and pore size.

1 Syringe filter CHROMAFIL™, Cellulose acetate (CA)

1



Hydrophilic membrane *MACHEREY-NAGEL*
For filtration of water-soluble oligomers and polymers, especially suited for biological macromolecules. Very high shape stability in aqueous solutions extremely low binding capacity for proteins (21µg/ 25mm filter).
Available in a sterile package (S) for filtration under sterile conditions (each filter individually sealed).

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
25	0.20	PP-yellow/red	non sterile	100	**9.049 038**
25	0.20	PP-yellow/red	non sterile	400	**9.049 039**
25	0.20	PP-colourless/labelled*	non sterile	100	**4.003 419**
25	0.20	PP-colourless/labelled*	non sterile	400	**4.003 420**
25	0.45	PP-colourless/red	non sterile	100	**9.049 040**
25	0.45	PP-colourless/red	non sterile	400	**9.049 041**
25	0.45	PP-colourless/labelled*	non sterile	100	**4.003 421**
25	0.45	PP-colourless/labelled*	non sterile	400	**4.003 422**
25	0.20	PP-yellow/red	sterile	50	**9.049 036**
25	0.45	PP-colourless/red	sterile	50	**9.049 037**

*Chromafil XTRA

2 Syringe filter CHROMAFIL™, Cellulose mixed ester (MV)

2



Hydrophilic membrane *MACHEREY-NAGEL*
This membrane is recommended for all filtrations in aqueous or polar organic samples.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
25	0.20	PP-yellow/yellow	non sterile	100	**9.049 030**
25	0.20	PP-yellow/yellow	non sterile	400	**9.049 031**
25	0.20	PP-colourless/labelled*	non sterile	100	**4.003 407**
25	0.20	PP-colourless/labelled*	non sterile	400	**4.003 408**
25	0.45	PP-colourless/yellow	non sterile	100	**9.049 032**
25	0.45	PP-colourless/yellow	non sterile	400	**9.049 033**
25	0.45	PP-colourless/labelled*	non sterile	100	**4.003 405**
25	0.45	PP-colourless/labelled*	non sterile	400	**4.003 406**

*Chromafil XTRA

1



1 Syringe filter CHROMAFIL™, regenerated Cellulose (RC)

NEW!

Hydrophilic membrane with very low adsorption for aqueous and organic/aqueous liquids i.e. polar and medium polar sample solutions. Binding capacity for proteins 84µg/25mm filter.

MACHEREY-NAGEL

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
15	0.20	PP-yellow/blue[1)]	non sterile	100	**9.049 025**
15	0.20	PP-yellow/blue[1)]	non sterile	800	**4.003 399**
15	0.45	PP-colourless/blue[1)]	non sterile	100	**9.049 026**
15	0.45	PP-colourless/blue[1)]	non sterile	800	**4.003 400**
25	0.20	PP-yellow/blue	non sterile	100	**9.049 042**
25	0.20	PP-yellow/blue	non sterile	400	**9.049 043**
25	0.20	PP-colourless/labelled*	non sterile	100	**4.003 424**
25	0.20	PP-colourless/labelled*	non sterile	400	**4.003 425**
25	0.45	PP-colourless/blue	non sterile	100	**9.049 044**
25	0.45	PP-colourless/blue	non sterile	400	**9.049 046**
25	0.45	PP-colourless/labelled*	non sterile	100	**4.003 426**
25	0.45	PP-colourless/labelled*	non sterile	400	**6.233 891**

*Chromafil XTRA
[1)] with mini tip outlet

2



2 Syringe filter CHROMAFIL™, Polyamide (PA)

Hydrophilic membrane. The membrane is recommended for filtration of aqueous and organic/aqueous medium polar liquids.

MACHEREY-NAGEL

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
3	0.20	PP-colourless	non sterile	100	**9.049 047**
3	0.45	PP-colourless	non sterile	100	**9.049 048**
25	0.20	PP-yellow/green	non sterile	100	**9.049 049**
25	0.20	PP-yellow/green	non sterile	400	**9.049 050**
25	0.20	PP-colourless/labelled*	non sterile	100	**4.003 411**
25	0.20	PP-colourless/labelled*	non sterile	400	**4.003 412**
25	0.45	PP-colourless/green	non sterile	100	**9.049 051**
25	0.45	PP-colourless/green	non sterile	400	**9.049 052**
25	0.45	PP-colourless/labelled*	non sterile	100	**6.232 389**
25	0.45	PP-colourless/labelled*	non sterile	400	**6.234 011**

*Chromafil XTRA

3



3 Syringe filter CHROMAFIL™, Hydrophilized Polytetrafluoroethylene (H-PTFE)

NEW!

Hydrophilized polytetrafluoroethylene syringe filters labelled for method validation and certification

MACHEREY-NAGEL

- Hydrophobic membrane with additional hydrophilic characteristics
- For polar and nonpolar solutions
- Resistant against all kinds of solvents as well as acids and bases

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
13	0.20	PP-colourless/labelled	non sterile	100	**6.266 191**
13	0.45	PP-colourless/labelled	non sterile	100	**6.266 192**
25	0.20	PP-colourless/labelled	non sterile	100	**6.266 189**
25	0.45	PP-colourless/labelled	non sterile	100	**7.658 851**
25	0.20	PP-colourless/labelled	non sterile	400	**7.660 305**
25	0.45	PP-colourless/labelled	non sterile	400	**6.266 190**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

MN

E & OE.

1 Syringe filter CHROMAFIL™, Polytetrafluoroethylene (PTFE)

A hydrophobic membrane. Ideal for filtration of non-polar liquids and gases. It is very resistant to various solvents as well as acids and bases. By flushing with alcohol, followed by water, the original hydrophobic membrane can be made more hydrophilic.

MACHEREY-NAGEL

1



Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
3	0.20	PP-colourless	non sterile	100	**9.049 053**
3	0.45	PP-colourless	non sterile	100	**9.049 054**
15	0.20	PP-yellow/colourless[1)]	non sterile	100	**9.049 055**
15	0.20	PP-yellow/colourless[1)]	non sterile	800	**4.003 394**
15	0.45	PP-colourless[1)]	non sterile	100	**9.049 056**
15	0.45	PP-colourless[1)]	non sterile	800	**4.003 395**
25	0.20	PP-yellow/colourless	non sterile	100	**9.049 057**
25	0.20	PP-yellow/colourless	non sterile	400	**9.049 058**
25	0.20	PP-colourless/labelled*	non sterile	100	**4.003 409**
25	0.20	PP-colourless/labelled*	non sterile	400	**4.003 410**
25	0.45	PP-colourless/labelled*	non sterile	100	**9.049 059**
25	0.45	PP-colourless/labelled*	non sterile	400	**9.049 060**

*Chromafil XTRA
[1)] with mini tip outlet

2 Syringe filter CHROMAFIL™, Polyester (PET)

Hydrophilic multipurpose membrane. For polar as well as non-polar solvents. The HPLC filter, especially suited for mixtures of water and organic solvents; for TOC/DOC determination; not cytotoxic, does not inhibit the growth of microorganisms and higher cells. Polyester filter with integrated glass fibre prefilter (GF/PET): recommended for solutions with a high load of particulate matter or for highly viscous solutions.

MACHEREY-NAGEL

2



Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
15	0.20	PP-yellow/orange[1)]	non sterile	100	**9.049 065**
15	0.20	PP-yellow/orange[1)]	non sterile	800	**4.003 397**
15	0.45	PP-colourless/orange[1)]	non sterile	100	**9.049 066**
15	0.45	PP-colourless/orange[1)]	non sterile	800	**4.003 398**
25	0.20	PP-yellow/orange	non sterile	100	**9.049 067**
25	0.20	PP-yellow/orange	non sterile	400	**9.049 068**
25	0.20	PP-colourless/labelled*	non sterile	100	**4.003 417**
25	0.20	PP-colourless/labelled*	non sterile	400	**4.003 418**
25	0.45	PP-colourless/orange	non sterile	100	**9.049 069**
25	0.45	PP-colourless/orange	non sterile	400	**9.049 070**
25	0.45	PP-colourless/labelled*	non sterile	100	**6.232 548**
25	0.45	PP-colourless/labelled*	non sterile	400	**4.003 416**
25	1.20	PP-colourless/black*	non sterile	100	**6.232 549**
25	1.20	PP-colourless/black*	non sterile	400	**6.233 172**
25	1.0/0.20	PP-black/orange[2)]	non sterile	100	**9.049 079**
25	1.0/0.45	PP-black/orange[2)]	non sterile	100	**9.049 080**
25	1.0/0.20	PP-blue/orange[2)]	non sterile	400	**9.049 020**
25	1.0/0.45	PP-black/orange[2)]	non sterile	400	**9.049 021**

*Chromafil XTRA
[1)] with mini tip outlet
[2)] with glass-fibre prefilter

3 Syringe filter CHROMAFIL™, Polyethersulfone (PES)

NEW!

Hydrophilic membrane for aqueous and light organic solutions with a low binding capacity for proteins. This membrane has extremely low extractable levels and is ideal for ionic chromatography and organic solutions.

MACHEREY-NAGEL

3



Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
25	0.20	PP-colourless/labelled*	non sterile	100	**4.003 427**
25	0.45	PP-colourless/labelled*	non sterile	100	**4.003 429**
25	0.45	PP-colourless/labelled*	non sterile	400	**4.003 430**
25	5.00	PP-colourless/labelled*	non sterile	100	**4.003 431**

*Chromafil XTRA

Disposable syringes - please see page 1358.



1 Syringe filter CHROMAFIL™, Glass-fibre (GF)

NEW!

MACHEREY-NAGEL

Inert Filter, nominal pore size 1µm, allows higher flow rates than smaller pore filters; for solutions with high loads of particulate matter or for highly viscous solutions (e. g. soil samples, fermentation broths) as prefilters for other CHROMAFIL® filters, they prevent plugging of the membrane.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
15	1.00	PP-blue/colourless[1)]	non sterile	100	**9.049 077**
25	1.00	PP-yellow/black	non sterile	100	**9.049 078**
25	1.00	PP-yellow/black	non sterile	400	**6.229 751**
25	1.00	PP-colourless/labelled*	non sterile	100	**6.232 362**
25	1.00	PP-colourless/labelled*	non sterile	400	**4.003 423**

*Chromafil XTRA
[1)] with mini tip outlet



2 Syringe filter CHROMAFIL™, Polyvinylidenfluoride (PVDF)

NEW!

MACHEREY-NAGEL

Hydrophilic membrane, for polar and nonpolar solutions, water-soluble oligomers and polymers like proteins binding capacity for proteins 82µg/25mm filter. The PVDF filter with integrated glass fibre prefilter (GF/P) is recommended for filtration of biological samples with high particle loads. This filter features a high binding capacity for proteins. Also suited for filtration of polar and non-polar solutions.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
25	0.20	PP-colourless/labelled*	non sterile	100	**4.003 413**
25	0.20	PP-colourless/labelled*	non sterile	400	**4.003 414**
25	0.45	PP-colourless/labelled*	non sterile	100	**9.049 063**
25	0.45	PP-colourless/labelled*	non sterile	400	**4.003 415**
25	1.0/0.45	PP-black/white[1)]	non sterile	400	**4.003 402**
25	1.0/0.45	PP-black/white[1)]	non sterile	100	**4.003 401**

*Chromafil XTRA
[1)] with glass-fibre prefilter



3 Syringe filter Polyamide (PA)

Thermo Scientific

This is a rather hydrophilic membrane; it is recommended for filtration of aqueous and organic/aqueous medium polar liquids.
Excellent chemical compatibility with esters, bases and alcohols.
Sterile filters individually blister-packed, colour-coded blue.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
4	0.20	PP	non sterile	100	**9.046 196**
25	0.45	PP	sterile	50	**6.268 144**



4 Syringe filters, Type 199, PTFE

Thermo Scientific

Autoclavable, colour-coded black.
Applications: Pre-filtration and ultrafiltration of organic solutions and alcohols, for volumes from 10 to 50ml, sterile filtration of air or other gases.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
25	0.20	PP	non sterile	50	**9.046 187**

More syringe filters, please see page 670.

E & OE.

1 Syringeless filters, Autovial™

GE Healthcare

Provides a single disposable, manual pressure filtration system which is fast and easy to use in sample preparation.
- Built-in pre-filter for 'difficult' samples
- Minimal waste

Comprise a graduated, medical grade PP barrel, maximum capacity 12ml with 3cm² filter at the base, luer slip outlet and plunger. Non-sterile



Membrane	Pore size µm	PK	Cat. No.
PVDF	0.2	50	**9.951 174**
PVDF	0.45	50	**9.951 175**
Nylon	0.45	50	**9.951 176**
PTFE	0.2	50	**9.951 177**
PTFE	0.45	50	**9.951 178**

2 3 Syringeless filters Mini-UniPrep™

GE Healthcare

The Whatman Mini-UniPrep™ filter provides a quick and easy means of removing particles from HPLC samples. In comparison to other methods the amount of time required for sample preparation is reduced to one third. Mini-Uni-Prep™ is a ready-to-use filter unit consisting of a 0.4ml chamber and a plunger. The plunger contains a filtration membrane at one end and a cap with septum at the other.
The plunger is pressed through the sample in the chamber. The pressure generated forces the filtrate into the plunger reservoir, with air escaping through the vent hole until the locking mechanism engages to form an airtight seal.
The unit can now be placed in any autosampler and the sample analysed. Alternatively the sample can also be removed manually with a suitable syringe and injected into the HPLC instrument.





Membrane	Pore size µm	PK	Cat. No.
PTFE	0.2	100	**9.056 824**
RC	0.2	100	**9.056 825**
RC	0.45	100	**9.056 826**
PVDF	0.45	100	**9.056 827**
DpPP	0.45	100	**9.056 828**
GMF	0.45	100	**9.056 829**
Nylon	0.45	100	**9.056 830**
PTFE	0.45	100	**9.056 831**
PP	0.45	100	**9.056 832**
RC	0.2	1000	**9.056 833**
RC	0.45	1000	**9.056 834**
PVDF	0.45	1000	**9.056 835**
Nylon	0.45	1000	**9.056 836**
PTFE	0.45	1000	**9.056 837**
PP	0.45	1000	**9.056 838**

Syringeless filters, slit septa Mini-UniPrep™

GE Healthcare

Slit septum cap enables Mini-UniPrep use with current robotics on HPLC instruments for high throughput automation.
Durable yet flexible slit septum cap has been specially designed for instruments with sensitive sampling needs.
Sample evaporation is minimal.

Membrane	Pore size µm	PK	Cat. No.
PVDF	0.2	100	**9.056 840**
Nylon	0.2	100	**9.056 841**
PTFE	0.2	100	**9.056 842**
Nylon	0.45	100	**9.056 843**
PTFE	0.45	100	**9.056 844**

Syringeless filters, amber Mini-UniPrep™

GE Healthcare

Amber colorant prevents photo degradation of light sensitive samples.
Same colorant used in pharmaceutical containers designed to meet USP specifications for light resistance. Translucent amber chamber and plunger enable easy visual inspection

Membrane	Pore size µm	PK	Cat. No.
Nylon	0.2	100	**9.056 845**
PVDF	0.45	100	**9.056 846**
PTFE	0.45	100	**9.056 847**

1



1 Compressor for Mini-UniPrep™ syringeless filters

The compressor can process up to 6 samples at any one time, further improving sample processing time.

GE Healthcare

Type	PK	Cat. No.
Compressor Mini-UniPrep™	1	**9.056 839**

2



2 Disposable filtration capsules, Polycap TF™

Hydrophobic PTFE membrane.

GE Healthcare

- 1µm capsules incorporate a PP prefilter
- Autoclavable up to 132°C maximum

For applications involving organic solvents and chemically aggressive solutions.

Type	Description	Porosity µm	PK	Cat. No.
Polycap 36 TF	non-sterile	0.2	1	**9.951 126**
Polycap 36 TF	non-sterile	1.0	1	**9.951 127**
Polycap 75 TF	non-sterile	0.2	1	**9.951 128**
Polycap 75 TF	non-sterile	1.0	1	**9.951 129**

3



3 Disposable filtration capsules, PolycapHD™

NEW!

PP monofilament depth filters.

GE Healthcare

- Choice of filtration areas (36 HD:260cm², 75 HD: 650cm²) and porosities
- Maximum operating pressure 4.1 bar forward, 3.0 bar reverse
- Capsules may be used in either direction
- Low hold-up volume with air purge
- Autoclavable
- Operating temperature max. 60°C

Ideal for use as prefilters or for the filtration of samples in water or organic solvents. This design of deep-bed filter with a high loading capacity allows the purification of solutions with a high particle load.

- Filter PP

Type	Description	Porosity µm	PK	Cat. No.
Polycap 36 HD	Non-sterile	1	1	**9.951 118**
Polycap 36 HD	Non-sterile	5	1	**9.951 119**
Polycap 36 HD	Non-sterile	10	1	**9.951 120**
Polycap 36 HD	Non-sterile	20	1	**9.951 121**
Polycap 75 HD	Non-sterile	1	1	**9.951 122**
Polycap 75 HD	Non-sterile	5	1	**9.951 123**
Polycap 75 HD	Non-sterile	20	1	**9.951 125**

4



4 Disposable filtration capsules, Polycap AS™

NEW!

Used for large volumes of aqueous samples. Presterilized. Contains a nylon membrane which is inherently hydrophilic, has low extractables, is bio-safe and has excellent flow rates.

GE Healthcare

A glass microfibre prefilter ensures a long working life for the main filter and allows the easy filtration of large volumes and difficult samples.

Filter: GMF/Nylon

Type	Porosity µm	PK	Cat. No.
Polycap 36 AS	0.2	1	**9.951 130**
Polycap 36 AS	1.0	1	**9.951 131**

E & OE.

Selectron® filter holders FP 025/1 and FP 050/1

In polysulphone for use with syringes for analytical and preparative use. *GE Healthcare*
Filtration-media must be selected separately.

Applications of FP 025/1:
Clarification and sterile filtration of aqueous liquids and gases.
Applications of FP 050/1:
Sampling and flow rate applications. Ideal for filtrations using peristaltic pumps and for gas sterilisation.

Specifications:
Max. pressure: 7 bar
Max. temperature: 180°C

Type	Diam. mm	PK	Cat. No.	
FP 025/1	25	10	**9.603 181**	1
FP 050/1	50	1	**9.603 205**	2

3 Membrane filter holders, syringe, Type 165

Type 165. PC. Reusable filter holder, without filter. Filter has to be selected separately. *Sartorius*
For particle removal, sterile filtration of aqueous solutions or for venting of sterile vessels. Autoclavable. With Luer connection.

Diam. mm	PK	Cat. No.
13	12	**9.049 241**
25	12	**9.049 242**

1



9.603 181

2



9.603 205

3





1



1 LLG-Inline-filters

NEW!

The 50mm inline filter with it's ultra pure Polypropylene housing (ultrasonic welded) is designed to contain 47mm membranes. The filter comes with 6-12mm hose connectors (tapered) at the inlet and the outlet side.
The PTFE-membrane can be used for filtration of aggressive chemicals including acids and non-aqueous solutions.
Due to its high filter area of 1735mm² the filter is suitable for long term gas filtration /venting applications, it could be used for filtration of higher volumes of liquid (up to approximately 500ml, depending on the particle load of the filtrated suspension) or for filtration of aggressive non aqueous liquids.

- hydrophobic PTFE-membrane
- Housing polypropylene
- autoclavable at 121°C for 20 minutes at 2 bar, max. 3 cycles
- stepped hose connector of 6-10mm on either sides
- high throughput with low pressure drop
- max. operating pressure 4.0 bar

Pore size µm	Diam. mm	PK	Cat. No.
0.20	50	5	**9.059 513**
0.45	50	5	**9.059 514**

2



2 Capsule filters LifeASSURE™ PFS Series, PTFE

NEW!

3M Deutschland

LifeASSURE™ PFS 50 capsule filters are ideal for sterile air filtration applications in the laboratory.
Typical applications are in air filtration and sterile venting of tanks used for cell culture and bioprocessing designed to remove microorganisms and particulates. The filters offer the ultimate microorganism retention for air and gas streams while providing superior air flow capacity. The containing membrane is designed to provide low pressure drop resulting in fast flow.
- High flow optimized design
- Air and gas flow in both directions
- Reliable sterilization in humid and dry areas
- Hydrophobic PTFE membrane
- Stepped horse-barb of 6-10 mm on either side
- User friendly easy to use
- Autoclavable at 126°C for 30 minutes at 1.7 bar, 10 cycles
- Polypropylene (PP) housing
- Max. operating pressure 2.8 bar

Pore size µm	Diam. mm	PK	Cat. No.
0.20	50	3	**9.059 503**
0.20	50	50	**9.059 504**

3



3 In-line filters, Midisart 2000

NEW!

Sartorius

Midisart 2000 in-line filters. For sterile ventilation of fermenters, culture vessels, etc. or to act as a water barrier between the suction flask and the vacuum pump in filtration applications. The supported PTFE membrane within a PP housing gives excellent chemical resistance.
Filter in either direction (3 bar max. pressure).
- Stepped horse-barb of 6-12 mm on either sides
- sterile single packed filters, autoclavable

Pore size µm	Diam. mm	Type	PK	Cat. No.
0.20	62	sterile	12	**9.049 151**
0.20	62	sterile	25	**9.049 152**
0.20	62	non sterile	100	**9.049 153**
0.45	62	sterile	12	**9.049 156**
0.45	62	sterile	25	**9.049 157**

4



4 In-Line-Filter, disposable, Polydisc TF™

GE Healthcare

Mounted in a robust PP housing. All have a low hold-up volume.
Dimensions: (diameter x length) 53 x 46mm.
Connections: For 6mm to 10mm diameter bore tubing. Also accept male luer slip.
- Hydrophobic PTFE membrane
- Pore sizes 0.1µm, 0.2µm, 0.45µm, 1.0µm
- 1µm pore size unit has a PP prefilter
- Autoclavable at 131°C for 20 minutes
- Maximum operating pressure 4.0 bar

Suitable for chemically aggressive solutions, reagents and organic solvents. Ideal for protective venting, in-line filtration and isolation applications. Non-sterile.

Pore size µm	PK	Cat. No.
0.10	10	**9.951 096**
0.20	10	**9.951 097**
0.45	10	**9.951 098**
1.00	10	**9.951 099**

E & OE.

1 Pressure filtration units

Sartolab P 20. For sterile filtration of cell culture media. Ready-to-use, disposable filtration units. Surfactant-free, 0.2µm cellulose acetate membrane with minimal protein adsorption. With Luer lock inlet and filling bell on the outlet. *Sartorius*

Sartolab P 20 plus. With additional, binding agent-free, glass-fibre pre-filter for media which are difficult to filter.



Type	PK	Cat. No.
Sartolab P 20	10	**9.054 681**
Sartolab P 20 plus	10	**9.054 686**
Coupling M12 x 1 with G$^{3}/_{8}$ male thread	1	**9.604 383**
Diaphragm pump, pressurizing, G$^{3}/_{8}$ male screwthread connection, for 220V, 50Hz supplies	1	**9.604 389**
Tripod for pressure filtration apparatus 9.604 345	1	**9.604 394**
Double-ended box spanner for tripod 9.604 394	1	**9.604 395**
Stainless steel forceps	1	**9.604 061**

Further designs available on request.

2 Pressure filter holder, stainless steel

For 47mm diameter membrane filters. With reservoir barrel allowing up to 200ml of liquid to be filtered by connection to a suitable direct pressure source. Can also be used for filtering larger volumes in conjunction with a 5L pressurising container. Complete with silicone O-rings and 10mm diameter tubing ferrules on the inlet and outlets. For sterile filtration of tissue cultures, ultrafiltration of buffer solutions, cell count solutions and for pressing soil samples. *Sartorius*



Type	Volume ml	Filter size mm	PK	Cat. No.
Pressure filter holder	200	Ø 47 mm	1	**9.604 345**

3 Filter holders, vacuum, Type 162. Stainless steel

Specially designed for residue analysis. The stainless steel filter support produces homogeneous distribution of the residues on the membrane filter surface. Easy to use. For 47mm or 50mm diameter filters. *Sartorius*



Type	PK	Cat. No.
Vacuum filter holder, 500ml	1	**9.604 201**
Vacuum filter holder, 100ml	1	**9.604 202**

4 Vacuum filtration Equipment Grade MV 050/0

Stainless steel construction, chemically resistant to most aqueous and organic solutions. *GE Healthcare*
- funnel volume 500ml
- for filters with 47mm /50mm diameter and 40mm diameter prefilter

Self sealing, ideal for quick, repeated filtrations



Type	PK	Cat. No.
MV 050A/0*	1	**9.603 520**
MV 050/0	1	**9.603 510**

*With rapid closure clamp





1 2 Microbiological monitoring of water: MBS I system and membranes

GE Healthcare

The MBS I filtration system is designed for laboratories that handle high numbers of samples for microbiological quality control. It consists of a membrane dispenser, a funnel dispenser, and a 2-place filter AS220 manifold.

AS220 Filtration Manifold and Filtration funnels AS220 is a two-place stainless-steel filtration manifold, which can be joined together (maximum of 3 manifolds).This simple manifold can be used with 47mm or 50mm filtration membranes. AS220 Filtration Manifold and Filtration funnels deliver:- Waste reduction-because PP funnels can be autoclaved up to 20 times

- Time saving-No need to flame in between filtrations
- Easy handing
- Cost saving-20 PP funnels are enough for 1000 analyses
- Reduces cross-contamination

Description	PK	Cat. No.
2-place vacuum manifold AS 220	1	**6.231 788**
Automatic dispenser for funnels	1	**6.231 860**
Funnels 100 ml, PP, autoclavable	20	**7.616 566**
Funnels 100 ml, ABS, not autoclavable	20	**9.603 290**
Funnels 350 ml, PP, autoclavable	20	**6.801 571**
Autoclaving bags	20	**7.608 012**
Membran-Butler manual	1	**6.225 967**



3 Filter manifold systems, 3- and 6-place

Sartorius

Traditional multi-branch manifolds and individual filter holders for microbial enumeration. The filter holders and manifolds have been designed specifically for applications in which the particles or microorganisms retained on the membrane filter surface are of interest. Available with either 100ml or 500ml funnels.

Note:
Stainless steel manifolds only (Combisart) without funnels, for use with suitable adapters, are also available for attachment to all Sartorius vacuum funnels.

Type	Diam. mm	Capacity ml	PK	Cat. No.
3-way stainless steel manifold	50	3 x 100	1	**9.604 222**
6-way stainless steel manifold	50	6 x 100	1	**9.604 223**
3-way stainless steel manifold	50	3 x 500	1	**9.604 226**
6-way stainless steel manifold	50	6 x 500	1	**9.604 224**



4 Stainless steel filter manifold system

Sartorius

Combisart® Multibranch System with modular structure: For microbiological analysis. Basic system without outlet for holding all dismountable Sartorius vacuum funnels either completely or by using appropriate adapters

Description	PK	Cat. No.
3-place s/s manifold with sterile venting	1	**9.604 227**
6-place s/s manifold with sterile venting	1	**9.604 228**
Funnel, 100 ml	1	**9.604 210**
Funnel, 500 ml	1	**9.604 211**
Lid, stainless steel for 100ml funnel	1	**9.604 212**
Lid, stainless steel for 500ml funnel	1	**9.604 213**
Silicone lid seal for 100ml funnel	1	**9.604 214**
Silicone lid seal for 500ml funnel	1	**9.604 215**
Base support, stainless steel for mounting a single funnel onto a manifold	1	**9.604 216**



5 Filter holders, glass, Type 163

Sartorius

Two compact, glass vacuum filter holders for simple particle testing and clarification of solutions. With glass frit membrane filter support and anodised aluminium clamp.

Type	Volume ml	For Filter size	PK	Cat. No.
glass frit	30	25 mm dia.	1	**9.604 204**
glass frit	250	47/50 mm dia.	1	**9.604 307**

E & OE.

1 Filtering apparatus DURAN®

DURAN Group

The DURAN® filtering apparatus is made of high-quality borosilicate glass.
Aside from glass, the medium only comes into chemical contact with PTFE.
This means that the filtering apparatus can be used to filter virtually any chemical.
Thanks to the PTFE disc holder, fritted glass discs of different porosities can be used in addition to the slit-sieve disc.
This creates a wide application scope for filtration using filter paper, membrane filters (47mm) or simply using glass filters. Different porosities are available between 10µm and 160µm, which makes it possible to perform coarse and fine filtration in addition to analytical filtration. Furthermore, the filtering apparatus is suitable for the filtration of HPLC media, testing for bacterial contamination, residue analysis and the filtration of other media.
A Slit and a glass filter plate porosity 2 are included in the set.

Properties:
- Removable filter discs ensure easy cleaning
- Slit-sieve disc for mounting filter paper/membrane filter
- Only glass and PTFE come into contact with the medium
- Funnel with scale
- Secure plastic hose connection
- Tried-and-tested DURAN® filtering flask
- All components are available as spare parts

1



Description	PK	Cat. No.
Filtering apparatus DURAN®	1	**9.052 744**

Filtering apparatus DURAN®, Spare parts

NEW!

DURAN Group

Description	PK	Cat. No.
PTFE adapter disc	1	**9.052 745**
Clamp (anodised aluminium)	1	**9.052 746**
Funnel with 250ml scale	1	**9.052 747**
Head NS 45 / 40	1	**9.052 748**
Filtering flask with NS 45 /40, 1000ml	1	**9.052 749**
Plastic hose connection with silicone seal, straight, GL 14	1	**7.023 754**
Screw connection caps, red, made of PBT, GL 14, aperture bore 9.5mm	1	**9.209 114**
DURAN® glass filter disc, 50mm in diameter, por. 2	1	**9.052 952**
DURAN® slit-sieve disc, diameter 48mm	1	**9.052 901**
PTFE adapter, NS 45/40, GL 45	1	**9.052 750**

2 Filter holders, Type 16309

Sartorius

For vacuum filtration of particles from solutions. Comprises 250ml, dismountable, top manifold with filter holder and clamp. For 47mm and 50mm diameter filters. Supplied complete with 1L capacity filter flask with ground joint to fit manifold and PP side-arm for safe connection of flexible vacuum tubing.

2



Type	Capacity ml	Filter size mm	PK	Cat. No.
All-glass unit	250	Ø 47 - 50mm	1	**9.604 076**

3 Vacuum filtration equipment, GV 025 series

GE Healthcare

- funnel volume 60ml
- for filter 25mm diameter

3



Type	Filter media	Connection	PK	Cat. No.
GV 025/0	glass frit	rubber stopper	1	**9.603 250**
GV 025/2	glass frit	TC*, EF* 250ml (NS 29)	1	**9.603 252**

*TC = tubing connection
**EF = Erlenmeyer flask

1



1 Vacuum or pressure filtration apparatus, Typ 16510, PC

Sartorius

For vacuum or pressure filtration up to 2 bar.
For ultra or sterile filtration.
With collecting bottle 250 ml.
For filter 47mm diameter filters.

Type	Volume ml	Filter size mm	PK	Cat. No.
PC filtration apparatus	250	Ø 47mm	1	**9.049 243**

2



2 Vacuum Filtration Equipment GV 050 Series

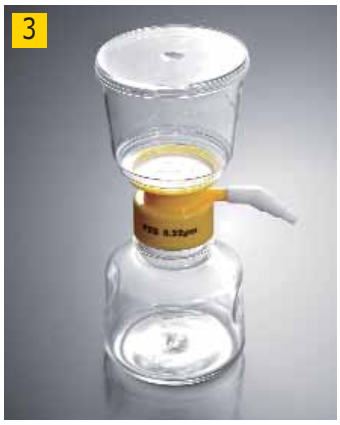
GE Healthcare

- Funnel Volume 250 ml
- to be used with Ø 47/50 mm membranes and Ø 40 mm pre-filter
- silicone cap and venting nozzle included in scope of supply
- GV 050A-Types equipped with rapid closure clamp

Type	Filter media	Connection	PK	Cat. No.
GV 050/0	glass frit	rubber stopper	1	**9.603 500**
GV 050/1	sieve	rubber stopper	1	**9.603 501**
GV 050/2	glass frit	TC*, EF** 1000 ml (NS 45)	1	**9.603 502**
GV 050/3	sieve	TC*, EF** 1000 ml (NS 45)	1	**9.603 503**

*TC = tubing connection
**EF = Erlenmeyer flask

3



3 Filter units, PES membrane

NEW!

Jet Bio-Filtration

These bottle-top filter units are ideally suited for the separation or purification of samples which are contained in large volumes. The units are available with either 0.22µm or 0.45µm pore sizes and 3 different volumes (250, 500 and 1000ml).
Features:
- Bottle-top filter and reservoir bottle are included
- Light weight and stable wall construction
- Large knurls on the reservoir bottle cap for easy screwing
- Wide bottle mouth for efficient pouring out
- Volume graduation
- Hose connector fits multiple diameters
- Non-pyrogenic

Membrane material: Polyethersulfone (PES)

Capacity ml	Pore size µm	Neck thread mm	PK	Cat. No.
250	0.22	45	12	**6.267 180**
250	0.45	45	12	**6.267 181**
500	0.22	45	12	**6.267 182**
500	0.45	45	12	**6.267 183**
1000	0.22	45	12	**6.267 184**
1000	0.45	45	12	**6.267 185**

4



4 Filter units, Sartolab RF, PES membrane

Sartorius

Sterile filter units with receiver for sterile filtration of aqueous solutions and media, particularly cell culture. Simple and safe to handle. The integral polyethersulfone (PES) membrane guarantees extremely good throughput times and low protein binding, making it ideal for filtering proteinaceous solutions. The receiver is supplied with a flexible vacuum tubing adapter and a lid.

Type	Capacity ml	Pore size µm	PK	Cat. No.
Sartolab RF 150	150	0.22	12	**9.049 200**
Sartolab RF 250	250	0.22	12	**9.049 201**
Sartolab RF 500	500	0.22	12	**9.049 202**
Sartolab RF 1000	1000	0.22	12	**9.049 203**

E & OE.

1 Bottle-top filters, Sartolab BT, PES membrane

Sartorius

Sterile vacuum filters for screwing directly onto sterile bottles. Disposable units for sterile filtration of media and aqueous solutions. The special polyethersulphone (PES) membrane produces extremely good throughput times and low protein binding, making it ideal for cell culture applications.
With GL45 screw connection for all standard bottles.
Caution: Only use sterile bottles authorised for use in low pressure applications.

1



Type	Capacity ml	Pore size µm	PK	Cat. No.
Sartolab BT 150	150	0.22	48	**9.049 204**
Sartolab BT 500	500	0.22	12	**9.049 205**
Sartolab BT 1000	1000	0.22	12	**9.049 206**

2 Filter units Nalgene™ Rapid-Flow™, PES Membrane, sterile

Thermo Scientific

Ideal for biological and pharmaceutical sterile filtration. PES membrane features low protein binding, low level of extractables and a high flow rate. Now available in three pore sizes: The best filter units with 0.20µm and 0.45µm pore size and new to the protection of valuable cell cultures from mycoplasma with 0.10µm pore size. Filter top and filtrate bottle are graduated. Blue color-coded collar with cellulosic vent plug side arm and quick-disconnect tubing adapter. Leakproof, sterile screw closure included for storage of sterile filtrate. Sterile, single packed. Certificate of Quality included in each full case. Lot number, catalogue number, membrane type, pore size and expiration date are printed on filter units, bottle tops and receivers for easy identification and lot traceability.

2



Type	Volume upper/lower part ml	Thread GL	Pore size µm	Membrane diam. mm	PK	Cat. No.
565	150/150	45	0.10	50	1	**9.046 022**
568	250/250	45	0.10	50	1	**9.046 024**
566	500/500	45	0.10	75	1	**9.046 023**
565	150/150	45	0.20	50	1	**6.302 336**
568	250/250	45	0.20	50	1	**6.228 218**
566	500/500	45	0.20	75	1	**6.227 381**
569	500/500	45	0.20	90	1	**6.225 298**
567	1000/1000	45	0.20	90	1	**6.229 041**
165	150/150	45	0.45	50	1	**7.047 785**
168	250/250	45	0.45	50	1	**7.047 791**
166	500/500	45	0.45	75	1	**7.047 787**
169	500/500	45	0.45	90	1	**7.047 793**
167	1000/1000	45	0.45	90	1	**7.047 789**

3 Bottle Top Filters Nalgene™ Rapid-Flow™, PES Membrane, sterile

Thermo Scientific

Filters securely screw onto glass media bottles with 33mm or 45mm neck sizes.
Allows direct filtration of liquid into sterile glass media bottles.
Tight and secure thread connection for vacuum filtration, vacuum tubing to be connected onto tubing adapter of side-arm. Graduated. Certificate of quality included in each full case. Lot number, catalogue number, membrane type, pore size and expiration date are printed on filter units for easy identification and lot traceability.

3



Type	Capacity ml	Neck thread GL	Pore size µm	Membrane diam. mm	PK	Cat. No.
596	150	33	0.20	50	1	**7.048 392**
596	150	45	0.20	50	1	**6.224 312**
595	500	33	0.20	75	1	**7.048 388**
595	500	45	0.20	75	1	**7.048 390**
597	1000	33	0.20	90	1	**7.048 396**
597	1000	45	0.20	90	1	**7.048 397**
296	150	33	0.45	50	1	**7.048 393**
296	150	45	0.45	50	1	**7.048 395**
295	500	33	0.45	75	1	**7.048 389**
295	500	45	0.45	75	1	**7.048 391**

Membrane pumps - please see page 971.



1 Filter Units Nalgene™, Low Profile, PES Membrane, sterile

Thermo Scientific

Compact Nalgene™ filter units with PES membrane are ideally suited for quick filtration of samples between 50 to 100 ml.
- Unitary construction with non-separable upper and receiver components
- Padless membrane support minimizes foaming of proteinaceous samples
- Non-pyrogenic
- Sterile

Type	Volume upper/lower part ml	Thread GL	Pore size µm	Membrane diam. mm	PK	Cat. No.
524	115/150	45	0.20	50	1	**6.234 424**
124	115/150	45	0.45	50	1	**9.046 020**



2 Filter Units Nalgene™ Rapid-Flow™ with 50ml centrifuge tube, PES Membrane, sterile

Thermo Scientific

Polystyrene housing, 0.2µm PES membrane. The optimal choice for small volume tissue culture work. Offers clean, fast filtration of 20ml to 50ml of media or buffers. This low protein binding unit is non-cytotoxic and non-pyrogenic. Comes assembled with 50ml conical tube and a separate closure. Includes 2 reusable stands in each case. Certified and graduated. Lot number, catalogue number, membrane type, pore size and expiration date are printed on it.

Type	Volume upper/lower part ml	Thread GL	Pore size µm	Membrane diam. mm	PK	Cat. No.
564	50/50	45*	0.20	50	1	**9.046 021**

* with adapter for 50ml tube



3 Filter Units, Cellulose Nitrate Membrane, sterile

NEW!

Thermo Scientific

White, cellulose nitrate membrane. Colour code: green. Gamma-irradiated sterile. Highest throughput rate for water and aqueous solutions, low extractables content. Surfactant-free.
Lot number, catalogue number, membrane type, pore size and expiration date are printed on filter units, bottle tops and receivers for easy identification and lot traceability.

Type	Volume upper/lower part ml	Thread GL	Pore size µm	Membrane diam. mm	Grid	PK	Cat. No.
121	115/115	45	0.45	50	black	1	**7.047 590**
125	150/150	45	0.20	50	without	1	**9.046 109**
125	150/150	45	0.45	50	black	1	**9.046 110**
125	150/150	45	0.80	50	without	1	**9.046 111**
126	250/250	45	0.20	50	without	1	**9.046 121**
126	250/250	45	0.45	50	black	1	**9.046 122**
126	250/250	45	0.80	50	without	1	**9.046 123**
450	500/500	45	0.20	75	without	1	**9.046 131**
450	500/500	45	0.45	75	black	1	**9.046 132**
450	500/500	45	0.80	75	without	1	**9.046 133**
127	500/1000	45	0.20	75	without	1	**9.046 141**
127	500/1000	45	0.45	75	black	1	**9.046 142**
127	500/1000	45	0.80	75	without	1	**9.046 143**

E & OE.

1 Filter Units Nalgene™ Rapid-Flow™, Nylon Membrane, sterile

Thermo Scientific

Single-use, disposable filter units for sterile filtration of media and other reagents, and for other highly sensitive cell culture lines. With polystyrene (PS) upper and lower chambers and nylon membrane. Colour code: red. For cell culture. Gamma-irradiated sterile. Extremely low in extractable substances, no wetting agents. Lot number, catalogue number, membrane type, pore size and expiration date are printed on filter units, bottle tops and receivers for easy identification and lot traceability.



Type	Volume upper/lower part ml	Thread GL	Pore size µm	Membrane diam. mm	PK	Cat. No.
150	150/150	45	0.20	50	1	**9.046 055**
150	150/150	45	0.45	50	1	**9.046 056**
153	250/250	45	0.20	50	1	**9.046 061**
153	250/250	45	0.45	50	1	**9.046 062**
151	500/500	45	0.20	75	1	**9.046 064**
151	500/500	45	0.45	75	1	**9.046 065**
163	500/500	45	0.20	90	1	**9.045 978**
154	500/1000	45	0.20	75	1	**9.046 067**
154	500/1000	45	0.45	75	1	**9.046 068**
164	1000/1000	45	0.20	90	1	**9.045 979**

2 Filter units Nalgene™ Rapid-Flow™, SFCA Membrane, sterile

NEW!

Thermo Scientific

Single-use, disposable filter units for sterile filtration of media and other reagents, and for other highly sensitive cell culture lines. With polystyrene (PS) upper and lower chambers and surfactant-free, cellulose acetate membranes. Colour code: yellow collar. For cell culture. Gamma-irradiated sterile. Low protein binding, with high throughput rate for proteinaceous solutions and minimal extractables content. Lot number, catalogue number, membrane type, pore size and expiration date are printed on filter units bottle tops and receivers for easy identification and lot traceability.



Type	Volume upper/lower part ml	Thread GL	Pore size µm	Membrane diam. mm	PK	Cat. No.
122	115/115	45	0.20	50	1	**7.047 591**
122	115/115	45	0.45	50	1	**6.236 659**
155	150/150	45	0.20	50	1	**9.046 034**
155	150/150	45	0.45	50	1	**9.046 035**
157	250/250	45	0.20	50	1	**9.046 037**
157	250/250	45	0.45	50	1	**9.046 038**
156	500/500	45	0.20	75	1	**9.046 041**
156	500/500	45	0.45	75	1	**9.046 042**
158	500/1000	45	0.20	75	1	**9.046 044**
158	500/1000	45	0.45	75	1	**9.046 045**
162	500/500	45	0.20	90	1	**9.045 975**
162	500/500	45	0.45	90	1	**9.045 976**
161	1000/1000	45	0.20	90	1	**9.045 971**
161	1000/1000	45	0.45	90	1	**9.045 972**

We can supply this manufacturer's whole product range !

Thermo SCIENTIFIC

partner of the LLG Lab Logistics Group



1 Bottle Top Filters Nalgene™ Rapid-Flow™, SFCA Membrane, sterile

Thermo Scientific

Tissue culture filters for screw fitting onto bottles with 33mm or 45mm neck diameters. With surfactant-free, cellulose acetate membrane (SFCA) and polystyrene (PS) housing. Gamma-irradiated sterile. Pyrogen free. Non cytotoxic. Low-pressure filtration can be carried out directly into a suitable sterile bottle. Caution: Only use sterile bottles authorised for use in low pressure applications. Always wear protective equipment for low pressure procedures. The membrane is characterised by its low protein binding, good throughput rates and minimal clogging with negligible protein loss. Permanent, moulded graduations. Quick-disconnection tubing adaptor with cellulosic vent plug for tubing with an internal diameter of 6mm to 9mm. Lot number, catalogue number, membrane type, pore size and expiration date are printed on filter units for easy identification and lot traceability.

Type	Capacity ml	Neck thread GL	Pore size µm	Membrane diam. mm	PK	Cat. No.
290	150	33	0.20	50	1	**9.045 951**
290	150	33	0.45	50	1	**9.045 952**
290	150	45	0.20	50	1	**9.045 953**
290	150	45	0.45	50	1	**9.045 954**
291	500	33	0.20	75	1	**9.045 956**
291	500	33	0.45	75	1	**9.045 957**
291	500	45	0.20	75	1	**9.045 958**
291	500	45	0.45	75	1	**9.045 959**
292	1000	33	0.20	90	1	**9.045 961**
292	1000	45	0.20	90	1	**9.045 963**

2 Filter Storage Bottles Nalgene™ Rapid-Flow™, PS, sterile

Thermo Scientific

Easy-to-use ergonomic design. Can be used to store sterilised filtrate. Radiation-sterilised to save you time and minimize contamination. Also handy as presterilised, single-use storage containers. 1-1/2-turn threaded screw closure guarantees a leakproof seal and eliminates pH shift in receivers. Certified. Non pyrogenic, non cytotoxic. Sterile, graduated and leakproof.

Type	Capacity ml	Thread GL	PK	Cat. No.
455	150	45	1	**7.048 731**
455	250	45	1	**7.048 732**
455	500	45	1	**7.048 733**
455	1000	45	1	**7.048 734**





3 Bottle Top Filters Nalgene™ Large-Volume FastCap™, PES Membrane, sterile

Thermo Scientific

Large-Volume Bottle Top Filter, blue PS housing. FastCap™ Bottle Top Filter's universal fit eliminates the need to screw them onto glass media bottles. Filters up to 5L. just place on bottle mouth, apply vacuum and start filtering. Fits bottle necks up to 53mm.

Pore size µm	Diam. mm	PK	Cat. No.
0.20	90	1	**7.055 107**

E & OE.

1 LLG-Porcelain filter crucibles, with porous bottom, DIN 12909

Glazed.



Capacity ml	Ext. diam. mm	Height mm	Pore size µm	PK	Cat. No.
8	25	28	6	1	**9.052 080**
8	25	28	7	1	**9.052 081**
8	25	28	8	1	**9.052 082**
15	30	35	6	1	**9.052 083**
15	30	35	7	1	**9.052 084**
15	30	35	8	1	**9.052 085**
25	35	40	6	1	**6.233 176**
25	35	40	7	1	**6.233 748**
25	35	40	8	1	**9.052 086**
35	40	43	6	1	**9.052 087**
35	40	43	7	1	**9.052 088**
35	40	43	8	1	**9.052 089**
50	45	50	6	1	**9.052 090**
50	45	50	7	1	**9.052 091**
50	45	50	8	1	**9.052 092**

2 Gooch crucibles, porcelain

NEW!

Made from porcelain with perforated bottoms. They need filter paper for filtering process. *Isolab*



Capacity ml	Diam. mm	Height mm	PK	Cat. No.
15	29	33	1	**6.267 350**
25	36	45	1	**6.267 351**
40	40	50	1	**6.267 352**

3 Filter crucibles, borosilicate glass 3.3

Borosilicate glass 3.3. With sintered disc filter as outlined below.



Capacity ml	Porosity	Diam. mm	PK	Cat. No.
15	1	23	1	**9.052 060**
15	2	23	1	**9.052 061**
15	3	23	1	**9.052 062**
15	4	23	1	**9.052 063**
15	5	23	1	**9.052 064**
30	1	30	1	**9.052 036**
30	2	30	1	**9.052 037**
30	3	30	1	**9.052 038**
30	4	30	1	**9.052 039**
30	5	30	1	**9.052 040**
50	1	40	1	**9.052 041**
50	2	40	1	**9.052 042**
50	3	40	1	**9.052 043**
50	4	40	1	**9.052 044**
50	5	40	1	**9.052 065**

4 Filter crucibles, DURAN®

With sintered glass filter disc at base, as outlined below. *DURAN Group*
Glass Type I/neutral glass as per USP, EP and JP. Autoclavable.



Capacity ml	Porosity	Diam. mm	PK	Cat. No.
30	1	28	1	**9.052 021**
30	2	28	1	**9.052 022**
30	3	28	1	**9.052 023**
30	4	28	1	**9.052 024**
30	5	28	1	**9.052 025**
50	1	36	1	**9.052 031**
50	2	36	1	**9.052 032**
50	3	36	1	**9.052 033**
50	4	36	1	**9.052 034**

Crucibles and lids - please see page 105.

1



1 Rubber sleeves, EPDM

For filter crucibles. Temperature resistant up to 150°C. Autoclavable. *DURAN Group*

Diam. mm	PK	Cat. No.
26	1	**9.052 114**
33	1	**9.052 121**
41	1	**9.052 126**
49	1	**9.052 131**

2



2 Adapters for filter crucibles, borosilicate glass 3.3.

Borosilicate glass 3.3. Autoclavable.

Diam. mm	Stem diam. mm	PK	Cat. No.
34	10	1	**9.052 213**
40	10	1	**9.052 214**
50	10	1	**9.052 215**

3



3 Adapters for filter crucibles, Duran®

Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*

Diam. mm	Height mm	PK	Cat. No.
27	108	1	**9.052 216**
34	110	1	**9.052 222**
41	125	1	**9.052 226**
50	132	1	**9.052 232**

4



4 Filter holders, DURAN®

DURAN®. Dismountable, modular filter holders with screwthreaded top manifold, PP funnel outlet and two FKM seals. Accessory sintered filter discs (9.052 941 to 9.052 954) are screwed in between two FKM seals. The filter discs are easy to replace. Membrane or paper filters can be stretched across the disc. Filter plates must be ordered separately. *DURAN Group*

Capacity ml	Plate diam. mm	Thread diam. mm	PK	Cat. No.
30	24	28	1	**9.052 903**
250	50	54	1	**9.052 905**
1000	90	95	1	**9.052 910**

5



5 Filter holders, glass, top manifold only, DURAN®

DURAN®. For use in dismountable filter holders. With screwthread, without PP outlet funnel, filter disc or FKM rubber seals. *DURAN Group*

Capacity ml	Thread diam. mm	PK	Cat. No.
30	28	1	**9.052 913**
250	54	1	**9.052 915**
1000	95	1	**9.052 920**

Exhaust Devices - please see page 1151.

1 Filter holders, outlet funnels, PP

PP. For use with dismountable filter holders. With screwthread to fit respective top manifold. Without manifold, sintered filter disc or FKM rubber seals.

DURAN Group

Neck thread GL	Thread diam. mm	PK	Cat. No.
28	10	1	**9.052 973**
54	12	1	**9.052 975**
95	18	1	**9.052 980**



2 Filter discs, DURAN®

NEW!

With glass rim. For use in dismountable filter holders. Patented design. Filter discs must always be screwed in between two FKM rubber seals. Without top manifold, PP outlet funnel or seals.

DURAN Group

Plate diam. mm	Porosity	PK	Cat. No.
24	1	1	**9.052 941**
24	2	1	**9.052 942**
24	3	1	**9.052 943**
24	4	1	**9.052 944**
50	1	1	**9.052 951**
50	2	1	**9.052 952**
50	3	1	**9.052 953**
50	4	1	**9.052 954**
90	1	1	**9.052 961**
90	2	1	**9.052 962**
90	3	1	**9.052 963**
90	4	1	**9.052 964**



3 FKM seals

NEW!

For use in dismountable filter holders. Without PP outlet funnel, filter disc or top manifold.

DURAN Group

For diam. mm	PK	Cat. No.
24	1	**9.052 923**
50	1	**9.052 925**
90	1	**9.052 930**



4 Slotted sieve disc (perforated plate) DURAN®

Can be used in the 250ml capacity dismountable filter holder as a carrier for membrane and paper filters.

DURAN Group

Plate diam. mm	PK	Cat. No.
48	1	**9.052 901**





1 Filter funnels, Borosilicate glass 3.3

Borosilicate glass 3.3, with sintered disc filter as outlined below. Autoclavable.

Capacity ml	Porosity	Diam. mm	Stem diam. mm	PK	Cat. No.
50	1	36	10	1	**9.052 367**
50	2	36	10	1	**9.052 368**
50	3	36	10	1	**9.052 369**
50	4	36	10	1	**9.052 370**
75	1	48	10	1	**9.052 371**
75	2	48	10	1	**9.052 372**
75	3	48	10	1	**9.052 373**
75	4	48	10	1	**9.052 374**
125	1	60	10	1	**9.052 375**
125	2	60	10	1	**9.052 376**
125	3	60	10	1	**9.052 377**
125	4	60	10	1	**9.052 378**
250	1	80	18	1	**9.052 066**
250	2	80	18	1	**9.052 067**
250	3	80	18	1	**9.052 068**
250	4	80	18	1	**9.052 069**
500	1	95	22	1	**9.052 379**
500	2	95	22	1	**9.052 380**
500	3	95	22	1	**9.052 381**
500	4	95	22	1	**9.052 382**
1000	1	124	22	1	**9.052 383**
1000	2	124	22	1	**9.052 384**
1000	3	124	22	1	**9.052 385**
1000	4	124	22	1	**9.052 386**
4000	1	180	30	1	**9.052 387**
4000	2	180	30	1	**9.052 388**
4000	3	180	30	1	**9.052 389**
4000	4	180	30	1	**9.052 390**



2 Filter funnels, glass DURAN®

Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*

Capacity ml	Porosity	Diam. mm	Stem diam. mm	Height mm	PK	Cat. No.
50	1	35	10	130	1	**9.052 301**
50	2	35	10	130	1	**9.052 302**
50	3	35	10	130	1	**9.052 303**
50	4	35	10	130	1	**9.052 304**
50	5	35	10	130	1	**9.052 305**
75	1	45	10	132	1	**9.052 311**
75	2	45	10	132	1	**9.052 312**
75	3	45	10	132	1	**9.052 313**
75	4	45	10	132	1	**9.052 314**
75	5	45	10	132	1	**9.052 315**
125	1	60	10	140	1	**9.052 321**
125	2	60	10	140	1	**9.052 322**
125	3	60	10	140	1	**9.052 323**
125	4	60	10	140	1	**9.052 324**
125	5	60	10	140	1	**9.052 325**
500	1	95	22	240	1	**9.052 331**
500	2	95	22	240	1	**9.052 332**
500	3	95	22	240	1	**9.052 333**
500	4	95	22	240	1	**9.052 334**
500	5	95	22	240	1	**9.052 335**
1000	1	120	22	270	1	**9.052 341**
1000	2	120	22	270	1	**9.052 342**
1000	3	120	22	270	1	**9.052 343**
1000	4	120	22	270	1	**9.052 344**
1000	5	120	22	270	1	**9.052 345**
4000	1	175	30	425	1	**9.052 361**
4000	2	175	30	425	1	**9.052 362**
4000	3	175	30	425	1	**9.052 363**
4000	4	175	30	425	1	**9.052 364**



3 Filter funnels, conical, borosilicate glass 3.3

Capacity ml	Porosity	Diam. mm	Int. diam. mm	Stem diam. mm	PK	Cat. No.
25	3	55	25	8	1	**9.052 365**
25	4	55	25	8	1	**9.052 366**

1 Filter funnels, glass DURAN®, conical

Conical. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*

Capacity: 25mm
Diameter: 55mm
Plate diameter: 25mm
Stem diameter: 8mm
Height: 100mm

Type	Porosity	PK	Cat. No.
39D	3	1	**9.052 453**
39D	4	1	**9.052 454**



2 Slotted sieve filter funnels (Buchner funnels), DURAN®

Buchner pattern funnel with slotted sieve (perforated) filter plate. *DURAN Group*
Glass Type I/neutral glass as per USP, EP and JP. Autoclavable.

Capacity ml	Diam. mm	Height mm	Stem diam. mm	PK	Cat. No.
70	48	132	10	1	**9.252 022**
125	60	140	10	1	**9.252 028**
220	73	190	18	1	**9.252 034**
500	95	240	22	1	**9.252 044**
1000	120	270	22	1	**9.252 054**



3 LLG Buchner funnels, porcelain

For filter paper diam. mm	Capacity ml	PK	Cat. No.
45	35	1	**6.239 903**
55	70	1	**6.237 328**
70	120	1	**6.231 541**
90	240	1	**9.252 500**
110	400	1	**9.252 501**
125	600	1	**9.252 502**
150	1000	1	**9.252 503**
185	2000	1	**9.252 504**
240	4000	1	**9.252 505**
295	7000	1	**9.252 506**
325	10000	1	**9.252 507**



4 Buchner funnels, porcelain

To DIN 12905. *Haldenwanger*

For filter diam. mm	Capacity ml	PK	Cat. No.
29	10	1	**9.252 027**
48	50	1	**9.252 045**
59	75	1	**9.252 055**
74	135	1	**9.252 070**
95	290	1	**9.252 090**
114	580	1	**9.252 110**
130	795	1	**9.252 125**
155	1250	1	**9.252 150**
190	1900	1	**9.252 185**
250	4300	1	**9.252 240**
279	5800	1	**9.252 270**
330	10600	1	**9.252 320**



1



1 Filter funnels, PP, Buchner

PP. Two-piece construction. Top and bottom sections can be separated. Easy to clean. *Kartell*

For filterpaper diam. mm	Capacity ml	PK	Cat. No.
42.5	40	1	**9.252 330**
55	70	1	**9.252 331**
70	180	1	**9.252 332**
80	285	1	**9.252 333**
90	390	1	**9.252 334**
110	810	1	**9.252 335**
160	2100	1	**9.252 338**
240	6000	1	**9.252 339**

2

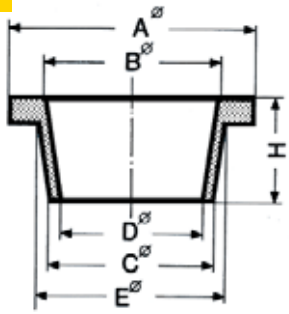


2 Discs for filter funnels, Buchner, PE-HD

Useful interface layer between filter paper and perforated Buchner plate. Avoids clogging of filter holes. *Kartell*

Diam. mm	PK	Cat. No.
45	1	**9.252 340**
55	1	**9.252 341**
70	1	**9.252 342**
80	1	**9.252 343**
90	1	**9.252 344**
110	1	**9.252 345**
160	1	**9.252 348**
240	1	**9.252 349**

3

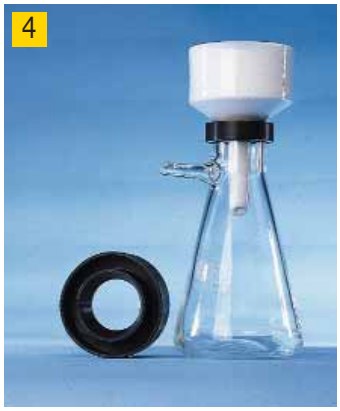


3 Filter rings, rubber

Natural rubber (NR). To hold filter funnels or crucibles.

Ø A mm	Ø B mm	Ø C mm	Ø D mm	Ø E mm	Height mm	PK	Cat. No.
41	25	24	18	30	20	1	**9.052 449**
48	35	32	28	36	20	1	**9.052 450**
56	40	42	35	44	20	1	**9.052 451**

4



4 Protective collars, EPDM.

For filter flasks. *CETEC*
Special design centres the funnel and flask and provides stable support for funnels, filters and manifolds placed on them. A clean seal is made between the flask rim and container placed on it. Application of the vacuum provides a tight seal. Also provides all-round protection for glass filter flask rims, significantly reducing impact damage and extending working life.

Diam. mm	Height mm	For bottles ml	PK	Cat. No.
23	11	100	1	**9.052 391**
33	15	250, 500	1	**9.052 392**
44	25	1000	1	**9.052 393**
58	25	2000, 3000	1	**9.052 394**
68	25	5000, 10000	1	**9.052 395**

5



5 Gaskets

Grey, filter gaskets made of natural rubber (NR). Conical, to fit filter funnels or crucibles into suction flasks. *Deutsch & Neumann*

Top diam. mm	Bottom diam. mm	Height mm	Wall thickness mm	PK	Cat. No.
21	12.0	18	2.5	1	**9.052 412**
27	17.0	20	3.0	1	**9.052 417**
33	21.0	24	3.0	1	**9.052 423**
41	27.5	27	4.0	1	**9.052 427**
53	33.0	34	5.0	1	**9.052 432**
68	48.0	35	5.5	1	**9.052 436**
78	58.0	35	6.0	1	**9.052 439**
89	66.0	40	6.5	1	**9.052 443**

E & OE.

1 Set of filter crucible cones, Guko

Comprises of 8 Gukos with an external lower diameter of 12mm, 17mm, 21mm, 27.5mm, 33mm, 48mm and 66mm each. *Deutsch & Neumann*

Type	PK	Cat. No.
Guko set	1	**9.052 400**



2 Filter flasks, PE

Manufactured from durable thick walled polyethylene.
Side arms are suitable to fit 6-10 mm hose diameter. *Isolab*

Capacity ml	PK	Cat. No.
1000	1	**6.243 759**



Filter flasks, Erlenmeyer shape, borosilicate glass 3.3

Borosilicate glass 3.3 with thick walls according to ISO 6556 and DIN 12476 standards.
The glass side arm and the Polypropylene side arm is suitable to work with 6mm to 10mm hose diameters. The Polypropylene side arm has a screw thread connector for easy and safe fitting of the tubing. *Isolab*

Capacity ml	lateral connection	PK	Cat. No.
100	glass	1	**4.008 437**
250	glass	1	**6.241 652**
500	glass	1	**6.241 291**
1000	glass	1	**6.239 008**
2000	glass	1	**4.008 438**
100	PP	1	**4.008 439** 3
250	PP	1	**6.237 706**
500	PP	1	**6.237 707**
1000	PP	1	**6.237 708**
2000	PP	1	**6.242 170**



4.008 439

4 Filter flasks, glass DURAN®

DIN 12476. ISO 6556. With PBT tubing connection and silicone (VMQ) seal.
Heavy wall for vacuum use. These filtering flasks fulfil the regulations of the "equipment and product safety regulations". *DURAN Group*

Capacity, 100ml to 2000ml: Erlenmeyer shape
Capacity, 3000 to 20000 ml: Bottle shape

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
100	64	24	105	1	**9.051 424**
250	85	34	155	1	**9.051 436**
500	105	34	185	1	**9.051 444**
1000	135	45	230	1	**9.051 454**
2000	166	60	255	1	**9.051 455**
3000	170	58	295	1	**9.051 456**
5000	185	68	360	1	**9.051 457**
10000	240	70	420	1	**9.051 458**
15000	257	70	500	1	**9.051 459**
20000	290	70	535	1	**9.051 460**



5 Assembly set, KECK® and Replacement seal

For attaching flexible vacuum tubing to filter flasks. Consists of straight PP tubing connection, PP tubulature made of silicone (VMQ) rubber seal. PP components can withstand temperatures up to 140°C for short periods without mechanical load. *DURAN Group*

Type	PK	Cat. No.
Assembly set, Keck®	1	**9.051 471**
Replacement seal	1	**9.051 474**



1



1 Filter flasks, glass DURAN®

DIN 12476. ISO 6556. Erlenmeyer shape. Heavy wall, for vacuum use. *DURAN Group*
With ground 17.5/26 socket for vacuum tubing with 15mm to 18mm external diameter.
These filtering flasks fulfil the regulations of the "equipment and product safety regulations".

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
250	85	34	155	1	**9.051 236**
500	105	34	185	1	**9.051 244**
1000	135	45	230	1	**9.051 254**
2000	166	60	255	1	**9.051 263**

2



2 Filter flasks with side-arm socket, glass DURAN®

Bottle shape. Heavy wall, for vacuum use. *DURAN Group*
With ground 17.5/26 socket for vacuum tubing with 15mm to 18mm external diameter.
These filtering flasks fulfil the regulations of the "equipment and product safety regulations".

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
3000	170	58	295	1	**9.051 268**
5000	185	68	360	1	**9.051 273**
10000	240	70	420	1	**9.051 286**
15000	255	70	500	1	**9.051 288**
20000	290	70	535	1	**9.051 291**

3



3 Filter flask DURAN®

Witt-pattern. Complete with interchangeable, flat-ground jointed, tube lid with cone, and plastic flexible tubing connection on one side. Vacuum resistant. *DURAN Group*

DN	Height mm	Lid	PK	Cat. No.
100	160	29/32	1	**9.051 519**
150	200	29/32	1	**9.051 531**
100	160	45/40	1	**9.051 619**
150	200	45/40	1	**9.051 631**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

DURAN GROUP magic of precision

E & OE.

Cooling 702

Cryogenic tubes ... 702
Cryogenic boxes ... 704
Cryogenic racks ... 709
Cryogenic accessories ... 710
Cryogenic storage tanks ... 713
Liquid nitrogen-Accessories ... 715
Dewar flasks ... 716
Low and Ultra low temperature freezers ... 718
Refrigerators and Freezers ... 723
Refrigerators and Freezers ex protected ... 726
Ice machines ... 728
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Temperature regulators 732

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Water baths ... 758
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Universal, Heating and Drying incubators ... 788
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Incubators ... 798
Cooling incubators ... 804
CO_2-Incubators ... 810
Shaking incubators ... 813
Test incubators ... 821
Ovens, Furnaces ... 825

1



2



1 2 LLG-Cryotubes, PP, sterile

NEW!

With star-shape in the screw cap, for automated capper/decapper.
External screw thread or internal screw thread. Temperature resistant down to -196°C. **Not appropriate for operations in liquid nitrogen.** With marking area, fill line and graduations printed on the vial. Safe and precise handling of biotechnology materials. Bar-code printed on each tube. DNase/RNase free. Vials and caps are autoclavable at 121°C.
Homogeneous conception:
- all made from polypropylene
- single-body, single-turn screw cap
Printed graduations for accurate measurements. Large white area for writing specimen identification. Sterile.

Packed in 2 bags of 50 tubes.

Capacity ml	Ext. diam. mm	Description	Thread	Height mm	PK	Cat. No.
1.2	12.6	self-standing	external	40.2	100	**9.401 160**
1.2	12.6	self-standing	internal	40.2	100	**9.401 161**
2.0	12.6	self-standing	external	45.6	100	**9.401 162**
2.0	12.6	self-standing	internal	48.2	100	**9.401 163**
2.0	12.6	without ring	external	44.5	100	**9.401 164**
2.0	12.6	without ring	internal	47.0	100	**9.401 165**
5.0	12.6	self-standing	external	87.6	100	**9.401 166**
5.0	12.6	without ring	internal	89.2	100	**9.401 167**
5.0	12.6	self-standing	internal	90.3	100	**9.401 168**

Fits in 10 x 10 Cryobox System 100™ 5026, Order No: 9.400 927

3



3 LLG-Insert cap disks for cryotubes, PP

NEW!

Cap-disk with star-shaped insert.. For colour-coding of cryotubes and quick identification of your samples.

Colour	PK	Cat. No.
blue	1000	**9.401 170**
white	1000	**9.401 171**
yellow	1000	**9.401 172**
pink	1000	**9.401 173**
red	1000	**9.401 174**
green	1000	**9.401 175**

4



5



4 5 Cryogenic tubes, PP

BRAND

Designed for storage of biological material, such as microorganisms, human and animal cells, etc. in the gas phase of liquid nitrogen.
Graduated, 12.5 mm o.d. Large frosted marking area and coloured cap inserts for easy sample identification.
Temperature stability to -196°C. gamma-ray sterile (SAL 10^{-6}) and autoclavable at 121°C (2 bar), according to DIN EN 285. Marked with the CE symbol according to the IVD Directive 98/79 EC.
Cryogenic vials are sterile, RNase-, DNase-, DNA- and endotoxin-free.

Capacity ml	Grad. up to ml	Description	Thread	Height mm	PK	Cat. No.
1.2	1.00	self-standing	external	41	1000	**6.801 655**
2.0	1.80	round-bottom	external	47	1000	**6.206 393**
2.0	1.80	self-standing	external	49	1000	**7.079 366**
3.0	3.00	self-standing	external	70	1000	**6.802 266**
4.0	3.60	self-standing	external	76	1000	**7.059 827**
5.0	4.50	self-standing	external	90	1000	**7.300 349**
1.2	1.00	self-standing	internal	41	1000	**7.300 557**
2.0	1.80	self-standing	internal	49	1000	**7.053 349**
2.0	1.80	round-bottom	internal	48	1000	**7.604 109**
4.0	3.60	round-bottom	internal	70	1000	**9.401 223**
4.0	3.60	self-standing	internal	71	1000	**9.401 224**
5.0	4.60	round-bottom	internal	90	1000	**7.610 567**

6



6 Cap coders, PP for Brand® cryogenic tubes

BRAND

Fit for all sizes

Colour	PK	Cat. No.
white	500	**7.200 575**
blue	500	**7.077 849**
red	500	**7.053 350**
green	500	**7.079 679**
yellow	500	**7.600 162**

Cryo labels - please see page 710.

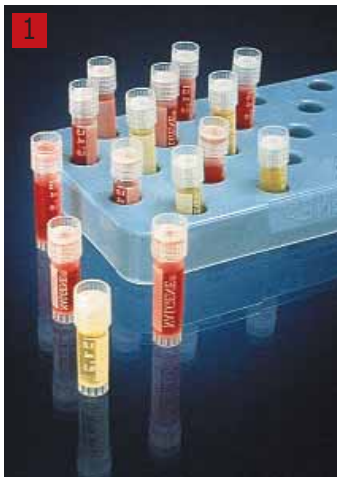
E & OE.

1 Cryovials System 100, with external screw thread, PP

Thermo Scientific

With PE-HD screw cap and silicone gasket. External screw thread. Self-standing.
Increase storage capacity in mechanical and gaseous phase liquid nitrogen freezers.
The gasket prevents leakage in microcentrifuges (up to 8000xg), or during transport.
With writing area and graduations in white. Gamma radiation sterilized. One-handed operation possible.
In compliance to CE. DNAse/RNAse free. Pyrogen-free and non-cytotoxic. Supplied in packs as indicated.
Bar coded version available on request.

Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
1.0	12	38	25	**9.400 912**
1.5	12	48	25	**9.400 913**



2 Cryovials with external screw thread, PP, sterile

Thermo Scientific

PP with PE-HD screw cap. External screw thread. Self-standing. Temperature resistant down to -196°C. Gamma radiation sterilised. Non-cytotoxic and pyrogen-free.
CE certified. DNAse/RNAse free. With marking area, fill line and graduations printed on the vial.
Bar coded version available on request.

Type	Capacity ml	Ext. diam. mm	Height mm	Description	PK	Cat. No.
5000	1.2	13.5	38	conical, sterile	25	**9.400 941**
5000	2.0	13.5	48	conical, sterile	25	**9.400 942**
5000	5.0	13.5	92	conical, sterile	10	**9.400 943**
5005	15.0	33.0	47	flat, sterile	75	**9.400 950**

Also available in a larger pack size (1000 pc.).

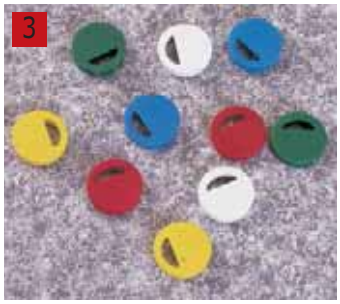


3 Cap coders for cryovials, PS

Thermo Scientific

Coloured PS cap inserts.

Colour	PK	Cat. No.
white	100	**9.400 967**
yellow	100	**9.400 968**
blue	100	**9.400 969**
green	100	**9.400 970**
red	100	**9.400 971**



4 5 Nunc Cryotubes with External Thread, PP/PE

Thermo Scientific

Intended for cryogenic transportation and storage of biological material. Available in three different tube types: Round or conical bottom shape with starfoot or round without foot (= non free standing). Conform to the IATA requirements for the transport of diagnostic specimens and to the US pharmacopoeia USP Class VI. Packed in resealable zip lock bags with printed catalog no. and lot. no. Non-pyrogenic. Non-toxic. Sterile (SAL 10^{-6}). CE marked. Certified RNase- and DNase-free.
Material tubes: PP
Material screw caps: PE

Warning:
Do not use CryoTubes in the liquid phase of liquid nitrogen unless correctly sealed in Nunc CryoFlex™ Tubing (Cat. No. 4.009 142). Improper use may cause liquified nitrogen to be trapped inside the vial and lead to pressure build-up, resulting in possible explosion or biohazard release.





Capacity ml	Height mm	Ext. diam. mm	Description	PK	Cat. No.
1.0	41	12.5	Conical, starfoot and writing area	500	**6.078 305**
1.8	48	12.5	Round, starfoot and writing area	450	**6.054 658**
4.5	91	12.5	Round, starfoot and writing area	300	**6.302 247**
1.0	41	12.5	Conical, starfoot	2000	**4.009 087**
1.8	48	12.5	Round, starfoot	450	**6.803 016**
4.5	91	12.5	Round, starfoot	1200	**4.008 952**
1.0	30	12.4	Round, writing area*	500	**6.800 399**
1.8	44	12.4	Round, writing area*	500	**6.088 774**
-	-	-	CryoFlex™ Tubing, 500 x 14mm	300	**4.009 142**

* Closure design does not permit the use of Cryo Color Coders.

1



2



1 2 Nunc Cryotubes with Internal Thread, PP, sterile

NEW!

Thermo Scientific

Intended for cryogenic transportation and storage of biological material. Internal thread with a silicone gasket provides the best possible seal. Available in four different bottom shapes: Round with or without free standing and round or conical with starfoot. Conform to the IATA requirements for the transport of diagnostic specimens and to the US pharmacopoeia USP Class VI. Packed in resealable zip lock bags with printed catalog no. and lot. no. Non-pyrogenic. Non-toxic. Sterile (SAL 10^{-6}). CE marked.
Certified RNase- and DNase-free.
Material tube and screw cap: PP

Warning:
Do not use CryoTubes in the liquid phase of liquid nitrogen unless correctly sealed in Nunc CryoFlex™ Tubing (Cat. No. 4.009 142). Improper use may cause liquified nitrogen to be trapped inside the vial and lead to pressure build-up, resulting in possible explosion or biohazard release.

Capacity ml	Height mm	Ext. diam. mm	Description	PK	Cat. No.
1.8	48	12.5	Round and writing area	500	**6.052 729**
3.6	70	12.5	Round and writing area	400	**7.607 431**
4.5	92	12.5	Round and writing area	300	**7.607 632**
1.0	42	12.5	Conical, free standing and writing area	500	**7.600 059**
1.8	49	12.5	Round, free standing and writing area	450	**6.800 228**
1.0	42	12.5	Conical, starfoot and writing area	500	**6.054 193**
1.8	49	12.5	Round, starfoot and writing area	450	**6.302 598**
3.6	72	12.5	Round, starfoot and writing area	400	**6.200 843**
4.5	92	12.5	Round, starfoot and writing area	300	**6.302 596**
-	-	-	CryoFlex™ Tubing, 500 x 14mm	300	**4.009 142**

3



3 Cryo Color Coders for Nunc Cryotubes

Thermo Scientific

Use Nunc Cryo Color Coders as part of a versatile and comprehensive filing system. Fit all CryoTubes™ and are available in 10 different colours.

Colour	PK	Cat. No.
Red	500	**7.079 568**
Orange	2000	**9.401 272**
Brown	500	**7.630 646**
White	2000	**9.401 274**
Blue	2000	**9.401 275**
Green	2000	**9.401 276**
Magenta	500	**6.204 811**
Yellow	2000	**9.401 278**
Purple	500	**6.901 208**
Grey	500	**6.901 244**
Assorted colours	500	**7.200 519**

4



4 Cryobank Vials, black racks with 96 tubes

Thermo Scientific

Nunc CryoTube™ with unique low binding surface
- High sample recovery with low concentration samples
- CE marked for diagnostic use
- DNAse/RNAse free
- Non-pyrogenic (LAL-test)
- Non-toxic (USP class VI test)
- Conform to IATA requirements for the transport of diagnostic specimens

Capacity ml	Description	PK	Cat. No.
0.5	sterile	10	**4.008 838**
1.0	sterile	10	**4.008 843**

5



5 Miniboxes for CryoTubes™, PS

Thermo Scientific

Miniboxes made from High Impact Polystyrene (HIPS) are ideal for the transport of CryoTubes™. Available in two sizes.

For	PK	Cat. No.
5 CryoTubes™ 1.0-1.8ml	350	**9.390 600**
10 CryoTubes™ 1.0-1.8ml	200	**9.390 601**

1 LLG-Cryogenic storage boxes, standard, 136 x 136

Freezer and cryogenic storage boxes (CryoBoxes). 136 x 136mm square. For the storage of samples.
Made of freezing-resistant, water-repellent, coated cardboard. With lid. Colours as indicated.
Further colours available on request.



Int. height mm	Colour	PK	Cat. No.
32	white	1	**6.088 950**
32	blue	1	**6.802 293**
50	white	1	**9.401 000**
50	yellow	1	**9.401 002**
50	blue	1	**9.401 004**
50	green	1	**9.401 013**
50	red	1	**9.401 015**
75	white	1	**9.401 030**
75	yellow	1	**9.401 032**
75	blue	1	**9.401 034**
100	white	1	**9.401 040**
100	yellow	1	**9.401 042**
100	blue	1	**9.401 044**
130	white	1	**6.057 279**
130	red	1	**6.201 070**

2 LLG-Cryogenic storage boxes, plastic coated, 136 x 136

Freezer and cryogenic storage boxes (CryoBoxes). Made of cardboard, **plastic coated** without divider.
Dimensions: 136 x 136mm square. For the storage of samples. With lid. Further colours available on request.



Int. height mm	Colour	PK	Cat. No.
32	white	1	**6.802 214**
50	white	1	**6.080 130**
50	yellow	1	**6.077 876**
50	blue	1	**6.077 875**
50	green	1	**6.081 021**
50	red	1	**6.081 022**
75	white	1	**6.802 726**
75	blue	1	**6.260 006**
75	red	1	**6.260 007**
75	green	1	**6.260 008**
75	yellow	1	**6.260 009**
100	blue	1	**6.260 010**
130	white	1	**6.083 519**

3 LLG-Partition inserts for Cryoboxes, 136 x 136

For cryoboxes 136 x 136mm. With compartment heights and formats as indicated. Other sizes available on request.



Height mm	Array	PK	Cat. No.
25	6 x 6	1	**6.260 015**
25	9 x 9	1	**6.802 057**
25	10 x 10	1	**6.054 191**
25	12 x 12	1	**6.050 586**
25	14 x 14	1	**6.050 333**
30	4 x 4	1	**6.305 840**
30	5 x 5	1	**9.401 055**
30	6 x 6	1	**6.090 419**
30	7 x 7	1	**9.401 054**
30	8 x 8	1	**9.401 053**
30	9 x 9	1	**9.401 052**
30	10 x 10	1	**9.401 051**
30	12 x 12	1	**9.401 050**
30	13 x 13	1	**6.260 017**
30	14 x 14	1	**6.260 016**
40	4 x 4	1	**6.401 505**
40	5 x 5	1	**6.260 020**
40	6 x 6	1	**6.202 839**
40	7 x 7	1	**6.802 215**
40	8 x 8	1	**6.900 361**
40	9 x 9	1	**7.510 691**
40	10 x 10	1	**6.077 877**
65	5 x 5	1	**6.079 677**
65	6 x 6	1	**6.201 071**
65	8 x 8	1	**6.801 789**
65	9 x 9	1	**6.072 218**
65	10 x 10	1	**6.802 727**
65	12 x 12	1	**6.803 270**

1



1 LLG-Cryogenic storage boxes, standard, 133 x 133

Freezer and cryogenic storage boxes (CryoBoxes). Cardboard. Without internal dividers. Colour-coded, with lid. Dimensions: 133 x 133mm. For the storage of samples. Further colours available on request.

Int. height mm	Colour	PK	Cat. No.
32	white	1	**6.235 243**
50	yellow	1	**6.079 785**
50	blue	1	**6.079 786**
50	green	1	**6.079 787**
50	red	1	**6.079 788**
50	white	1	**6.090 495**
75	white	1	**6.087 345**
75	blue	1	**6.260 021**
100	white	1	**6.082 970**
130	white	1	**6.803 050**

Special sizes and colours available on request!

2



2 LLG-Cryogenic storage boxes, plastic coated, 133 x 133

NEW!

Freezer and cryogenic storage boxes (CryoBoxes). Made of cardboard, **plastic coated**. Without divider. Dimensions: 133 x 133mm square. For the storage of samples. With lid. Further colours available on request.

Int. height mm	Colour	PK	Cat. No.
32	white	1	**6.260 029**
32	red	1	**6.234 735**
32	blue	1	**6.802 431**
50	white	1	**6.082 701**
50	red	1	**6.081 654**
50	green	1	**6.084 538**
50	blue	1	**6.700 568**
75	white	1	**6.801 707**
75	yellow	1	**6.260 031**
75	green	1	**6.803 056**
75	blue	1	**9.698 776**
100	white	1	**6.260 032**
100	red	1	**9.698 787**
100	yellow	1	**9.698 789**
100	blue	1	**9.698 786**
100	green	1	**9.698 788**
130	white	1	**6.260 033**

Special sizes and colours available on request!

3



3 LLG-Partition inserts for Cryoboxes, 133 x 133

For cryoboxes 133 x 133mm. With compartment heights and formats as indicated. Other sizes available on request.

Height mm	Array	PK	Cat. No.
25	8 x 8	1	**6.260 034**
25	9 x 9	1	**6.078 412**
25	10 x 10	1	**6.081 029**
25	12 x 12	1	**7.610 545**
30	5 x 5	1	**7.606 811**
30	6 x 6	1	**6.260 037**
30	7 x 7	1	**6.260 036**
30	8 x 8	1	**6.082 702**
30	9 x 9	1	**6.081 879**
30	10 x 10	1	**6.075 820**
30	12 x 12	1	**6.260 035**
40	5 x 5	1	**6.260 044**
40	6 x 6	1	**6.260 043**
40	7 x 7	1	**6.260 042**
40	8 x 8	1	**6.803 043**
40	9 x 9	1	**6.260 041**
40	10 x 10	1	**6.260 040**
40	14 x 14	1	**6.260 039**
65	4 x 4	1	**6.079 079**
65	5 x 5	1	**6.260 046**
65	6 x 6	1	**6.206 129**
65	7 x 7	1	**6.260 045**
65	8 x 8	1	**6.206 130**
65	9 x 9	1	**6.206 131**

E & OE.

1 Cryo Code Card for partition inserts

NEW!

Ratiolab

For additional and long lasting marking of each place in any cryo-box (carton) with grids 9x9 or 10x10. The Cryo-Code-Card is made of temperature resistant fibre (-80°C) and has a water repellant coating. Simple to add into the box (fits sizes 133x133 or 136x136mm) and replace it.

Description	For vessels diam. mm	PK	Cat. No.
For partition inserts 9 x 9	12	10	**9.405 856**
For partition inserts 10 x 10	11	10	**9.405 857**

1



2 Cryogenic Cardboard Boxes, 145 x 145 and Partitions

NEW!

Heathrow Scientific

For storage of large samples and 15 and 50 ml tubes. One size box safely stores 15 and 50 ml tubes in LN_2 or mechanical freezers. Choose from two partitions for your tube size.

Description	Int. height mm	Colour	PK	Cat. No.
Box for 15 or 50 ml tubes, with lid	122	white	1	**6.254 570**
Partition for 16 x 50 ml tubes	122	white	1	**6.254 571**
Partition for 36 x 15 ml tubes	122	white	1	**6.254 572**

2



3 LLG-Cryogenic storage boxes, PP, autoclavable

With 81 places, 9x9 grid and numerical coded. Robust hinge with safe snap-on lid, stackable for safe transport. Minimised liquid retention. Guaranteed metal free. Temperature resistant from -130°C to +90°C, autoclavable at 121°C, 20 minutes. Dimensions: 140mm x 140mm x 60mm

Colour	Array	PK	Cat. No.
Magenta/clear	9 x 9	1	**9.405 800**
Black	9 x 9	1	**9.405 801**

3



4 Cryogenic storage boxes Arctic Square®, PC, autoclavable

Heathrow Scientific

Safely store vials from -196 to +121°C for repeated use in mechanical freezers as well as liquid nitrogen. Boxes are designed with unique features to help the user orient, identify, and access vials with ease. The forward-sloped base and high-contrast, imprinted indexing on the transparent lid ensure quick visual orientation. Hinged lid allows easy one-handed access to samples. A built-in stop prevents the lid from swinging too far when the box is picked up by the lid, helping to prevent accidental spills. The 5 x 5 array box does not have hinged lid. All boxes include vent and drainage holes. Stackable. Autoclavable.

Colour	For tubes	Array	Dimensions (W x D x H) mm	Figure	PK	Cat. No.
red	up to 2.0 ml	5 x 5	76 x 76 x 53	A	1	**9.405 911**
purple	up to 5.0 ml	9 x 9	133 x 133 x 96	C	1	**9.405 912**
red, blue , green, purple	up to 2.0 ml	9 x 9	133 x 133 x 53	B	4	**9.405 913**
blue	up to 2.0 ml	10 x 10	133 x 133 x 53	D	1	**9.405 910**

4



5 Cryogenic boxes, PP, autoclavable, 133 x 133

Ratiolab

Polypropylene. 9 x 9 array. Resists ultra-low storage temperatures from -90°C up to +121°C. With grid numbers on the lid for reliable identification of individual samples. Box fits most stainless steel racks. Autoclavable

Height mm	Colour	PK	Cat. No.
52	natural	1	**9.405 890**
52	yellow	1	**9.405 892**
52	red	1	**9.405 894**
52	green	1	**9.405 896**
52	blue	1	**9.405 898**
52	black	1	**9.405 900**
75	natural	1	**9.405 891**
75	yellow	1	**9.405 893**
75	red	1	**9.405 895**
75	green	1	**9.405 897**
75	blue	1	**9.405 899**
75	black	1	**9.405 901**

5



1



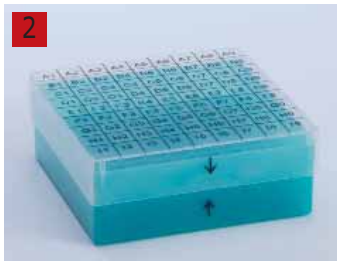
1 Cryogenic boxes, Type 5025, 5026, 5027, 5050, PC, autoclavable

Stable, autoclavable PC. With printed grid on lid for cryovials and similar tubes up to 13.5mm diameter.
Temperature resistant from -196 to +121°C. With grid numbers for reliable identification of individual samples.

*Type 5050 is a plain box with transparent PC lid, without grid, used for storing tubes of various sizes.
Supplied in packs as outlined below.
**Only for tubes up to 12.5 mm diameter.

Type	For tubes ml	Width mm	Length mm	Height mm	Array	PK	Cat. No.
SYSTEM 100™ 5026**	1/1.5	133	133	52	10 x 10	1	**9.400 927**
CryoBoxes™ 5025	1.2/2.0	76	76	52	5 x 5	1	**9.400 946**
CryoBoxes™ 5026	1.2/2.0	133	133	52	9 x 9	1	**9.400 947**
CryoBoxes™ 5027	5.0	133	133	95	9 x 9	1	**9.400 948**
Storage Box 5050*		133	133	52	1	1	**9.400 949**

2



2 Cryogenic boxes, PP, 81 well, autoclavable

No. of cells 9 x 9 = 81 cryovials. *Tenak*

Type	Width mm	Depth mm	Height mm	PK	Cat. No.
Blue	130	130	50	1	**9.698 708**
Green	130	130	50	1	**9.698 709**
Natural	130	130	50	1	**9.698 710**
Red	130	130	50	1	**9.698 711**
Yellow	130	130	50	1	**9.698 712**

3



3 Cryogenic boxes, PP, 81 well, autoclavable

Polypropylene box fits in standard freezer racks. Locate tubes is easily with moulded grid lines and a moulded reference point on the lid. Stores 1.5ml to 2.0ml microtubes under easy-open, friction-fit lid. Dimensions: 130mm x 130mm x 47mm. Autoclavable. *Heathrow Scientific*

Colour	PK	Cat. No.
natural	1	**9.193 983**
blue	1	**7.078 821**
green	1	**7.058 103**
pink	1	**7.058 102**
yellow	1	**7.078 822**
orange	1	**7.083 522**
blue, green, pink, yellow, orange	5	**9.193 984**

4



5



4 5 Cryogenic boxes, slip lid with adaptable height, PP, 133 x 133

- Made from polypropylene *Ratiolab*
- Height adaptable from 50mm to 75mm, by turning the lid 90°.
- 9 x 9 array, 10 x 10 array
- Numerical coded places (except black box)
- Drain bores at the bottom for dew liquids
- Autoclavable, temperature resistant from -90°C to +121°C

Colour	Array	For tubes diam. mm	PK	Cat. No.
natural	9 x 9	13	5	**9.405 840**
yellow	9 x 9	13	5	**9.405 843**
red	9 x 9	13	5	**9.405 845**
green	9 x 9	13	5	**9.405 844**
blue	9 x 9	13	5	**9.405 842**
black	9 x 9	13	5	**9.405 846**
natural, yellow, red, green, blue	9 x 9	13	5	**9.405 841**
natural	10 x 10	11.5	5	**9.405 847**
yellow	10 x 10	11.5	5	**9.405 848**
red	10 x 10	11.5	5	**9.405 849**
green	10 x 10	11.5	5	**9.405 850**
blue	10 x 10	11.5	5	**9.405 851**
black	10 x 10	11.5	5	**9.405 852**
natural, yellow, red, green, blue	10 x 10	11.5	5	**9.405 855**

E & OE.

1 Microtube Storage Boxes, 50-/100-Well, PP

Autoclavable. Compact storage box has angled front slot for easy access to tubes. *Heathrow Scientific*
Rugged, polypropylene box has durable three-point hinges, snapping clasp for secure closure, moulded grid lines on lid, imprinted coordinates on bottom of base and imprinted and raised coordinates on tube wells. Ideal for sample or case study storage.Holds 1.5ml to 2.0ml microtubes.
Resist storage temperatures from -80°C up to +121°C.

1



no. of wells	Dimensions (l x w x h) mm	Colour	PK	Cat. No.
50	141 x 92 x 56	blue, green, purple, yellow, orange	5	**9.193 985**
50	141 x 92 x 56	natural	1	**6.243 162**
100	141 x 151 x 57	blue, green, purple, yellow, orange	5	**9.193 981**
100	141 x 151 x 57	natural	1	**6.206 710**

2 50-/100-Well cryogenic boxes, EPS

Inexpensive freezer storage. Lightweight 1.5ml to 2.0ml microtube racks are ideal for long-term studies or tube storage. Two-piece racks are constructed of expanded polystyrene (EPS) foam. Extra spacing between wells allows easy gripping with fingertips. Racks stack securely with nesting features on lid and base. *Heathrow Scientific*
Resist storage temperatures from -80°C up to +70°C. Not autoclavable.

2



no. of wells	Dimensions (l x w x h) mm	PK	Cat. No.
50	210 x 100 x 71	1	**9.193 987**
100	336 x 95 x 73	1	**9.193 986**

3 4 Chest Freezers Racks, vertical

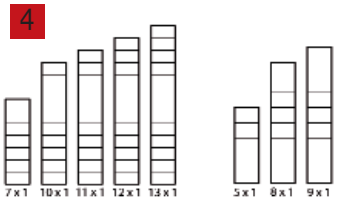
Stainless steel racks, suitable for all brands of chest freezer. For boxes up to 135 x 135mm.

Type	Height Box mm	Width mm	Depth mm	Height mm	PK	Cat. No.
7x1	approx. 53	140	141	390	1	**9.698 962**
10x1	approx. 53	140	141	557	1	**9.698 746**
11x1	approx. 53	140	141	613	1	**9.698 963**
12x1	approx. 53	140	141	669	1	**9.698 964**
13x1	approx. 53	140	141	724	1	**9.698 965**
5x1	approx. 78	140	141	406	1	**9.698 967**
8x1	approx. 78	140	141	649	1	**9.698 966**
9x1	approx. 78	140	141	730	1	**9.698 968**

3



4



5 Vertical cryobox racks, Type 5036

Stainless steel. With individual retainers to secure each box safely. *Thermo Scientific*

Type	Height Box mm	Shelves	Width mm	Depth mm	Height mm	PK	Cat. No.
5036	approx. 52	4	140	143	225	1	**9.400 953**
5036	approx. 52	9	140	143	502	1	**9.400 954**

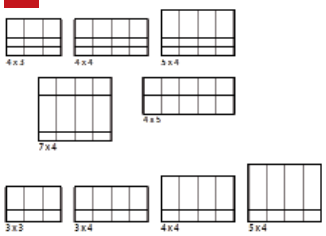
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1



2



1 2 Upright Freezer Racks

NEW!

Stainless steel racks, suitable for all brands of upright freezers. For boxes up to 135mm x 135mm.

Type	Height Box mm	Width mm	Depth mm	Height mm	PK	Cat. No.
2x3	approx. 75	140	423	164	1	**9.698 954**
6x4	approx. 50	140	562	331	1	**9.698 959**
4x4	approx. 78	556	140	326	1	**9.698 960**
5x4	approx. 78	556	140	407	1	**9.698 961**
4x4	approx. 53	556	140	225	1	**9.698 969**
4x3	approx. 53	418	140	225	1	**9.698 970**
5x4	approx. 53	556	140	280	1	**9.698 971**
7x4	approx. 53	556	140	392	1	**9.698 972**
4x5	approx. 53	695	140	225	1	**9.698 973**
5x3	approx. 53	418	140	280	1	**9.698 974**
3x4	approx. 78	556	140	245	1	**9.698 975**
3x3	approx. 78	418	140	245	1	**9.698 976**

3



3 Racks for upright freezers Arctic Squares®

Heathrow Scientific

Stainless steel. Fits most standard upright freezers. Overall rack size (H x W x D): 238 x 139 x 571mm. With four drawers to hold 16 boxes of 133 x 133 x 53mm.
Drawers feature a unique stop that when fully extended pivot down allowing for easy box access.
Freezer rack also includes a pull-out wire handle for easy removal off the shelf.
Polycarbonate drawer handles provide a user-friendly grip. Includes a slot and label for drawer/sample identification.

Type	PK	Cat. No.
Arctic Squares®	1	**9.193 980**

4



4 Cryoware marker set, Type 6313

Thermo Scientific

For durable labelling of cardboard, plastic and cloth material for use at ultra-low temperatures. Non-smudge and non-running. Removable with alcohol. Extra fine point.
Two packs available - 1 pack conatins one each red, green, black and blue marker while the other pack contains black markers only.

Type	Description	PK	Cat. No.
6313	Assorted	4	**9.400 978**
6313	Black	4	**9.400 979**

5



5 Cryo labels Rainbow

NEW!

Ratiolab

For customizing the white Cryo Boxes, the Rainbow Cryo labels are available in modern colors: red, yellow, green, blue, purple.
- temperature-resistant down to -150°C
- 50 labels per pack, divided into 5 colors, 10 pieces from each color

Type	Width mm	Height mm	PK	Cat. No.
Rainbow	200	40	50	**6.256 343**

6



6 Deep freeze labels Cryo-Babies®/Cryo-Tags®

Heathrow Scientific

Temperature resistant from -196°C to +150°C. All labels withstand freezer temperatures down to -196°C (liquid and vapor phase nitrogen), boiling water baths (100°C), autoclaving and moderate ovens (150°C). Chemically inert labels resist most organic solvents and caustic agents. They adhere to most plastics, glass and metals without cracking, peeling or degrading. Made with a flexible, polyfin label material and acrylic adhesive. This unique combination expands and contracts together with temperature fluctuations resulting in a strong adhesive bond. Convenient dispensing box assists in labeling individual tubes used in small experiments.
Easy to write on. PVC labels accept writing from most lab markers including solvent resistant pens.

Type	Dimensions (W x D) mm	Colour	For vessels	PK	Cat. No.
Cryo-Babies®	24 x 13	White	0.5ml tubes	1000	**9.100 030**
Cryo-Babies®	33 x 13	White	1.5/2.0ml tubes	1000	**9.100 031**
Cryo-Tags®	38 x 13	White	General application	1000	**9.100 032**

E & OE.

LLG-Temperature block *exact*, aluminium

NEW!

Suitable for both cooling and heating, universally usable, uniform temperature distribution within the block, ideal for all temperature-sensitive applications.

Aluminum blocks with conical compartments and closed bottom for easy and precise tempering of reaction tubes and PCR tubes. The precisely adapted shape of the borings and the closed bottom offer advantages compared with cylindrical drilled blocks with open bottom, such as much better heat transfer and temperature accuracy.
Made of a special aluminum alloy with high thermal conductivity. Identical temperature conditions for all samples.
Compact size, requiring little space. Suitable for 96-well plates, 8 or 12 strips and single tubes.
Ideal for working with 8- or 12-channel pipettes. Blocks for different tube sizes and combinations of tube sizes as indicated, all working steps in one block, holes closed at the bottom and tapered to fit perfectly the respective tube sizes and offer an optimum heat exchange.

1



9.409 015

2



9.409 017

Description	PK	Cat. No.
LLG-aluminum block, 96 x 0.2 ml PCR tubes + 6 x 1.5 ml tubes	1	**9.409 015** 1
LLG-aluminum block, 36 x 0.5 ml tubes + 11 x 1.5 ml tubes	1	**9.409 016**
LLG-aluminum block, 24 x 1.5 ml tubes	1	**9.409 017** 2
LLG-aluminum block, 24 x 2.0 ml tubes	1	**9.409 018**
LLG-aluminum block, 25 x 2.0ml Cryogenic tubes with round bottom	1	**9.409 006**
LLG-aluminum block, 12 x 15.0ml Centrifuge tubes	1	**9.409 008**

3 LLG-Temperature block "exact", aluminium, for crogenic tubes with rim, single-handed operation

NEW!

Simultaneous single-handed operation and cooling of cryogenic vials
The cryogenic tubes are fixed in the cavities with a pin so that they can be opened and closed with one hand.
Suitable for most cryogenic tubes with rim or notch such as LLG Labware. Cryogenic tubes are cooled by uniform temperature distribution in the block, ideal for temperature-critical work. The closed bottom of the block provides a much better temperature distribution and temperature accuracy over the block compared to blocks with open bottom.
Made of a special aluminum alloy with high thermal conductivity. Thus, the block has identical temperature conditions for all samples.

3



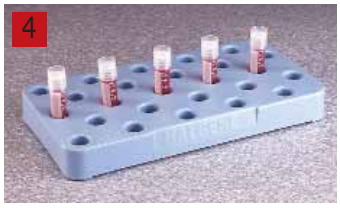
Description	PK	Cat. No.
LLG-Temperature block "exact", aluminium, 25 x 2.0ml Cryogenic tubes with tripod rim	1	**9.409 007**

Cryovial racks, PC

Thermo Scientific

Autoclavable. Space-saving. Choice of sizes to hold 25 or 50 cryovials of 1.2, 2.0 or 5ml capacities. With moulded identification numbers and letters. One-handed operation possible.

4



9.400 958

Aperture array qty.	Width mm	Length mm	Height mm	PK	Cat. No.
5 x 10	102	197	28	1	**9.400 944**
5 x 5, staggered	102	197	22	1	**9.400 958** 4

5 Floating cryovial racks, Type 5974, PP

Thermo Scientific

For 0.5 to 2.0ml test tubes and cryovials. Racks will float with a full load of filled tubes. With moulded identification numbers and letters.

5



Type	Description	For tubes ml	Array	Colour	Dimensions (W x D x H) mm	PK	Cat. No.
5974	Square	1.0/1.2/1.5/2.0	4 x 4	white	103 x 103 x 65	1	**9.400 982**
5974	Circular	1.0/1.2/1.5/2.0	8	white	66 dia.	4	**9.400 983**
5974	Circular	1.0/1.2/1.5/2.0	20	white	96 dia.	4	**9.400 984**

Further Racks - please see page 30.

1



1 Floating Tube Racks, PE

Polyethylene foam. Resist water absorption so racks can be washed and reused. Ideal for floating tubes in water baths, tubs, or beakers. Racks include detachable carrying handles, to easily lift samples out of baths.

Heathrow Scientific

Type	For tubes ml	Array	Colour	PK	Cat. No.
Diamond	50	4	green	5	**6.238 546**
Parallelogram	15	8	blue	5	**6.238 547**
Rectangle	1.5 to 2.0	24	yellow	5	**6.238 545**
Round	0.2/0.5/1.5 to 2	18	blue	5	**6.240 378**

2



2 Floating racks PrepSafe™ for microcentrifuge tubes, PP

Unique tabs protect your samples from loss and contamination. Place tubes in slots and slide under tabs to keep tubes in place and caps closed when under pressure, floating or submerged. Use in water baths, ice baths or on the benchtop period

Bel-Art Products

- Holds up to twelve 1.5ml or 2.0ml microcentrifuge tubes in numbered locations
- Raised handle for easy lifting without agitating samples; stable feet keep racks upright on the bench
- 95mm outer diameter fits most 1000ml beakers
- With removable vortexing attachment, this allows samples to be vortexed simultaneously
- Polypropylene construction. Steam autoclavable at 121°C .

Colour	PK	Cat. No.
Natural	1	**9.400 995**
Turquoise	1	**9.400 996**
Pink	1	**9.400 997**
Neon Yellow	1	**9.400 998**

3



Work

4



Store

3 4 Cryogenic box Work2Store™, PP

Reduce sample handling time and the need for several racks when working with samples for cold temperature storage. Patent-pending opening and closing mechanism allows the rack to expand, creating needed room for sample manipulation. Then simply collapse the rack back to its compact form and it is ready for the freezer. Temperature range -80 to 121°C.

Heathrow Scientific

- Clear lid locks the rack together for safe handling and transportation
- Wells have a center depression to stabilize conical tubes and a cryogenic vial lock for one handed cap removal
- Stackable, autoclavable and with alphanumeric well identification
- Will fit into standard 2" (52mm) freezer racking

Type	For tubes	Array	Dimensions open (W x D x H) mm	Dimensions closed (W x D x H) mm	PK	Cat. No.
Work2Store™	1.5/2.0 ml	64	310 x 128 x 33,5	133 x 133 x 53	1	**9.194 001**
Work2Store™ Rack Mini	0.2/0.5 ml	96/64	310 x 128 x 20	133 x 133 x 29	1	**9.194 009**

5



5 Cryogenic storage boxes Transformer™ Cube, PP

NEW!

For storage of large samples or 15 and 50 ml tubes. Robust, rugged polypropylene construction complete with two Snap-In grids for 16 x 15ml and 9 x 50ml tubes.
Holds tubes securely upright in deep grid wells. Locate tubes easily with numbering of inserts on lid, imprinted grid and first tube orientation. Use without grids for larger sized product storage. Fill with ice and use as a temporary low temperature workstation. Autoclavable. Dimensions: 125 x 125 x 129 mm. For temperatures from -80 to 121°C. Purple box with clear lid.

Heathrow Scientific

Type	PK	Cat. No.
Box with 2 inserts	1	**6.243 251**

E & OE.

Cryogenic storage tanks, B 2000 series

The B 2000 series is especially developed for storing of straws and cryo vials in ampoule holders.
The B 2000 series offers capacities of 216 to 1332 cryo ampoules with 2ml and 474 to 16400 x 0.25ml straws.
The B 2000 series long term storage tanks are especially suited to hold small amounts of samples.
Thanks to the small neck openings these storage tanks have holding times reaching 365 days. Supplied with canisters.
Accessories on request include: Canes for cryovials, rolling castors base, liquid level measuring rod, low filling level alarm.

1 Long term cryogenic storage tanks, B 2000 series

Cryo Diffusion



Type	Capacity	No. of vials	No. of straws	No. of canisters	Static holding time	Chamber dimensions (Diam. x H)	PK	Cat. No.
	L	2ml	0.25ml		Days	mm		
B 2002M	2.00		474	3	25	26x110	1	**9.524 506**
B 2003M	4.10		1560	6	42	37x110	1	**9.524 507**
B 2009M	10.50		1560	6	93	37x110	1	**9.524 508**
B 2011M	12.00	216	2700	6	133	37x270	1	**9.524 509**
B 2020M	21.70	216	2700	6	238	37x270	1	**9.524 510**
B 2020M	21.70	216	1560	6	238	37x110	1	**9.524 511**
B 2036M	35.90	216	2700	6	365	37x270	1	**9.524 512**
B 2036M	35.90	216	1560	6	365	37x110	1	**9.524 513**

2 Large capacity cryogenic storage tanks, B 2000 series

Cryo Diffusion



Type	Capacity	No. of vials	No. of straws	No. of canisters	Static holding time	Chamber dimensions - outside (Diam. x H)	PK	Cat. No.
	L	2ml	0.25ml		Days	mm		
B 2013-6	13.00		4920	6	59	66x110	1	**9.524 514**
B 2013-10	13.00		4920	10	59	44x110	1	**9.524 515**
B 2026	26.00		8200	10	104	66x110	1	**9.524 516**
B 2035	35.90	684	9840	6	211	66x270	1	**9.524 517**
B 2048-6	48.50	1332		6	180	94x270	1	**9.524 518**
B 2048-10	48.50	1332	16400	10	180	73x270	1	**9.524 519**

3 Cryogenic storage tanks, BR 2000 series with drawers

Cryo Diffusion



The BR 2000 series is especially developed for storing 750, 3600, 4500 and 6600 cryogenic vials (max. 2ml vials, 5ml vials on request) in cryo boxes.
Low vaporization thanks to their 215mm dia. neck (BR 2048: only 120mm).
The lightweight, aluminium design and low space requirements of these containers make them the most economical units in their class. Supplied with drawer fastener.
Features:
- large neck openings
- easy access to stored samples
- long Nitrogen retention times
- lightweight aluminium design
- 2 Year warranty

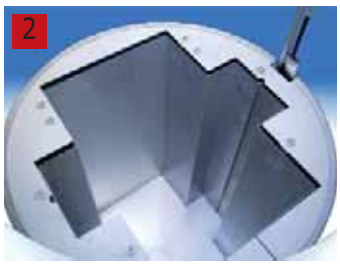
Available accessories on request: cryogenic boxes, castors, liquid level measuring rod, low filling level alarm, electronic filling level regulation.

Type	Capacity	No. of vials	No. of boxes	No. of racks	Static holding time	PK	Cat. No.
	Litres	2ml			Days		
BR 2048	48	750	5	6	179	1	**9.524 520**
BR 2100	100	3600	6	6	153	1	**9.524 521**
BR 2150	148	5400	9	6	227	1	**9.524 522**
BR 2200	197	6600	11	6	303	1	**9.524 523**

1



2



1 2 Cryogenic storage tanks, LO 2000 series with drawers

Cryo Diffusion

The LO 2000 series is specially developed for the storing of 4000(*), 8000(*) and 10400(*) cryo vials (*in liquid phase) (max. 2ml vials, 5ml vials on request) in cryo boxes. The large opening of 410mm (LO 2075) or 590mm gives easy access to the samples. The lightweight aluminium design and low space requirements of these containers make them the most economical units in their class. Supplied with drawer fastener.

Features:
- large neck openings
- easy access to stored samples
- long Nitrogen retention times
- inclusive castors for easy handling
- 2 Year warranty

The storage tanks LO 2000 series are also available for gas phase and dry storage (please see detailed image).

Accessories available on request: cryo boxes, liquid level measuring rod, low filling level alarm, electronic filling level regulation and storage inserts for dry storage.

Type	Capacity Litres	No. of vials 2ml	No. of boxes	No. of racks	Static holding time Days	Description	PK	Cat. No.
LO 2075 M	75	4000	10	4	30	without electronics	1	**9.524 500**
LO 2200 M	198	8000	10	8	40	without electronics	1	**9.524 501**
LO 2250 M	236	10400	12	8	47	without electronics	1	**9.524 502**
LO 2075 M	75	4000	10	4	30	with S170 electronics	1	**9.524 559**
LO 2200 M	198	8000	10	8	40	with S170 electronics	1	**9.524 560**
LO 2250 M	236	10400	12	8	47	with S170 electronics	1	**9.524 561**

3



3 Vapour Shipper containers BS 2000 series

Cryo Diffusion

Vapour Shipper containers BS 2000 series are designed for the safe transportation of biological samples at cryogenic (-150°C or colder) temperatures.
Fabricated from durable, lightweight aluminum, they employ a hydrophobic absorbent that contains the liquid nitrogen for "spill free" shipping. The absorbent also repels moisture and humidity, assuring the maximum holding time. This eliminates the necessity to dry units between uses.
A protective shipping case is available for all models. These containers may be used to ship your samples with a "non-hazardous" classification e.g. straws, cryo ampoules, bloodbags, thus reducing costs and helping to assure sample viability.
Availlable accessories on request: protective shipping case, temperature logger, holders for ampoules and blood bags.

Vapour Shipper containers BS 2000 series are in accordance with the IATA requirements.

Type	Capacity L	No. of vials 2ml	No. of straws 0.25ml	Static holding time Days	Neck diam. mm	Weight empty / full kg	PK	Cat. No.
BS 2002	2.00		190	23	35	3.3/4.8	1	**9.524 503**
BS 2004	5.20	114	1640	19	70	6.9/9.6	1	**9.524 504**
BS 2024	24.00	798	17220	11	215	15.6/22.6	1	**9.524 505**

4



4 Cryogenic liquid dewars L 2000 series

Cryo Diffusion

The L 2000 Series of cryogenic liquid dewars are so-called because of their universal acceptance in laboratories and medical facilities worldwide. These high-efficiency, super-insulated dewars are the most convenient, economical way to store and dispense liquid nitrogen. Types L 2025, L 2035, L 2050 and L 2100 can be fitted with pressurized dispensing devices to aid in the transfer of liquid nitrogen.
Accessories on request include: Transfer hose, phase separator, spare corks, pressurized dispensing device, liqiud level measuring rod, rolling castor base

Type	Capacity L	Evaporation rate L/ day	Neck diam. mm	Weight empty / full kg	Height mm	PK	Cat. No.
L 2002	2.0	0.08	35	2.7/4.3	402	1	**9.524 524**
L 2005	5.5	0.13	50	4.4/8.8	494	1	**9.524 525**
L 2012	12.4	0.14	50	8.1/18.1	600	1	**9.524 526**
L 2025	25.0	0.2	50	10/31	684	1	**9.524 527**
L 2035	35.0	0.25	50	13/41.5	591	1	**9.524 528**
L 2050	50.0	0.3	50	17/57.5	675	1	**9.524 529**
L 2100	100.0	0.8	50	32/113	1035	1	**9.524 530**

E & OE.

Castors for cryogenic liquid dewars

With 5 castors and 2 brakes.

Cryo Diffusion

For	PK	Cat. No.
B 2048, BR 2048, L 2035, L 2050, L 2100	1	**9.524 531**
BR 2100, BR 2150	1	**9.524 532** 1

1



9.524 532

2 Plastic goblets for cryogenic dewars

Cryo Diffusion

Description	PK	Cat. No.
dia. 35mm, height 118mm	1	**9.524 533**
dia. 65mm, height 118mm	1	**9.524 534**
Cup "Marguerite"	1	**9.524 535**

2



3 Ampoule holders for cryogenic liquid dewars

Cryo Diffusion

For vials	Diam. mm	Height mm	PK	Cat. No.
6	11	45	1	**9.524 536**
6	12	45	1	**9.524 537**
5	12	55	1	**9.524 538**
2	12	75	1	**9.524 539**

3



4 Canisters, stainless steel for cryogenic dewars

Cryo Diffusion

Diam. mm	Height mm	For	PK	Cat. No.
30	120	BS 2002	1	**9.524 540**
66	270	BS 2004	1	**9.524 541**
26	110	B 2002	1	**9.524 542**
37	110	B 2003	1	**9.524 543**
37	110	B 2009	1	**9.524 544**
37	110	B 2011	1	**9.524 547**
66	110	B 2013/6	1	**9.524 548**
44	110	B 2013/10	1	**9.524 549**
37	270	B 2020**	1	**9.524 550**
37	110	B 2020*	1	**9.524 551**
66	110	B 2026	1	**9.524 552**
66	270	B 2035	1	**9.524 553**
94	270	B 2048/6	1	**9.524 554**
73	270	B 2048/10	1	**9.524 555**

* one level
**two levels

4



5 Auminum holder KryoCane™, Type 5015

For frozen storage of cryovials 1.2, 1.5 or 2.0ml.

Thermo Scientific

Type	For	Length mm	PK	Cat. No.
5015	5 cryovials	290	1	**9.400 956**
5015	6 cryovials	300	12	**9.400 935**

5



6 Sleeve KryoSleeve™., Type 5016

Made of transparent PVC. For KryoCane™ aluminium vial holder.

Thermo Scientific

Type	Length mm	PK	Cat. No.
5016	273	100	**9.400 957**

6





1 Dewar flasks, Type 4150, PE-HD

With vented, insulating PE-HD lid. PE covered handle. Unbreakable and completely safe for short term storage of ice water, dry ice solvents and liquid nitrogen. Also suitable for use as warming baths. Chemical-resistant, reinforced walls, filled with urethane foam, are temperature resistant from -196 to +100°C. 1, 2 and 4 litre flasks have a carrying handle. *Thermo Scientific*

Type	Capacity Litres	Top diam. mm	Int. height mm	PK	Cat. No.
4150	1	96	195	1	**9.031 961**
4150	2	122	231	1	**9.031 962**
4150	4	158	259	1	**9.031 964**
4150	10	198	396	1	**9.031 970**

2 3 4 5 Dewar vessels, cylindrcal, for CO_2 and LN_2

NEW!

DURAN®. DIN 12492. Cylindrical. With blue coated protective casing out of metal or structured aluminium casing. With lid. Carrying handles as indicated. *KGW*

Capacity l	Int. diam. mm	Int. height mm	Figure	With	PK	Cat. No.
10	200	350	a	Handle	1	**9.032 131**
10	200	350	d	Handle	1	**9.032 742**
14	200	500	a	Handle	1	**9.032 132**
14	200	500	d	Handle	1	**6.070 411**
21	250	480	c	Side grips	1	**9.032 133**
21	250	480	b	Side grips	1	**9.032 743**
28*	250	620	c	Side grips	1	**9.032 134**
28	250	620	b	Side grips	1	**6.300 165**
40*	280	650	c	Side grips	1	**9.032 135**
40	280	650	b	Side grips	1	**6.226 406**

*Linen bag included.











6 Dewar carrying flasks, cylindrical, for CO_2 and LN_2

DURAN®. DIN 12492. Cylindrical. With blue coated protective casing out of metal. With lid and aluminium carrying handle. *KGW*

Type	Capacity Litres	Int. diam. mm	Int. height mm	PK	Cat. No.
26 B	1	100	150	1	**9.032 726**
27 B	2	138	170	1	**9.032 727**
28 B	3	138	230	1	**9.032 728**
29 B	4	138	310	1	**9.032 729**

BE Type: Stainless steel casings, type 26 BE to 29 BE are available on request.

E & OE.

1 Dewar flasks, shallow form, for CO_2 and LN_2

DURAN®. DIN 12492. Dish-shaped. Generally for thermostatting round bottom flasks to a constant temperature as hot or cold baths. With structured aluminium casing and edge protection. Suitable for use with magnetic stirrers. *KGW*



Capacity ml	Int. diam. mm	Height mm	PK	Cat. No.
120	77	50	1	**9.032 422**
260	100	65	1	**9.032 423**
400	110	70	1	**9.032 425**
680	138	80	1	**9.032 426**
1600	170	110	1	**9.032 427**
3000	200	125	1	**6.075 807**

2 Dewar flasks, cylindrical, for CO_2 and LN_2

DURAN®. DIN 12492. Cylindrical. With blue coated protective casing made of metal. All vessels can also be supplied without casing, unsilvered or silvered with opposite viewing strips. Stoppers - please order separately. *KGW*



Capacity ml	Int. diam. mm	Ext. diam. mm	Int. height mm	PK	Cat. No.
100	40	56	90	1	**9.032 011**
200	40	56	170	1	**9.032 012**
300	47	60	190	1	**9.032 013**
500	57	70	210	1	**9.032 015**
800	67	80	240	1	**9.032 018**
1200	67	80	350	1	**9.032 019**
1000	77	95	235	1	**9.032 021**
1500	77	95	345	1	**9.032 022**
1500	90	115	245	1	**9.032 024**
2000	90	115	340	1	**9.032 025**
1500	100	120	240	1	**9.032 027**
2000	100	120	290	1	**9.032 028**
2500	110	130	290	1	**9.032 030**
4000	138	160	310	1	**9.032 033**

3 Chrome steel Dewar flasks

Nickel chromium steel, unbreakable, open top. With high-vacuum, permanent insulation. Temperature range -269 to +300°C. 5 year insulation guarantee.



Capacity Litres	Int. diam. mm	Ext. diam. mm	Int. height mm	PK	Cat. No.
1	85	107	206	1	**9.031 982**
1	100	122	157	1	**9.031 983**
2	100	122	285	1	**9.031 984**

4 Lid in cork for chrome steel Dewar flasks

Cork.



For	PK	Cat. No.
9.031 982	1	**9.031 972**
9.031 983 and 9.031 984	1	**9.031 973**

5 Dewar flasks, spherical, for LN2

DURAN®. DIN 12492. Spherical. Brushed aluminium casing with insulating lid and carrying handle. *KGW*



Capacity Litres	Neck diam. mm	Ext. diam. mm	PK	Cat. No.
1	30	175	1	**9.032 740**
3	60	225	1	**9.032 741**
5	60	260	1	**9.032 115**
10	65	330	1	**9.032 127**

1 Cryogenic freezers CRYO 170/CRYO 230, up to -152°C

NEW!

Arctiko

The CRYO FREEZER range features a dual cooling system which consists of two independent systems offering double security. In the unlikely event that one cooling system should fail, the second cooling system will maintain the freezer at -130°C. The cryogenic freezers offer a wide variety of research and long term storage applications for low temperature scientific experiments, preservation of cells, DNA, bone material, bacteria etc. It's the perfect choice for testing special material, ideal for hospitals, university laboratories or sanitation stations.

- Dual cooling system for double security
- Two independent compressor systems
- Visual and acoustic alarm
- Extremely Low Energy Consumption
- Adjustable high and low temperature alarm
- Probe and power failure alarm
- Contact for remote alarm
- Temperature chart recorder
- Battery back up
- LN2 back up
- 4 castors for easy handling
- Digital display
- Extremley low noise level
- Handle with lock
- Porthole for external temperature probes
- Power supply: 3 x 400V, 50/60Hz

Type	Capacity	Internal dimensions (W x D x H)	External dimensions (W x D x H)	Weight	Temp. range	PK	Cat. No.
	Litres	mm	mm	kg	max. °C		
CRYO 170	173	500 x 500 x 705	1580 x 960 x 1090	310	-140 ... -150	1	**6.267 685**
CRYO 230	230	680 x 500 x 675	1600 x 840 x 1090	350	-140 ... -150	1	**6.267 686**

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6.267 847

Racks for Cryogenic freezers CRYO 170/CRYO 230

NEW!

Arctiko

Type	Height Box	Dimensions (W x D x H)	PK	Cat. No.
	mm	mm		
CFR50-12	50	140 x 140 x 665	1	**6.267 847** 2
CFR75-08	75	140 x 140 x 629	1	**6.267 848**
CFR100-06	96	140 x 140 x 635	1	**6.267 849**

3



3 LLG-Laboratory Power Failure Detector

- Alarm is reported immediately visually and acoustically
- Reports alarm even for short power outages or for a period of at least 12 hours (can be switched off manually)
- Plug safety cover offers protection against accidentally pulling the plug
- Maximum total power of connected devices. 3500W power supply 230V 50Hz
- Suitable for European plugs
- Max. Rating 16 A
- With built-in battery

Scope of supply:
1 x power failure detector
2 x plug safety caps
2 x screws

Type	PK	Cat. No.
LLG-Laboratory Power Failure Detector	1	**6.255 819**

E & OE.

Ultra low temperature freezer, ULUF series up to -90°C

NEW!

Arctiko

Reliable and powerful upright freezer with extra storage capacity and a user friendly controller. Models with volumes from 7 litres up to 826 litres are available. Features as non-manipulative data logger and USB readout are just some of the features that come as standard in the ULUF series.

Features on ULUF series
- Low energy consumption
- Low noise level, low heat dissipation
- Insulated inner doors
- Castors
- Lock on door
- Ergonomic loading
- Heated door frame, heated vacuum valve
- 100% HCFC/CFC free
- Porthole for external temperature probes
- Single-compressor (ULUF 15, 65, 125, 450, 550, 750, 850) or two compressor systems as security in case of failure of a compressor.

Upon failure of a compressor, the temperature is maintained at -86°C by the second compressor at ULUF 490 and 890, for ULUF 750 at -70°C.

Controller features
- Temperature graph
- Micro processor controller with digital display
- Approx. 72 hours battery back up for alarms, loggings and temperature display in case of power cut
- Visual and acoustic alarm, adjustable high/low temperature alarm, power failure alarm, probe failure alarm, instrument failure alarm, open door alarm, contact for remote alarm, prepared for GSM alarm
- Prepared for connection of 2 additional probes
- Integrated data logger (software included)
- RS485/232 Interface
- Computer USB data read out
- Direct download/upload on/from USB memory stick
- Auto cycle if probe failure
- Ambient temperature display
- Shows all alarms as text (no codes)
- 3-level password protected
- Battery level indication
- Integrated memory
- Display text available in different languages

Accessories (optional):
- All freezers are available with stainless steel housing (on request)
- CO_2 back up
- GSM alarm module
- Racks and boxes
- Temperature chart recorder
- Drawer systems

Type	Capacity Litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Weight kg	Temp. range max. °C	PK	Cat. No.
ULUF 15	7	150 x 143 x 310	400 x 630 x 665	55	-40...-90	1	**6.264 066**
ULUF 65	55	360 x 468 x 320	600 x 700 x 810	80	-40...-86	1	**9.699 310** 1
ULUF 125	115	360 x 493 x 530	950 x 725 x 810	100	-40...-86	1	**9.699 311** 2
ULUF 450	413	480 x 608 x 1415	720 x 885 x 2089	183	-40...-86	1	**9.699 312** 3
ULUF 550	585	680 x 608 x 1415	920 x 885 x 2089	215	-40...-86	1	**6.263 920**
ULUF 750	680	790 x 608 x 1415	1030 x 885 x 2089	354	-40...-86	1	**9.699 314** 4
ULUF 850	826	2 deparment each 480 x 608 x 1415	1492 x 885 x 2089	376	-40...-86	1	**9.699 315** 5
ULUF 490*	393	480 x 608 x 1415	720 x 885 x 2089	208	-40...-90	1	**9.699 318**
ULUF 890*	786	2 deparment each 480 x 608 x 1415	1492 x 885 x 2089	426	-40...-90	1	**9.699 319**

*Dual Cooling System: Increased safety due to 2 separate cooling systems.

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9.699 310

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9.699 311

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9.699 312

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9.699 314

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9.699 315

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9.699 320

Ultra low temperature freezer, ULTF series, up to -86°C

NEW!

Arctiko

The ULTF range shows that high performance freezing with focus on low energy consumption is the future. The range has been updated with our advanced Arctiko controller which ensures that all alarm and data logging features are included as standard. The ULTF range is produced with the true and original single compressor technology which ensures the lowest noise level available.

Features on ULTF series
- Single compressor
- Low energy consumption
- Low noise level
- Low heat dissipation
- 100% HCFC/CFC free
- Sub lids
- Castors and key lock
- Prepared porthole for external temperature probes

Controller features
- Temperature graph
- Micro processor controller with digital display
- Approx. 72 hours battery back up for alarms, loggings and temperature display in case of power cut
- Visual and acoustic alarm
- Adjustable high/low temperature alarm
- Power failure alarm
- Probe failure alarm
- Instrument failure alarm
- Open door alarm
- Contact for remote alarm
- Prepared for GSM Alarm
- Prepared for connection of 2 additional probes
- Integrated data logger
- RS485/232 Interface
- Direct upload of new software via USB memory stick
- Direct download of logged data on USB memory stick
- Auto cycle in case of probe failure
- Ambient temperature display
- Shows all alarms (displayed as text, no codes)
- 3-level password protected
- Battery level indication
- Integrated memory for 20 years
- Display text available in different languages

2



9.699 323

Accessories (optional):
- CO_2 back up
- GSM alarm module
- Temperature chart recorder
- Racks and boxes

Type	Capacity Litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Weight kg	Temp. range max. °C	PK	Cat. No.
ULTF 80	71	390 x 390 x 450	552 x 648 x 850	53	-40...-86°C	1	**9.699 320** 1
ULTF 220	189	760 x 440 x 635	920 x 695 x 885	64	-40...-86°C	1	**9.699 321**
ULTF 320	284	1100 x 440 x 630	1262 x 698 x 885	76	-40...-86°C	1	**9.699 322**
ULTF 420	368	1400 x 440 x 630	1562 x 698 x 885	88	-40...-86°C	1	**9.699 323** 2

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9.883 664

Ultra low temperature freezer, ULTRA.GUARD™ up to -86°C

BINDER

The Ultra low temperature freezer ULTRA.GUARD™ secures a long-term storage of samples at -86°C. ULTRA.GUARD™ is based on a multi-stage security concept, which offers everything that laboratory staff want from reliable operation to ease of use and system integration to the emergency exchange service. Voltage 230V 1N, ~50Hz.

- Temperature range: -40°C to -86°C
- GUARD.CONTROL opens the freezer by pressing a button
- GUARD.CONTROL RFID technology personalizes access and records user traffic
- DATA.SECURE Data logger with USB connection
- 5 year warranty

Shelves are included. Racks and boxes must be ordered separately.

Type	Capacity Litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Weight kg	Temp. range max. °C	PK	Cat. No.
UF V 500	483	900 x 935 x 1970	619 x 600 x 1300	320	-40 to -86°C	1	**9.883 663**
UF V 700	711	1200 x 935 x 1970	911 x 600 x 1300	360	-40 to -86°C	1	**9.883 664** 3

E & OE.

1 Portable freezer DP-80 CRYO PORTER, up to -80°C

NEW!

1

Arctiko

The DP-80 ensures direct access to your samples at your desk. Transport your probes at -80°C e.g. with a car.

- Portable Freezer up to -80°C
- Stirling technology, no compressor, no refrigerant
- Temp. stability ±0.2°C
- Power connection 12V or 230V
- Max volume one aluminium block (please order separately)
- Can only be used with aluminium block

Temperature range:	0°C to -80°C
Dimensions exterior (WxDxH)	230 x 262 x 390mm
Power supply:	12/100 - 240 V 50/60 Hz
Weight:	10 kg



Description	PK	Cat. No.
DP-80 Cryo Porter	1	**6.262 040**
Aluminium Block, 40 wells for Vials, Cryotubes 1,8ml	1	**6.262 447**
Aluminium Block, 96 wells for PCR-tubes 0,2ml	1	**6.265 273**
Aluminium Block, 48 wellls PCR-tubes 0,5ml	1	**6.265 274**
Aluminium Block, 48 wells Sample-tubes 1,5ml	1	**6.265 275**
Aluminium Block, 40 wells, Cryotubes 2,0ml	1	**6.265 276**
Aluminium Block, one large compartment	1	**6.265 277**

Laboratory chest freezers up to -45°C

Liebherr

Liebherr's low temperature -45°C chest freezers are designed to meet the specific requirements of an array of research, industrial or clinical applications. Where there is a need to store products or samples at lower than usual freezing temperatures freezers are the ideal solution. Offering supreme temperature stability as well as temperature uniformity within the units, they ensure the safe, cold storage of specimens, biological samples and other substances. The low temperature chest freezers are available in three sizes and are equipped with a precision digital controller, which guarantees maximum temperature accuracy. Having a volt-free contact and an RS 485 serial interface, Liebherr's low temperature chest freezers can also be connected to a central alarm and documentation system, which provides additional safety for the samples within the unit.

Features:

- Precision electronic controller with digital temperature display
- Interior light integrated in the lid
- Hygienic, easy-to-clean inner liner
- Profiled aluminium handle
- Reinforced lid hinges

Security package:

- Visual and audible temperature and lid-open alarm
- Visual power failure alarm when mains power returns
- Integrated data memory with min/max temperatures
- 1-point-calibration
- Volt-free contact for alarm forwarding to an external remote warning system
- RS 485 interface enabling external documentation
- Access port for an external temperature sensor
- Stop-frost-system to prevent the freezer from steaming up and easy opening
- Maximum temperature stability and consistency according to IEC 60068-3

Type	Capacity Litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Energy consumption kWh (24h)	Temp. range max. °C	PK	Cat. No.	
LGT 2325	215	1132 x 760 x 919	889 x 410 x 630	2.256	-10°C ... -45°C	1	**9.698 694**	2
LGT 3725	365	1373 x 808 x 919	1170 x 500 x 650	2.928	-10°C ... -45°C	1	**9.698 695**	3
LGT 4725	459	1648 x 808 x 919	1445 x 500 x 650	4.352	-10°C ... -45°C	1	**9.698 696**	4

2



9.698 694

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9.698 695

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9.698 696

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1 Chest and Upright Freezers, up to -40/-80°C

GFL

Microprocessor controlled temperature regulation
The microprocessor controlled temperature regulator, with digital display of actual and set temperature values operates without maintenance and is shock-resistant. The regulator is battery-backed by constantly charged NiCd battery that maintains the display of the actual temperature and the alarm functions for 60 hours in the event of mains failure. During operation on the mains, the battery level and the set temperature can be checked by touch control. With RS-232 interface, compatible e.g. to the PC software labworldsoft®. Alternative data transfer formats, RS-422 and RS-485, are also available.

Energy-saving cooling unit
The maintenance-free cooling unit, equipped with hermetically sealed, high-performance compressors, ensures short cooling times. The refrigerant is non-flammable. The all around insulation comprises an up to 150mm thick, seamless and diffusion-protected foamed-in polyurethane layer.

Ex-proof inside cabinets
The inside cabinets are manufactured entirely out of stainless steel (material no 1.4301), are corrosion resistant and easy to clean. They are free from ignition sources, an extremely important aspect when storing low flash-point media and are ex-proof in accordance with BG-I 850-0, version 02/2009. The cooling air outlet is located at the front of the unit, meaning that explosive gases can not be drawn in. The magnetic sealing system reliably prevents freezing of the lid or door seals.

Controlled access
The lids and doors of the freezer units can be locked, a control panel provides controlled access through the use of a key-operated security switch.

Multiple alarm messages
All deep freezers include a potential-free, changeover contact for connection to an internal alarm system or to the central I&C system as standard. They are also provided with a connection for a piezoelectric buzzer. In the event of a fault an optical and audible alarm is issued. The cause for the fault is shown in the display as a defined code number. The limit values for alarms (1-20 K) for excess and under temperature can be set individually by the user. Optional suppressions of alarm messages can also be set by the user.

Powder-coated housing
The housings are made of powder-coated, electrolytically galvanized sheet steel. As standard, GFL deep freezers are mounted on double wheel, swivel castors, two of which can be locked, for transport to the place of use and for mobile applications (castors for the sub-counter Deep Freezers 6441 and 6481).

Accessories appropriate for the task at hand and storage system avaialble on request. Customised equipment available on request, for tasks that demand special solutions for storage.

Additional facilities such as safety cooling systems, manifolds for CO_2 safety cooling, water cooling, check log, set of drawers and shelves for freezers, storage system and special designs on request.

2



2 Chest Freezers up to -40°C/-85°C

GFL

All chest lids are balanced and easy to operate. Chest freezers with capacities of 220 to 500 litres are also equipped with additional insulating cover panels on the cabinet.

Type	Capacity Litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Weight kg	Rating kW	Temp. range °C	PK	Cat. No.
6340	70	836 x 685 x 1055	600 x 350 x 340	100	0.60	0 to -40	1	**9.699 340**
6341	30	700 x 600 x 905	500 x 305 x 200	70	0.60	0 to -40	1	**9.699 341**
6342	100	960 x 790 x 1080	710 x 440 x 340	180	0.60	0 to -40	1	**9.699 342**
6343	220	1450 x 870 x 1040	840 x 460 x 580	210	0.60	0 to -40	1	**9.699 343**
6344	300	1610 x 910 x 1060	1000 x 500 x 600	240	0.60	0 to -40	1	**9.699 344**
6345	500	2060 x 1000 x 1060	1440 x 580 x 600	310	1.20	0 to -40	1	**9.699 345**
6380	70	836 x 685 x 1055	600 x 350 x 340	120	1.20	-50 to -85	1	**9.699 380**
6381	30	700 x 600 x 905	500 x 305 x 200	90	1.20	-50 to -85	1	**9.699 381**
6382	100	960 x 790 x 1080	710 x 440 x 340	200	1.20	-50 to -85	1	**9.699 382**
6383	220	1450 x 870 x 1040	840 x 460 x 580	230	1.20	-50 to -85	1	**9.699 383**
6384	300	1610 x 910 x 1060	1000 x 500 x 600	260	1.20	-50 to -85	1	**9.699 384**
6385	500	2060 x 1000 x 1060	1440 x 580 x 600	330	1.20	-50 to -85	1	**9.699 385**

E & OE.

1 2 Upright Freezers up to -40°C/-85°C

GFL

Upright freezers of 300 litres and 500 litres are equipped with three inner compartments (H 353mm), each provided with an insulating door. Optional shelves can also be installed in the compartments. On request, the cabinet can also be equipped with a set of drawers instead of the inside compartments.

After removing the cover plate, the sub-counter Deep Freezers 6441 and 6481 can be built into a laboratory bench.

Type	Capacity Litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Weight kg	Rating kW	Temp. range °C	PK	Cat. No.
6441	96	900 x 770 x 890	430 x 430 x 510	140	0.45	0 to -40	1	**9.699 501**
6443	300	990 x 865 x 1940	600 x 450 x 1100	240	0.60	0 to -40	1	**9.699 503**
6445	500	990 x 1175 x 1940	600 x 760 x 1100	310	0.60	0 to -40	1	**9.699 504**
6481	96	900 x 770 x 890	430 x 430 x 510	150	0.90	-50 to -85	1	**9.699 502**
6483	300	990 x 865 x 1940	600 x 450 x 1100	270	1.20	-50 to -85	1	**9.699 495**
6485	500	990 x 1175 x 1940	600 x 760 x 1100	340	1.20	-50 to -85	1	**9.699 497**

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2



3 Laboratory refrigerators and freezers ES series, up to +1/-30°C

NEW!

Thermo Scientific

Designed for routine sample protection where laboratory space is limited.
Our new ES Series lab refrigerators, freezers and combination refrigerator/freezer are the ideal choice when there is limited space in the laboratory.
All ES Series models deliver the sample protection, performance, security and quality you have come to depend on from us:

- Integrated controller
- Digital temperature display
- High and low temperature alarms
- Standard door locks, lockable
- Low energy consumption
- Access ports
- CE marked
- Defrost type automatic for temperature range +1 ... +11°C and manual for temperature range -10 ... -30°C

3



Equipment

151R-AEV-TS/151R-AEW-TS:	3 shelves, 1 basket
288R-AEV-TS/288R-AEW-TS:	5 shelves, 1 basket
151F-AEV-TS/151F-AEW-TS:	3 shelves
232F-AEV-TS/232F-AEW-TS:	2 shelves, 3 baskets
263C-AEV-TS/263C-AEW-TS:	3 shelves, 2 half baskets (R) / 1 shelf 2 baskets (F)

Type	Capacity l	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Energy consumption kWh (24h)	Temp. range max. °C	PK	Cat. No.
151R-AEV-TS*	151	595 x 610 x 845	500 x 450 x 705	0,6	+1 ... +11	1	**9.536 211**
151R-AEW-TS**	151	595 x 610 x 845	500 x 450 x 705	0,6	+1 ... +11	1	**9.536 212**
288R-AEV-TS*	288	595 x 640 x 1565	480 x 445 x 1382	0,5	+1 ... +11	1	**9.536 213**
288R-AEW-TS**	288	595 x 640 x 1565	480 x 445 x 1382	0,5	+1 ... +11	1	**9.536 214**
151F-AEV-TS*	151	595 x 610 x 845	500 x 450 x 705	1,5	-10 ... -30	1	**9.536 215**
151F-AEW-TS**	151	595 x 610 x 845	500 x 450 x 705	1,5	-10 ... -30	1	**9.536 216**
232F-AEV-TS*	232	595 x 640 x 1565	437 x 430 x 1300	1,0	-10 ... -30	1	**9.536 217**
232F-AEW-TS**	232	595 x 640 x 1565	437 x 430 x 1300	1,0	-10 ... -30	1	**9.536 239**
263C-AEV-TS*	159 (R) / 109 (F)	545 x 610 x 1675	457 x 450 x 725 (R) / 408 x 415 x 670 (F)	0,9	+1 ... +11 (R) / -10 ... -30 (F)	1	**9.536 219**
263C-AEW-TS**	159 (R) / 109 (F)	545 x 610 x 1675	457 x 450 x 725 (R) / 408 x 415 x 670 (F)	0,9	+1 ... +11 (R) / -10 ... -30 (F)	1	**9.536 220**

*EU plug, **UK plug
(R) refrigerated area, (F) freeze area

1



9.698 686

Laboratory refrigerators and freezers LKPv/LGPv with Profi electronic controller, up to -10°C

NEW!

Liebherr

The laboratory appliances incorporating Profi electronic controllers offer many advantages. High-grade materials, high-performance components and accurate workmanship right down to the last detail ensure the high quality of the Liebherr appliances. Wherever huge storing capacity is required the large-scale laboratory appliances with Profi electronic controller are the ideal solution.

Features:
- Dynamic cooling system
- Profi electronic controller with integrated real-time clock
- Castors, thereof two with brake
- Integrated, ergonomic handle
- Plastic-coated grid shelves and CNS inner liner
- Glass door (..23) with ceiling light (seperately switchable)
- Hot-gas defrost system for very short defrost cycles

Security package:
- Integrated data memory (Alarm events and temperature profile)
- Visual and audible temperature and door alarm
- Mains-independent power supply of the electronic controller
- Infrared and RS 485 interface enabling external documentation
- Volt-free contact for alarm forwarding to an external remote warning system
- Maximum temperature stability and consistency according to IEC 60068-3
- 3-point calibration
- Access port for an external temperature sensor
- Lock

Type	Capacity Litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Energy consumption kWh (24h)	Temp. range max. °C	PK	Cat. No.
LKPv 1423	1427	1430 x 830 x 2150	1250 x 700 x 1550	3,923	0 ... +16	1	**6.264 055**
LKPv 6523	601	700 x 830 x 2150	520 x 700 x 1550	2,731	0 ... +16	1	**9.698 395**
LKPv 1420	1427	1430 x 830 x 2150	1250 x 700 x 1550	2,297	-2 ... +16	1	**9.698 688**
LKPv 6520	601	700 x 830 x 2150	520 x 700 x 1550	1,775	-2 ... +16	1	**9.698 686** 1
LGPv 1420	1427	1430 x 830 x 2150	1250 x 700 x 1550	8,887	-10 ... -26	1	**9.698 693**
LGPv 6520	601	700 x 830 x 2150	520 x 700 x 1550	4,715	-10 ... -35	1	**9.698 692**
LKPv 8420	856	790 x 980 x 2150	620 x 850 x 1550	2,4	-2 ... +16	1	**9.698 697**
LGPv 8420	856	790 x 980 x 2150	620 x 850 x 1550	5,5	-10 ... -35	1	**9.698 698**

2



2 Laboratory refrigerators and freezers GPS series up to +1°C/-25°C

Thermo Scientific

Medium and large capacities designed for routine sample protection.
With capacities ranging from space-saving 400L to spacious 1400L, our new GPS Series lab refrigerators and freezers meet the demands of today's laboratory requirements. All models contain sample protection features designed for the rigorous demands of the laboratory environment.
- Integrated controller
- Digital temperature display
- High and low temperature alarms
- Standard door locks, lockable
- Standard casters
- Choice of glass or solid door (refrigerators only)
- Automatic defrost
- Access ports
- CE marked

Equipment

R400-/R700-/F400-/F700-: 3 shelves
R14X-/F14X-: 6 shelves

Type	Capacity Litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Energy consumption kWh (24h)	Temp. range max. °C	doors	PK	Cat. No.
R400-SAEV-TS*	400	600 x 600 x 1900	480 x 500 x 1150	3.1	+1 ... +11	solid	1	**9.536 221**
R400-SAEW-TS**	400	600 x 600 x 1900	480 x 500 x 1150	3.1	+1 ... +11	solid	1	**9.536 222**
R400-GAEV-TS*	400	600 x 600 x 1900	480 x 500 x 1150	3.6	+1 ... +11	glass	1	**9.536 223**
R700-SAEV-TS*	700	790 x 860 x 1980	600 x 660 x 1300	3.4	+1 ... +11	solid	1	**9.536 225**
R700-SAEW-TS**	700	790 x 860 x 1980	600 x 660 x 1300	3.4	+1 ... +11	solid	1	**9.536 226**
R700-GAEV-TS*	700	790 x 860 x 1980	600 x 660 x 1300	5.3	+1 ... +11	glass	1	**9.536 227**
R700-GAEW-TS**	700	790 x 860 x 1980	600 x 660 x 1300	5.3	+1 ... +11	glass	1	**9.536 228**
R14X-SAEV-TS*	1400	1400 x 800 x 1980	1300 x 660 x 1300	2.6	+1 ... +11	solid	1	**9.536 229**
R14X-SAEW-TS**	1400	1400 x 800 x 1980	1300 x 660 x 1300	2.6	+1 ... +11	solid	1	**9.536 230**
R14X-GAEV-TS*	1400	1400 x 800 x 1980	1300 x 660 x 1300	7.7	+1 ... +11	glass	1	**9.536 231**
R14X-GAEW-TS**	1400	1400 x 800 x 1980	1300 x 660 x 1300	7.7	+1 ... +11	glass	1	**9.536 232**
F400-SAEV-TS*	400	600 x 600 x 1900	480 x 500 x 1150	10.1	-12 ... -25	solid	1	**9.536 233**
F400-SAEW-TS**	400	600 x 600 x 1900	480 x 500 x 1150	10.1	-12 ... -25	solid	1	**9.536 234**
F700-SAEV-TS*	700	790 x 860 x 1980	600 x 660 x 1300	10.6	-12 ... -25	solid	1	**9.536 235**
F700-SAEW-TS**	700	790 x 860 x 1980	600 x 660 x 1300	10.6	-12 ... -25	solid	1	**9.536 236**
F14X-SAEV-TS*	1400	1400 x 800 x 1980	1300 x 660 x 1300	12.0	-12 ... -25	solid	1	**9.536 237**

*EU plug, **UK plug

E & OE.

Laboratory refrigerators LKv/LKUv, up to + 3°C and laboratory fridge-freezer LCv, up to +3/-30°C

NEW!

Liebherr

Wherever floor space is limited or under-worktop installation is planned, the laboratory refrigerators with Comfort electronic controllers are the ideal solution. The range comprises two freestanding (LKv) and two underworktop (LKUv) laboratory refrigerators, in each case with glass door and solid door versions. The temperature can be set from +3°C to +8°C. The forced-air cooling system in conjunction with the precision electronic controller ensures temperature consistency and uniform temperature distribution in the interior. The LCv 4010 laboratory fridge-freezer, which has two separately cooling circuits, further extends the range of compact laboratory appliances.

Features:
- Dynamic cooling system
- Precision electronic controller with digital temperature display
- Glass door (..12) with ceiling light (separately switchable)
- Convenient, clear view drawers (LCv 4010)
- Self-closing door with integrated lock

Security package:
- Visual and audible temperature and door alarm
- Visual power failure alarm when mains power returns
- Integrated data memory with min/max temperatures
- Volt-free contact for alarm forwarding to an external remote warning system
- RS 485 interface enabling external documentation
- Access port for an external temperature sensor
- Maximum temperature stability and consistency according to IEC 60068-3

Type	Capacity l	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Energy consumption kWh (24h)	Temp. range max. °C	PK	Cat. No.	
LKv 3913*	360	600 x 615 x 1840	440 x 435 x 1635	1,315	+3 ... +16	1	**7.940 344**	1
LKv 3910	360	600 x 615 x 1840	440 x 435 x 1635	0,846	+3 ... +16	1	**9.698 683**	2
LKUv 1613*	141	600 x 615 x 820	440 x 435 x 670	1,010	+3 ... +16	1	**9.698 699**	3
LKUv 1610	141	600 x 615 x 820	440 x 435 x 670	0,747	+3 ... +16	1	**9.698 680**	4
LCv 4010 fridge	254/	600 x 615 x 2000	440 x 435 x 1105	1,8	+3 ... +16	1	**7.627 795**	5
freezer	107		431 x 435 x 597		-9 ... -30			

*Glass door

1



7.940 344

2



9.698 683

3



9.698 699

4



9.698 680

5



7.627 795

6 Refrigerator drawers AluCool® including dividers

H+H System

High quality aluminium drawers including frame on smooth-running wheels with pull-out stop. Includes flexible dividing system with card pockets. Depending on the specific need, the dividing system allows the storage of drugs, blood and plasma with a space saving of up to 30%. With a few simple steps, the flexible dividers are taken out and the drawer can be cleaned easily and hygienically.

Typ A:
FKS 1800/1802/2600 /2602/3600/3602; FKU 1800/1805; UKS 1800/1801/2600/2602/3600/3602/3650; FKEx 1800/2600/3600

Typ B:
FKUv 1610/1612/1660/1662; LKexv 3910; LKv 3910/3912; LKUexv 1610; LKUv 1610/1612

The AluCool® drawers can be retrofitted at any refrigerator - to save and optimise valuable space.
Tool-free assembly without damaging the refrigerator interior.

Division: 3 channels with 12 universal dividers. Width of the channels can be changed in 1cm steps.

6



Refrigerator internal dimensions (W x D) mm	Type	PK	Cat. No.
441 x 513	A	1	**9.698 980**
435 x 440	B	1	**9.698 981**

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2

1 2 Spark-free laboratory refrigerators

NEW!

AQUALYTIC

The German guidelines "Working Safely in Laboratories BG-I 850-0" stipulates that interior space must be explosion-protected where hazardous, explosive atmospheres can develop (for example, due to the presence of flammabel liquids). Such explosive atmospheres can be created by stored flammable liquids, for example.
The laboratory refrigerators by Aqualytic® meet these requirements. The interiors are free from sparking sources and are therefore explosion-proof. With glass shelves.
Variable temperature control from +1°C to 15°C. Temperature is continuously controlled by thermostat.
The digital temperature display enables the interior temperature to be easily read.

Capacity l	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Weight kg	Temp. range max. °C	PK	Cat. No.
160	600 x 600 x 860	513 x 441 x 702	41.00	+1 ... +15	1	**9.699 005**
220	600 x 610 x 1250	470 x 440 x 1062*	53.00	+1 ... +15	1	**9.699 006**
300	600 x 610 x 1640	470 x 440 x 1452*	64.00	+1 ... +15	1	**9.699 007**
490	750 x 730 x 1640	600 x 460 1452*	84.00	+1 ... +15	1	**9.699 008**

* with "fan stop" function, which switches the fan off when the door is opened.

3



4

3 4 Spark-free laboratory refrigerators LKexv

NEW!

Liebherr

Laboratory refrigerators with dynamic cooling and spark-free interior.
Designed especially for storing explosive and highly flammable substances. The interiors of the LKexv models meet all the safety requirements of the EU Directive 94/9EC (ATEX 95).
The appliances excel with a large capacity and rugged design. The cooling temperature is continuously adjustable from +1°C to +15°C with the aid of the thermostat integrated in the control panel.
Features:
Flexible, hygienic interior, Glass shelves, Water tray, Lock, Reversible door hinges
- Certified according to ATEX 95

Type	Capacity Litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Energy consumption kWh (24h)	PK	Cat. No.
LKexv 2600	240	600 x 610 x 1250	470 x 440 x 1062	0.786	1	**6.264 468**
LKexv 3600	333	600 x 610 x 1640	470 x 440 x 1452	0.947	1	**7.671 880**
LKexv 5400	554	750 x 730 x 1640	600 x 560 x 1452	0.983	1	**6.262 810**

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9.698 685

6



9.698 682

7

7 Spark-free laboratory refrigerators and freezers LKexv/LKUexv/LGex/LGUex/LCexv with Comfort electronic controller

Liebherr

The range of laboratory appliances with Comfort electronic controllers comprises two refrigerators, two freezers and one frigde-freezer combination with spark-free interior, especially for storing explosive and highly flammable substances - for instance in the chemical industry or in special laboratories. The interiors of the appliances are in compliance with the safety requirements of the EU Directive 94/9/EC (ATEX 95) and have been tested by electro-suisse SEV, the ATEX conformity evaluation organisation.

- Dynamic cooling system (refrigerators), static cooling system (freezers)
- Precision electronic controller with digital temperature display
- Flexible, height-adjustable glass-shelves
- Convenient, clear view drawers (freezers)
- Self-closing door with integrated lock

- Visual and audible temperature and door alarm
- Visual power failure alarm when mains power returns
- Integrated data memory with min/max temperatures
- Volt-free contact for alarm forwarding to an external remote warning system
- RS 485 interface enabling external documentation
- Access port for an external temperature sensor
- Maximum temperature stability and consistency according to IEC 60068-3

Type	Capacity l	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Energy consumption kWh (24h)	Temp. range max. °C	PK	Cat. No.	
LKexv 3910	360	600 x 615 x 1840	440 x 435 x 1635	0,865	+3 ... +16	1	**9.698 685**	5
LKUexv 1610	141	600 x 615 x 820	440 x 435 x 670	0,863	+3 ... + 16	1	**9.698 682**	6
LGex 3410	310	600 x 615 x 1840	420 x 400 x 1587	1,309	-9 ... -30	1	**9.698 691**	
LGUex 1500	139	600 x 615 x 820	454 x 450 x 663	0,926	-9 ... -16	1	**9.698 690**	
LCexv 4010 fridge	254/	600 x 615 x 2000	440 x 435 x 1105	1,8	+3 ... +16	1	**9.698 677**	
freezer	107		431 x 435 x 597		-9 ... -30			

Precision and innovation for professional laboratory applications



- Menu-guided Profi electronic controller with user-friendly text display for precise temperature setting
- Visual and audible temperature-, door open- and power-failure alarms
- Integrated data-logger records alarm events and internal temperatures
- Integrated 12 Volt battery maintains data-logger and alarm functions of the electronic controller in case of mains power failure
- Infrared data transfer, RS 485 serial interface and volt-free contact for external temperature and alarm documentation
- 3-point calibration for high-precision temperature control



www.lab.liebherr.com

LIEBHERR

Quality, Design and Innovation

1



9.580 205

Flake ice maker with reservoir, air cooled, RF Series

Manitowoc

Due to its specific properties and large surface for rapid cooling, flake ice can be used in different areas of food production or laboratories and could be applied directly to the products to be cooled. In this particularly hygienic and economical method almost the total amount of used water is converted into ice. Manitowoc offers a variety of different ice flakers. Beside mountable devices with reservoir, there are modular ice machines with separate magazine and split units with external condenser.

- Vertical condenser cylinder with internal worm gear system
- HACCP compliant
- Energy-saving production
- Convenient door for easy access
- Separate power switch
- Ready to plug in
- Stainless Steel
- Warranty: 24 months, plus 12 months for parts
- Deionized water suitable as standard at no extra charge

Included: Adjustable stainless steel feet 110 to 150mm, water supply kit, drain kit, ice scoop.

Specifications

Cooling:	Air (A)
Refrigerant:	R 404 A
Power supply *:	230V, 50Hz

* Other voltages on request

Type	Output kg/24 hrs. up to kg	Rating W	Capacity kg	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
RF 0244 A	82	703	18	500 x 660 x 842	71	1	**9.580 201**
RF 0266 A	82	703	27	500 x 660 x 952	76	1	**9.580 202**
RF 0385 A	151	1026	40	738 x 690 x 1003	102	1	**9.580 203**
RF 0399 A	151	1026	54	738 x 690 x 1172	109	1	**9.580 204**
RF 0644 A	312	3004	54	741 x 678 x 1167	117	1	**9.580 205** 1

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9.580 006

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9.580 045

Flake ice makers with/without reservoir, air-cooled

NEW!

Scotsman / HIBU

Manufactured under DIN ISO 9001 conditions. For solid, even, ice flakes. Hygienic, 0.5°C cold ice. With stainless steel outer casing and air-cooled compressor.

- AF models without drain pump
- EF models standard with drain pump. The drain pump allows an installation or set-up without any drainage height or distance problems. Place your ice maker just where it is needed even lower than the actual drain outlet.
- MF models without reservoir (please order separately).

Also available with water-cooled compressor. Alternative models availlable on request. A specially built model for laboratory-grade water is available on request.

2 year warranty.

Type	Output kg/24 hrs. up to kg	Capacity kg	Rating W	Width mm	Length mm	Height mm	PK	Cat. No.
Ice flake maker AF 80	70	25	330	626	535	933	1	**9.580 006** 2
Ice flake maker AF 103	108	30	400	622	592	1126	1	**9.580 040**
Ice flake maker AF 124	120	40	600	605	950	795	1	**9.580 041**
Ice flake maker AF156	160	60	650	605	950	1006	1	**9.580 042**
Ice flake maker AF 206	200	60	760	605	950	1006	1	**9.580 043**
Ice flake maker EF 103	108	30	400	622	592	1006	1	**9.580 045** 3
Ice flake maker EF 124	120	40	600	605	950	795	1	**9.580 046**
Ice flake maker EF 156	160	60	650	605	950	1006	1	**9.580 047**
Ice flake maker EF 206	200	60	760	605	950	1006	1	**9.580 048**
Ice flake maker MF 26*	120		500	533	560	525	1	**9.580 009**
Ice flake maker MF 36*	200		760	533	560	525	1	**9.580 016**
Reservoir B 193 for MF 26/MF 36		90		800	560	940	1	**9.580 010**
Reservoir B393 for MF 26/MF 36 incl. cover adapter		150		825	765	900	1	**9.580 049**
Conversion kit / Laboratory equipment for de-ionised water							1	**6.222 851**

* without reservoir

Scoops please see page 126.

E & OE.

1 Dry ice machines SnowPack®

Bürkle

Suitable for all European siphon carbon dioxide cylinders with valve (W 21.80 x 1¼" acc. to DIN 477, no. 6).

Applications: hospitals, universities, schools, laboratories, chemical industry, materials testing.
Examples of use: lowering the temperature in cooling baths or cold traps, pre-cooling tissue samples, ensuring safe transport or embedding biological substances, freezing blood and tissue samples, studies in chemistry, physics and materials technology, etc.

- Produces dry ice tablets at -79°C
- operates without power
- taint and odour free

Gassing period (per tablet): either 0.5min. or 1min approx.
Tablets per 22kg bottle (dependent on ambient temperature and pressure): either 90 or 16 pieces approx.



Tablet weight	Diam.	Height	PK	Cat. No.
g	mm	mm		
50	50	30	1	**9.253 006**
250	80	60	1	**9.253 008**

Cool packs Icecatch®

NEW!

Icecatch

Icecatch® cool packs for temperature sensitive products used in the pharmaceutical, biotech, medical and food industries. Icecatch® cool packs distinguish themselves through the following specific features:
- Reliable cold storage through the use of immobilised coolant
- For repeat usage due to the use of robust PA/PE film
- Disposal with the domestic trash due to the use of non-poisonous ingredients
- Unobjectionable use in the pharmaceutical and food industries
- Phase transition 0°C

Icecatch®-Gel
- Spreading of heat absorption around the 0°C range through the use of immobilised cooling gel
- Optimal price/heat absorption capacity relationship
- Filled with cooling gel

Icecatch®-Solid
- Maximum dimensional stability during the freezing process through the use of hard foam
- Filled with hard foam

Icecatch®-Solid Insulated 2 - 8°C
- A perfect cool pack in combination with our System packaging for the +2°C up to +8°C transport
- Maximum dimensional stability during the freezing process through the use of hard foam, coolant and integrated isolation layer
- Filled with hard foam and isolation layer



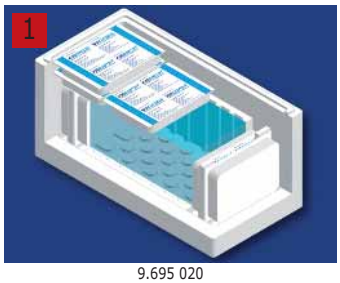
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9.695 007

Type	Description	Weight	Dimensions (W x D x H)	PK	Cat. No.
		g	mm		
Icecatch®-Gel	with cooling gel	90	90 x 110 x 20	120	**9.695 000** 2
Icecatch®-Gel	with cooling gel	170	90 x 150 x 20	80	**9.695 001**
Icecatch®-Gel	with cooling gel	230	90 x 180 x 20	60	**9.695 002**
Icecatch®-Gel	with cooling gel	460	140 x 190 x 30	32	**9.695 003**
Icecatch®-Gel	with cooling gel	690	140 x 240 x 40	24	**9.695 004**
Icecatch®-Solid	with hard foam/cool medium	500	195 x 130 x 20	27	**6.262 659**
Icecatch®-Solid	with hard foam/cool medium	630	105 x 180 x 40	12	**6.262 660**
Icecatch®-Solid	with hard foam/cool medium	850	105 x 230 x 38	15	**9.695 005**
Icecatch®-Solid	with hard foam/cool medium	1100	280 x 190 x 25	11	**9.695 006**
Icecatch®-Solid Insulated	with hard foam/cool medium and isolation layer	500	195 x 130 x 23	24	**9.695 008**
Icecatch®-Solid Insulated	with hard foam/cool medium and isolation layer	1100	280 x 190 x 30	10	**9.695 007** 3
Icecatch®-Solid Insulated	with hard foam/cool medium and isolation layer	1700	280 x 190 x 45	7	**9.695 009**

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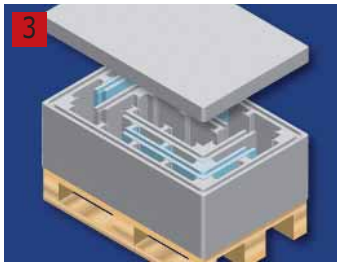
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9.695 021

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9.695 023

System packaging Icecatch® made of EPS

NEW!

Icecatch

This system solution, is a combination of a specific EPS Box and the cooling element Icecatch®-Solid Insulated (Cat-No. 9.695 007). It is the perfect medium for the transport of temperature sensitive products in the spectrum of +2°C up to +8°C.
In this solution there is no need of a combination of variably precondition cooling elements. By the use of an easily convertible packaging instruction the packaging process is simplified and wrong assembly is excluded.

- Easy handling, no "thawing", no additional isolation material
- Modular system in terms of temperature an run time requirements
- Prequalified system solution consisting of the EPS Box and Icecatch®-Solid Isolated 2°C - 8°C
- Immediate availability

Description	Dimensions (W x D x H) mm	Int. dimensions (W x D x H) mm	PK	Cat. No.	
System packaging 15l/22l	670 x 390 x 385	380 x 230 x 175 / 550 x 230 x 175	1	**9.695 020**	1
System packaging 12.8l	365 x 270 x 250	305 x 210 x 200	1	**9.695 021**	2
System packaging 5.4l	365 x 270 x 240	305 x 210 x 85	1	**9.695 022**	
System packaging 333l	11170 x 770 x 795	960 x 560 x 620	1	**9.695 023**	3

4



4 Isolating box with lid, Neopor®

Storopack Deutschland

Neopor® is characterised by its outstanding hot and cold thermal insulation properties (a further 20% over Styropor), its high compressive strength, shock absorbing properties, low weight and insensitivity to moisture. It also contains infrared absorbers and reflectors. Compared to conventional insulating materials, they diminish heat conductivity and lend the material its characteristic silver-grey color.

Description	Capacity	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	PK	Cat. No.
Isolating box with lid	12,5 l	350 x 350 x 300 mm	250 x 250 x 200 mm	1	**7.656 680**
Isolating baffle ring	6,2 l	350 x 350 x 100 mm	250 x 250 x 100 mm	1	**7.656 681**

5



5 Nalgene Freezing container Mr. Frosty, PC

Thermo Scientific

With 120mm diameter screw cap in blue PE-HD, vial holder made of white PE-HD. Suitable for 18 x 1.2/2.0ml cryovials. Foam interior. Cooling rate 1°C/min. Tubes can be easily removed. Each aperture has a moulded number for identification. Stackable.

Diam. mm	Height mm	For tubes ml	No. of tubes	PK	Cat. No.
117	86	1.0-2.0	18	1	**9.400 945**
117	151	3.6	12	1	**9.400 990**
117	151	4.5-5.0	12	1	**9.400 991**

6



6 Cool Containers True North®, PU

Heathrow Scientific

Rigid polyurethane container provides durability for chilling your temperature sensitive samples. Excellent insulation properties for ultra cold. Use with ice, dry ice and ice-salt slurries, etc. For low temperature use down to -196°C. Minimize evaporation loss with close fit lid. Easily remove with comfortable recessed knobs. Keyed lid and base fit together to conveniently store lid under base. With spout and ergonomic handles for safe handling. Stackable.

Capacity litres	Dimensions (l x w x h) mm	Colour	PK	Cat. No.
4	234 x 181*	black	1	**9.010 691**
1	267 x 195.5 x 114	green	1	**9.010 692**
4	381 x 254 x 182	blue	1	**9.010 693**
9	521 x 292 x 163	red	1	**9.010 694**

*(dia. x H)

E & OE.

Insulated container Magic Touch 2™

NEW!

Bel-Art Products

Superior insulating properties combined with high chemical resistance make Magic Touch 2™ laboratory ice buckets and pans compatible not only with wet ice, but also with ultra-low temperature materials including dry ice, ice-salt mixtures, dry ice solvent mixtures, or liquid nitrogen.
Their lightly textured non-slip finish and raised edge provides secure transport and a stylish look.

Expanded urethane icewares are
- lightweight
- durable
- non-sweating
- impervious to moisture and odors
- able to withstand a wide temperature range: -196°C to 100°C
- provided with a convenient pour spout, drip-proof rims and fill line
- furnished with perfect fitting lid
- easy and secure to stack because of a keyed lid and base

1



9.010 632

2



9.010 635

3



9.010 636

4



9.010 641

Type	Capacity L	Dimensions mm	Colour	PK	Cat. No.
Mini Ice Pan	1.0	(W x D x H) 183 x 183 x 116	blue	1	**9.010 632** 1
Mini Ice Pan	1.0	(W x D x H) 183 x 183 x 116	red	1	**9.010 633**
Midi Ice Pan	4.0	(W x D x H) 304 x 229 x 200	blue	1	**9.010 638**
Midi Ice Pan	4.0	(W x D x H) 304 x 229 x 200	red	1	**9.010 639**
Maxi Ice Pan*	9.0	(W x D x H) 420 x 303 x 200	blue	1	**9.010 640**
Maxi Ice Pan*	9.0	(W x D x H) 420 x 303 x 200	red	1	**9.010 641** 4
Handy Ice Bucket	2.5	(diam. x H) 268 x 164	blue	1	**9.010 634**
Handy Ice Bucket	2.5	(diam. x H) 268 x 164	red	1	**9.010 635** 2
N'Icer Ice Bucket	4.0	(diam. x H) 268 x 212	blue	1	**9.010 636** 3
N'Icer Ice Bucket	4.0	(diam. x H) 268 x 212	red	1	**9.010 637**

* without lid

Cryo-Safe™ Coolers

NEW!

Bel-Art Products

Use to protect samples on the bench, during transport, or in freezers with defrost cycle and fluctuating temperatures
Polycarbonate. A non-toxic freezing gel is isolated within the walls of the cooler, guaranteeing that labels or marks on the vials or tube are not damaged.
- The indexed and transparent (9.401 090, 9.401 091, 9.401 092) or gel-filled (9.401 093, 9.401 094) polycarbonate lid shows tube location and matches locations printed on the cooler
- Side handles (9.401 090, 9.401 091) or a wire handle for easy carrying
- Coolers can be stacked to save space and maximize freezer volume
- Rubber feet to prevent slipping
- All polycarbonate cooler body easy to clean

Store at -20°C for 24 hours prior to use — for -15°C-Cryo-Safe-Boxes
Store at -20°C for a few hours until the temperature of the cooler falls below 0°C — for -0°C-Cryo-Safe-Boxes

5



9.401 090

6



9.401 094

Type	Array	Temperature-maintained	For tubes ml	Dimensions (l x w x h) mm	PK	Cat. No.
0°C-Cryo-Safe	12	≤ 0°C for 2.5 h	0.5ml, 1.5ml	151 x 108 x 125	1	**9.401 090** 5
-15°C-Cryo-Safe	12	≤ -15°C for 1 h	0.5ml, 1.5ml, 2.0ml	151 x 108 x 125	1	**9.401 091**
0°C-Cryo-Safe	12	≤ 0°C for 3 h	15ml	197 x 140 x 190	1	**9.401 092**
0°C-Cryo-Safe	32	≤ 0°C for 3 h	0.5ml, 1.5ml	243 x 157 x 146	1	**9.401 093**
-15°C-Cryo-Safe	32	≤ -15°C for 1.5 h	0.5ml, 1.5ml, 2.0ml	243 x 157 x 146	1	**9.401 094** 6

7 Labtop Cooler, Type 5115, 5116, DS5116

Thermo Scientific

The economical alternative for keeping samples and biochemical reagents cool at the workbench or for protecting against temperature fluctuations and power failure in refrigeration apparatus. With write-on, gridded lid. Lids fit one way to maintain the correct grid orientation. Robust, space-saving and stackable. With non-slip rubber feet. Can be used down to -135°C.
Adapters are also supplied for 0.5ml microtubes.

7



Type	Description	Aperture array qty.	Temperature-maintained on lab bench	PK	Cat. No.
5115	Clear lid, without gel, for 1.5 - 2.0ml tubes	12	≤-15°C up to 1 hr.	1	**9.400 929**
DS5116	Clear lid, without gel, for 1.5 - 2.0ml tubes	12	≤ 1°C up to 3.5 hrs.	1	**9.400 930**
5115	White lid, with gel, for 1.5 - 2.0ml tubes	32	≤-15°C up to 2 hrs.	1	**9.400 932**
DS5116	White lid, with gel, for 1.5 - 2.0ml tubes	32	≤ 1°C up to 5 hrs.	1	**9.400 933**

1



1 Immersion circulator

NEW!

PolyScience

Immersion circulator for all kinds of water baths. It clamps securely to both straight and curved tank walls.
The patented, closed housing protects the user and the heating element.
- Maximum working temperature 98°C
- Temperature stability ±0.07°C
- Suitable for tank capacities up to 20 liter
- Minimum working depth 7.5inch/19 cm
- Large LCD-display
- Display resolution 0.1°C
- Displays actual and set point temperature simultaneously
- Integral pump and heater protection
- Integrated timer form 5 minutes to 99 hours
- Integrated over-temperature protection
- Low liquid level protection
- Included clamp for straight and curved tank walls
- Maximum pressure 0.7 psi with a maximum pressure flow rate of 6.0 l/min.

Type	Temp. Stability	Pump max.	Dimensions (W x D x H)	PK	Cat. No.
	K	L/min / bar	mm		
Immersion circulator	0,07	11,9 / 0,12	97 x 109 x 358	1	**6.267 595**

2



2 Thermostatic controllers Optima™ T100/TC120

Grant

Combine with a plastic or stainless steel tank or with an accessory T-clamp for independent use.
The two general purpose heating circulators offer excellent temperature stability and uniformity with a cooling/heating range of 0°C to +100°C* (T100) and -15°C to +120°C* (TC120).

***For using at or below room temperature you need additional flow coolers C1G (9.920 765) or C2G (9.920 766).**

Features:
T100: visual alarm, 2 point recalibration, fixed over temperature cut-out
TC120: visual and audible alarm, timer, 2 point recalibration, adjustable over temperature cut-out, pump for external circulation

T Clamp: For attaching the thermostats to any vertical sided tank with a maximum wall thickness of 35mm for rectangular tanks, 30mm for circular tanks (300mm diameter), and a capacity of up to 50L.

Models with clamps available on request.

Specifications

Temperature range with stainless steel tank	
T100:	0°C to +100°C*
TC120:	-15°C to +120°C*
Stability/Uniformity (DIN 12876) at 70°C:	±0.05°C/±0.1°C
Setting resolution:	0.1°C
Display:	4 digit LED
No. of pre-set temperatures:	3
Recalibration points:	2
Heating power (230V):	1.3kW
Power supply (230V/50-60Hz):	1.4kW

TC120 only:

Timer:	1 to 6000 mins
Pump max. pressure:	210mbar
Flow rate max.:	16l/min

Type	Description	PK	Cat. No.
T100	without pump	1	**9.699 630**
TC120	with pump	1	**9.699 631**
T clamp	-	1	**9.699 634**

E & OE.

1 Thermostatic controllers Optima™ TX150/TXF200

NEW!

Grant

Combine with a plastic or stainless steel tank or with an accessory T-clamp for independent use.
The two advanced heating circulators feature a modern, icon driven programming interface and full colour display. Cooling/heating range: -15°C to +150°C* (TX150) and -15°C to +200°C* (TXF200).
***For using at or below room temperature you need additional flow coolers C1G (9.920 765) or C2G (9.920 766).**

Features:
Visual and audible alarm, timer, 5 point recalibration, adjustable over temperature cut-out, pump, external probe, progammable, relay, menu system, program storage, USB port.

T Clamp: For attaching the thermostats to any vertical sided tank with a maximum wall thickness of 35mm for rectangular tanks, 30mm for circular tanks (300mm diameter), and a capacity of up to 50L.

Models with clamps available on request.

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Specifications

Temperature range with stainless steel tank	
TX150:	-15°C to 150°C*
TXF200:	-15°C to 200°C*
Stability/Uniformity (DIN 12876) at 70°C:	±0.01°C/±0.05°C
Setting resolution:	0.1°C (0.01°C with Labwise)
Display:	QVGA TFT
Timer:	1 min to 99 hrs 59 mins
No. of pre-set temperatures:	3
Recalibration points:	5
Heating power (230V):	1.9kW
Power supply (230V/50-60Hz):	2.0kW
Interface:	USB and RS232
Pump max. pressure	
TX150:	310 mbar
TXF200:	530 mbar
Flow rate max.	
TX150:	18l/min
TXF200:	22l/min (adjustable)

Type	Programmable	PK	Cat. No.
TX150	remote via PC/labtop, 1 program / 30 segments	1	**9.699 632**
TXF200	direct via user interface or remote via PC/labtop, 10 programs / 100 segments	1	**9.699 633**
T clamp	-	1	**9.699 634**

Tanks Optima™ series, stainless steel

Grant

High efficiency stainless steel (ST) tanks (range -15°C to +200°C). Drain tap included on ST12, ST18, ST26, ST38. Raised feet for carrying repositioning and retort access.
Accessory polypropylene spheres or a lid must be used at temperatures between +60°C and +100°C. Above +100°C only a lid must be used.
Accessory cooling is required for temperatures below ambient. **Please order lid and PP spheres separately.**

Type	Capacity litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	PK	Cat. No.	
ST5	5	180 x 330 x 200	150 x 300 x 150	1	**9.905 718**	2
ST12	12	330 x 360 x 215	300 x 325 x 150	1	**9.905 719**	
ST18	18	330 x 540 x 215	300 x 505 x 150	1	**9.905 720**	3
ST26	26	330 x 540 x 265	300 x 505 x 200	1	**9.905 721**	
ST38	38	330 x 730 x 260	300 x 690 x 200	1	**9.905 722**	4

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9.905 718

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9.905 720

4



9.905 722

Plastic and stainless steel tanks available on request

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1 Stirred thermostatic baths Optima™ series

Grant

Complete units including plastic or stainless steel bath, bridge mounting plate and thermostatic controller. For 220-240V, 50/60Hz.

- The two general purpose heating circulators offer excellent temperature stability and uniformity with a cooling/heating range of 0 to 100°C (T100) and -15°C to +120°C (TC120).
- The two advanced heating circulators feature a modern, icon driven programming interface and full color display. Cooling/heating range: -15°C to +150°C (TX150) and -15°C to +200°C (TXF200).
- Grant stirred baths and circulators provide a source of precision heating and cooling. Complete range of 32 models covers basic to more sophisticated needs, each model representing excellent value for money and featuring intuitive programming and accurate, safe temperature control.
- An accessory gabled hinged lid is available to reduce evaporation, avoid heat loss and avoid sample contamination.
- High efficiency stainless steel (ST) tanks (range -15°C to +200°C)
- A drain trap is included on the ST12, ST18, ST26 and ST38

Accessory polypropylene spheres or a lid must be used at temperatures between 60°C and 100°C. Above 100°C only a lid must be used. Accessory cooling is required for temperatures below ambient.

For using at or below room temperature you need additional flow coolers C1G (9.920 765) or C2G (9.920 766).

Please see article table for usable working space. External dimensions incl. controller.

Please order spheres and lids separately.

Type	Capacity	Temp. range	External dimensions (W x D x H)	Working space W x D x H	Material	PK	Cat. No.
	litres	max. °C	mm	mm			
T100-P5	5	Amb. +15 to +99	235 x 325 x 380	150 x 120 x 155	plastic	1	**9.699 640**
T100-P12	12	Amb. +5 to +99	350 x 415 x 380	280 x 210 x 155	plastic	1	**9.699 641**
T100-P18	18	Amb. +5 to +99	350 x 600 x 380	375 x 280 x 155	plastic	1	**9.699 642**
T100-ST5	5	Amb. +15 to +100	180 x 330 x 395	150 x 150 x 150	stainless steel	1	**9.699 643**
T100-ST12	12	Amb. +5 to +100[1]	330 x 360 x 415	300 x 205 x 150	stainless steel	1	**9.699 644**
T100-ST18	18	Amb. +5 to +100[1]	330 x 540 x 415	300 x 385 x 150	stainless steel	1	**9.699 645**
T100-ST26	26	Amb. +5 to +100[1]	330 x 540 x 465	300 x 385 x 200	stainless steel	1	**9.699 646**
T100-ST38	38	Amb. +5 to +100[1]	330 x 730 x 460	300 x 575 x 200	stainless steel	1	**9.699 647**
TC120-P5	5	Amb. +15 to +99	235 x 325 x 380	150 x 120 x 155	plastic	1	**9.699 648**
TC120-P12	12	Amb. +5 to +99	350 x 415 x 380	280 x 210 x 155	plastic	1	**9.699 649**
TC120-P18	18	Amb. +5 to +99	350 x 600 x 380	375 x 280 x 155	plastic	1	**9.699 650**
TC120-ST5	5	Amb. +15 to +120[1]	180 x 330 x 395	150 x 150 x 150	stainless steel	1	**9.699 651**
TC120-ST12	12	Amb. +5 to +120[1]	330 x 360 x 415	300 x 205 x 150	stainless steel	1	**9.699 652**
TC120-ST18	18	Amb. +5 to +120[1]	330 x 540 x 415	300 x 385 x 150	stainless steel	1	**9.699 653**
TC120-ST26	26	Amb. +5 to +120[1,2]	330 x 540 x 465	300 x 385 x 200	stainless steel	1	**9.699 654**
TC120-ST38	38	Amb. +5 to +120[1,2]	330 x 730 x 460	300 x 575 x 200	stainless steel	1	**9.699 655**
TX150-P5	5	Amb. +15 to +99	235 x 325 x 380	150 x 120 x 155	plastic	1	**9.699 656**
TX150-P12	12	Amb. +5 to +99	350 x 415 x 380	280 x 210 x 155	plastic	1	**9.699 657**
TX150-P18	18	Amb. +5 to +99	350 x 600 x 380	375 x 280 x 155	plastic	1	**9.699 658**
TX150-ST5	5	Amb. +15 to +150[1]	180 x 330 x 395	150 x 150 x 150	stainless steel	1	**9.699 659**
TX150-ST12	12	Amb. +5 to +150[1]	330 x 360 x 415	300 x 205 x 150	stainless steel	1	**9.699 660**
TX150-ST18	18	Amb. +5 to +150[1]	330 x 540 x 415	300 x 385 x 150	stainless steel	1	**9.699 661**
TX150-ST26	26	Amb. +5 to +150[1,2]	330 x 540 x 465	300 x 385 x 200	stainless steel	1	**9.699 662**
TX150-ST38	38	Amb. +5 to +150[1,2]	330 x 730 x 460	300 x 575 x 200	stainless steel	1	**9.699 663**
TXF200-P5	5	Amb. +15 to +99	235 x 325 x 380	150 x 120 x 155	plastic	1	**9.699 664**
TXF200-P12	12	Amb. +5 to +99	350 x 415 x 380	280 x 210 x 155	plastic	1	**9.699 665**
TXF200-P18	18	Amb. +5 to +99	350 x 600 x 380	375 x 280 x 155	plastic	1	**9.699 666**
TXF200-ST5	5	Amb. +15 to +200[1]	180 x 330 x 395	150 x 150 x 150	stainless steel	1	**9.699 667**
TXF200-ST12	12	Amb. +5 to +200[1]	330 x 360 x 415	300 x 205 x 150	stainless steel	1	**9.699 668**
TXF200-ST18	18	Amb. +5 to +200[1]	330 x 540 x 415	300 x 385 x 150	stainless steel	1	**9.699 669**
TXF200-ST26	26	Amb. +5 to +200[1,2]	330 x 540 x 465	300 x 385 x 200	stainless steel	1	**9.699 670**
TXF200-ST38	38	Amb. +5 to +200[1,2]	330 x 730 x 460	300 x 575 x 200	stainless steel	1	**9.699 671**

[1] Temperature range can be extended to 0°C with accessory cooling of flow cooler 9.920 765.
[2] Temperature range can be extended to -15°C with accessory cooling of flow cooler 9.920 766.



Lids for water baths Optima™ series

To help reduce evaporation, avoid heat loss and avoid sample contamination. *Grant*
Available in moulded plastic or stainless steel, flat or gabled with hinge as indicated.

Type	Description	Material	For	PK	Cat. No.
PL 5	Flat	Stainless steel	bath P 5	1	**9.699 085**
PL 12	Flat	Plastic	bath P 12	1	**9.699 086** 1
PL 18	Flat	Plastic	bath P 18	1	**9.699 087**
STL5	Flat	Stainless steel	bath ST5	1	**9.905 723**
STL12	Gabled with hinge	Stainless steel	bath ST12	1	**9.905 724** 2
STL26	Gabled with hinge	Stainless steel	bath ST26 and ST18	1	**9.905 725**
STL38	Gabled with hinge	Stainless steel	bath ST38	1	**9.905 726**

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9.699 086

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9.905 724

Accessories for water baths Optima™ series

NEW!

Drain syphon SY1: For the rapid draining of baths. *Grant*

Heat exchange coil CW5: For use with precision and general purpose stirred baths. Temperature range 2°C above coolant temperature. Coil diameter/l mm 77/55, pipe bore inlet/outlet 7mm.

PP spheres PS20: Between operating temperatures 60°C and 100°C and below room temperature a lid or layers of polypropylene spheres can be used. Above 100°C a lid must be used.

C1G refrigerated cooler:
For use with all stainless steel Optima™ baths ranging from 0°C to +40°C. For 220 - 240 V 50 Hz single phase supplies.

C2G refrigerated cooler:
For use with all stainless steel Optima™ baths ranging from -20°C to +40°C. A bath lid must be used at temperatures below 0°C, in order to achieve optimum performance. For 220 - 240 V 50 Hz single phase supplies.

3



6.239 419

4



9.699 096

Type	PK	Cat. No.
PP spheres PS20	300	**6.239 419** 3
Drain syphon SY1	1	**9.699 096** 4
Heat exchange coil CW5	1	**9.920 764**
Refrigerated cooler C1G	1	**9.920 765**
Refrigerated cooler C2G	1	**9.920 766**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

Grant

1



1 2 Baths and Circulators

The Huber circulators are split into two product lines, the Compatible Control models and the simpler MPC models. Both model lines represent classically constructed laboratory circulators with open baths. Baths and circulators for heating applications up to +300°C are available, as well as models for heating and cooling applications from -90°C to +200°C. Immersion or bridge circulators are suitable for thermal control of existing baths. The Ministat, the smallest cooling and heating circulator in the world, is the first choice for operation in fume-hoods or integrating into systems.

Circulators with Pilot ONE Controller
Models with Pilot ONE Controller convincing in practice with their highly precise temperature control and a professional range of functions even in the basic version. The electronic upgrade function "E-grade" allows a simple and low cost expansion of functions at any time. Operation is simple using large colour displays, an easily understandable menu and an individually customisable display. Models with the Pilot ONE have powerful pressure and suction pumps with continuously variable speed control for adjusting circulation to the bath in use. Further connections are available via the optional Com.G@te, e.g. RS232 and RS485, analogue interface 4 to 20mA or 0 to 10V, standby signal and programmable alarm.

2



Circulators using the MPC Controller
The functions of models with the low price MPC controller concentrate on the essentials. MPC models are suitable for numerous typical laboratory applications, such as temperature control of samples, analysis, materials testing, as well as the external temperature control of test equipment or experimental constructions. The machine achieves a temperature stability of ±0.05°C and are fitted with an over temperature and low fluid level protection. The safety systems are according to class III/FL (DIN 12876) for use with flammable fluids. All MPC machines are also available as "plus" versions with RS232 interface.

Advantages and Functions (model dependent):
- Working Temperatures from -90°C to +300°C
- Models for internal and external temperature control
- High heating and cooling powers up to 7kW
- Powerful controllable circulation pumps
- Function expansion with the E-grade system is available at any time
- High precision cascade temperature control
- Large and full colour 5.7" TFT touchscreen
- Programmer with calendar/clock function
- Extended range of languages including a selection of European and Asian
- Comprehensive warning and safety functions

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3



3 Immersion circulators MPC®-E and CC®-E

Immersion circulators are the basis of many combinations of polycarbonate and stainless steel baths. Together with a cooling bath it is possible to get exact and reproducable temperatures down to -30°C. *Huber*

Temp. control range °C:	(-30) 25 to 200°C
Safety class:	FL, III
Heating capacity kW:	2kW
suction max. (CC®-E):	25L/min/0.4bar
suction max. (CC®-E xd):	15L/min/0.25bar
suction max. (MPC®-E):	17L/min/0.18bar
Immersion depth (CC®-E, MPC®-E):	150mm
(CC®-E xd):	195mm

Type	Temp. Stability	Pump max.	Dimensions (W x D x H)	PK	Cat. No.
	K	L/min / bar	mm		
MPC®-E	0.05*	20 / 0,2	132 x 153 x 312	1	**9.699 110**
CC®-E	0.01*	27 / 0,7	132 x 159 x 315	1	**9.859 201**
CC®-E xd	0.01*	20 / 0,5	132 x 159 x 360	1	**9.859 202**

*according to DIN 12876, measured in 12-litre stainless steel bath.

E & OE.

1 Thermostatic baths with polycarbonate tanks

The transparent polycarbonate baths are suitable for use up to 100°C. An immersion thermostat is mounted on the bath bridge for all models. With a pump adapter, this combination can also be used with external, closed applications. Models with the Pilot ONE controller have a variable speed pressure/suction pump and are therefore also suitable for external open applications. *Huber*



Temperature max.: 100°C
Temp. Stability at 70°C to DIN12876
MPC®-E: 0.05K
CC®-E: 0.02K
Safety class: FL, III
Bath depth: 150mm

Type	Bath capacity	Bath opening	Pressure pump max.	Dimensions (W x D x H)	PK	Cat. No.
	L	mm	L/min bar	mm		
CC®-106A	6	130 x 110	27 / 0.7	147 x 307 x 330	1	**9.859 203**
MPC®-106A	6	130 x 110	20 / 0.2	147 x 307 x 330	1	**9.857 474**
CC®-108A	8	130 x 210	27 / 0.7	147 x 407 x 330	1	**9.859 204**
MPC®-108A	8	130 x 210	20 / 0.2	147 x 407 x 330	1	**9.857 476**
CC®-110A	10	130 x 310	27 / 0.7	147 x 507 x 330	1	**9.859 205**
MPC®-110A	10	130 x 310	20 / 0.2	147 x 507 x 330	1	**9.857 477**
CC®-112A	12	303 x 161	27 / 0.7	333 x 360 x 335	1	**9.859 206**
MPC®-112A	12	303 x 161	20 / 0.2	333 x 360 x 335	1	**9.857 478**
CC®-118A	18	303 x 321	27 / 0.7	333 x 520 x 335	1	**9.859 207**
MPC®-118A	18	303 x 321	20 / 0.2	333 x 520 x 335	1	**9.857 479**

2 Heating circulators with stainless steel baths

The insulated stainless steel baths are suitable for use up to 200°C. All models have a bridge-mounted CC-E and MPC-E immersion circulator. With a pump adapter, this combination can also be used with externally closed and externally open (with option level control) applications. Models with the Pilot ONE controller have a variable speed pressure/suction pump and are therefore also suitable for external open applications. *Huber*



Stability to DIN 12876:
CC® models: 0.02K
MPC® models: 0.05K
Max. temp.: 200°C
Safety class: FL, III

Type	Bath capacity	Bath opening	Bath tank depth	Pressure pump max.	Dimensions (W x D x H)	PK	Cat. No.
	L	mm	mm	L/min bar	mm		
CC®-208B	8.5	230 x 127	150	27 / 0.7	290 x 350 x 375	1	**9.859 212**
MPC®-208B	8.5	230 x 127	150	20 / 0.2	290 x 350 x 375	1	**9.857 425**
CC®-212B	12	290 x 152	150	27 / 0.7	350 x 375 x 375	1	**9.859 208**
MPC®-212B	12	290 x 152	150	20 / 0.2	350 x 375 x 375	1	**9.857 426**
CC®-215B	15	290 x 152	200	27 / 0.7	350 x 375 x 425	1	**9.859 209**
MPC®-215B	15	290 x 152	200	20 / 0.2	350 x 375 x 425	1	**9.857 427**
CC®-220B	20	290 x 329	150	27 / 0.7	350 x 555 x 375	1	**9.859 210**
MPC®-220B	20	290 x 329	150	20 / 0.2	350 x 555 x 375	1	**9.857 428**
CC®-225B	25	290 x 329	200	27 / 0.7	350 x 555 x 425	1	**9.859 211**
MPC®-225B	25	290 x 329	200	20 / 0.2	350 x 555 x 425	1	**9.857 429**

3 Function upgrade for Huber circulators

E-grade - innovative activation keys for the functionality to suit your budget and process requirements *Huber*



Every application requires particular functions. If the circulator is to be used in a range of applications it will generally require greater functionality. The required functionality grows with the complexity of the application. The innovative „E-grade" has the answer. Models with the Pilot ONE Controller have a comprehensive range of functions suited to the classical temperature control applications. The E-grade allows the functionality to be extended at any time to suit new process requirements and budget. E-grade stands for electronic upgrade and it is simple to do: To extend the functionality a unit specific code is entered via the controller. This code is specific to the serial number of the unit and is either already entered at the factory for new units or it can be activated at a later date. The code is sent by email. There is no requirement for a hardware or software update.

Type	PK	Cat. No.
E-grade® "Exclusive"	1	**9.699 100**
E-grade® "Professional"	1	**9.699 101**

1 Heating circulators

NEW!

Huber

Good things come in small packages! Thanks to their low bath volumes the models CC-104A und MPC-104A (with polycarbonate bath) as well as the CC-202C and MPC-202C (with stainless steel bath) are especially suitable for controlling the temperature of small external applications. All models are fitted with rear mounted M16x1 pump connections as standard. Models with the Pilot ONE have a speed regulated pressure/suction pump. The temperature constancy, in accordance with DIN12876, is 0.02 K with the Compatible Control models and 0.05 K for the MPC models.
Models CC-202C and MPC-202C are fitted with an integrated cooling coil as standard. With the models CC-104A and MPC-104A the cooling coil is an optional extra.

Temperature range
CC®-104A/MPC®-104A: (15)25 to 100°C
CC®-202C/MPC®-202C: (-30)45 to 200°C
Temp. Stability to DIN 12876
CC® models: 0.02K
MPC® models: 0.05K
Safety class: FL, III
Bath depth: 150mm
Heating capacity: 2kW

Type	Bath opening	Dimensions (W x D x H)	Suction pump cap.	Pressure pump max.	PK	Cat. No.
	mm	mm	L/min bar	L/min bar		
CC®-104A	Ø 25	147 x 235 x 330	25/0.4	27/0.7	1	**9.859 213**
MPC®-104A	Ø 25	147 x 235 x 330	17/0.18	20/0.2	1	**7.638 719**
CC®-202C	Ø 25	178 x 260 x 355	25/0.4	27/0.7	1	**9.859 220**
MPC®-202C	Ø 25	178 x 260 x 355	17/0.18	20/0.2	1	**6.244 120**

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2



2 Heating bath circulators

NEW!

Huber

Heating bath circulators are suitable for temperatures up to 200°C or 300°C depending on model. The Compatible Control models have a continuously variable pressure and suction pump. The pump pressure can be controlled with an optional pressure sensor, and so can protect your valuable glass-ware from breakage. The machines are preferred and used for temperature control of externally connected applications. Additionally there is the ability to control the temperature of objects placed directly in the open bath.

Temperature control range
CC®-205B/MPC®-205B: (-30)45 ... 200°C
CC®-304B/CC®-308B/CC®-315B: (-20)28 ... 300°C
Safety class: FL, III
Stability to DIN 12876
CC®-205B/CC®-304B/CC®-308B/CC®-315B: 0.02K
MPC®-205B: 0.05K

Type	Bath capacity	Heating capacity	Dimensions (W x D x H)	Suction pump cap.	Pressure pump max.	PK	Cat. No.
	L	kW	mm	L/min bar	L/min bar		
CC®-205B	5.0	2.0	178 x 337 x 355	25 / 0.4	27 / 0.7	1	**9.859 221**
MPC®-205B	5.0	2.0	178 x 337 x 355	17 / 0.18	20 / 0.2	1	**6.244 121**
CC®-304B	5.0	2.0	210 x 335 x 392	22 / 0.4	33 / 0.7	1	**9.859 222**
CC®-308B	8.5 / 5.2*	3.0	242 x 404 x 392	22 / 0.4	33 / 0.7	1	**9.859 223**
CC®-315B	15 / 8.5*	3.0 / 4.0	335 x 382 x 433	22 / 0.4	33 / 0.7	1	**9.859 224**

*using displacement insert

1 Thermoregulators Economy ED, EH, TopTech MB, MA and ME

JULABO

For thermoregulation of bath tanks up to 50 litres. With bath attachment clamp for wall thicknesses up to 26mm or retort stand mounting using accessory rod.

Economy ED series
- Bright LED temperature display for actual and setpoint values, resolution 0.1°C
- Keypad for setpoint, switches automatically to the actual value
- PID1 temperature control
- Adjustable high temperature cut-out/dry-running protection (protection class 1 for non-flammable liquids, DIN 12876-1)

Economy EH series
- Enhanced temperature range up to 150°C
- Adjustable high temperature cut-out/dry-running protection (protection class 3 for flamable liquids, DIN 12876-1)

TopTech MB series
- Multi-Display (LED) for actual and setpoint values, warning/safety functions and pump stage
- PID2 temperature control with drift compensation
- ATC3 3-Point-Calibration
- Early warning system for low liquid level
- RS232 interface
- Adjustable high temperature cut-out/dry-running protection (protection class 1 for non-flammable liquids, DIN 12876-1)

TopTech MA series - as TopTech MB, but additionally with:
- PPC (Pump Pressure Control), electronically adjustable pump capacity
- Adjustable high temperature cut-out/dry-running protection (protection class 3 for flamable liquids, DIN 12876-1)

TopTech ME series - as TopTech MA, but additionally with:
- VFD Comfort Display, resolution 0.01°C
- Pt100 External sensor connection
- Programmer for 10 programme steps

Delivery without bath please order separately.

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Type	Working Temp. range °C	Temp. stability ± °C	Pump max. L/min / bar	PK	Cat. No.
Economy ED	20 to 100	0.03	15 / 0.35	1	**9.858 003**
Economy EH	20 to 150	0.03	15 / 0.35	1	**9.858 000**
TopTech MB	20 to 100	0.02	10 / 0.12	1	**9.858 001**
TopTech MA	20 to 200	0.01	11-16 / 0.23-0.45	1	**9.858 110**
TopTech ME	20 to 200	0.01	11-16 / 0.23-0.45	1	**9.858 004**

2 Bath tanks for thermostatic controllers up to +150°C, stainless steel, insulated

NEW!

JULABO

Type	Capacity Litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	For Type	PK	Cat. No.
Bath tank 5	5	330 x 150 x150	380 x 190 x 180	ED, EH, MB, MA, ME	1	**6.100 661**
Bath tank 13	13	330 x 150 x150	380 x 190 x 180	ED, EH, MB, MA, ME	1	**6.100 662**
Bath tank 17	17	330 x 300 x 200	380 x 330 x 230	ED, EH, MB, MA, ME	1	**6.100 663**
Bath tank 19	19	500 x 300 x 150	560 x 330 x 180	ED, EH, MB, MA, ME	1	**6.100 664**
Bath tank 27	27	500 x 300 x 200	560 x 330 x 230	ED, EH, MA, ME	1	**6.100 665**
Bath tank 33	33	830 x 300 x 150	900 x 330 x 200	ED, EH, MA, ME	1	**6.100 666**
Bath tank 39	39	500 x 300 x 300	540 x 330 x 350	ED, EH, MA, ME	1	**6.100 667**

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1 Circulator Baths, Economy ED and TopTech MB series

JULABO

Open bath circulators only for lower temperature range tasks performed internally, directly in the bath. Working temperature ranges:
- with stainless steel bath tank: up to 100°C (without suffix)
- with Plexiglas bath tank up to 60°C (Suffix 'A')
- with Makrolon bath tank up to 100°C (Suffix 'M')

Economy ED series
- Bright LED temperature display for actual and setpoint values, resolution 0.1°C
- Keypad for setpoint, switches automatically to the actual value
- PID1 temperature control
- Adjustable high temperature cut-out/dry-running protection

TopTech MB series
- Multi-Display (LED) for actual and setpoint values, warning/safety functions and pump status
- PID2 temperature control with drift compensation
- ATC3 3-Point-Calibration
- Early warning system for low liquid level
- RS232 interface

Type	Working Temp. range °C	Temp. stability ± °C	Pump max. L/min / bar	Capacity L	PK	Cat. No.
Economy ED-5A/B *	20 to 60	0.03	15 / 0.35	5	1	**9.857 804**
Economy ED-7A/B *	20 to 60	0.03	15 / 0.35	7	1	**9.857 805**
Economy ED-5M/B *	20 to 100	0.03	15 / 0.35	5	1	**9.857 806**
Economy ED-13A	20 to 60	0.03	15 / 0.35	13	1	**9.858 028**
Economy ED-19A	20 to 60	0.03	15 / 0.35	19	1	**9.858 029**
Economy ED-13M	20 to 100	0.03	15 / 0.35	13	1	**9.857 807**
Economy ED-19M	20 to 100	0.03	15 / 0.35	19	1	**9.857 808**
Economy ED-13	20 to 100	0.03	15 / 0.35	13	1	**9.858 016**
Economy ED-19	20 to 100	0.03	15 / 0.35	19	1	**9.858 017**
Economy ED-27	20 to 100	0.03	15 / 0.35	27	1	**9.858 010**
TopTech MB-13A	20 to 60	0.02	10 / 0.12	13	1	**9.858 025**
TopTech MB-19A	20 to 60	0.02	10 / 0.12	19	1	**9.858 030**
TopTech MB-13	20 to 100	0.02	10 / 0.12	13	1	**9.858 011**
TopTech MB-19	20 to 100	0.02	10 / 0.12	19	1	**9.858 012**

* Cooling coil option not possible

2



2 Circulator baths, Economy ED, EH series and TopTech MB series

JULABO

Open bath circulator for internal and external temperature tasks directly in the bath. Additional pump connections for external temperature tasks. Working temperature ranges:
- with stainless steel bath tank: up to 100°C (without suffix)
- with Plexiglas bath tank up to 60°C (Suffix 'A')
- with Makrolon bath tank up to 100°C (Suffix 'M')

Economy ED series
- Bright LED temperature display for actual and setpoint values, resolution 0.1°C
- Keypad for setpoint, switches automatically to the actual value
- PID1 temperature control
- Adjustable high temperature cut-out/dry-running protection (protection class 1)

Economy EH series
- Extended temperature range up to +150°C
- Adjustable high temperature cut-out/dry-running protection (protection class 3)

TopTech MB series
- Multi-Display (LED) for actual and set-point values, warning/safety functions and pump status
- PID2 temperature control with drift compensation
- ATC3 3-Point-Calibration
- Early warning system for low liquid level
- RS232 interface

Type	Working Temp. range °C	Temp. stability ± °C	Pump max. L/min / bar	Capacity L	PK	Cat. No.
Economy ED-5A	20 to 60	0.03	15 / 0.35	5	1	**9.858 037**
Economy ED-5M	20 to 100	0.03	15 / 0.35	5	1	**9.857 812**
Economy ED-5	20 to 100	0.03	15 / 0.35	4.5	1	**9.858 032**
Economy EH-5	20 to 150	0.03	15 / 0.35	4.5	1	**9.858 036**
Economy EH-13	20 to 150	0.03	15 / 0.35	13	1	**9.858 056**
Economy EH-19	20 to 150	0.03	15 / 0.35	19	1	**9.858 057**
Economy EH-27	20 to 150	0.03	15 / 0.35	27	1	**9.858 058**
Economy EH-33	20 to 150	0.03	15 / 0.35	33	1	**9.858 059**
TopTech MB-5A	20 to 60	0.02	10 / 0.12	5	1	**9.858 034**
TopTech MB-7A	20 to 60	0.02	10 / 0.12	7	1	**9.858 035**
TopTech MB-5M	20 to 100	0.02	10 / 0.12	5	1	**9.857 820**
TopTech MB-5	20 to 100	0.02	10 / 0.12	4.5	1	**9.858 031**

E & OE.

Heating circulator baths, TopTech MA, ME series

JULABO

Principally for temperature control of external closed circuit systems. Smaller vessels can be thermoregulated directly in the bath tank. For working at lower temperature ranges the cooling coil is integrated. With stainless steel bathes.
For temperatures up to 200°C.

TopTech MA series
- Multi-Display (LED) for actual and setpoint values, warning/safety functions and pump status
- PID2, temperature control with drift compensation
- ATC3, 3-point calibration
- early warning system for low liquid level
- RS232 interface
- PPC (Pump Pressure Control), electronically adjustable pump capacity

TopTech ME series - as TopTech MA, but with additional:
- VFD Comfort Display, resolution 0.01°C
- Pt100 external sensor connection

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9.857 831

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9.857 833

Type	Working Temp. range °C	Temp. stability ± °C	Pump max. L/min / bar	Capacity L	PK	Cat. No.
TopTech MA-4	20 to 200	0.01	11-16 / 0.23-0.45	4.5	1	**9.858 111**
TopTech MA-6	20 to 200	0.01	11-16 / 0.23-0.45	6	1	**9.858 112**
TopTech MA-12	20 to 200	0.01	11-16 / 0.23-0.45	12	1	**9.858 113**
TopTech MA-26	20 to 200	0.01	11-16 / 0.23-0.45	26	1	**9.858 114**
TopTech ME-4	20 to 200	0.01	11-16 / 0.23-0.45	4.5	1	**9.857 831** 1
TopTech ME-6	20 to 200	0.01	11-16 / 0.23-0.45	6	1	**9.857 824**
TopTech ME-12	20 to 200	0.01	11-16 / 0.23-0.45	12	1	**9.857 832**
TopTech ME-26	20 to 200	0.01	11-16 / 0.23-0.45	26	1	**9.857 833** 2

3 Heating circulator baths HighTech HE, HL, SE, SL series

JULABO

Principally for temperature control of external systems. Models with pressure and suction pump generally have a higher capacity and can be used for larger and open circuit systems. Smaller vessels can be thermoregulated directly in the bath tank. For working at lower temperature ranges the cooling coil is integrated. With stainless steel bathes.
For temperatures up to 250/300°C.

HighTech HE, SE series
- Multi-Display (LED) for actual and setpoint values, warning/safety functions and pump status
- PID2, temperature control with drift compensation
- ATC3, 3-point calibration
- early warning system for low liquid level
- RS232 interface
- PPC (Pump Pressure Control), electronically adjustable pump capacity
- VFD Comfort Display, resolution 0.01°C
- Pt100 external sensor connection
- ICC (Intelligent Cascade Control), self-optimising temperature control
- powerful pressure and suction pump. Pressure 0.4 to 0.7 bar, Suction 0.2 to 0.4 bar

HighTech HL, SL series - as HighTech HE, SE, but with additional:
- LCD Dialogue Display for convenient interactive operation
- TCF Temperature Control Features to optimise control behaviour
- integral programmer for 6 x 60 programme steps
- connections for solenoid valve and HSP booster pump

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Type	Working Temp. range °C	Temp. stability ± °C	Pump max. L/min / bar	Suction bar	Capacity L	PK	Cat. No.
HighTech HE-4	20 to 250	0.01	22-26 / 0.4- 0.7	0.2-0.4	4.5	1	**9.858 044**
HighTech SE-6	20 to 300	0.01	22-26 / 0.4- 0.7	0.2-0.4	6	1	**9.858 049**
HighTech SE-12	20 to 300	0.01	22-26 / 0.4- 0.7	0.2-0.4	12	1	**9.858 047**
HighTech SE-26	20 to 300	0.01	22-26 / 0.4- 0.7	0.2-0.4	26	1	**9.858 048**
HighTech HL-4	20 to 250	0.01	22-26 / 0.4- 0.7	0.2-0.4	4.5	1	**9.858 050**
HighTech SL-6	20 to 300	0.01	22-26 / 0.4- 0.7	0.2-0.4	6	1	**9.858 054**
HighTech SL-12	20 to 300	0.01	22-26 / 0.4- 0.7	0.2-0.4	12	1	**9.858 051**
HighTech SL-26	20 to 300	0.01	22-26 / 0.4- 0.7	0.2-0.4	26	1	**9.858 052**

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6.255 692

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9.721 067

Refrigerated circulators LTC 2/LTC 4

Grant

Versatile system for the laboratory, with a comprehensive specification to suit most low temperature applications.

- Optima™ digital thermostat for precise temperature control: LTC 2 assembled with TC 120, LTC 4 assembled with TX 150
- Cooling/heating range for -25 to 100°C for LTC 2 and -30 to +100°C for LTC 4
- Stability ±0.1°C
- Powerful integral pump; allows temperature-controlled fluid to be circulated to external devices (16L/min, 210mbar for LTC 2 and 18L/min, 310mbar for LTC 4)
- Easy to use rotary dial and two function keys

- Clear 4 digit display - easy to read from a distance for instant reassurance
- Visual alarm and countdown timer; alerts you when your attention is required
- User calibration facility for optimum accuracy at the required operating temperature
- Operating setpoint plus 3 adjustable preset temperatures for convenience
- Liquid protection and over-temperature cut-out
- Easy access to coolant reservoir for local cooling of tubes, bottles etc.
- Powerful efficient cooling, ozone-friendly refrigerant
- Dual-position bridge plate, ensures visibility/accessibility of the thermostat whilst optimising bench space
- Robust construction, corrosion resistant materials, stainless steel tank; durable in demanding environments
- 5°C thermostat on/off switch; stops tank freezing when operating with water

Type	Capacity	Temp. range	Heating power	Cooling capacity kW at 20/0/-20°C	Dimensions (W x D x H)	PK	Cat. No.
	litres	max. °C	W		mm		
LTC 2	5	-25 to +100	1300	0.25/0.14/0.035	230 x 410 x 610	1	**6.255 692** 1
LTC 4	20	-30 to +100	1900	0.90/0.50/0.18	390 x 490 x 730	1	**9.721 067** 2

3 Cooling circulators

Huber

Combinations of immersion circulators and insulated refrigeration baths are low-cost solutions for direct thermoregulation within the temperature range -20/-30°C to +200°C. The refrigeration baths operate with natural refrigerants. A pump adapter (optional) can be fitted for thermoregulation of externally closed applications. Models with the Pilot ONE controller have a variable speed pressure/suction pump and are therefore suitable for external open thermoregulation applications. The temperature stability is 0.02K for the Compatible Control models and 0.05K for the MPC models.
Items supplied: cooling thermostat, cooling bath of stainless steel

Type	Working Temp. range °C	Cooling capacity kW at 0/-10/-20°C	Bath capacity L	Bath opening mm	Dimensions (W x D x H) mm	Pump max. L/min / bar	PK	Cat. No.
CC®-K12	-20 ... +200	0.2/0.12/0.05	12	290 x 152	350 x 560 x 430	27 / 0.7	1	**9.859 227**
MPC®-K12	-20 ... +200	0.2/0.12/0.05	12	290 x 152	350 x 560 x 430	20 / 0.2	1	**9.857 407**
CC®-K15	-20 ... +200	0.2/0.12/0.05	15	290 x 152	350 x 560 x 430	27 / 0.7	1	**9.859 228**
MPC®-K15	-20 ... +200	0.2/0.12/0.05	15	290 x 152	350 x 560 x 430	20 / 0.2	1	**9.857 408**
CC®-K20	-30 ... +200	0.35/0.27/0.16	20	290 x 329	350 x 555 x 615	27 / 0.7	1	**9.859 229**
MPC®-K20	-30 ... +200	0.35/0.27/0.16	20	290 x 329	350 x 555 x 615	20 / 0.2	1	**9.857 409**
CC®-K25	-30 ... +200	0.35/0.27/0.16	25	290 x 329	350 x 555 x 615	27 / 0.7	1	**9.859 230**
MPC®-K25	-30 ... +200	0.35/0.27/0.16	25	290 x 329	350 x 555 x 615	20 / 0.2	1	**9.857 404**

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1 Compatible Control Refrigeration Circulators K6



Huber

The K6 models are compact refrigeration bath circulators for temperatures from -25 to 200°C. These units are a combination of a refrigerated bath and immersion circulator, in combination with an integrated pump they are suitable for external open (with level control) and closed applications. The CC-E immersion circulator with its suction/pressure pump is suitable to externally open and closed applications. The temperature stability is 0.02K for the Compatible Control models and 0.05K for the MPC models.

Safety class: FL, III
Heating capacity: 2kW
Pressure pump
CC®-K6/CC®-K6s: 27L/min/0.7 bar
MPC®-K6/MPC®-K6s: 20L/min/0.2 bar

Type	Temp. range max. °C	Bath capacity L	Bath opening mm	Cooling capacity kW at 0/-10/-20°C	Dimensions (W x D x H) mm	PK	Cat. No.
CC®-K6	-25 ... +200	4.5	140 x 120	0.15/0.1/0.05	210 x 400 x 546	1	**9.859 226**
MPC®-K6	-25 ... +200	4.5	140 x 120	0.15/0.1/0.05	210 x 400 x 546	1	**9.857 405**
CC®-K6s	-25 ... +200	4.5	140 x 120	0.21/0.15/0.05	210 x 400 x 546	1	**9.859 225**
MPC®-K6s	-25 ... +200	4.5	140 x 120	0.21/0.15/0.05	210 x 400 x 546	1	**9.857 406**

All units use natural refrigerant as standard.

2 Cooling circulator Variostat® for a variety of baths



Huber

This unique immersion circulator can thermoregulate a wide range of baths between -30°C and 150°C. This innovative construction allows the user ultimate flexibility. The circulation can be adjusted to suit the bath size using the stepless, variable speed suction/pressure pump. The pump can also be controlled with an optional pressure sensor for external applications.

Temperature stability to DIN 12876: 0.02K
Heating capacity: 1kW
Pump pressure max.: 27L/min/0.7bar
Max. suction: 20L/min/0.4bar

Type	Working Temp. range max. °C	Bath capacity L	Cooling capacity kW at 100/20/0/-20/-30°C	PK	Cat. No.
Variostat®	-30 ... +150	variable	0.3 / 0.3 / 0.2 / 0.12 / 0.03	1	**9.859 231**

3 Compact refrigerated circulators - Ministat®



Huber

Exceptionally compact and powerful, Ministats have been the smallest cooling circulators in the world since 1976. Their compact form allows them to be placed in small spaces, e.g. in a laboratory extraction hood. Compliance with DIN 12876, class 3 allows them to be used unsupervised in continual operation. The maximum ambient temperature is 40°C.
The powerful variable speed pressure/suction pump can thermoregulate objects in the bath or external applications. The maximum pressure can be controlled using an optional pressure sensor - VPC (Variable Pressure Control) - which protects delicate glassware. The small volume and high power of the Ministats means exceptionally rapid heating and cooling rates are achieved. Optional displacement inserts reduce the bath volume by approximately 50 % amplifying this effect and reducing moisture absorption in the thermal fluid. All models have Active Cooling Control for cooling power control at the maximum working temperature and an automatic cooling power regulation for energy saving operation and reduced heat dissipation into the lab.The bath opening is large enough to allow small objects to be thermoregulated within. All parts in contact with the thermal fluid are made of stainless steel or Polycarbonate. Ministats have the Pilot ONE with Plug & Play technology (proven since 1980). In the event of service the controller can be simply swapped. Using a data cable the Ministat can be remotely controlled. The Pilot ONE has a state of the art microprocessor controller and a high precision temperature measurement system for exact and reproducible temperature control. The functionality and TFT-display are supported by Easy Control.
Typical applications for the smallest cooling circulator in the world are external closed systems e.g. photometer, refractometer and viscosimeter.

Pump pressure max.: 27L/min/0.7bar
Max. suction: 20L/min/0.4bar

Type	Working Temp. range max. °C	Bath capacity L	Bath tank depth mm	Heating power W	Cooling capacity kW at 0/-20/-30°C	Dimensions (W x D x H) mm	PK	Cat. No.
Ministat® 125	-25 ... +150	2.75/1.3*	120	1000	0.21/0.05/--	225 x 370 x 429	1	**6.257 173**
Ministat® 125w	-25 ... +150	2.75/1.3*	120	1000	0.20/0.10/--	225 x 370 x 429	1	**9.859 232**
Ministat® 230	-40 ... +200	3.2/1.7*	135	2000	0.38/0.25/0.14	255 x 450 x 476	1	**9.859 233**
Ministat® 230w	-40 ... +200	3.2/1.7*	135	2000	0.38/0.25/0.14	255 x 450 x 476	1	**9.859 234**
Ministat® 240	-45 ... +200	4.9/2.8*	157	2000	0.55/0.35/0.125	300 x 465 x 516	1	**9.859 235**
Ministat® 240w	-45 ... +200	4.9/2.8*	157	2000	0.55/0.35/0.125	300 x 465 x 516	1	**9.859 236**

Temperature Stability to DIN 12876: 0.02 K
All units use natural refrigerant as standard.
*with displacement insert

1 Refrigeration Bath Circulators to -45°C

Huber

HUBER refrigerated bath circulators perform safe and repeatable heating and cooling tasks in the lab. 22 models covering the range -90 to 200°C with a selection of heating and cooling powers are available with air or water cooling (w). Natural refrigerants for environmentally friendly operation are available on request. A powerful variable speed pressure/suction pump allows the thermoregulation of objects directly in the bath or can be used to control external applications. The pump speed is stepless and when used in combination with an optional pressure sensor the maximum pressure can be controlled. VPC (Variable Pressure Control) ensures the best circulation and protects delicate glass apparatus from breakage caused by overpressure.
Small volume and high heating and cooling powers result in the shortest heating and cooling rates. Optional displacement inserts reduce the bath volume by half increasing this effect. Additionally the bath surface area is reduced, lowering moisture absorption. The optional calibration insert allows all HUBER refrigeration circulators to be used as calibration baths. The calibration insert ensures an even temperature distribution with a temperature stability of ±0.01K. All models have Active Cooling Control for cooling power control at the maximum working temperature and an automatic cooling power regulation for energy saving operation and reduced heat dissipation into the lab. Depending on the model carry handles or castors are fitted for easy transportation. The drain is located on the front of the unit to enable simple drainage of the bath. The cover plate is thermoregulated to avoid condensation. All models have the Pilot ONE with Plug & Play technology which can be simply swapped in the event of a service. The Pilot ONE can be used as a remote control (with data cable). The Pilot ONE is a high tech microprocessor based controller with a high precision measurement system for exact and reproducible results. The wide ranging functionality is supported by a large TFT display and simple operation. HUBER refrigeration circulators can be equipped with a Com.G@te to the NAMUR standard to enable integration in a process control system. Depending on the bath dimensions objects can be thermoregulated within the bath. Typical applications for these classics are the thermoregulation of externally closed systems, e.g. photometer, refractometer, viscosimeter, double-jacketed reactors and autoclaves. They are used in miniplants, kilo labs, for stock point measurement, for low temperature calibration, for petroleum tests and many more applications.

Option: Natural refrigerant available on request

Pump data

Max. pressure:	33L/min/0.7bar
Max. suction:	22L/min/0.4bar
Temp. stability acc. to DIN 12876:	0.02K

Type	Working Temp. range °C	Bath capacity L	Bath tank depth mm	Heating power W	Cooling capacity KW at 100/20/0/-20/-30/-40°C	PK	Cat. No.
CC®-405	-40 ... +200	5	150	1500	0.7 / 0.7 / 0.7 / 0.45 / 0.18 / 0.03	1	**9.859 237**
CC®-405w	-40 ... +200	5	150	1500	0.7 / 0.7 / 0.7 / 0.45 / 0.18 / 0.03	1	**9.859 238**
CC®-410	-45 ... +200	22 /8.5*	200	3000	0.8 / 0.8 / 0.8 / 0.5 / 0.15 / 0.1	1	**9.857 403**
CC®-410wl	-45 ... +200	22 /8.5*	200	3000	0.8 / 0.8 / 0.8 / 0.5 / 0.15 / 0.1	1	**9.859 243**
CC®-415	-40 ... +200	5	150	1500	1.2 / 1.2 / 1.0 / 0.6 / 0.2 / 0.05	1	**9.859 239**
CC®-415wl	-40 ... +200	5	150	1500	1.2 / 1.2 / 1.0 / 0.6 / 0.2 / 0.05	1	**9.859 240**

*with displacement insert

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E & OE.

1 Refrigeration Bath circulators to -55°C

NEW!

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Huber

Compact design and high cooling capacity at low temperatures.
Option: Natural refrigerant available on request

Heating capacity	
CC®-505/CC®-505wl:	1.5kW
CC®-508 to CC®-525w:	3.0kW
Pump data CC®-505 to CC®-508w	
Max. pressure:	33L/min/0.7bar
Max. suction:	22L/min/0.4bar
Pump data CC®-510 to CC®-525w	
Max. pressure:	31L/min/0.6bar
Max. suction:	24L/min/0.35bar
Supply requirement	
CC®-505 to CC®-508w:	230V/50Hz
CC®-510 to CC®-525w:	400V/50Hz
Temp. stability acc. to DIN 12876:	±0.02K

Type	Working Temp. range °C	Bath capacity L	Bath tank depth mm	Cooling capacity KW at 100/20/0/-20/-40°C	PK	Cat. No.
CC®-505	-50 ... +200	5	150	1,2 / 1,2/ 1,0 / 0,6 / 0,15	1	**9.859 241**
CC®-505wl	-50 ... +200	5	150	1,2 / 1,2/ 1,0 / 0,6 / 0,15	1	**9.859 242**
CC®-508	-55 ... +200	5	160	1,5 / 1,5 / 1,5 / 1,0 / 0,3	1	**9.857 402**
CC®-508w	-55 ... +200	5	160	1,5 / 1,5 / 1,5 / 1,0 / 0,3	1	**9.857 401**
CC®-510	-50 ... +200	26/15*	200	2,1 / 2,1 / 2,1 / 1,0 / 0,4	1	**9.859 256**
CC®-510w	-50 ... +200	18/11*	200	2,4 / 2,4 / 2,4 / 1,0 / 0,4	1	**9.859 245**
CC®-515	-55 ... +200	26/15*	200	3,3 / 3,3 / 3,3 / 1,6 / 0,6	1	**9.859 247**
CC®-515w	-55 ... +200	18/11*	200	3,3 / 3,3 / 3,3 / 1,6 / 0,6	1	**9.859 246**
CC®-520w	-55 ... +200	17/10*	200	5,0 / 5,0 / 5,0 / 3,0 / 1,5	1	**9.859 248**
CC®-525w	-55 ... +100	17/10*	200	7,0 / 7,0 / 5,0 / 3,0 / 1,5	1	**9.859 249**

*with displacement insert
Function version available by E-grade.

2 Refrigerated Bath Circulators to -90°C

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Huber

The CC-805 is a low cost alternative for low temperature applications when low power is required.
Option: Natural refrigerant available on request

Pump data CC®-805/ CC®-902:	
Max. pressure:	33L/min/0.7bar
Max. suction:	22L/min/0.4bar
Pump data CC®-820 to CC®-906w:	
Max. pressure:	31L/min/0.6bar
Max. suction:	24L/min/0.35bar
Supply requirement:	400V 50Hz
CC®-805/CC®-902:	230V 50Hz
Temp. stability acc. to DIN 12876:	0.02K

Type	Working Temp. range °C	Bath capacity L	Bath tank depth mm	Cooling capacity KW at 100/20/0/-20/-40/-60°C	Heating power W	PK	Cat. No.
CC®-805	-80 ... +100	5	150	0.5 / 0.5 / 0.5 / 0.4 / 0.3 / 0.3	1500	1	**9.859 250**
CC®-820	-80 ... +100	17 / 10*	200	1.2 / 1.2 / 1.2 / 1.1 / 0.9 / 0.6	3000	1	**9.859 251**
CC®-820w	-80 ... +100	17 / 10*	200	1.2 / 1.2 / 1.2 / 1.1 / 0.9 / 0.6	3000	1	**9.859 252**
CC®-902	-90 ... +200	5	150	1.2 / 1.2 / 1.2 / 1.1 / 0.9 / 0.6	1500	1	**9.857 400**
CC®-905	-90 ... +200	26 / 15*	200	2.0 / 2.0 / 2.0 / 1.9 / 1.7 / 1.0	3000	1	**9.859 253**
CC®-905w	-90 ... +200	26 / 15*	200	2.0 / 2.0 / 2.0 / 1.9 / 1.7 / 1.0	3000	1	**9.859 254**
CC®-906w	-90 ... +200	30 / 19*	200	3.0 / 3.0 / 3.0 / 2.8 / 2.4 / 1.6	3000	1	**9.859 255**

*with displacement insert
Function version available by E-grade

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

huber

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1 Refrigerated circulator baths, Economy ED, EH series

JULABO

For temperature control of external closed circuit systems, such as photometers, refractometers, viscometers etc. Smaller objects can be thermoregulated directly in the bath tank.

Economy ED series
- bright LED temperature display for actual and setpoint values, resolution 0.1°C
- keypad for setpoint, switches automatically to the actual value
- PID1 temperature control
- adjustable high temperature cut-out/dry-running protection (protection class 1 for non-flammable liquids, DIN 12876-1)

Economy EH series
- extended temperature range up to +150°C
- adjustable high temperature cut-out/dry-running protection (protection class 3 for flamable liquids, DIN 12876-1)

Type	Working Temp. range °C	Temp. stability ± °C	Cooling capacity kW at 20/0/-20°C	Pump max. L/min / bar	Capacity L	PK	Cat. No.
Economy F12-ED	-20 to 100	0.03	0.16/0.1/0.02	15 / 0.35	4.5	1	**9.857 841**
Economy F25-ED*	-28 to 100	0.03	0.26/0.2/0.06	15 / 0.35	4.5	1	**9.858 062**
Economy F26-ED**	-28 to 100	0.03	0.26/0.2/0.06	15 / 0.35	4.5	1	**9.857 844**
Economy F34-ED	-30 to 100	0.03	0.45/0.32/0.14	15 / 0.35	20	1	**9.858 075**
Economy F12-EH	-20 to 150	0.03	0.16/0.1/0.02	15 / 0.35	4.5	1	**9.857 843**
Economy F25-EH	-28 to 150	0.03	0.26/0.2/0.06	15 / 0.35	4.5	1	**9.857 842**
Economy F32-EH	-35 to 150	0.03	0.45/0.39/0.15	15 / 0.35	8	1	**9.857 846**
Economy F33-EH	-30 to 150	0.03	0,5/0,32/0,12	15 / 0.35	16	1	**6.230 445**
Economy F34-EH	-30 to 150	0.03	0.45/0.32/0.14	15 / 0.35	20	1	**9.857 847**
Economy F38-EH	-35 to 80	0.05	0.92/0.66/0.32	15 / 0.35	45	1	**9.857 848**

* Compact units. **Low-profile design.

2



2 Refrigerated circulator baths TopTech MA, ME series

JULABO

For temperature control of external closed circuit systems, such as photometers, refractometers, viscometers etc. Smaller objects can be thermoregulated directly in the bath tank.

TopTech MA series - as TopTech MB, but additionally with:
- PPC (Pump Pressure Control), electronically adjustable pump capacity
- adjustable high temperature cut-out/dry-running protection (protection class 3 for flamable liquids, DIN 12876-1)

TopTech ME series - as TopTech MA, but additionally with:
- VFD Comfort Display, resolution 0.01°C
- Pt100 external sensor connection
- Programmer for 10 programme steps

Type	Working Temp. range °C	Temp. stability ± °C	Cooling capacity kW at 20/0/-20°C	Pump max. L/min / bar	PK	Cat. No.
TopTech F12-MA	-20 to 200	0.02	0.16/0.1/0.02	11-16 / 0.23-0.45	1	**9.858 115**
TopTech F25-MA	-28 to 200	0.02	0.26/0.2/0.06	11-16 / 0.23-0.45	1	**9.858 117**
TopTech FP40-MA	-40 to 200	0.02	0.68/0.5/0.32/0.004	11-16 / 0.23-0.45	1	**9.858 121**
TopTech FP50-MA	-50 to 200	0.02	0.9/0.8/0.5/0.16	11-16 / 0.23-0.45	1	**9.858 122**
TopTech F25-ME*	-28 to 200	0.01	0.26/0.2/0.06	11-16 / 0.23-0.45	1	**9.857 849**
TopTech F26-ME**	-28 to 200	0.01	0.26/0.2/0.06	11-16 / 0.23-0.45	1	**9.858 066**
TopTech F32-ME	-35 to 200	0.01	0.45/0.39/0.15	11-16 / 0.23-0.45	1	**9.857 857**
TopTech F33-ME	-30 to 200	0.01	0.50/0.32/0.12	11-16 / 0.23-0.45	1	**9.857 858**
TopTech F34-ME	-30 to 150	0.01	0.45/0.32/0.14	11-16 / 0.23-0.45	1	**9.857 859**
TopTech FP40-ME	-40 to 200	0.01	0.68/0.5/0.32/0.04	11-16 / 0.23-0.45	1	**9.857 862**
TopTech FP50-ME	-50 to 200	0.01	0.9/0.8/0.5/0.16	11-16 / 0.23-0.45	1	**9.857 863**

* Compact units. **Low-profile design.

We can **supply** this **manufacturer's whole product range !**

partner of the LLG Lab Logistics Group

Julabo

E & OE.

1 Refrigerated circulator baths, HighTech HE, HL series

For temperature control of externally open and closed circuit systems. Smaller objects can be thermoregulated directly in the bath tank. *JULABO*

HighTech HE series - as TopTech ME, but additionally with:
- ICC (Intelligent Cascade Control), self-optimizing temperature control
- powerful pressure and suction pump, capacity max. 1.1 bar, electronically adjustable

HighTech HL series - as HighTech HE, but additionally with:
- LCD Dialogue Display, backlit for convenient interactive operation
- TCF Temperature Control Features to optimise control behaviour
- programmer for 6 x 60 programme steps
- connections for solenoid valve and HSP booster pump

1



Type	Working Temp. range °C	Temp. stability ± °C	Cooling capacity KW at 20/0/-20/-30°C	Pump max. L/min / bar	PK	Cat. No.
HighTech F25-HE	-28 to 200	0.01	0.26/0.20/0.06	22-26 / 0.4-0.7	1	**9.858 063**
HighTech F32-HE	-35 to 200	0.01	0.45/0.39/0.15	22-26 / 0.4-0.7	1	**9.858 071**
HighTech F34-HE	-30 to 150	0.01	0.45/0.32/0.14	22-26 / 0.4-0.7	1	**9.857 867**
HighTech FP40-HE	-40 to 200	0.01	0.68/0.5/0.32/0.04	22-26 / 0.4-0.7	1	**9.858 455**
HighTech FP45-HE	-42 to 200	0.01	0.85/0.7/0.42/0.08	22-26 / 0.4-0.7	1	**9.858 458**
HighTech FP50-HE	-50 to 200	0.01	0.9/0.8/0.5/0.16	22-26 / 0.4-0.7	1	**9.858 456**
HighTech F32-HL	-35 to 200	0.01	0.45/0.39/0.15	22-26 / 0.4-0.7	1	**9.858 072**
HighTech FP35-HL	-35 to 150	0.01	0.45/0.39/0.15	22-26 / 0.4-0.7	1	**9.857 872**
HighTech F25-HL	-28 to 200	0.01	0.26/0.20/0.06	22-26 / 0.4-0.7	1	**9.858 064**
HighTech F33-HL	-30 to 200	0.01	0.50/0.32/0.12	22-26 / 0.4-0.7	1	**9.857 870**
HighTech FP40-HL	-40 to 200	0.01	0.68/0.5/0.32/0.04	22-26 / 0.4-0.7	1	**9.857 878**
HighTech FP45-HL	-42 to 200	0.01	0.85/0.7/0.42/0.08	22-26 / 0.4-0.7	1	**9.858 459**
HighTech FP50-HL	-50 to 200	0.01	0.9/0.8/0.5/0.16	22-26 / 0.4-0.7	1	**9.858 460**

2 Refrigerated circulator baths series Economy and HighTech

The new CF series offers compact refrigerated/heating circulators. With small overall dimensions the units can even be placed on a very small surface or within a complex installation. All models offer a heating capacity of 2kW and safety class 3 according to DIN12876-1. The maximum ambient temperature of +40°C as well as ventilated air cooling allow the units to be positioned very closely together, with other units or directly under a fume hood. Furthermore all the models feature pump connections for external temperature applications and a bath opening for temperature control of small objects directly in the circulator bath. Wetted parts are made of high quality stainless steel or plastic. The instruments incorporate reliable Microprocessor electronics offering high temperature stability as well as warning and safety functions. *JULABO*

2



Economy line CF30, CF40
- Ergonomic design and easy operation
- Compact dimensions require minimal space
- Splash-proof keypad
- Large, bright LED temperature display
- Precise PID temperature control
- RS232 interface for PC connection
- Adjustable high temperature cut-out
- Pump connections for external temperature applications
- Bath opening for temperature control of small objects in the bath

HighTech line CF31, CF41

Generally as Economy line but additionally with:
- Bright VFD display and interactive LCD dialogue display
- Highly precise ICC cascade temperature control
- RS232/RS485 interface for PC connection
- Electronically adjustable pump output
- External Pt100 sensor connection
- Integrated programmer with 6x60 program steps
- Early warning system for low liquid level
- 3-point calibration
- TCF Temperature Control Features

Type	Working Temp. range °C	Temp. stability ± °C	Cooling capacity kW at 20/0/-20°C	Pump max. L/min / bar	Suction bar	PK	Cat. No.
CF30	-30 to 150	0.03	0.32/0.25/0.15	15 / 0.35	-	1	**9.858 086**
CF40	-40 to 150	0.03	0.47/0.4/0.28	15 / 0.35	-	1	**9.858 087**
CF31	-30 to 200	0.02	0.32/0.25/0.15	22-26 / 0.4-0.7	0.2-0.4	1	**9.858 088**
CF41	-40 to 200	0.02	0.47/0.4/0.28	22-26 / 0.4-0.7	0.2-0.4	1	**9.858 089**

Further JULABO Refrigerated circulator baths for lower temperature ranges available on request.

1



1 Unichiller® in alternative bench-top or tower housing formats

Huber

Unichillers are intelligent chillers which are used mainly as an environmentally friendly and economic alternative to tap water for process cooling. Low temperatures increase efficiency and recovery rates in condensation processes. In contrast to tap water a set-point can be selected between -10/-20°C to 40°C and controlled with a temperature stability of ±0.5°C. The product range includes 27 air cooled and 26 water cooled models, with cooling powers from 0.3kW to 50kW. Most models can be factory fitted with a heater if required. Housings are made of stainless steel to ensure long life. Compact, value-for-money units are available in classic look with cooling powers up to 2.5kW for cooling applications in the lab. Models from Minichiller to Unichiller 025w are suitable for on or under the lab bench. The proven Huber tower housing models offer power with small footprints. These models are fitted with the exchangeable Pilot ONE controller and are used in both research and production. The range of cooling powers available is from 0.3kW to 50kW. Unichillers with an optional heating become powerful process ciculators (additional charge on request).

2



2 Chillers, Minichiller®

Huber

Small, robust and cost effective with its stainless steel casing. The Minichiller is the smallest Unichiller in the world. Minichillers are available with air or water-cooled refrigeration systems, illuminated level indicator, overflow and drain on the front. The filling port is on the top of the unit. All models use natural refrigerants as standard.

Supply req.: 230V 50/60Hz
Dimensions (WxDxH): 225mm x 360mm x 380mm

Type	Working Temp. range °C	Pump max. L/min / bar	Cooling capacity kW at 15/0/-10°C	PK	Cat. No.
Minichiller®*	-20 ... +80	20 / 0.2	0.3/0.2/0.14	1	**9.857 717**
Minichiller® w*	-20 ... +80	20 / 0.2	0.3/0.2/0.14	1	**9.857 592**

*Also available as "plus" version.
(plus=RS232/serial with the LAI commands G,v,L; (SpyLight compatible)

3



3 Unichiller®, bench-top

NEW!

Huber

Unichillers are intelligent chillers which can be used as an environmentally friendly and economic alternative to tap water for process cooling. Low temperatures increase efficiency and recovery rates in gas condensation processes. In contrast to tap water a desired setpoint can be selected between -10/-20°C to 40°C and controlled with a temperature stability of ±0.5°C. The product range includes 27 air cooled and 26 water cooled models, with cooling powers from 0.3kW to 50kW. Most models can be factory fitted with a heater. The casings are made of high quality stainless steel to ensure long life.

With the exception of the two models Unichiller 006Tw-MPC and Unichiller 009Tw-MPC all units can be factory fitted with optional heating and independent over-temperature protection. Increasing the maximum working temperature to 100°C and the temperature stability to ±0.2K. The new construction allows constant operation in ambient temperatures up to 40°C. The water-cooled models are especially quiet and require little cooling water even at full cooling power. Despite the increasing costs of water the ROI is exceptionally short. All models with maximum pump pressure of 2.5bar have an adjustable bypass and a pressure gauge.

All Unichillers are also available as "plus" version (plus=RS232/serial with the LAI commands G,v,L; (SpyLight compatible). Unichiller 003-MPC and Unichiller 006-MPC uses natural refrigerant as standard, for all other models available on request.

Type	Working Temp. range °C	Supply req., 50 Hz V	Pump max. L/min / bar	Cooling capacity kW at 15/0/-10°C	PK	Cat. No.
Unichiller® 003-MPC®	-5 ... +40	230	20 / 0,2	0.28/0.2/-	1	**7.639 971**
Unichiller® 006-MPC®	-20 ... +40	230	33 / 0,7	0.6/0.5/0.35	1	**7.656 640**
Unichiller® 007-MPC®	-20 ... +40	230	25 / 2,5	0.7/0.55/0.4	1	**9.857 659**
Unichiller® 010-MPC®	-20 ... +40	230	25 / 2,5	1.0/0.8/0.5	1	**9.857 361**
Unichiller® 012-MPC®	-20 ... +40	230	25 / 2,5	1.2/1.0/0.7	1	**9.857 362**
Unichiller® 012w-MPC®	-20 ... +40	230	25 / 2,5	1.2/1.0/0.7	1	**9.857 363**
Unichiller® 015-MPC®	-20 ... +40	230	25 / 2,5	1.5/1.0/0.7	1	**9.857 364**
Unichiller® 015w-MPC®	-20 ... +40	230	25 / 2,5	1.5/1.0/0.7	1	**9.857 365**
Unichiller® 022-MPC®	-10 ... +40	230	25 / 2,5	2.2/1.6/1.0	1	**9.857 366**
Unichiller® 022w-MPC®	-10 ... +40	230	25 / 2,5	2.2/1.6/1.0	1	**9.857 367**
Unichiller® 025-MPC®	-10 ... +40	230	25 / 2,5	2.5/2.0/1.2	1	**9.857 369**
Unichiller® 025w-MPC®	-10 ... +40	230	25 / 2,5	2.5/2.0/1.2	1	**9.857 370**

E & OE.

1 Unichiller® (bench top) with water cooled refrigeration

Huber

The models Unichiller 006Tw-MPC® and Unichiller 009Tw-MPC® have a footprint of only 230 x 280mm and are therefore suitable for installation in laboratory furniture or in extract hoods. The water-cooled chillers emit almost no heat and require minimal amounts of cooling water. All models use natural refrigerant as standard.

Pump capacity max. 30L/min, pressure max. 0.7bar
Supply requirements: 230V/50Hz



Type	Working Temp. range °C	Cooling capacity kW at 15/0/-10/-20°C	Dimensions (W x D x H) mm	PK	Cat. No.
Unichiller® 006Tw-MPC®	-20 ... +40	0,6/0,45/0,4/0,25	230 x 280 x 540	1	**9.857 050**
Unichiller® 006Tw-MPC® plus*	-20 ... +40	0,6/0,45/0,4/0,25	230 x 280 x 540	1	**9.857 317**
Unichiller® 009Tw-MPC®	-25 ... +40	0,6/0,7/0,4/0,2	230 x 280 x 540	1	**9.857 053**
Unichiller® 009Tw-MPC® plus*	-25 ... +40	0,6/0,7/0,4/0,2	230 x 280 x 540	1	**9.857 318**

*with RS232 interface

2 Unichiller® (tower housing) with air cooled refrigeration

NEW!

Huber

Many applications depend on a reliable source of cooling. Circulating chillers in the Unichiller range offer an ideal solution for environmentally friendly and economical cooling in laboratory and industry. There are over 50 air and water cooled models to choose from, with cooling powers from 0.3 to 50 kW. Efficient energy management in all Huber chillers ensures low operating costs and reduced usage of valuable fresh water. Huber circulating chillers are a resource saving solution with a quick return on investment.
Optional: Natural refrigerant available on request



Type	Working Temp. range °C	Pump max. L/min / bar	Cooling capacity kW at 15/0/-10/-20°C	Dimensions (W x D x H) mm	PK	Cat. No.
Unichiller® 017T	-10 ... +40	25 / 3.0	1.7 / 0.9 / 0.4 / --	450 x 510 x 1230	1	**9.859 301**
Unichiller® 020T	-20 ... +40	25 / 3.0	2.0 / 2.0 / 1.5 / 0.8	450 x 510 x 1230	1	**9.859 302**
Unichiller® 025T	-10 ... +40	25 / 3,0	2.5 / 1.2 / 0.6 / --	450 x 510 x 1230	1	**9.859 303**
Unichiller® 040T	-10 ... +40	26 / 3.0	4.0 / 2.5 / 1.5 / --	500 x 552 x 1451	1	**9.859 304**
Unichiller® 045T	-20 ... +40	26 / 3.0	4.5 / 4.5 / 2.9 / 1.5	500 x 552 x 1451	1	**9.859 305**
Unichiller® 055T	-10 ... +40	57/ 5.6	5.5 / 3.0 / 1.3 / --	600 x 632 x 1610	1	**9.859 306**
Unichiller® 060T	-20 ... +40	80 / 5.6	6.0 / 6.0 / 3.9 /2.0	600 x 632 x 1610	1	**9.859 307**
Unichiller® 080T	-10 ... +40	84 / 5.6	8.0 / 4.8 / 2.5 / --	600 x 790 x 1614	1	**9.859 308**

3 Unichiller® (tower housing) with water cooled refrigeration

NEW!

Huber

Many applications depend on a reliable source of cooling. Circulating chillers in the Unichiller range offer an ideal solution for environmentally friendly and economical cooling in laboratory and industry. There are over 50 air and water cooled models to choose from, with cooling powers from 0.3 to 50 kW. Efficient energy management in all Huber chillers ensures low operating costs and reduced usage of valuable fresh water. Huber circulating chillers are a resource saving solution with a quick return on investment.
Option: Natural refrigerant available on request



Type	Working Temp. range °C	Pump max. L/min / bar	Cooling capacity kW at 15/0/-10/-20°C	Dimensions (W x D x H) mm	PK	Cat. No.
Unichiller® 017Tw	-10 ... +40	25 / 3,0	1,7 / 0,9 / 0,4 / --	400 x 440 x 1230	1	**9.859 317**
Unichiller® 020Tw	-20 ... +40	25 / 3,0	2,0 / 2,0 / 1,5 / 0,8	400 x 440 x 1230	1	**9.859 318**
Unichiller® 025Tw	-10 ... +40	25 / 3,0	2,5 / 1,2 / 0,6 / --	400 x 440 x 1230	1	**9.859 319**
Unichiller® 030Tw	-20 ... +40	26 / 3,0	3,0 / 3,0 / 2,0 / 1,0	400 x 440 x 1230	1	**9.859 320**
Unichiller® 040Tw	-10 ... +40	26 / 3,0	4,0 / 2,5 / 1,5 / --	400 x 440 x 1230	1	**9.859 321**
Unichiller® 055Tw	-10 ... +40	57/ 5,6	5,5 / 4,0 /2,0 / --	500 x 552 x 1261	1	**9.859 314**
Unichiller® 060Tw	-20 ... +40	80 / 5,6	6,0 /6,0 / 3,8 / 2,1	500 x 552 x 1261	1	**9.859 315**
Unichiller® 080Tw	-10 ... +40	84 / 5,6	8,0 / 4,65 / 2,35 / --	500 x 552 x 1261	1	**9.859 316**

1



1 Beer Force-Ageing-Test Bath BFT®5

Huber

We offer special air cooled circulator for the Beer Force-Ageing-Test. It is equipped with a programmer for the change between 0°C/40°C and 0°C/60°C in a 24 hour cycle.
Casings and bath parts are made of stainless steel.

Dimensions (WxDxH): 460 x 710 x 911mm

Type	Working Temp. range °C	Bath opening mm	Bath tank depth mm	Heating power W	Cooling capacity kW at 20 °C	PK	Cat. No.
BFT®5	-40 ... +80	350 x 410	270	2000	1.2	1	**9.857 399**

2



9.698 528

Compact Recirculating Cooler, F-Series

NEW!

JULABO

- Environmentally friendly operation with low energy consumption
- No side vents, instruments can be placed right next to other equipment
- All wetted parts made of stainless steel or high grade plastic
- Large, bright LED display
- Compact design and small foot print
- Splash-proof keypad
- Drain tap
- Easy filling

Type	Working Temp. range °C	Temp. stability ± °C	Cooling capacity kW at 20/0/-10°C	Pressure bar	Flow rate L / min.	PK	Cat. No.
F250	-10 to +40	0.50	0,25/0,18/0,09	0,35	15	1	**9.698 525**
F500	0 to +40	0.50	0,5/0,25	0,5	24	1	**9.698 528** 2
F1000	0 to +40	0.50	1,0/0,35	1,0	23	1	**9.698 526**

3



3 Flow coolers, FL series

JULABO

- Working temperature range covers -20°C to +40°C, the temperature stability of the PID control is ±0.5°C
- splash-proof keypad with integral mains switch
- large, bright LED display
- reliable Microprocessor PID temperature control
- filling level indicator
- powerful immersion pumps, suitable for continuous operation
- permissible temperature within return line: +80°C max.
- easy filling from the top with hinged protective lid
- low liquid level protection with visual and audible alarm signal
- stainless steel bath tanks
- removable venting grille for cleaning of the condenser
- front drain
- no side vents
- RS232 interface for PC connection
- Ingress protection class acc. to IEC 529: IP21
- pressure indicator
- adjustable bypass for pump pressure

Type	Working Temp. range °C	Temp. stability ± °C	Cooling capacity kW at 20/0/-10°C	Pressure bar	Flow rate L / min.	PK	Cat. No.
FL300	-20 to 40	0.50	0.3/0.2/0.15	0,35	15	1	**9.698 530**
FL601	-20 to 40	0.50	0.6/0.4/0.33	1,0	23	1	**9.698 531**
FL1201	-20 to 40	0.50	1.2/0.9/0.6	1,0	23	1	**9.698 532**
FL1203	-20 to 40	0.50	1.2/0.8/0.5	0,5-3,0	40	1	**9.698 533**
FL1701	-20 to 40	0.50	1.7/1.1/0.85	1,0	23	1	**9.698 534**
FL1703	-20 to 40	0.50	1.7/1.0/0.75	0,5-3,0	40	1	**9.698 535**
FL2503	-20 to 40	0.50	2.5/1.5/1.2	0,5-3,0	40	1	**9.698 536**
FL2506	-15 to 40	0.50	2.5/1.0/0.3	0,5-6,0	60	1	**9.698 537**
FL4003	-20 to 40	0.50	4.0/2.4/1.5	0,5-3,0	40	1	**9.698 538**
FL4006	-20 to 40	0.50	4.0/1.9/0.9	0,5-6,0	60	1	**9.698 539**
FL7006	-20 to 40	0.50	7.0/5.1/3.0	0,5-6,0	60	1	**9.698 540**
FL11006	-20 to 40	0.50	11.0/7.5/5.0	0,5-6,0	60	1	**9.698 541**
FL20006	-20 to 40	0.50	20.0/10/6	0,8-6,0	80	1	**9.698 550**

E & OE.

IMPRESSIVE ...

SMALL AND POWERFUL



Petite Fleur®
meets Grande Fleur®



- Working temperatures: -40 °C to +200 °C
- Incredibly compact dimensions
- Unique thermodynamics
- Highest cooling power density [w/l]
- Brilliant 5,7" touchscreen controller
- Ethernet, RS232 and USB interfaces
- Natural refrigerant propane R290

-125...+425°C

Petite Fleur and Grande Fleur are the smallest temperature control systems in the Unistat range. Thanks to their compact form, the units can be operated in confined spaces, for example laboratory fume hoods. Both models are predestined for the temperature control of small and medium sized research reactors.

huber
high precision thermoregulation

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1



1 Petite Fleur® and Grande Fleur® - the small Tangos®

NEW!

Huber

The small Tangos mark the entry level into the world of Unistats. The compact dimensions and unique thermodynamics make the Petite Fleur and Grande Fleur ideal for precise temperature control of research reactors. As for all Unistats also the Petite/Grande Fleur models have unique thermodynamic properties. In a direct comparison to other devices in this price class the systems stand alone when it comes to the highest temperature control speed. All models are extremely space saving, simple to operate and can be used flexibly at working temperatures of -40 to +200°C. All units use natural refrigerant as standard.

Temperature stability at -10°C:	0.01K
Temperature adjustment and indication:	digital
Internal temperature sensor:	Pt100
Interface digital:	Ethernet, USB (Host und Device), RS232
Alarm message:	optic, acoustic, relay
Heating power:	1.5kW
Refrigeration machine:	
Petite Fleur®/Petite Fleur®-eo/Grande Fleur®/ Grande Fleur-eo®:	air cooled, natural refrigerant
Petite Fleur® w/Grande Fleur w®:	water cooled, natural refrigerant
Circulation pump:	33 l/min (Petite Fleur®); 38 l/min (Grande Fleur®)
Max. delivery	
Max. delivery pressure	0.9bar
Net weight Petite Fleur®:	45kg
Net weight Grande Fleur®:	55kg
Power supply:	230V 1~ 50Hz
Protection class:	IP20
Min./max. ambient temperature:	5°C/40°C

Type	Working Temp. range max. °C	Cooling capacity kW at 200/20/0/-20/-40°C	Dimensions (W x D x H) mm	PK	Cat. No.
Petite Fleur®	-40 ... +200	0,48/0,48/0,45/0,27/0,04	260 x 450 x 504	1	**9.859 170**
Petite Fleur® w	-40 ... +200	0,48/0,48/0,45/0,27/0,04	260 x 450 x 504	1	**9.859 171**
Petite Fleur®-eo*	-40 ... +200	0,48/0,48/0,45/0,27/0,04	260 x 450 x 504	1	**6.258 888**
Grande Fleur®	-40 ... +200	0,60/0,60/0,60/0,35/0,04	295 x 540 x 565	1	**7.672 072**
Grande Fleur® w	-40 ... +200	0,60/0,60/0,60/0,35/0,04	295 x 540 x 565	1	**9.859 257**
Grande Fleur®-eo*	-40 ... +200	0,60/0,60/0,60/0,35/0,04	295 x 540 x 565	1	**9.859 258**
Grande Fleur® w-eo*	-40 ... +200	0,60/0,60/0,60/0,35/0,04	295 x 540 x 565	1	**9.859 259**

*for external open applications

2



2 Dynamic Temperature Control Systems Unistat®

The dynamic thermoregulation of the Unistat line introduced a revolution in fluid temperature control. Unistats are the ideal solution for fast and highly exact thermal control of external applications, e.g. reactors, autoclaves, miniplants, pilot systems, reaction calorimeters or distillation systems. In comparison to classical circulators Unistats are convincing in their unique thermodynamics for highly exact and reproducible results. The Unistat technology thereby guarantees to always have the shortest heating and cooling times as well as a large temperature range without bothersome fluid changes. There are over 60 models to choose from with cooling powers from 0.7kW to 130kW. What ever the application, Unistats provide professional scale-up offering the same stable process conditions from the development lab to production systems. Unistat temperature control systems make use of a professional range of functions for all requirements. The facilities encompass a colour touchscreen display, with comfortable menu guidance and a real-time graphics display of temperature progress, as well as an intelligent cascade temperature control and high performance speed controlled circulation pump. This is rounded off with a programmer, a ramp function, calendar start, customisable user menus, sensor calibration as well as analogue and digital interfaces.

Advantages and Functions:
- Working temperatures from -125°C to +425°C
- Previously unachievable performance
- Highly acurate, intelligent temperature control
- Maximum process stability and reproducability
- The fastest heating and cooling rates
- High Cooling Power from 0.7 to 130kW
- Large temperature range without fluid change
- Increased thermal fluid life
- Incredibly compact
- Brilliant 5.7" TFT-touchscreen with graphic display
- 2x USB (Host and Device), Ethernet and RS232 interface

Software upgrades for Huber Circulators - please see page 737.

E & OE.

1 Temperature control systems, Unistat® to -55°C

NEW!

1

Huber



Unistats are predestined for applications in process and chemical engineering, such as temperature control of reactors, autoclaves, miniplant/pilot systems, reactor blocks and calorimeters. Unistat temperature control systems with their unique thermodynamics provide highly accurate and reproducible results, guaranteeing the shortest heating and cooling times and a wide temperature range without fluid change. Environmentally and economically Unistats stand out, offering natural refrigerants and an efficient energy management system for reduced operating costs.

Heating capacity
Unistat® tango®/ tango® wl/405/405w/410w: 1.5/3.0kW
Unistat® 410: 3.0kW
Unistat® 425/425w: 2.0kW
Unistat® 430/430w: 4.0kW
Unistat® 510/510w: 6.0kW

Type	Working Temp. range °C	Pump max. L/min / bar	Cooling capacity kW at 250/200/100/0/-20/-40°C	PK	Cat. No.
Unistat® tango®	-45 ... +250	55 / 0.9*	0.7 / 0.7 / 0.7 / 0.7 / 0.4 / 0.06	1	**9.859 101**
Unistat® tango® wl	-45 ... +250	55 / 0.9*	0.7 / 0.7 / 0.7 / 0.7 / 0.4 / 0.06	1	**9.859 102**
Unistat® 405	-45 ... +250	55 / 0.9*	1.0 / 1.0 / 1.0 / 1.0 / 0.6 / 0.15	1	**9.859 108**
Unistat® 405w	-45 ... +250	55 / 0.9*	1.3 / 1.3 / 1.3 / 1.3 / 0.7 / 0.15	1	**9.859 107**
Unistat® 410w	-45 ... +250	55 / 0.9*	1.7 / 2.5 / 2.5 / 1.5 / 0.8 / 0.2	1	**9.859 126**
Unistat® 425	-40 ... +250	105 / 1.5**	2.0 / 2.0 / 2.0 / 2.5 / 1.8 / 0.2	1	**9.859 116**
Unistat® 425w	-40 ... +250	105 / 1.5**	2.8 / 2.8 / 2.8 / 2.5 / 1.9 / 0.2	1	**9.859 117**
Unistat® 430	-40 ... +250	90 / 1.7**	3.5 / 3.5 / 3.5 / 3.5 / 2.2 / 0.3	1	**9.859 118**
Unistat® 430w	-40 ... +250	90 / 1.7**	3.5 / 3.5 / 3.5 / 3.5 / 2.2 / 0.3	1	**9.859 119**
Unistat® 510	-50 ... +250	105 / 1.5**	5.3 / 5.3 / 5.3 / 5.3 / 2.8 / 0.9	1	**9.857 299**
Unistat® 510w	-50 ... +250	105 / 1.5**	5.3 / 5.3 / 5.3 / 5.3 / 2.8 / 0.9	1	**9.859 120**

*Integrated pressure control VPC
**VPC pressure control via optional bypass

2 Temperature control systems, Unistat® to -85°C

NEW!

2

Huber



Heating capacity
Unistat® 705/705w: 1.5/3.0kW
Unistat® 815/815w: 2.0kW
Safety class: FL, III
Supply requirements: 230/400V 50Hz (705/705w)
400V 50Hz (815/815w)

Dimensions (WxDxH)
Unistat® 705/705w: 425 x 400 x 720mm
Unistat® 815/815w: 460 x 604 x 1465mm

Type	Working Temp. range °C	Pump max. L/min / bar	Cooling capacity kW at 250/200/100°C	Cooling capacity kW at 0/-20/-40/-60/-80°C	PK	Cat. No.
Unistat® 705	-75 ... +250	55 / 0.9	0.6 / 0.6 / 0.6	0.65 / 0.6 / 0.6 / 0.3 / --	1	**9.859 105**
Unistat® 705w	-75 ... +250	55 / 0.9	0.6 / 0.6 / 0.6	0.65 / 0.6 / 0.6 / 0.3 / --	1	**9.859 106**
Unistat® 815	-85 ... +250	40 / 0.9	1.3 / 1.3 / 1.3	1.5 / 1.5 / 1.4 / 1.2 / 0.2	1	**9.859 121**
Unistat® 815w	-85 ... +250	40 / 0.9	1.5 / 1.5 / 1.5	1.5 / 1.5 / 1.4 / 1.2 / 0.2	1	**9.859 122**

Integraded VPC pressure control.



1



1 High temperature circulators Unistat® up to 425°C

NEW!

Huber

High-precision and space saving temperature control up to +425°C. The new high temperature thermostats of the Unistat range set new standards in safety, easy operation, and rapid, dynamic temperature control. The minimal internal volume allows the shortest heat-up times to be achieved. The working life and properties of the thermal fluid are also protected, by avoiding direct contact between the hot fluid and atmosphere. The high temperature Unistats are suitable for temperature control applications up to +425°C, e.g. a double jacketed reaction vessel (reactor), and pilot plants, as well as the semiconductor Industry and high temperature distillation. They are suitable for maintaining constant high temperatures, or to contain an exothermic reaction at high temperature.

Safety class: FL, III

Type	Temp. range max. °C	Heating capacity kW	Dimensions (W x D x H) mm	Supply req., 50 Hz V	Cooling capacity kW at 400/300/200/100°C	PK	Cat. No.
Unistat® TR401	+50 ... +400	3.0/9.0	288 x 379 x 890	230/400	-- / -- / -- / --	1	**6.258 173**
Unistat® TR401w HT	+50 ... +400	3.0/9.0	288 x 379 x 890	230/400	10.0 / 10.0 / 10.0 / 10.0	1	**9.857 315**
Unistat® TR402	+80 ... +425	3.0/9.0	288 x 332 x 870	230/400	-- / -- / -- / --	1	**9.859 125**
Unistat® T305	+65 ... +300	3.0/6.0	425 x 250 x 631	230/400	-- / -- / -- / --	1	**9.859 109**
Unistat® T305 HT	+65 ... +300*	3.0/6.0	425 x 250 x 631	230/400	--/ 3.2 / 2.3 / 0.6	1	**9.859 110**
Unistat® T305w HT	+65 ... +300	3.0/6.0	425 x 250 x 631	230/400	-- / 10.0 / 10.0 / 10.0	1	**9.859 111**
Unistat® T320w HT	+65 ... +300	12.0	460 x 554 x 1332	400	-- / 10.0 / 10.0 / 6.0	1	**9.859 113**
Unistat® T330w HT	+65 ... +300	24.0	460 x 554 x 1332	400	-- / 10.0 / 10.0 / 6.0	1	**9.859 115**
Unistat® T340w HT	+65 ... +300	48.0	600 x 704 x 1517	400	-- / 10.0 / 10.0 / 6.0	1	**9.859 124**
Unistat® T402	+80 ... +425	3.0/6.0	505 x 400 x 765	230/400	-- / -- / -- / --	1	**9.857 316**

* Lowest working temperature 15K above ambient temperature.

2



9.857 916

Highly Dynamic Temperature Control Systems Presto A30/A40/W40

NEW!

JULABO

The models of JULABO's new Presto generation set new standards for highly dynamic temperature control systems. They represent the optimal solution for highly precise external temperature control applications. The instruments feature extremely short heat-up and cool-down times, wide working temperature ranges and maximum performance with minimum dimensions. All models have an interactive touch screen for easy, menu-guided operation. The pump pressure is adjustable and displayed on the screen. Analog and a number of digital interfaces permit laboratory automation. Typical applications are temperature control of jacketed reactor vessels, reactor systems, autoclaves, distillations, pilot plants, semiconductor industries.

The advantages of PRESTO models:
- Extremely short heat-up and cool-down times
- Powerful circulating pump with adjustable pump pressure
- Wide working temperature ranges without change of thermal fluid
- Large TFT touch screen for interactive operation
- Digital and analog interfaces
- Handles and castors allow for easy set-up
- Low filling volume
- Small dimensions

3



9.857 917

Specifications

Temperature stability:	±0.01...0.05°C
Pump capacity	
Flow rate:	
A30	25L/min
A40/W40/A80/W80	16-40L/min
Pressure:	
A30	0.5bar
A40/W40/A80/W80	0.3 to 1.7bar

Type	Working Temp. range °C	Cooling capacity kW at 20 °C	Heating capacity kW	Dimensions (W x D x H) mm	PK	Cat. No.
A 30	-30 ... + 250	0,5	2.7	242 x 583 x 612	1	**9.857 915**
A 40	-40 ... + 250	1,2	2.7	323 x 583 x 662	1	**9.857 916** 2
W 40	-40 ... + 250	1,2	2.7	323 x 583 x 662	1	**9.857 917** 3
A 80	-80 ... + 250	1,2	1.8	430 x 650 1258	1	**9.857 918**
W 80	-80 ... + 250	1,2	1.8	430 x 650 1258	1	**9.857 919**
A 80t	-80 ... + 250	1,2	3.4	430 x 650 1260	1	**9.857 920**
W 80t	-80 ... + 250	1,2	3.4	430 x 650 1260	1	**9.857 921**

1 Beakers, glass, jacketed, type T

DURAN®. For heating and cooling liquids. Thermostatting liquid is circulating between the double walls of the beaker jacket. With glass olives (O.D. 12mm) for thermostat hoses. Coolant ram pressure: 0.5bar at maximum, operating temperature: +300°C at maximum. Special sizes available on request.

KGW



Capacity ml	Int. diam. mm	Ext. diam. mm	Int. height mm	PK	Cat. No.
250	55	70	115	1	**9.032 371**
600	77	95	135	1	**9.032 373**
2000	112	135	200	1	**9.032 376**

2 Beakers, glass, jacketed wiht PTFE-Olive, type T-GL

DURAN®. For heating and cooling liquids. Thermostatting liquid is circulating between the double walls of the beaker jacket. With glass-screw connections GL14 with PTFE olives (O.D. 9mm, T-GL2000 with GL18 and O.D. 10mm) for thermostat hoses. Coolant ram pressure: 0.5bar at maximum, operating temperature: +120°C at maximum. Special sizes available on request.

KGW



Capacity ml	Neck thread GL	Int. diam. mm	Ext. diam. mm	Int. height mm	PK	Cat. No.
250	14	55	70	115	1	**9.032 372**
600	14	77	95	135	1	**9.032 374**
2000	18	112	135	200	1	**9.032 377**

3 Hoses, metal

Insulated hoses of metal ensure the highest operational safety of your temperature control circuit. The high quality hoses offer the best heat transfer with optimum flow characteristics, hence reducing the power loss in external temperature control applications. The hoses are firmly screwed to the temperature control machine and the external application.

Huber



Type	Ext. diam. mm	Temp.-working range °C	Length cm	PK	Cat. No.
NW 12 M16 x 1	33	-50 to 200	100	1	**9.857 214**
NW 12 M16 x 1	33	-50 to 200	150	1	**9.857 215**
NW 12 M16 x 1	33	-50 to 200	200	1	**9.857 216**
NW 12 M16 x 1	33	-50 to 200	300	1	**9.857 217**
NW 12 M16 x 1	44	-100 to 350	100	1	**9.857 121**
NW 12 M16 x 1	44	-100 to 350	150	1	**9.857 122**
NW 12 M16 x 1	44	-100 to 350	200	1	**9.857 045**
NW 12 M16 x 1	44	-100 to 350	300	1	**9.857 124**
NW 12 M24 x 1.5	44	-100 to 350	100	1	**9.857 218**
NW 12 M24 x 1.5	44	-100 to 350	150	1	**6.229 781**
NW 12 M24 x 1.5	44	-100 to 350	200	1	**9.857 219**
NW 12 M24 x 1.5	44	-100 to 350	300	1	**9.857 220**
NW 12 M24 x 1.5	56	-120 to 400	100	1	**9.857 046**
NW 12 M24 x 1.5	56	-120 to 400	150	1	**9.857 047**
NW 12 M24 x 1.5	56	-120 to 400	200	1	**9.857 048**
NW 12 M24 x 1.5	56	-120 to 400	300	1	**9.857 049**
NW 20 M30 x 1.5	56	-100 to 350	100	1	**9.857 125**
NW 20 M30 x 1.5	56	-100 to 350	150	1	**9.857 126**
NW 20 M30 x 1.5	56	-100 to 350	200	1	**9.857 127**
NW 20 M30 x 1.5	56	-100 to 350	300	1	**9.857 128**
NW 25 M38 x 1.5	63	-100 to 350	100	1	**9.857 129**
NW 25 M38 x 1.5	63	-100 to 350	150	1	**9.857 130**
NW 25 M38 x 1.5	63	-100 to 350	200	1	**9.857 131**
NW 25 M38 x 1.5	63	-100 to 350	300	1	**9.857 132**

1



1 Thread adapters

Huber

Type	PK	Cat. No.
M16x1 male - M16x1 male	1	**9.857 176**
M16x1 female - M16x1 female	1	**9.857 177**
M16x1 male - G½ male	1	**9.857 178**
M16x1 male - G½ female	1	**9.857 179**
M16x1 female - R½ male	1	**9.857 180**
M16x1 female - G½ female	1	**9.857 181**
M16x1 male - G¾ female	1	**9.857 182**
M16x1 female - G¾ female	1	**9.857 183**
M16x1 female - M30x1.5 male	1	**9.857 184**
M16x1 male - M30x1.5 male	1	**9.857 185**
M16x1 male - M30x1.5 female	1	**9.857 186**
M24x1.5 female - M16x1 male	1	**6.227 404**
M24x1.5 female - ¾ NPT female	1	**9.857 209**
M24x1.5 male - M16x1 female	1	**9.857 210**
M24x1.5 male - R½ female	1	**9.857 211**
M24x1.5 female - R½ male	1	**9.857 212**
M24x1.5 male - M24x1.5 male	1	**9.857 213**
M30x1.5 male - M30x1.5 male	1	**9.857 187**
M30x1.5 female - G3/8 male	1	**9.857 188**
M30x1.5 male - G½ male	1	**9.857 189**
M30x1.5 male - R½ female	1	**9.857 190**
M30x1.5 female - G½ male	1	**9.857 191**
M30x1.5 female - G½ female	1	**9.857 192**
M30x1.5 male - G¾ male	1	**9.857 193**
M30x1.5 male - R¾ female	1	**9.857 194**
M30x1.5 female - ¾ NPT male	1	**9.857 208**
M30x1.5 female - G¾ female	1	**9.857 195**
M30x1.5 male - G1 male	1	**9.857 196**
M30x1.5 female - G1 female	1	**9.857 197**
M30x1.5 male - M38x1.5 female	1	**9.857 201**
R½ female - R½ female	1	**9.857 198**
R½ female - ¾ NTP female	1	**9.857 199**
M38x1.5 female - 1 NPT male	1	**9.857 200**
M38x1.5 female - R¾ male	1	**9.857 202**

Further thread adapters available on request

2



2 Accessories M16x1

NEW!

Huber

Accessories	PK	Cat. No.
Hose connector NW 8	1	**9.857 145**
Hose connector NW 12	1	**9.857 146**
Blank Plug	1	**9.857 147**
Nut	1	**9.857 148**
Micro hose connector NW 3.2	1	**9.857 149**
Adaptor 90°	1	**9.857 150**
Ball valve*	1	**9.857 151**
Ball valve**	1	**6.264 110**
2-way Header	1	**9.857 152**
3-way Header	1	**9.857 153**
4-way Header	1	**9.857 154**
5-way Header	1	**9.857 206**
2-way Valve System*	1	**9.857 155**
3-way Valve System*	1	**9.857 156**
4-way Valve System*	1	**9.857 157**
5-way Valve System*	1	**9.857 207**

*Temperature range: -20 to +140°C (max. 6 bar at +140°C)
**Temperature range: -60 to +200°C (max. 20 bar at +175°C)

E & OE.

1 Thermal fluids

Huber thermal fluids are recommended because they have the best possible thermodynamic and environmental characteristics. Safe reliable operation relies on compliance with safety standards to ensure optimal results.

Huber

1



Description	Type	Capacity litres	Temp. range °C	PK	Cat. No.
Thermal fluid MinOil	P20.190.40	5	+20 bis +190	1	**6.201 643**
Thermal fluid MinOil	P20.190.40	20	+20 bis +190	1	**6.239 618**
Thermal fluid SilOil	P20.275.50	5	+20 bis +275	1	**6.201 670**
Thermal fluid SilOil	P20.275.50	10	+20 bis +275	1	**6.203 535**
Thermal fluid SilOil	M20.195/235.20	5	-20 bis +195/235	1	**6.306 078**
Thermal fluid SilOil	M20.195/235.20	10	-20 bis +195/235	1	**6.250 420**
Thermal fluid SilOil	M40.165.10/200.10	5	-40 bis +165/200	1	**6.250 278**
Thermal fluid SilOil	M40.165.10/200.10	10	-40 bis +165/200	1	**6.304 378**
Thermal fluid SilOil	M60.115.05/200.05	5	-60 bis +115/200	1	**6.201 255**
Thermal fluid SilOil	M60.115.05/200.05	10	-60 bis +115/200	1	**6.225 263**
Thermal fluid SilOil	M90.055.03	5	-90 bis +55	1	**7.615 661**
Thermal fluid SilOil	M90.055.03	10	-90 bis +55	1	**6.202 172**

Further thermal fluids available on request

2 Thermal fluid DW-Therm

DW-Therm is a mixture of isometric triethoxysilanes and has been developed for hydraulically sealed systems.

Huber

2



- temperature range from -90°C to +200°C (hydraulically sealed systems)
- excellent stability at high temperatures
- low viscosity at low temperatures
- low volatility and pleasant odour
- easy handling (no creeping like silicone oils)
- good compatibility with silicone oils
- insoluble in water and environmentally friendly
- not classified as dangerous goods, no known toxicity

Specifications

Appearance and odour:	transparent, colourless or yellow liquid with characteristic odour
Silane content:	99%
Viscosity:	2.0 - 2.2 mm² /sec at 20°C
Density:	0.88g/cm³ at 15°C
Boiling range	228 - 235°C
Solidification at:	-137°C
Flash point:	101°C
Ignition temperature:	265°C
Usage:	closed systems

Description	Type	Capacity Litres	Temp. range °C	PK	Cat. No.
Thermal fluid DW-Therm	M90.200.02	10	-90 to +200°C	1	**6.201 320**

Thermal fluid DW-Therm HT

DW-Therm HT is a mixture of partially hydrogenated terphenyls. It is for use exclusively in high temperature Unistats.

Huber

- temperature range from +20°C to +340°C (hydraulically sealed systems)
- long lifetime at high temperatures under inert atmosphere: 3-4 years
- good thermal properties for heat transfer
- high thermal oxidation stability
- nontoxic

Specifications

Appearance:	clear, orange coloured liquid
Silane content:	99.5% partially hydrogenated naphtalenes
Viscosity:	51 mm²/sec at 20°C
Density:	1.043 g/cm³ at 20°C
Initial boiling point:	approx. 352°C
Solidification point:	-33°C
Flash point:	approx. 190°C
Ignition temperature:	approx. 385°C
Usage:	closed systems

Description	Type	Capacity Litres	Temp. range °C	PK	Cat. No.
Thermal fluid DW-Therm HT	P20.340.32	5	+20 ... +340	1	**6.204 286**
Thermal fluid DW-Therm HT	P20.340.32	10	+20 ... +340	1	**6.222 503**

1 2 Water Baths, PolyScience

NEW!

PolyScience

The PolyScience water baths are characterized by a user-friendly display, high precision, simple operation and an excellent price-performance ratio. The inclined display makes the readability and usage very comfortable. Easy to use Digital Temperature controller features three temperature pre-sets for one-touch selection of frequently used set-points plus a user settable high limit alarm that alerts if the bath temperature exceeds pre-set limits.

- Displays actual and set point temperature simultaneously
- Three push-button pre-sets for frequently used temperatures
- Integrated timer
- Calibration capability
- Five Reservoir sizes from 2 to 28 litres
- Reservoir drain (10, 20 and 28 liter baths)
- Primary and automatic safety thermostats.
- Stainless steel tank with hinged gable lid
- 3.25" illuminated LCD-Display
- Maximum Ambient Temperature: 40°C
- Sample tray included
- Temperature Range: Ambient + 5°C
- Temperature Uniformity ±0.2°C
- Temperature Stability: ±0.1°C

An optional high rise lid allows the interference-free placement of media bottles or flasks into the General Purpose Water Bath. For example: 4 x 1 litre flasks will fit into a 10 litre bath with the lid fully closed. These lids are available on request.

Type	Volume litres	Power consumption W	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
Water Bath, digital	2	120	99 x 109 x 152	229 x 267 x 305	1	**6.267 596**
Water Bath, digital, shallow	2	360	274 x 127 x 65	368 x 267 x 305	1	**6.268 105**
Water Bath, digital	5	360	274 x 127 x 152	368 x 267 x 305	1	**6.267 597**
Water Bath, digital	10	1000	269 x 295 x 152	393 x 432 x 305	1	**6.267 598**
Water Bath, digital	20	1400	432 x 241 x 152	572 x 445 x 305	1	**6.267 599**
Water Bath, digital	28	1400	432 x 241 x 203	546 x 415 x 358	1	**6.267 800**

1



2



3



3 LLG- Floating pellets, PP

NEW!

Pellets with 20mm diameter. Can cover 0.1m².
Protect against evaporation and fast temperature loss. Decrease hazardous vapors.
Resistant against most acids, bases, solvents and mineral oils.
Temperature stable up to +100°C.

Description	PK	Cat. No.
Floating pellets	250	**6.266 611**

E & OE.

Now available - PolyScience Digital Water Baths.



View set and actual temperature simultaneously.

Monitor and access samples with the clear, hinged lid.

Easily move bath with integrated handles.

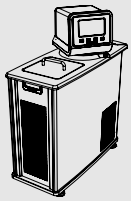
USES 1/3* LESS ELECTRICITY

Save time with rapid heat up.

Built-in timer.

*Compared to previous models.

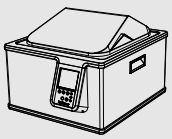
Circulating Water Baths



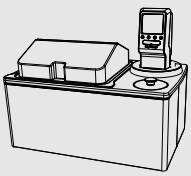
Recirculating Chillers



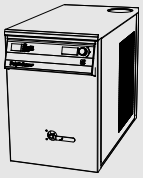
Non-Stirred Water Baths



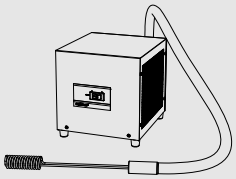
Application Specific Products



Non-Refrigerated Coolers



Low Temperature Coolers



Also from PolyScience

the leader in liquid Temperature Control Solutions® since 1963.

PolyScience®
Temperature Control Solutions

1



1 Basic digital water baths JB Academy

NEW!

Grant

An ideal choice for schools and colleges requiring a basic simple-to-use quality water bath. Base tray included as standard. A great value range consisting of three models.

- Ambient + 5°C to 95°C
- Unique Set and Forget™ technology, fast heat-up, reliable temperature control
- Stability ±0.5°C
- Simple, intuitive controls, quick and easy to set temperature
- Practical front panel lock, disables front panel controls preventing unintentional temperature changes
- 3 year warranty

Type	Volume litres	Rating kW	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
JBA5	5	0.35	281 x 131 x 132	335 x 215 x 200	1	**9.905 875**
JBA12	12	0.80	306 x 281 x 132	360 x 365 x 225	1	**9.905 876**
JBA18	18	1.40	281 x 485 x 132	335 x 570 x 275	1	**9.905 877**

2



2 Digital water baths JB Nova

NEW!

Grant

General purpose water baths with stable temperature control, simple controls and fast heat up. A choice of four models with a base tray and lid included as standard.

- Ambient +5°C to 95°C
- Unique Set and Forget™ technology, fast reliable temperature control
- Stability ±0.5°C
- Simple, intuitive controls, quick and easy to set temperature
- Drain tap on 12L, 18L and 26L baths
- Practical front panel lock - disables front panel controls preventing unintentional temperature changes
- 3-year warranty

Type	Volume litres	Rating kW	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
JBN5	5	0.35	281 x 131 x 132	335 x 215 x 200	1	**9.905 870**
JBN12	12	0.80	308 x 281 x 132	360 x 380 x 225	1	**9.905 871**
JBN18	18	1.40	281 x 485 x 132	335 x 590 x 275	1	**9.905 872**
JBN26	26	1.40	278 x 481 x 182	335 x 590 x 275	1	**9.905 873**

3



3 Unstirred water baths SUB Aqua Pro series, digital

NEW!

Grant

High quality and excellent temperature stability, in a value-for-money package designed to meet the needs of the world`s researchers. The SUB Aqua Pro range is composed of eight models, including shallow and dual baths.

- Three programmable temperature presets
- Drain tap on SUB Aqua 12 Pro,18 Pro, 26 Pro and 34 Pro
- Front panel lock-out
- Countdown timer with audible buzzer
- Ambient +5°C to 99°C operation
- Stability ±0.2°C
- Digital PID control for quick heat-up and precision control throughout the temperature range
- User-settable sample protection and fixed thermal cut-out
- High grade stainless steel tanks
- Wide range of tanks sizes and accessory options to suit different requirements

Available as 120V or 230V.

Type	Volume litres	Rating kW	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
SUB Aqua 2 Pro	2	0.25	131 x 117 x 132	185 x 200 x 200	1	**9.905 860**
SUB Aqua 2s Pro	2	0.35	289 x 139 x 47	335 x 215 x 150	1	**9.905 861**
SUB Aqua 5 Pro	5	0.35	281 x 131 x 132	335 x 215 x 200	1	**9.905 862**
SUB Aqua 12 Pro	12	0.80	306 x 281 x 132	360 x 380 x 225	1	**9.905 863**
SUB Aqua 18 Pro	18	1.05	281 x 485 x 132	335 x 590 x 275	1	**9.905 864**
SUB Aqua 26 Pro	26	1.05	278 x 481 x 182	335 x 590 x 275	1	**9.905 865**
SUB Aqua 34 Pro	34	1.30	281 x 635 x 180	335 x 770 x 275	1	**9.905 866**
SUB Aqua Dual Pro	5 & 12	1.15	281 x 131 x 132 & 306 x 281 x 132	545 x 380 x 225	1	**9.905 867**

E & OE.

1 Water baths, TW series

JULABO

- microprocessor technology with PID temperature control
- bright Multi-Display (LED) indicates five different temperature values
- splash-proof mains switch, built into a plastic membrane keypad
- easy-to-use controls
- timer for selecting desired operating period
- RS232 interface provided
- comprehensive range of accessories

Bath lid not included.



Type	Capacity Litres	Working Temp. range °C	Temp. stability ± °C	Heating power W	Bath opening mm	Bath tank depth mm	PK	Cat. No.
TW2	2	20 to 99.9	0.2	1000	150 x 130	110	1	**6.207 044**
TW8	8	20 to 99.9	0.2	2000	230 x 270	140	1	**9.906 424**
TW12	12	20 to 99.9	0.2	2000	350 x 270	140	1	**9.906 425**
TW20	20	20 to 99.9	0.2	2000	500 x 300	180	1	**9.906 426**

2 Lids for Water baths, TW series

NEW!

One-piece moulded, transparent Makrolon® lids with handle and hinges.

JULABO

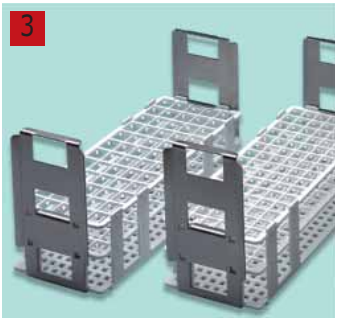


For	Width mm	Depth mm	Height mm	PK	Cat. No.
TW2	170	160	160	1	**6.229 213**
TW8	290	320	160	1	**9.906 398**
TW12	400	320	160	1	**9.906 399**
TW20	560	350	170	1	**9.906 401**

3 Racks for Water baths, TW series

Test tube racks.

JULABO



For	Description	PK	Cat. No.
TW2	24 test tubes, 16/17 mm dia.	1	**6.238 821**
TW8/TW12/TW20	60 test tubes, 16/17 mm dia.	1	**9.906 431**
TW8/TW12/TW20	90 test tubes, 12/13 mm dia.	1	**9.906 432**
TW8/TW12/TW20	90 microlitre vessels, 11/12 mm dia.	1	**9.906 433**
TW8/TW12/TW20	21 test tubes, 30/31mm dia.	1	**9.906 434**

4 LLG- Floating pellets, PP

NEW!

Pellets with 20mm diameter. Can cover 0.1m².
Protect against evaporation and fast temperature loss. Decrease hazardous vapors.
Resistant against most acids, bases, solvents and mineral oils.
Temperature stable up to +100°C.



Description	PK	Cat. No.
Floating pellets	250	**6.266 611**





1 Incubation/Inactivation Water Baths

Water Baths for incubations and inactivations of cultures *GFL*

Models 1002-1005/1008/1012/1013

Microprocessor controlled temperature regulation. Temperature display and setting digitally via LED display in 0.1°C increments. Temperature constancy ±0.1°C, temporal at 50°C.

Temperature range from approx. 5°C above ambient temperature to 99.9°C; after installation of a water level regulator 1919 (accessory) from approx. 3°C above tap water temperature to 99.9°C.

Short heating-up times. Electronic overtemperature cut-out, 4°C above set temperature and electromechanical >130°C. Electronic monitoring of the temperature regulator. In case of failure the cause of the fault is shown on the display. Soft touch keys with clear symbols. Interior (bath interior and heating element, cover frame, lid and perforated floor) made of stainless steel. Standard equipment includes lid and perforated floor*.
Tip-up, insulating lid with inner chamber, no dripping back of condensate into the vessels. Corrosion-resistant outer housing is made of electrolytically galvanized sheet steel, powder-coated. Drain cock at the back. The units are tested according to the German Equipment Safety Law and have the CE mark. Electrical connection: 230 volt/50...60 Hz (other voltages available on request).

Model 1005

Especially suitable for warming medical hot packs. *Water bath 1005 is supplied without perforated floor if the rack for hot packs 1923 (accessory) is ordered.

Models 1012/1013

The circulation system ensures an optimal temperature uniformity throughout the whole bath. An electric motor with rotary magnet is flanged to the bath floor. Its torque is transmitted to a PTFE coated stirring magnet in the bath. The stirring magnet forces the water into the centre of the bath and then evenly back again.

Type	Capacity Litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Power W	Weight kg	PK	Cat. No.
1002	7	340 x 395 x 255	245 x 200 x 145	1000	9.0	1	**9.905 902**
1003	14	500 x 440 x 255	400 x 245 x 145	1500	12.5	1	**9.905 903**
1004	21	700 x 440 x 255	600 x 245 x 145	1500	16.7	1	**9.905 904**
1005	40	510 x 490 x 445	410 x 296 x 315	1500	20.7	1	**9.905 905**
1008	20	500 x 440 x 325	400 x 245 x 205	1500	14.7	1	**9.905 908**
1012	7	340 x 395 x 325	245 x 200 x 145	1000	10.6	1	**9.905 912**
1013	14	500 x 440 x 325	400 x 245 x 145	1500	14.6	1	**9.905 913**

Table of racks held by water baths 1002-1013

GFL

Bath model	Max. number of rack types held Rack 1920	Rack 1921	Rack 1922	Rack 1923	Rack 1942
1002	4	4	4	-	1
1003/1008	8	8	8	-	2
1004	12	12	12	-	3
1005	9	9	9	1	2
1012	4	4	4	-	1
1013	8	8	8	-	2



9.905 970

Stainless steel. 1920/1921/1922. Max height: 185mm.

Type	Description	PK	Cat. No.
1920	With 20 apertures, each 18 mm diameter	1	**9.905 970**
1921	With 5 apertures, each 31 mm diameter	1	**9.905 971**
1922	With 20 apertures each 13 mm diameter	1	**9.905 972**



3 Water Level Regulator

NEW!

Accessory **for Shaking Water Baths 1083, 1086, 1092 and for Water Baths 1002 to 1013.** *GFL*
Adjustable, to maintain a desired level of water and to cool **Shaking Water Bath 1083 and Water Baths 1002-1013** (from approx. 3°C above tap water temperature).

Type	PK	Cat. No.
1919	1	**9.905 986**

E & OE.

1 Steam Bath 1023



For gentle steaming work using Erlenmeyer flasks, bottles, etc. Bath, cover frame and perforated floor above the heating element are made of stainless steel. *GFL*
Temperature range from approx. 5°C above ambient to boiling point, with temperature control by thermostat. Heating element protected by overtemperature cut-out. The adjustable water level regulator at the back of the unit and the set of rings are supplied as standard.
With removable, square cover (W 265mm x L 265mm) accommodating a 9-part set of rings, in heat-resistant plastic, which can be split. The aperture diameter can be adjusted in approx. 20mm steps (min. 32.5/max. 173.5mm). The bath housing is made of powder coated, electrolytically galvanized sheet steel. Mains supply 230V 50/60 Hz, 1.0kW (Other voltages available on request).
The unit is tested according to the German Equipment Safety Law and has the CE mark.

Type	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Capacity Litres	Power W	Weight kg	PK	Cat. No.
1023	240 x 240 x 120	342 x 400 x 180	7	1000	9	1	**9.905 923**

Inserts and support rod for water bath 1023 on request..

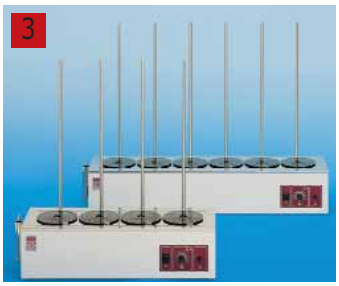
2 Water Baths for Fume Hoods 1031 and 1032



Special baths for gentle steaming work with Erlenmeyer flasks, bottles, etc., also suitable for use in fume hoods. Bath, removable recessed lid with holes and perforated floor above the heating element made of stainless steel. *GFL*
Temperature range from approx. 5°C above ambient to boiling point, with thermostatic temperature controller. Heating element protected by over-temperature cut-out. The apertures in the lid are covered by sets of rings in heat-resistant plastic. The adjustable water level regulator at the right-hand side of the unit is included. The units are tested according to the German Equipment Safety Law and have the CE mark. Electrical connection: 230V/50/60Hz (other voltages on request).

Type	Apertures with sets of rings	Top diam. mm	External dimensions (W x D x H) mm	Power W	Working height mm	Weight kg	PK	Cat. No.
1031	6	91	430 x 300 x 155	1500	100	6.1	1	**9.905 931**
1032	8	111	670 x 300 x 155	1500	100	8.2	1	**9.905 932**

3 Multiple Water Baths 1041 and 1042



For gentle steaming work with Erlenmeyer flasks, bottles, etc. Bath interior, frame with apertures and perforated floor above the heating element made of stainless steel. *GFL*
Temperature range from approx. 5°C above ambient to boiling point, with thermostatic temperature control. Heating element protected by overtemperature cut-out. The 131mm dia. apertures in the frame are covered by sets of rings in heat resistant plastic. With stainless steel support rod, 600mm x 12mm L x diameter behind each opening, for securing vessels. A water level regulator is included on the left-hand side of the bath. Working height 90mm. The units are tested according to the German Equipment Safety Law and have the CE mark.
Electrical connection: 230 Volt/50/60Hz (other voltages available on request).

Type	Apertures with sets of rings	Top diam. mm	External dimensions (W x D x H) mm	Power W	Working height mm	Weight kg	PK	Cat. No.
1041	4	131	682 x 232 x 190	1000	90	12.0	1	**9.905 941**
1042	6	131	982 x 232 x 190	1500	90	16.0	1	**9.905 942**

Water baths WNB/WNE

A combination of high-grade, anti-corrosion stainless steel and state-of-the-art technology. Two performance classes available: "Basic" and "Excellent", tuned to varying requirements and applications.
Basic: the water bath for routine processes, with integral timer adjustable from 1min. up to 99.59 hrs, and with delayed switch-on and programmable hold time.
Excellent: with enhanced features for overtemperature protection, liquid level monitoring and continuous, long-term tests using two high-grade Pt100 sensors. The integral timer range is from 1 min. up to 999 hrs and allows a setpoint-dependent hold time to be programmed, in addition to all the Basic-level features. Audible alarms for overtemperature, low liquid level and programme end make operation even more convernient.

Interior - Heating Concept:
- easy-to-clean, grade 1.4301 (ASTM 304), laser-welded, stainless steel interior, reinforced by deep drawn ribbing
- corrosion-proof, large-area heating surface on 3 sides of the tank

1



1 Water baths WNB

Memmert

Control:
- microprocessor PID-temperature controller with integral autodiagnostic system and fault indicator
- solid state switching unit
- one, class A, 4-wire Pt100 sensor
- integral digital timer from 1 min. to 99.59 hours for:

Continuous operation
Wait (delayed On for continuous and limited timed operation)
Hold
- digital display (LED) of set and actual temperature and of (remaining) programme time
- LEDs for indication of programme status

Overtemperature protection (dual):
- if an overtemperature condition occurs due to a fault, heating is switched off at approx. 10°C above the set temperature (fixed value)
- an independent, mechanical, TB class 1 temperature limiter switches the heating off at approx. 30°C above max. bath temperature

With textured, grade 1.4301 (ASTM 304), corrosion resistant, stainless steel housing.

Without covers - please order separately.
Specifications

Working-temperature range: at least 5°C above ambient temperature up to +95°C with additional boiling mode (+100°C)
Setting temperature-range: +10°C up to +95°C and boiling mode
Power supply: 230V, 50/60Hz; 115 V, 50/60 Hz no extra cost

Type	Capacity Litres	Internal dimensions (W x D x H) mm	Housing (W x D x H) mm	Weight kg	Power consumption W	PK	Cat. No.
WNB7	7	240 x 210 x 140	468 x 356 x 238*	11	1200	1	**9.906 581**
WNB10	10	350 x 210 x 140	578 x 356 x 238*	13	1200	1	**9.906 582**
WNB14	14	350 x 290 x 140	578 x 436 x 238*	15	1800	1	**9.906 583**
WNB22	22	350 x 290 x 220	578 x 436 x 296*	17	2000	1	**9.906 584**
WNB29	29	590 x 350 x 140	818 x 516 x 238*	24	2400	1	**9.906 585**
WNB45	45	590 x 350 x 220	818 x 516 x 296*	26	2800	1	**9.906 586**

* High with flat cover.

2



2 LLG- Floating pellets, PP

NEW!

Pellets with 20mm diameter. Can cover 0.1m².
Protect against evaporation and fast temperature loss. Decrease hazardous vapors.
Resistant against most acids, bases, solvents and mineral oils.
Temperature stable up to +100°C.

Description	PK	Cat. No.
Floating pellets	250	**6.266 611**

E & OE.

1 2 3 4 Water baths WNE

Memmert

Control:
- fuzzy-supported, PID microprocessor controller with integral autodiagnostic system and fault indication
- solid state switching unit
- 2 class A , 4-wire Pt100 sensors, mutually monitoring and controlling the performance at the same temperature value
- digital timer from 1 min to 999 hours for:

On (continuous operation)
Delayed On
Hold, or set temperature-dependent Hold, with fixed dwell time
- digital display (LED) of all set parameters, such as temperature, time and alarm values
- calibration facility on controller
- with audible and visual alarms at programme end, as input keypress confirmation and if low liquid level occurs (heating is switched off automatically)

Triple Overtemperature Protection:
- in case of overtemperature due to a fault, the heating is switched off at approx. 10°C above the set temperature (fixed value)
- independent, protection class 3.1, TWW electronic overtemperature controller, or protection class 2, TWB overtemperature limiter, are adjustable in set-up menu by the user
- class 1, TB mechanical temperature limiter switches the heating off at approx. 30°C above max. bath temperature
- set value display resolution: 0.1°C below 99.9°C, 1°C above 100°C

Textured, grade 1.4301 (ASTM 304), corrosion resistant stainless steel housing

Without lids - please order separately.

Specifications:

Working-temperature range:	at least 5°C above ambient up to +95°C with additional boiling mode (+100°C)
Setting temperature-range:	+10°C up to +95°C and boiling mode
Power supply:	230V, 50/60Hz; 115 V, 50/60 Hz no extra cost

Type	Capacity Litres	Internal dimensions (W x D x H) mm	Housing (W x D x H) mm	Weight kg	Power consumption W	PK	Cat. No.
WNE7	7	240 x 210 x 140	468 x 356 x 238*	11	1200	1	**9.906 591**
WNE10	10	350 x 210 x 140	578 x 356 x 238*	13	1200	1	**9.906 592**
WNE14	14	350 x 290 x 140	578 x 436 x 238*	15	1800	1	**9.906 593**
WNE22	22	350 x 290 x 220	578 x 436 x 296*	17	2000	1	**9.906 594**
WNE29	29	590 x 350 x 140	818 x 516 x 238*	24	2400	1	**9.906 595**
WNE45	45	590 x 350 x 220	818 x 516 x 296*	26	2800	1	**9.906 596**

*High with flat cover.

1



2



3



4



Accessories for all Memmert Water baths and Oil baths

NEW!

Stainless steel flat cover with openings and ring sets. Stainless steel gabled cover. *Memmert*

Shaking device:
Shaking device including support frame (for racks or support basket with perforated mounting shelf) for use in water baths, shaking speed 35-160 strokes per minute (horizontal back/forth movement) requires special gabled cover

Peltier Cooling Device CDP115
For precise operation with temperatures starting from +10°C. The temperature is controlled via the electronic controller of the waterbath with a precision of ±0.1 K
Easy fitting to bath by snap-on-technology, suitable for all tank sizes.
Power supply: 230 V, 50/60 Hz or 115 V, 60 Hz (please state in case of order)
Effective cooling capacity: 115W
Pumping capacity of circulation pump for coolant: 600ml/min.

Type	For Volume l	Well format	Diam. mm	PK	Cat. No.
Flat cover for water baths / oil baths	7	1	147	1	**9.906 530**
Flat cover for water baths / oil baths	10	3	107	1	**9.906 531**
Flat cover for water baths / oil baths	14	6	87	1	**9.906 532**
Flat cover for water baths / oil baths	22	6	87	1	**9.906 533**
Flat cover for water baths / oil baths	29	8	107	1	**9.906 534**
Flat cover for water baths / oil baths	45	8	107	1	**9.906 537**
Gabled cover for water baths / oil bath	7			1	**9.906 550**
Gabled cover for water baths / oil bath	10			1	**9.906 551**
Gabled cover for water baths / oil bath	14			1	**9.906 552**
Gabled cover for water baths / oil bath	22			1	**9.906 553**
Gabled cover for water baths / oil bath	29			1	**9.906 554**
Gabled cover for water baths / oil bath	45			1	**9.906 555**
Special gabled cover for WNB/WNE29/45	29/45			1	**6.228 924**
Special gabled cover for WNB/WNE14/22	14/22			1	**6.306 619**
Constant level device for WNB / WNE / WPE				1	**9.906 650**
CDP115 Peltier Cooling Device				1	**9.906 651**
Bottom grid for model WNB/WNE/ONB7				1	**6.302 001**
Bottom grid for model WNB/WNE/ONB10				1	**7.076 000**
Bottom grid for model WNB/WNE/ONB22				1	**7.076 101**
Bottom grid for model WNB/WNE/ONB29				1	**7.083 478**
Bottom grid for model WNB/WNE/ONB45				1	**6.801 467**
Shaking device	29/45			1	**6.228 923**
Shaking device	14/22			1	**7.075 941**

Accessories for shaking waterbath are available on request.

1



1 Water bath protection agent for water baths and shaking water baths

ProAquaTop prevents the formation of algae, bacteria, and mould. 4ml per litre of water required. Replacement of the bath water is indicated by fading of the blue colouration. *GFL*
Please use biocides safely. Always read labels and product information before use.

Type	Volume ml	PK	Cat. No.
1910	200	1	**9.905 957**
1911	3 x 200	3	**9.905 958**
1912	6 x 200	6	**9.905 959**

2



2 Water bath preservative liquid Aqua Stabil

- Prevents build-up of algae and bacteria in bath tanks providing hygienic operation *JULABO*
- No contamination of the tank or immersion thermostat components
- Economical - only 2 ml of Aqua Stabil is required for every 1 litres of water
- Remains effective for weeks, as shown by colour indicator.

Capacity ml	PK	Cat. No.
100 ml bottle	1	**9.858 040**

E & OE.

Shaking water baths LSB Aqua Pro

NEW!

1

Grant

- Reliable linear shaking mechanism for consistent results
- Excellent temperature stability and uniformity of ±0.1°C
- Simple controls, clear, bright display
- Set and Forget™ technology - fast heat-up accurate temperature control
- Extensive choice of trays for a wide variety of vessels. Trays sold separately
- Discreet magnetically coupled shaking mechanism maximises working area
- Advanced dry start/run dry protection - prevents costly service repairs



6.264 684

Minimum working depth:	60mm
Temperature range:	ambient +5 to 99°C
Display:	LED
Linear shaking speed:	20 to 200rpm (depending on load)
Shaking speed display resolution:	1rpm
Linear shaking stroke length:	20mm
Timer:	1 to 999min
Drain tap:	yes
Supply voltage:	220-230V

Type	Capacity L	External dimensions (W x D x H) mm	Dimensions Shaking trays (D x W) mm	PK	Cat. No.
LSB12	12.0	360 x 380 x 275	240x 235	1	**6.264 684** 1
LSB18	18.0	335 x 565 x 275	420x 235	1	**6.264 685**

2 Shaking water bath OLS 26 Aqua Pro

NEW!

2

Grant

A combined orbital/linear shaking bath for ultimate flexibility and usability. Combined orbital/linear motion in one bath, simply rotate tray carrier 180°

- Excellent temperature stability and uniformity of ±0.1°C
- Adjustable shaking speed/intensity for application optimisation
- Set and Forget™ technology - fast heat-up accurate temperature control
- Extensive choice of trays for a wide variety of vessels. Trays sold separately
- Includes adjustable high temp cut-off/alarm, countdown timer, presets, calibration facility and dry start/run dry protection
- Discreet magnetically coupled shaking mechanism maximises working area



Tank size:	26l
Minimum working depth:	70mm
Temperature range:	ambient +5 to 99°C (0 to 99°C with accessory cooling)
Uniformity:	±0.1°C
Stability:	±0.1°C
Display:	2 x LED (individual displays & controls for temperature and shaking speed)
Orbital and Linear shaking speed:	20 to 200rpm (depending on load)
Orbital shaking radius:	9mm
Shaking speed display resolution:	1rpm
Linear shaking stroke length:	18, 28 & 36mm
Shaking tray area:	380 x 235mm
Timer:	1 to 999min
Drain Tap:	yes
Supply voltage:	220-230V

Type	PK	Cat. No.
OLS 26	1	**6.264 683**

3 Shaking water bath lids

NEW!

3

Grant

Lids for shaking water baths aqua pro range. For use at temperatures above 60°C and below room temperature.



Type	For	Material	PK	Cat. No.
LS200	OLS26	stainless steel	1	**9.905 809**
LU14	LSB12	stainless steel	1	**9.905 771**
LU28	LSB18	stainless steel	1	**9.905 772**
AQL12	LSB12	polycarbonate	1	**6.236 450**
AQL26	OLS26, LSB18	polycarbonate	1	**6.255 638**

1



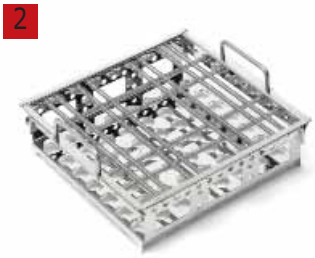
1 Accessories for shaking water baths

NEW!

Grant

Type	For	PK	Cat. No.
Refrigerated immersion cooler CC26	OLS26	1	**6.264 808**
Cooling coil CW26	OLS26	1	**6.264 809**
Spring clamp SC-25	25ml flask	1	**6.264 810**
Spring clamp SC-50	50ml flask	1	**6.264 811**
Spring clamp SC-100	100ml flask	1	**6.264 812**
Spring clamp SC-250	250ml flask	1	**6.264 813**
Spring clamp SC-500	500ml flask	1	**6.264 814**
Spring clamp SC-1000	1000ml flask	1	**6.264 815**
Holder SH	deep well plate	1	**6.264 816**
Spare kit, 10 short and 6 long springs	for use with universal tray	1	**6.264 817**

2



2 Versatile trays for shaking water bath

NEW!

Grant

Versatile stainless steel tray. Designed to accommodate a variety of vessels. Adjustable spring configuration for maximum flask capacity.

Type	For	PK	Cat. No.
TU12	LSB12	1	**6.264 687**
TU18	LSB18	1	**6.264 688**
TU26	OLS26	1	**6.264 686**

3



6.264 690

Test tube tray for shaking water baths

NEW!

Grant

Test tube tray for shaking water baths. Compatible with H1 test tube racks.

Type	For	PK	Cat. No.
Test tube tray	OLS26	1	**6.264 689**
Test tube tray	LSB12	1	**6.264 690** 3
Test tube tray	LSB18	1	**6.264 691**

4



4 Plain trays for shaking water baths Series OLS/LSB

NEW!

Grant

Type	For	PK	Cat. No.
Flask tray	OLS26	1	**6.264 695**
Flask tray	LSB12	1	**6.264 696**
Flask tray	LSB18	1	**6.264 697**
Base tray	LSB12	1	**6.264 698**
Base tray	OLS26/LSB18	1	**6.264 699**

5



5 Test tube racks for shaking water bath, SR series

NEW!

Grant

Type H1-series test tube racks. Stainless steel, 200 x 75mm. The OLS 26 holds up to 5 SR racks, LSB12 holds up to 3 SR racks and LSB18 holds up to 5 SR racks. Choice of 7 variants to accommodate different tube diameters and microtubes.

Type	For tubes	PK	Cat. No.
Test tube rack SR-10	48 x 10mm tubes	1	**6.264 800**
Test tube rack SR-13	44 x 13mm tubes	1	**6.264 801**
Test tube rack SR-16	24 x 16mm tubes	1	**6.264 802**
Test tube rack SR-19	21 x 19mm tubes	1	**6.264 803**
Test tube rack SR-25	12 x 25mm tubes	1	**6.264 804**
Test tube rack SR-30	10 x 30mm tubes	1	**6.264 805**
Test tube rack SR-SE	119 x 0,5ml microtubes	1	**6.264 806**
Test tube rack SR-LE	48 x 1,5ml microtubes	1	**6.264 807**

E & OE.

1 Shaking Water Bath 1083



GFL

With Reciprocating Motion.
Universally applicable for shaking tasks that require exactly reproducible temperatures.
For gentle mixing or vigorous shaking. Microprocessor controlled temperature regulation. Temperature display and setting via LED display in 0.1°C increments. Temperature range approx. 5°C above ambient to +99.9°C, alternatively after installation of water level regulator 1919 (accessory) approx. 3°C above tap water temperature to +99.9°C.
Optimum temperature distribution throughout the whole bath interior.
Overtemperature cut-out: electronic, 4°C above set temperature, and electro-mechanical >130°C. Electronic monitoring of the temperature controller. Maintenance-free and durable shaking device, electronically controlled and continuously adjustable from 10 to 250rpm, with soft-start. Constant shaking frequency, independent of load, even when in continuous operation. All parts in contact with water made of stainless steel. No dripping back of condensate into the vessels due to double-walled insulating lid with internal gable. Corrosion-resistant housing is made of powder-coated, electrolytically galvanized sheet steel. Accessories to accept various kinds of vessels are quickly and safely attachable to the shaking device. Easily removable shaking rack. A drain tap is provided to empty the bath.
Tested according to the German Equipment Safety Law and CE marked.

Specifications

External dimensions (WxDxH):	715 x 520 x 330mm
Internal dimensions (WxDxH):	450 x 300 x 160mm
Usable capacity:	20 litres
Usable bath height:	190mm
Net/gross weight:	28/32kg
Shaking motion:	Reciprocating, can be switched on/off
Temperature constancy (temporal):	±0.1°C
Temperature display:	Digital LED
Overtemperature cut-out:	electronic 4°C above set temperature, and electro-mechanical > 130°C
Shaking frequency:	10 to 250rpm.
Shaking amplitude:	22mm
Supply requirements:	230V 50/60Hz, 1.5kW (alternative voltage models are available, details on request)

Type	PK	Cat. No.
1083	1	**9.905 983**

2 Shaking Water Bath 1086



GFL

Generally as model 1083, but with digital display of temperature and shaking frequency. Cooling coil supplied as standard. Tested according to the German Equipment Safety Law and CE marked.

Technical Specification

Shaking speed display:	Digital LED
Net/gross weight:	30/34kg
Shaking amplitude:	22mm

Type	PK	Cat. No.
1086	1	**9.905 984**

3 Shaking Water Bath 1092



GFL

Generally as model 1086, but with orbital motion. Cooling coil supplied as standard. Tested according to the German Equipment Safety Law and CE marked.

Technical Specification

External dimensions (WxDxH):	635 x 505 x 400mm
Internal dimensions(WxDxH):	450 x 300 x 160mm
Usable capacity:	20 litres
Temperature range:	approx. 5°C above ambient to +80°C, with water level regulator approx. 3°C above tap water temperature to +80°C
Net/gross weight:	35/40kg
Shaking motion:	Orbital, can be switched on/off
Shaking amplitude:	14mm dia.

Type	PK	Cat. No.
1092	1	**9.905 985**



1 Water Level Regulator

NEW!

GFL

Accessory **for Shaking Water Baths 1083, 1086, 1092 and for Water Baths 1002 to 1013.**
Adjustable, to maintain a desired level of water and to cool **Shaking Water Bath 1083 and Water Baths 1002-1013** (from approx. 3°C above tap water temperature).

Type	PK	Cat. No.
1919	1	**9.905 986**

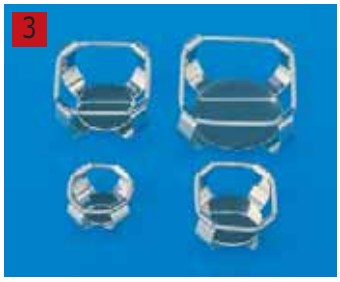


2 Tray type 3960

GFL

Accessory for **Shaking Water Baths 1083, 1086 and 1092.**
Stainless steel, with holes to accept clamps for Erlenmeyer flasks, holder for reaction vessels 3926 and test tube racks 3924 and 3925. The tray has two handles that reach above the waters surface, for easy inserting and removing from the bath.

Type	PK	Cat. No.
3960	1	**9.837 960**



3 Clamps for Erlenmeyer Flasks

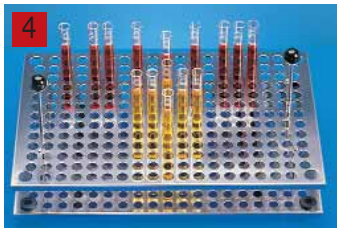
NEW!

GFL

Accessory for **Shaking Water Baths 1083, 1086 and 1092**.
Stainless steel, to be screwed onto **shaking tray 3960**. Supplied complete with fixing material (see also shaking shakers and incubators).

Type	For flasks ml	Max. number per tray	PK	Cat. No.
3983	25	52	1	**9.837 983**
3984	50	33	1	**9.837 984**
3985	100	22	1	**9.837 985**
3986	200	15	1	**9.837 986**
3987	250 to 300	13	1	**9.837 987**
3988	500	10	1	**9.837 988**
3989	1000	6	1	**9.837 989**

Type 3989 raised lid required (on request).

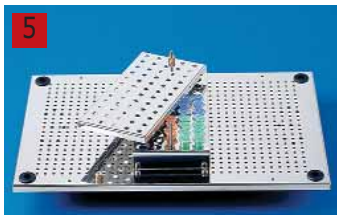


4 Test tube racks

GFL

Accessory for **Shaking Water Baths 1083, 1086 and 1092**.
Stainless steel, with two handles for easy insertion and removal from the bath.

Type	For neck diam. mm	Max. no. plates	PK	Cat. No.
3920	16/17, max. length 180mm	243	1	**9.837 966**
3921	31	63	1	**9.837 967**
3922	12, max. length 180mm	372	1	**9.837 968**

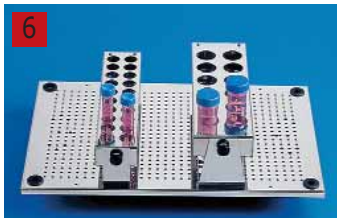


5 Holder 3926

GFL

Accessory for **Shaking Water Baths 1083, 1086 and 1092.**
Holder for 58 reaction vessels 1.5ml to 2.0ml, made of stainless steel. With float protection, can be screwed onto **shaking tray 3960**. Max. 3 holders per tray.

Type	PK	Cat. No.
3926	1	**9.905 990**



6 Test Tube Racks 3924 and 3925

GFL

Accessory for **Shaking Water Baths 1083, 1086 and 1092**. Stainless steel. The holding device can be tilted by an angle of 90°, equipped with springs for secure support. It can be screwed onto **shaking tray 3960**.

Type 3924: e.g. for 15ml Falcon tubes, max. 20 tubes x 12 to 17mm dia., max. 4 racks per tray.
Type 3925: e.g. for 50ml Falcon tubes, max. 12 tubes x 25 to 29mm dia., max. 3 racks per tray.

Type	PK	Cat. No.
3924	1	**9.905 996**
3925	1	**9.905 997**

E & OE.

1 Shaking water baths, SW series

JULABO



For simultaneous heating and shaking of samples, e.g. incubations, hybridizations etc.
Reciprocal motion.
- microprocessor technology with PID temperature control
- bright Multi-Display (LED) indicates five different temperature values and shaking speed
- splash-proof mains switch, built into plastic membrane keypad
- easy-to-use controls
- timer for selecting desired operating period
- RS232 interface provided
- shaking frequency 20 to 200 strokes/min., with 15mm stroke
- removable shaking carriage
- model SW23 has an internal circulation pump giving enhanced temperature stability

Bath lid not included.

Type	Capacity Litres	Working Temp. range °C	Temp. stability ± °C	Heating power W	Bath opening mm	Bath tank depth mm	PK	Cat. No.
SW22	20	20 to 99.9	0.2	2000	500 x 300	180	1	**9.906 383**
SW23	20	20 to 99.9	0.02	2000	500 x 300	180	1	**9.906 384**

2 Shaking water baths, SW 22, SW 23, accessories

JULABO



Type	PK	Cat. No.
Hinged Makrolon®-lid	1	**9.906 401**
Constant level device/cooling set	1	**9.906 402**

3 Trays for Erlenmeyer flasks

JULABO



Type	PK	Cat. No.
Tray for 32 x 50ml Erlenmeyer flasks	1	**9.906 386**
Tray for 15 x 200ml Erlenmeyer flasks	1	**9.906 387**
Tray for 11 x 250 to 300ml Erlenmeyer flasks	1	**9.906 388**
Tray for 8 x 500ml Erlenmeyer flasks	1	**9.906 389**

4 Spring clips for erlenmeyer flasks

JULABO



For	PK	Cat. No.
10 ml flasks	1	**9.906 410**
25 ml flasks	1	**9.906 411**
50 ml flasks	1	**9.906 412**
100 ml flasks	1	**9.906 413**
200 to 250 ml flasks	1	**9.906 414**
300 ml flasks	1	**9.906 415**
500 ml flasks	1	**9.906 416**
1000 ml flasks	1	**9.906 417**
Tray for spring clips to hold Erlenmeyer flasks as required	1	**9.906 390**

5 Test tube trays

JULABO



For	PK	Cat. No.
240 test tubes, 16/17 mm Ø	1	**9.906 420**
360 test tubes, 12/13 mm Ø	1	**9.906 421**
360 microlitre vessels, 30 x 11/12 mm Ø	1	**9.906 422**
84 test tubes, 30 mm Ø	1	**9.906 423**

Water bath protection agent please see page 766.

1



HB 1500

2



HB 1500-S

1 2 Heating bath HB 1500/HB 1500-S

Heju

The heating bath HB 1500 is developed for varied tasks. As bath filling water, oils and sand is used. Different sizes are deliverable! The device has an integrated temperature controller with microprocessor. It is freely programmable and has also self optimization function and rampfunction!
- Microprocessor controller with 4-digits 7-segment display, 10 mm high, green,
- With selfoptimization and rampfunction
- Measurement and control range +20.0 to +250.0°C
- On-Off switch is light up green
- Setting of heat power from 1 to 99%
- Irreversible rapid shut-down when reaching the security temperature

Heating bath HB 1500-S
Equipment such as HB 1500, also with safety on separate microprocessor controller and an internal temperature sensor. Exceeding the safety temperature, the heating is switched off completely.
The over-temperature shutdown >10K + reference deleted.

Type	Internal dimensions (Ø x H) mm	External dimensions (W x D x H) mm	Capacity Litres	Power W	Weight kg	PK	Cat. No.
HB 1500	200 x 130	290 x 270 x 275	2	1500	5.8	1	**9.234 512**
HB 1500	240 x 150	360 x 290 x 275	4	2000	6.5	1	**9.234 511**
HB 1500	280 x 180	370 x 320 x 285	8	2000	7.5	1	**9.234 510**
HB 1500-S	200 x 130	290 x 270 x 275	2	1500	5.8	1	**9.234 515**
HB 1500-S	240 x 150	360 x 290 x 275	4	2000	6.5	1	**9.234 514**
HB 1500-S	280 x 180	370 x 320 x 285	8	2000	7.5	1	**9.234 513**

3



3 Oil baths, ONE

Memmert

Interior - Heating Concept:
- easy-to-clean, grade 1.4301 (ASTM 304), laser-welded, stainless steel interior, reinforced by deep drawn ribbing
- corrosion-proof, large-area heating surface on 3 sides of the tank

Control:
- fuzzy-supported PID microprocessor controller with integral autodiagnostic system and fault indication
- solid state switch unit
- 2 x class A, 4-wire, Pt100 sensors, mutually monitoring and controlling performance at the same temperature
- digital timer from 1 min to 999 hours for:

On (continuous operation)
Delayed On
Hold, or set temperature-dependent Hold with fixed dwell time
- digital display (LED) of all set parameters, such as temperature, time and alarm values
- Calibration facility on controller
- audible and visual alarms at programme end, as keypress input acknowledgement and in the case of low liquid level (heating is switched off automatically)

Triple Overtemperature Protection:
- in the case of overtemperature due to fault the heating is switched off at approx. 10°C above the set temperature (fixed value)
- independent, class 2, TWB electronic overtemperature limiter
- class 1, TB mechanical temperature limiter switching the heating off at approx. 30°C above max. bath temperature
- set value display resolution: 0.1°C below 99.9°C, 1°C above 100°C

Textured, grade 1.4301 (ASTM 304), corrosion resistant, stainless steel housing.
Without covers - please order separately.

Specifications:

Temperature range:	at least 5°C above ambient up to +200°C
Setting temperature range:	+20°C up to +200°C
Power supply:	230V, 50/60Hz; 115 V, 50/60 Hz no extra cost

Type	Capacity Litres	Internal dimensions (W x D x H) mm	Housing (W x D x H) mm	Weight kg	Power consumption W	PK	Cat. No.
ONE7	7	240 x 210 x 140	468 x 356 x 238*	11	1200	1	**9.906 601**
ONE10	10	350 x 210 x 140	578 x 356 x 238*	13	1200	1	**9.906 602**
ONE14	14	350 x 290 x 140	578 x 436 x 238*	15	1800	1	**9.906 603**
ONE22	22	350 x 290 x 220	578 x 436 x 296*	17	2000	1	**9.906 604**
ONE29	29	590 x 350 x 140	818 x 516 x 238*	24	2400	1	**9.906 605**
ONE45	45	590 x 350 x 220	818 x 516 x 296*	26	2800	1	**9.906 606**

*High with flat cover

Accessories - please see page 766.

E & OE.

1 Heating baths HB 10

1



IKA

- Water- and oil heating bath for tempering of liquids
- Heating power 1350W
- Particularly suited for operation with the rotary evaporator RV 10
- Optimized bath shape for quick heating
- Integrated carrying handles for safe handling
- Adjustable safety circuit, for a safe switch-off in the case of errors
- Protection against dry running
- High-quality recyclable materials
- Digital display makes for easy operation
- Temperature controlled by micro controller
- IR interface for communication with the rotary evaporator RV 10 digital/control
- Choice of operating modes:

A: clear regulation of all parameters
B: a fixable safety temperature setting avoids unintentional readjustments
C: fixable set- and safety temperatures

Specifications

Heating output:	1350W
Temperature range:	ambient to 180°C
Setting accuracy:	±1K
Offset:	±1K
Material:	stainless steel (AISI 304)
Useful volume:	3L
Ext./int. height:	185/134mm
Dimensions (WxDxH):	295 x 265 x 190mm
Weight:	3kg
Protection class DIN EN 60529:	IP 21
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
HB 10	1	**6.258 322**

2 Heating baths HBR4 digital

2



A digital heating bath characterised by:

IKA

- digital display for set, actual, and overtemperature safety as well as stirring speed
- Fuzzy Logic electronic control
- integral magnetic stirring drive to circulate
 the bath heating liquid, enhancing heat distribution in the bath

Specifications

Heating output:	1000W
Temperature range:	ambient to 200°C
Setting accuracy:	±1K
Offset:	±1K
Speed range:	150 to 800rpm
Material:	stainless steel (AISI 304)
Useful volume:	4L
Ext./int. diameters:	250mm/200mm
Ext./int. height:	250mm/160mm
Weight:	4.4kg
Protection class DIN EN 60529:	IP21
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
HBR 4 digital	1	**9.906 106**
HBR 4 digital UK	1	**4.007 964**

3 4 Accessories for HB 10/HBR 4 baths

3



4



IKA

Type	PK	Cat. No.
Set of rings H 240 *	1	**9.906 121**
Intermediate base H 159 **	1	**9.906 125**

* For HB 4 basic digital bath.
** Allows insertion of vessels into the bath HB R 4, without affecting the stirrer motion.



1 Sand baths

Gestigkeit

For continuous operation. Electrical sand baths with thermostatic temperature control and separate power controller for performance adjustment to the heating requirements.
Anodised aluminium alloy hotplate. Excellent uniform temperature distribution over the entire heating surface. Asbestos free. The sand bath frame is tightly screwed onto the hotplate so that the sand is in direct contact with the hotplate. Useful depth 50mm. Stainless steel controller housing, with painted central section. Height-adjustable feet. Connection cable approximately 1.7m. With earthed plug for 230V supplies up to 3300W. A 400V 3-phase model is also available.

Type	Temp. range max. °C	Weight kg	Rating W	Dimensions (W x D x H) mm	Supply requirements V	PK	Cat. No.
ST 72	50 to 300	14.0	2200	360 x 360 x 220	230	1	**9.645 814**
ST 82	50 to 300	21.0	2850	514 x 364 x 220	230	1	**9.645 815**
ST 92-2	50 to 300	28.0	4000	592 x 442 x 220	230	1	**9.645 816**
ST 92-3	50 to 300	28.0	4000	592 x 442 x 220	400 (3-ph.)	1	**9.645 820**



2 Heating bath liquid, BASF

Buddeberg

Use:
BASF heating bath liquid can be used continuously as a heating medium up to approx. 170°C. Higher temperatures (below flash point) are possible, but will result in rapid darkening. The low pour point allows the bath liquid also to be used as a cooling medium. Mixtures with 10% to 30% water have proved best for this.

The crucial advantages of BASF heating bath liquid compared to the oils or other organic liquid mainly used are:
- accidental spillage of water into the bath does not lead to dangerous spitting at temperatures over 100°C, as the water dissolves in the heating bath liquid and subsequently evaporates safely
- BASF heating bath liquid can easily be rinsed away with water which eases cleaning of laboratory equipment, e.g. distillation flasks, and also bench or floor if the bath liquid is accidentally spilled.
- BASF heating bath liquid does not foam when mixed with water.

Viscosity on addition of water:
BASF heating bath liquid is quite viscous at ambient or low temperatures, and therefore sometimes difficult to dispense. The addition of 10-20% water reduces the viscosity and enables easier handling. If the mixture is then heated to 100°C, the water evaporates without boiling. Further heating is only shortly delayed by this. Before next heating, water can be added again.

Water solubility: BASF heating bath liquid can be mixed with water in any ratio. The hardness of the water has no effect on the bath liquid.

Chemical character:	Modified, polyvalent, aliphatic alcohol
Appearance:	Clear, colourless or lightly coloured liquid
Storage time:	When stored for long periods the product may become darker.
(unlimited at present knowledge)	This does not affect the performance of the product.
Density:	approx. 1.15g/cm³
Flashpoint	
to DIN 51758:	> 200°C
to DIN 51794:	approx. 255°C
Water solubility:	Heating bath liquid, BASF is miscible with water in each ratio. No susceptibility to water hardness in mixed water.

Container	PK	Cat. No.
5 litres	1	**9.906 200**



E & OE.

Hotplate induction Ceran®

NEW!

Housing made of stainless steel, brushed and polished, in a unique Softline Design, Schott Ceran® cooking surface. Adjustable power control with power-saving or power control in 9 steps (*Touch Control*). Two-circle HiLight technique, thus extra large heating zone (dia. 210mm) can be activated. Thermal shutdown and automatic cooking system. Residual heat indicator and warning light. Temperature range (empty): 0 to approx. 460°C.

Specifications:

One unit provides heat outputs of:	
1. Heating area:	dia. 140mm, 1000W
2. Heating area:	dia. 210mm, 2200W
Small heating area of the double cooking plate	dia. 140mm, 1200W
Supply requirements:	230 V

Type	Dimensions (W x D x H) mm	PK	Cat. No.	
Single hotplate Ceran®	305 x 410 x 75	1	**9.645 510**	1
Single hotplate Ceran® *Touch Control*	305 x 410 x 75	1	**9.645 511**	2
Double Cooking Plate Ceran®	550 x 310 x 65	1	**6.261 651**	3

1



9.645 510

2



9.645 511

3



6.261 651

4 Hotplate induction Ceran®

NEW!

- casing made of brushed stainless steel in softline design
- Schott Ceran® cooking surface, superior and easy to clean
- with superior induction technology, pot recognition
- safe, user-friendly and extremely energy-saving
- temperature selection in 21 levels in steps of 10°C from 60°C (keeping warm) up to 260°C
- power selection in 9 levels, powerboost (2200 W) for additional performance
- timer up to 99 minutes, automatic switch-off and signal tone
- electronic regulation via touch control sensors
- integrated safety functions, overheating protection
- indicators for residual heat, standby and power-on

4



Specifications:

heating zone:	80 - 200 mm Ø
weight:	3.5 kg
power supply:	230 V ~ 2200 W

Type	Dimensions (W x D x H) mm	PK	Cat. No.
Hotplate induction Ceran®	305 x 410 x 75	1	**7.672 290**

5 Laboratory hotplates, SLK 12

5



Optimised for all-round use *SI Analytics*

The new laboratory hotplate SLK 12 with its pronounced characteristics meets high demands in quality and robustness. Even in very rough environments one can count on its dependability.

- The pore-free glass-ceramics surface (easy-to-clean) is highly resistant against chemical influences and temperature fluctuations.
- The glass-ceramics surface has a high infrared permeability and hence is exceptional economic saving energy and time.
- The heating surface is throughout planar and offers not heated border areas. This allows the vessel to be heated partially or completely removed off the hotplate.
- High-quality, unpainted and non sensitive stainless steel casing.
- Heating area with two zones (230V) for small and bigger vessels.
- Indicator LED for residual heat for safe operation.
- An optional compressed air connection allows operation in highly aggressive environment.

Type	Heated zone mm	Rating W	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
SLK 12	Ø 180	1700	330 x 300 x 73	4.5	1	**9.645 616**

Boiling chips - please see page 595.

1



6.252 739

2



7.656 840

3

BioCote

3 Hotplates, analogue, US150/UC150

NEW!

Stuart

- Flashing "Hot" warning light for temperature above 50°C, mains independent
- Accurate temperature control with LED setting scale
- Compact space saving design
- Space saving integral fitting for a retort rod
- Can be used with SCT1 digital temperature controller

Model UC150 has a glass ceramic top which has excellent chemical resistance. The surface is easy to clean and allows high plate temperatures for faster heating. Heating area: 120 x 120mm

Model US150 has a robust aluminium/silicon alloy top plate for excellent heat transmission. The top plate has a thin ceramic coating for added chemical resistance. A 700W element gives rapid heating and ensures even temperature distribution across the whole surface of the plate.

With BioCote, silver-based, antimicrobial protection.

Specifications

Plate dimensions:	150 x 150mm
Weight:	2.2kg
Power supply:	230V, 50Hz
Protection class:	IP 32

Type	Max. temp. °C	Power W	Dimensions (W x D x H) mm	PK	Cat. No.
UC 150	450	500	172 x 248 x 122	1	**6.252 739** 1
US 150	325	700	172 x 248 x 120	1	**7.656 840** 2
Digital contact thermometer SCT1				1	**9.645 342**
Retort rod SR1, 600mm x 12mm diam.				1	**9.645 335**

4



5

BioCote

4 5 Hotplates, analogue, Stuart CB300 and CB500

Stuart

Energy regulator control with glass ceramic top plate and 'hot' warning lamp which illuminates when the plate temperature exceeds 50°C. For 230V 50/60 Hz single phase supplies. With BioCote, silver-based, antimicrobial protection. Maximum temperature as indicated.

Type	Max. temp. °C	Hot-plate mm	Weight kg	Rating W	Internal dimensions (W x D x H) mm	PK	Cat. No.
CB300	450	300 x 300	6.00	1200	320 x 370 x 120	1	**9.645 338**
CB500	375	500 x 300	12.00	2250	520 x 360 x 130	1	**9.645 316**

6



7

BioCote

6 7 Hotplates, analogue, Stuart SB 300 and SB 500

Stuart

Maximum temperature 300°C. Energy regulator control with cast aluminium/silicon alloy top plate and 'hot' warning lamp which illuminates when the plate temperature exceeds 50°C. The 300mm x 300mm top plate model has a retort rod mounting at the rear of the housing. With BioCote, silver-based, antimicrobial protection.

Model	**SB 300**
Top plate:	300 x 300mm
Overall WxDxH:	320 x 370 x 120mm
Weight:	6kg
Power:	600W
Model	**SB 500**
Top plate:	500 x 300mm
Overall WxDxH:	520 x 360 x 130mm
Weight:	12kg
Power:	1500W

As described. For 230V 50/60 Hz single phase supplies.

Type	PK	Cat. No.
SB300	1	**9.645 331**
SB500	1	**9.645 317**

E & OE.

3 Hotplates digital, SD 300 and SD 500

Stuart

Maximum temperature 300°C. Digital setting and control of plate temperature with 1°C resolution and cast aluminium/silicon alloy top plate. The 300 x 300mm top plate model has a retort rod mounting at the rear of the housing. With BioCote, silver-based, antimicrobial protection.

Model	**SD300**
Top plate:	300 x 300mm
Overall (WxDxH):	320 x 370 x 105mm
Weight:	6kg
Power:	600W
Model	**SD500**
Top plate:	500 x 300mm
Overall (WxDxH):	520 x 360 x 130mm
Weight:	12kg
Power:	1500W

For 230V 50/60 Hz single phase supplies.

1



9.645 320

2



9.645 321

Type	Hot-plate mm	PK	Cat. No.
SD300	300 x 300	1	**9.645 320** 1
SD500	300 x 500	1	**9.645 321** 2

3

BioCote

Hotplates C-MAG HP 4/C-MAG HP 7/C-MAG HP 10

IKA

Made of glass ceramic which offers excellent chemical resistance.
- fixed safety circuit of 550°C
- Hot Top indicator: Hot surface warning to prevent burns
- exact temperature setting via digital display (LED)
- digital error code display
- raised control panel for protection against spilt liquids

C-MAG HP 7, C-MAG HP 10 additionally:
adapter according to DIN 12878 for connecting a contact thermometer, e.g. ETS-D5, enables precise temperature control

4



9.720 496

Specifications

Heating function	
Temperature display:	digital
Heat output	
C-MAG HP 4:	250W
C-MAG HP 7:	1000W
C-MAG HP 10:	1500W
Heating rate (1 litre H_2O)	
C-MAG HP 4:	2.5K/min
C-MAG HP 7/HP 10:	5K/min
Temperature range:	50 to 500°C
Setting accuracy:	±10K
Safety circuit fixed:	550°C
Control accuracy with sensor	
C-MAG HP 4:	-
C-MAG HP 7/HP 10:	ETS-D5/±0.5 K
Heating plate	
Material:	glass ceramic
Dimensions	
C-MAG HP 4:	100 x 100mm
C-MAG HP 7:	180 x 180mm
C-MAG HP 10:	260 x 260mm

Tested to DIN EN IEC 61010-1.

5



9.720 497

6



9.720 498

Type	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
C-MAG HP 4	150 x 260 x 105	3	1	**9.720 496** 4
C-MAG HP 7	220 x 330 x 105	5	1	**9.720 497** 5
C-MAG HP 10	300 x 415 x 105	6	1	**9.720 498** 6

Optional accessories: HP 7 and HP 10 additionally: Electronical thermometer ETS-D5

1



1 High-performance hotplates

With thermostatic temperature control. CERAN® glass ceramic material is highly resistant to breakage and changes in temperature, free from distortion, permeable to infrared light and highly acid-resistant. Bench-top instrument with built-in controller. SR model - with separate controller for wall mounting can be supplied on request.

Gestigkeit

Type	Hot-plate mm	Temp. range max. °C	Rating W	Dimensions (W x D x H) mm	Weight kg	Supply requirements V	PK	Cat. No.
11 A	280 x 280	50 to 500	2000	290 x 410 x 100	5.5	230	1	**9.645 711**
22 A	280 x 430	50 to 500	3000	290 x 560 x 100	6.5	230	1	**9.645 712**
33 A	430 x 430	50 to 500	4400	440 x 560 x 100	9.0	400 (3ph.)	1	**9.645 714**
44 A	580 x 430	50 to 500	5700	590 x 560 x 100	11.5	400 (3ph.)	1	**9.645 715**

2



2 High-performance hotplate

High-performance CERAN® glass ceramic hotplate with circular heating area 145mm diameter, stainless steel housing, power controller (adjustable 10% to 100%) and integral temperature monitor.

Gestigkeit

Type	Hot-plate mm	Temp. range max. °C	Rating W	Dimensions (W x D x H) mm	Weight kg	Supply requirements V	PK	Cat. No.
CT 10	175 x 175	500	1200	200 x 290 x 85	2.6	230	1	**9.645 740**

3



3 Precision hotplate, PZ 44

Automatic, precise regulation of temperatures between 20 and 450°C. Digital presetting and temperature display. Three power levels (825W, 1650W and 3300W) can be set and an additional electronic power controller (adjustable 10% to 100 %) is provided. At 825W and 3300 W settings the entire plate surface is heated. At 1650W setting only the right hand side of the plate is heated. As a result of heat conduction, the temperature from the right hand side to the left edge of the plate varies by approx. 40%. Built-in relay allows direct connection of electronic contact thermometers. With solid, flat, low-distortion, cast GG15 alloy. Switching differential ±1K.

Gestigkeit

Type	Hot-plate mm	Temp. range max. °C	Rating W	Dimensions (W x D x H) mm	Weight kg	Supply requirements V	PK	Cat. No.
PZ 44	290 x 440	20 to 450	3300	320 x 470 x 190	23.0	230*	1	**9.645 744**

* 400 V, 3-ph. versions are also available on request

Precision hotplate, PZ 44, accessories

Gestigkeit

Type	PK	Cat. No.
Cable with plug for temperature safety device, timer switch, contact thermometer	1	**9.645 747**
Temperature safety device for 82, 128, 156, 170, 182, 212, 228, 254 °C please state when ordering	5	**9.645 748**

E & OE.

1 Hotplates

Gestigkeit

For continuous operation. Electric hotplates with thermostatic temperature control and separate power controller for performance adjustment to the heating requirements.
Anodised aluminium alloy hotplate. Excellent uniform temperature distribution over entire heating surface. Asbestos free. Stainless steel housing, with painted central section. Height-adjustable feet. Mains cable approximately 1.7m. With earthed plug for 230V supplies up to 3300W. A 400V 3-phase model is also available.



Type	Hot-plate mm	Temp. range max. °C	Rating W	Dimensions (W x D x H) mm	Weight kg	Supply requirements V	PK	Cat. No.
HT 02	300 x 300	50 to 300°C	1800	312 x 312 x 170	11.0	230	1	**9.645 781**
HT 12	350 x 350	50 to 300°C	2200	358 x 358 x 170	13.0	230	1	**9.645 782**
HT 22	350 x 500	50 to 300°C	2850	514 x 364 x 170	19.0	230	1	**9.645 785**
HT 32-230	430 x 580	50 to 300°C	4000	592 x 442 x 170	26.0	230	1	**9.645 786**
HT 32-400	430 x 580	50 to 300°C	4000	592 x 442 x 170	26.0	3x400	1	**9.645 787**

2 Precision hotplates, PZ-series

Gestigkeit

For continuous operation. Provide extremely accurate, uniform temperatures, even in plate corners and on edges. Polished anodised aluminium heating surface.
Microprocessor-controlled temperature controller with temperature setting up to 99.9 in 0.1°C steps, over 99.9 in 1°C steps. Actual temperature displayed continuously. With separate power controller for performance adjustment to the heating requirements from 10 to 100%. Built-in relay allows direct connection of electronic contact thermometers. Adjustable temperature monitor from 50 to 300°C (with PZ 28-1, 30 to 110°C) to prevent excess temperatures.



Type	Hot-plate mm	Temp. range max. °C	Rating W	Dimensions (W x D x H) mm	Weight kg	Supply requirements V	PK	Cat. No.
PZ 28-1	200 x 280	20 to 110	500	210 x 300 x 135	7.0	230	1	**9.645 827**
PZ 28-2	200 x 280	20 to 300	1100	210 x 300 x 135	7.0	230	1	**9.645 828**
PZ 35	350 x 350	20 to 300	2200	365 x 365 x 155	14.0	230	1	**9.645 824**
PZ 60	610 x 160	20 to 300	2000	620 x 200 x 155	12.0	230	1	**9.645 829**

Precision hotplates, PZ-series, accessories, PZ 28, 35, 60

Gestigkeit

As described.

Type	PK	Cat. No.
SK 85 to Cable for contact thermometer	1	**9.645 831**
ST 12 to Support rod 12 mm D. (PZ 60 only)	1	**9.645 832**
HK 3 to Holder for contact thermometer	1	**9.645 833**

3 Multiple hotplate systems behrotest®

Behr

Multiple hotplate systems, 360 W, with individually adjustable heating controls and indidicator lights.



Type	Description	PK	Cat. No.
HB 4	4 hotplates with metal protective grills, 94mm dia., 53cm width	1	**9.645 590**
HB 6	6 hotplates with metal protective grills, 94mm dia., 76cm width	1	**9.645 591**
HB 8	8 hotplates with metal protective grills, 94mm dia., 90cm width	1	**9.645 594**
HBS 4	Holder for HB 4 incl. 4 support rods	1	**9.645 592**
HBS 6	Holder for HB 6 incl. 6 support rods	1	**9.645 593**
HBS 8	Holder for HB 8 incl. 8 support rods	1	**9.645 595**

1



1 Standard heating mantles series KM-G

LabHEAT®-Heating mantles for flasks, round bottom. Flexible glass yarn heating element, outer jacket in glass silk, with diam. 60mm bottom out-let from 500ml, max. heating element temperature 450°C, 1.5m power supply (earthed) cable with heating-zone switch and RCD (residual current detection), nominal voltage 230V AC.

SAF Wärmetechnik

Capacity ml	Flask diam. mm	Rating W	Heating zones	PK	Cat. No.
25	41	65	1	1	**9.642 401**
50	51	75	1	1	**9.642 402**
100	64	120	1	1	**9.642 403**
250	85	180	2	1	**9.642 404**
500	105	250	2	1	**9.642 405**
1000	131	450	2	1	**9.642 406**
2000	166	600	2	1	**9.642 407**
3000	185	800	2	1	**9.642 408**
4000	207	900	2*	1	**9.642 409**
5000	223	1200	2*	1	**9.642 410**
6000	236	1400	2*	1	**9.642 411**
10000	279	2000	2*	1	**9.642 412**
20000	345	2200	2*	1	**9.642 413**

Heating mantles with other specifications available on request.
*with 4 heating zones available on request

2



2 Standard heating mantles series KM-GH

LabHEAT®-Heating mantles for flasks, round bottom. Designed identical to series KM-G, but the heating element is made of heat-resistant quartz yarn and permits a maximum temperature up to 900°C; 1.5m power supply (earthed) cable with heating-zone switch and RCD (residual current detection); nominal voltage 230V AC.

SAF Wärmetechnik

Capacity ml	Flask diam. mm	Rating W	Heating zones	PK	Cat. No.
100	64	200	1	1	**9.642 440**
250	85	300	2	1	**9.642 441**
500	105	500	2	1	**9.642 442**
1000	131	750	2	1	**9.642 443**
2000	166	1200	2	1	**9.642 444**
4000	207	1800	2	1	**9.642 445**
6000	236	2500	2	1	**9.642 446**

Heating mantles with other specifications available on request.

3



4



3 4 Accessories for Standard heating mantles

LabHEAT® - Accessories made of stainless steel (1.4301) for higher stability or to integrate within support wall. The heating mantles are able to be suspended on its four clips.

SAF Wärmetechnik

Description	For mantle ml	PK	Cat. No.
Tripod	100	1	**9.642 600**
Tripod	250	1	**9.642 601**
Tripod	500	1	**9.642 602**
Tripod	1000	1	**9.642 603**
Tripod	2000	1	**9.642 604**
Tripod	3000	1	**9.642 605**
Tripod	4000	1	**9.642 606**
Tripod	5000	1	**9.642 607**
Tripod	6000	1	**9.642 608**
Tripod	10000	1	**9.642 609**
Tripod	20000	1	**9.642 610**
Support ring	25	1	**9.642 620**
Support ring	50	1	**9.642 621**
Support ring	100	1	**9.642 622**
Support ring	250	1	**9.642 623**
Support ring	500	1	**9.642 624**
Support ring	1000	1	**9.642 625**
Support ring	2000	1	**9.642 626**
Support ring	3000	1	**9.642 627**
Support ring	4000	1	**9.642 628**

E & OE.

1 Metal-cased heating mantles series KM-M, without controller

LabHEAT® - Heating mantles for flasks, round bottom. Flexible glass yarn heating element in plastic coated, chemical-resistant metal housing with built-in power-on and heating zone switch; max. heating element temperature 450°C; 1.5m power supply (earthed) cable and RCD (residual current detection); nominal voltage 230V AC.

SAF Wärmetechnik

Capacity ml	Flask diam. mm	Rating W	Heating zones	PK	Cat. No.
50	51	55	1	1	**9.642 500**
100	64	100	1	1	**9.642 501**
250	85	150	2	1	**9.642 502**
500	105	200	2	1	**9.642 503**
1000	131	300	2	1	**9.642 504**
2000	166	500	2	1	**9.642 505**
3000	185	600	2	1	**9.642 506**
4000	207	750	2	1	**9.642 507**
5000	223	860	2	1	**9.642 508**
6000	236	1000	2	1	**9.642 509**
10000	279	1400	2	1	**9.642 510**
20000	345	2000	2	1	**9.642 511**

Serial heating units and Heating mantles with other specifications available on request.

1



2 Metal-cased heating mantles series KM-ME, with controller

LabHEAT® - Heating mantles for flasks, round bottom. Flexible glass yarn heating element in plastic coated, chemical-resistant metal housing with built-in power-on and heating zone switch, **in addition equipped with a controller** which allows a continuous adjustment of the heater power; max. heating element temperature 450°C; 1.5m power supply (earthed) cable and RCD (residual current detection); nominal voltage 230V AC.

SAF Wärmetechnik

Capacity ml	Flask diam. mm	Rating W	Heating zones	PK	Cat. No.
50	51	55	1	1	**9.642 520**
100	64	100	1	1	**9.642 521**
250	85	150	2	1	**9.642 522**
500	105	200	2	1	**9.642 523**
1000	131	300	2	1	**9.642 524**
2000	166	500	2	1	**9.642 525**
3000	185	600	2	1	**9.642 526**
4000	207	750	2	1	**9.642 527**
5000	223	860	2	1	**9.642 528**
6000	236	1000	2	1	**9.642 529**
10000	279	1400	2	1	**9.642 530**
20000	345	2000	2	1	**9.642 531**

Heating mantles with other specifications available on request.

2



3 Metal-cased heating mantles series KM-MPE for different sized round bottom flasks

LabHEAT®-Heating mantles for flasks, round bottom. Designed and technical identical to series KM-ME, but can be used **for round flasks of three different sizes,** max. heating element temperature 450°C; 1.5m power supply (earthed) cable and RCD (residual current detection); nominal voltage 230V AC.

SAF Wärmetechnik

Capacity ml	Flask diam. mm	Rating W	Heating zones	PK	Cat. No.
50 to 250	51 to 85	160	3	1	**9.642 540**
250 to 1000	85 to 131	350	3	1	**9.642 541**
1000 to 3000	131 to 185	700	3	1	**9.642 542**

Serial heating units and Heating mantles with other specifications available on request.

3



4 Stirred heating mantles LabHEAT® KM-MER series

LabHEAT® - Heating mantles for flasks, round bottom. Designed and technical identical to series KM-ME, but **in addition equipped with a magnetic stirrer**; rotational frequency up to 1600rpm max. heating element temperature 450°C, 1.5m power supply (earthed) cable and RCD (residual current detection); nominal voltage 230V AC.

SAF Wärmetechnik

Capacity ml	Flask diam. mm	Rating W	Heating zones	PK	Cat. No.
100	64	100	1	1	**9.642 545**
250	85	150	2	1	**9.642 546**
500	105	200	2	1	**9.642 547**
1000	131	300	2	1	**9.642 548**

Serial heating units and Heating mantles with other specifications available on request.

4



1



1 Support clamp KM-SK

LabHEAT®-Accessories for metal-cased heating mantles and serial heating unit to fix support rods up to diameter 13mm or to integrate the metal-cased heating mantles within support wall.

SAF Wärmetechnik

Type	PK	Cat. No.
KM-SK	1	**9.642 630**

2



2 Glass fibre-insulated heating tapes series KM-HT-BS30

LabHEAT®-Heating tapes. No protection against ingress of water; with inner metal protective braiding and glass fibre insulation; product dimensions 30 x 5mm; min. bending radius > 15mm; max. heating element temperature 450°C; preterminated with 1.0m cold end; nominal voltage 230V AC.

SAF Wärmetechnik

Length cm	Heating power W	PK	Cat. No.
50	125	1	**9.642 720**
100	250	1	**9.642 721**
150	375	1	**9.642 722**
200	500	1	**9.642 723**
250	625	1	**9.642 724**
300	750	1	**9.642 725**
400	1000	1	**9.642 726**
500	1250	1	**9.642 727**
700	1500	1	**9.642 728**
1000	2000	1	**9.642 729**

Other lenghts and other specifications available on request.

3



3 Glass fibre-insulated heating cables series KM-HC-G

LabHEAT®-Heating cables. No protection against ingress of water; glass fibre insulation without protective braiding; outer diameters dia. 3.5 to 4.5mm; min. bending radius > 5mm; max. heating element temperature 450°C; preterminated with 2 x 1.5m cold end; nominal voltage 230V AC.

SAF Wärmetechnik

Length cm	Heating power W	PK	Cat. No.
50	75	1	**9.642 750**
100	150	1	**9.642 751**
150	225	1	**9.642 752**
200	300	1	**9.642 753**
250	375	1	**9.642 754**
300	450	1	**9.642 755**
400	600	1	**9.642 756**
500	750	1	**9.642 757**
600	900	1	**9.642 758**

Other lenghts and other specifications available on request.

4



4 Power controller KM-L116 for heating mantles

LabHEAT®-regulator for heating mantles. Electromechanical; infinitely variable control over power outlet; plastic housing (H x W x D) 55mm x 65mm x 120mm; switching power max. 2990W (13A); 1.5m power supply (earthed) cable with plug.

SAF Wärmetechnik

Type	PK	Cat. No.
KM-L116	1	**9.642 660**

5



5 Laboratory regulator series KM-RX1000

LabHEAT®-regulator. Freely configurable electronical temperature regulator with two displays indicating the desired and actual values. Pt-100 or thermocouples for temperatures up to 1200°C, metal housing (H x W x D) 75mm x 205mm x 140mm with fixed support clamp, switching power max. 2300W (10A), 1.5m power supply (earthed) cable with plug. Nominal voltage 230V AC.

SAF Wärmetechnik

Type	Sensor / Alarm connetion	PK	Cat. No.
KM-RX 1001	Socket / Socket	1	**7.619 815**
KM-RX 1004	Clamps / Clamps	1	**9.642 654**

E & OE.

1 Temperature sensors for Laboratory regulator series KM-RX1000

LabHEAT®-sensors. Suitable for temperature control and KM-KM-RX1001 RX1004 with permanently attached cable, with or without diode plug. *SAF Wärmetechnik*

KM-TP2: Pt100, up to 400°C, sheated element V2A, dia. 4 x 50mm, 2.0m cable
KM-TPG: Pt100, up to 250°C, glass tube, dia. 6 x 400mm, 1.5m cable
KM-TNS: NiCr-Ni, up to 1200°C, rod sensor in Inconell, dia. 1.5 x 300mm, 2.0m cable
KM-TNF: NiCr-Ni, up to 400°C, flat sensor, 0.4 x 15 x 400mm, 1.5m cable



Type	Connection	For	PK	Cat. No.
KM-TP2	with diode plug	KM-RX1001	1	**7.619 816**
KM-TPG	with diode plug	KM-RX1001	1	**9.642 674**
KM-TNS	with diode plug	KM-RX1001	1	**6.237 998**
KM-TNF	with diode plug	KM-RX1001	1	**6.236 355**
KM-TP2	without diode plug	KM-RX1004	1	**9.642 672**
KM-TPG	without diode plug	KM-RX1004	1	**9.642 673**
KM-TNS	without diode plug	KM-RX1004	1	**9.642 671**
KM-TNF	without diode plug	KM-RX1004	1	**9.642 670**

Further models available on request.

2 Electronic heating mantles, EM series

Polypropylene outer case is resilient and chemically- resistant. Highly efficient in heating up to an element temperature of 450°C. The flexible heating element is suspended in a thermal insulating cartridge to provide maximum heat transfer with minimum risk of flask breakage. Even at full power output, the exterior remains "cool-to-touch" due to good heating element insulation. All heating mantles have support clamp for rods of up to 12mm diameter, and are double fused, with earth (ground) screen to protect the user from electric shocks. Available as 220-240 V 50/60 Hz models; spare heater cartridges are available on request. *Electrothermal*



For flasks ml	Width mm	Depth mm	Height mm	Power W	PK	Cat. No.
100	175	260	127	60	1	**9.643 033**
250	175	260	127	150	1	**9.643 034**
500	238	310	145	200	1	**9.643 035**
1000	238	310	145	300	1	**9.643 036**
2000	350	400	190	500	1	**9.643 037**
3000	350	400	190	500	1	**9.643 038**
5000	350	400	190	800	1	**9.643 039**

3 Electronic multi-size heating mantles, spill-proof, EMX series

Solid stainless steel liner, which protects against fluid spills and is easy to clean, with central aperture to accommodate round-bottom and pear-shaped flask and 60° funnels. Polypropylene outer case is resilient and chemically- resistant. Highly efficient in heating up to an element temperature of 450°C. Even at full power output, the exterior remains "cool-to-touch" due to good heating element insulation. All heating mantles have support clamp for rods of up to 12mm diameter, and are double fused, with earth (ground) screen to protect the user from electric shocks. Available as 220-240 V 50/60 Hz models; spare heater cartridges are available on request. *Electrothermal*

For round bottom flasks, pear-shaped flasks and 60° funnels (Mantle is open at the bottom).



For flasks ml	Width mm	Depth mm	Height mm	Power W	PK	Cat. No.
500 to 1000	238	310	145	245	1	**9.643 081**
2000 to 5000	350	400	190	600	1	**9.643 083**

4 Electronic multi-size heating mantles, V-shaped, EMV series

Solid, with mesh stainless steel liner, which protects against fluid spills, with central aperture to accommodate round-bottom and pear-shaped flask and 60° funnels. Polypropylene outer case is resilient and chemically- resistant. Highly efficient in heating up to an element temperature of 450°C. Even at full power output, the exterior remains "cool-to-touch" due to good heating element insulation. All heating mantles have support clamp for rods of up to 12mm diameter, and are double fused, with earth (ground) screen to protect the user from electric shocks. Available as 220-240 V 50/60 Hz models; spare heater cartridges are available on request. *Electrothermal*

For round bottom flasks, pear-shaped flasks and 60° funnels (Mantle is open at the bottom).



For flasks ml	For funnel diam. mm	Dimensions (W x D x H) mm	Power W	PK	Cat. No.
10 to 50	50 to 100	175 x 260 x 127	60	1	**9.643 072**
100 to 250	75 to 100	175 x 260 x 127	150	1	**9.643 073**
500 to 1000	100 to 200	238 x 310 x 145	300	1	**9.643 074**
1000 to 5000 *	200 to 300	350 x 400 x 190	800	1	**9.643 075**

* With 2 circuits, 1 x 300, 1 x 500 W.

1



1 Electronic stirrer mantles, EMA series

Electrothermal

Built-in adjustable heater control up to an element temperature of 450°C and magnetic stirring control up to approx. 520rpm with auto-reverse facility and automatic stirrer bar trap; the stirrer unit has an independent power supply. Polypropylene outer case is resilient and chemically-resistant. Even at full power output, the exterior remains "cool-to-touch" due to good heating element insulation. All heating mantles have support clamp for rods of up to 12mm diameter, and are double fused, with earth (ground) screen to protect the user from electric shocks. Available as 220-240 V 50/60 Hz models; spare heater cartridges are available on request.

For flasks ml	Width mm	Depth mm	Height mm	Power W	PK	Cat. No.
50	175	260	133	80	1	**9.643 122**
100	175	260	133	80	1	**9.643 123**
250	175	260	133	170	1	**9.643 124**
500	238	310	157	220	1	**9.643 125**
1000	238	310	157	320	1	**9.643 126**
2000	350	400	197	520	1	**9.643 127**

2



2 Power controller, Voltron 20

Alternating current resistance controller with interference suppressor for variable, no-power-loss control of hotplates, heating tapes, soldering irons, light bulbs, infrared radiators etc., control range 25V to 225V. With single throw on/off potentiometer and shielded fuse holder for safe fuse replacement away from the internal circuit. Fitted with interference suppressor in accordance with EN standard.

Type	Power W	PK	Cat. No.
Voltron 20	2000	1	**9.725 094**

3



3 Contact thermometers, accessory relay TST-tr

Heju

With Schuko power output socket and discrete control circuit. Plastic housing insulated to VDE. Automatic on/off switch. Will not function unless a contact thermometer is plugged in. Switch status display. Dimensions (WxDxH) 120mm x 80mm x 85mm. Switching capacity 220V 10A.

Type	Description	PK	Cat. No.
TST tr		1	**9.234 253**
TST tr	for electronical contact thermometers	1	**9.234 254**

4



4 Temperature controllers, TEMPAT®-D

For controlling temperature of heating coils, hotplates, ovens, infrared radiators and water baths. TEMPAT®-D has a 10mm high, LED display which can even be seen in dark rooms and allows monitoring of actual temperature at any time. Set point can be entered via a 3 or 4 figure coding switch with 1°C resolution. Built-in sensor breakdown fuse, switching interval display and Xp trimmer to adjust variable gain amplification between 0 and 10K. Sensor connection is via a plug-in socket.

Appropriate temperature sensor please order separately.
If no temperature sensor is ordered, a loose plug is supplied.

Specifications

Input:	230V, 50/60Hz
Switching capacity:	2300W, 10A
Connection, appliance:	1.20M long connection cable with impact resistant plug
Consumer load:	earthed schuko socket, other plug-in connections in accordance with Swiss or French/Belgian standards, for example can be supplied at additional cost.
Housing:	Polycarbonate plastic, gray
Dimensions:	188mm x 110mm x 70mm
On/off switch:	via dipole luminous rocker switch
Probe connection:	via socket
Contact assignment Pt100:	1 and 2
Contact load:	1 + 3
Accuracy:	±1% from measuring range value

For	Temp. range °C	PK	Cat. No.
Probe Pt100	0 ... 400	1	**9.725 381**
Probe Fe-CuNi	0 ... 600	1	**9.725 382**
Probe NiCr-Ni	0 ... 1200	1	**9.725 383**

E & OE.

1 Probe for temperature controllers, TEMPAT®

All probes with 2m connecting cable and plug.

Type	Diam. mm	Length mm	PK	Cat. No.
Probe Pt100	1,6*	250	1	**9.725 320**
Probe Pt100	2,0*	250	1	**9.725 321**
Probe Pt100	2,5*	250	1	**9.725 378**
Probe Pt100	3,0*	250	1	**7.601 585**
Glass-probe Pt100	2,5	250	1	**9.725 322**
Glass-probe Pt100	3,0	250	1	**9.725 323**
Probe Fe-CuNi	1,5**	250	1	**9.725 394**
Probe NiCr-Ni	1,5**	250	1	**9.725 395**

* probe tube stainless steel 4301.
**mantle of austenitic stainless steel.

1



2 Power controller, VOLTRON-PLUS F

Alternating current controller for variable and no-loss control of resistive and inductive power devices with the following additional features:
- On/off luminous rocker switch, dipole switching, 10 A (4)
- IC controlled, hysteresis free
- Quiet running
- Anti-interference grade N
- Fast-blow fuse
- Protected fuse holder
- Power-on indicator lamp

Specifications

Voltage:	220-235V, 50/60Hz
Switching capacity:	Max. 2000VA
Switching current:	Max. 10A
Electronics:	Phase controls
Regulating range:	0 to 235V a.c.
Dimensions:	150 x 80 x 55mm
Weight:	0.7kg

Type	PK	Cat. No.
VOLTRON-PLUS F	1	**9.725 363**

2





1 Microwave SEVERIN MW 9721, silver/black

NEW!

Sonepar

- wattage: approx.700 W
- interior capacity: approx. 20 l
- power continuously variable, (by time or weight)
- 30 minute timer with acoustic signal
- turntable dia. approx. 24.5 cm
- heat resistant housing
- Dimensions (WxDxH) : 452 x 352 x 262mm

Type	PK	Cat. No.
SEVERIN MW 9721	1	**4.656 048**

1



2 Microwave SEVERIN MW 7864

NEW!

Freestanding with cavity capacity of 23L. Digital multi-function display, microwave, grill and convection separately or combined switchable. Microwave power: 800W, max. Grill power: 1200W. Preheat function to 190°C for convection, defrost by weight or time, Quick start button for instant full power, 10 different automatic cooking programs, grill grate with two selectable levels, child-proof lock. Dimensions (WxDxH): 495 x 415 x 295mm. Diameter turntable: 270mm.

Type	PK	Cat. No.
SEVERIN MW 7864	1	**9.106 785**

2



3 Microwave Severin MW 7873

- wattage: approx. 900 W
- interior capacity: approx. 30 l
- interior height: approx. 210mm, suitable for 800 ml Erlenmeyer flask
- turntable dia. approx. 315 mm
- Dimensions (WxDxH) : 510 x 430 x 305mm
- 5 steps selectable
- power continuously variable, (by time or weight)
- 35 minute timer with acoustic signal

Type	PK	Cat. No.
Severin MW 7873	1	**7.672 991**

3



LLG LABWARE

Good quality! Great value!



www.llg-labware.com

1



9.869 708

1 Universal Ovens UN/UF and UNplus/UFplus

The heating and drying oven generation with the unique ControlCOCKPIT for a quick and intuitive operation.
For a multitude of applications, ideally at temperatures above +50°C.
Standard equipment:
- PID microprocessor control with integrated auto-diagnostic system
- Interior made of stainless steel No. 1.4031 (ASTM 304) with all-round deep-drawn ribs to integrate the large-area heating with ceramic-metal sheath
- Structured stainless steel housing, scratch-resistant, robust and durable; rear of zinc-plated steel
- High-temperature connectors on the rear of the appliance for single-phase power connection according to country specific systems and IEC standards
- Internal data logger with a storage capacity of at least 10 years
- German, English, French, Spanish language settings available on the ControlCOCKPIT
- Digital backwards counter with target time setting adjustable between 1 minute and 99 days
- The SetpointWAIT function guarantees that the process time does not start until the set temperature is reached at all measuring points - optional for temperature values recorded by the freely positionable Pt100 sensors inside the chamber.
- Adjustment of three calibration values for temperature and additional appliance specific parameters directly at the ControlCOCKPIT

Type designation: plus = Models with TwinDISPLAY

Specifications

Type designation:	N = Natural convection, F = Forced air circulation
Working- temperature range:	at least 5°C (UN/UNplus) at least 10°C (UF/UFplus) above ambient temperature up to +300°C
Setting temperature range:	+20 up to +300°C
Setting accuracy:	up to 99.9°C: 0.1°C/from 100°C: 0.5°C
Power supply:	230 V, 50/60 Hz (sizes 30 - 260), 115 V, 50/60 Hz no extra cost; 400 V (sizes 450 - 1060)

2



9.869 697

Universal Ovens UN and UF

NEW!

Memmert

SingleDISPLAY: ControlCOCKPIT with one TFT colour display
- Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time, time zones, summertime/wintertime
- One temperature sensor Pt100 DIN class A in a 4-wire circuit
- AtmoCONTROL software for reading out, managing and organising the data logger via Ethernet interface (temporary trial version can be downloaded). USB stick with AtmoCONTROL software available as accessory (on demand)
- Ethernet interface on the rear of the appliance for reading out the protocol log and for online logging
- Double overtemperature protection: Electronic temperature monitoring with freely adjustable monitoring temperature with option A6 TWW/TWB (protection class 3.1 or 2), mechanical temperature limiter TB acc. to DIN 12880

Type	Internal volume	Int. dimensions (W x D x H)	Housing (W x D x H)	Shelf support ribs/shelves	Power consumption	Weight	PK	Cat. No.
	litres	mm	mm		W	kg		
UN30	32	400 x 250* x 320	585 x 434** x 704	3 / 1	1600	45	1	**9.869 681**
UN55	53	400 x 330* x 400	585 x 514** x 784	4 / 1	2000	57	1	**9.869 682**
UN75	74	400 x 330* x 560	585 x 514** x 944	6 / 2	2500	66	1	**9.869 683**
UN110	108	560 x 400* x 480	745 x 584** x 864	5 / 2	2800	74	1	**9.869 684**
UN160	161	560 x 400* x 720	745 x 584** x 1104	8 / 2	3200	96	1	**9.869 685**
UN260	256	640 x 500* x 800	824 x 684** x 1183	9 / 2	3400	110	1	**9.869 686**
UN450	449	1040 x 600* x 720	1224 x 784** x 1247	8 / 2	5800	161	1	**9.869 687**
UN750	749	1040 x 600* x 1200	1224 x 784** x 1726	14 / 2	7000	217	1	**9.869 688**
UF30	32	400 x 250* x 320	585 x 434** x 704	3 / 1	1600	45	1	**9.869 697** 2
UF55	53	400 x 330* x 400	585 x 514** x 784	4 / 1	2000	57	1	**9.869 698**
UF75	74	400 x 330* x 560	585 x 514** x 944	6 / 2	2500	66	1	**9.869 699**
UF110	108	560 x 400* x 480	745 x 584** x 864	5 / 2	2800	74	1	**9.869 700**
UF160	161	560 x 400* x 720	745 x 584** x 1104	8 / 2	3200	96	1	**9.869 701**
UF260	256	640 x 500* x 800	824 x 684** x 1183	9 / 2	3400	110	1	**9.869 702**
UF450	449	1040 x 600* x 720	1224 x 784** x 1247	8 / 2	5800	161	1	**9.869 703**
UF750	749	1040 x 600* x 1200	1224 x 784** x 1726	14 / 2	7000	217	1	**9.869 704**
UF1060	1060	1040 x 850* x 1200	1224 x 1035** x 1726	14 / 1	7000	252	1	**6.266 314**

Power supply at 230 V, 50/60 Hz, model sizes 450, 750 and 1060 at 400 V and 3 x 220 V without neutral, 50/60 Hz
Type designation: N = Natural convection, F = Forced air circulation
* Minus 39 mm for fan
**Depth without door handle, please add 56 mm

Universal ovens UNplus and UFplus

NEW!

1

Memmert



9.869 708

TwinDISPLAY: ControlCOCKPIT with two colour TFT displays

- Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time, time zones, summertime/ wintertime
- Two Pt100 sensors DIN class A in a 4-wire circuit for mutual monitoring, taking over functions in case of an error
- AtmoCONTROL software on a USB stick for programming, managing and transferring programmes via Ethernet interface or USB port
- HeatBALANCE function for application specific adjustment of heat output distribution (balance) between the upper and lower heating groups in an adjustment range between -50 % and +50 % (not valid for model size 30)
- ControlCOCKPIT with USB port for uploading programmes, reading out protocol logs, activating the User-ID function
- Displaying of already logged protocol data on the ControlCOCKPIT (max 10.000 values correspond to approx. 1 week)
- Ethernet interface on the rear of the appliance for reading out the protocol log and for uploading programmes and for online logging
- Multiple overtemperature protection: Electronic temperature monitoring TWW/TWB (protection class 3.1 or 2 and mechanical temperature limiter TB (protection class 1) acc. to DIN 12880, AutoSAFETY automatically adjusts to the set value within a freely adjustable tolerance range. Setting individual MIN/MAX values for over/undertemperature

Type	Internal volume	Int. dimensions (W x D x H)	Housing (W x D x H)	Shelf support ribs/shelves	Power consumption	Weight	PK	Cat. No.
	litres	mm	mm		W	kg		
UN30plus	32	400 x 250* x 320	585 x 434** x 704	3 / 1	1600	45	1	**9.869 689**
UN55plus	53	400 x 330* x 400	585 x 514** x 784	4 / 1	2000	57	1	**9.869 690**
UN75plus	74	400 x 330* x 560	585 x 514** x 944	6 / 2	2500	66	1	**9.869 691**
UN110plus	108	560 x 400* x 480	745 x 584** x 864	5 / 2	2800	74	1	**9.869 692**
UN160plus	161	560 x 400* x 720	745 x 584** x 1104	8 / 2	3200	96	1	**9.869 693**
UN260plus	256	640 x 500* x 800	824 x 684** x 1183	9 / 2	3400	110	1	**9.869 694**
UN450plus	449	1040 x 600* x 720	1224 x 784** x 1247	8 / 2	5800	161	1	**9.869 695**
UN750plus	749	1040 x 600* x 1200	1224 x 784** x 1726	14/2	7000	217	1	**9.869 696**
UF30plus	32	400 x 250* x 320	585 x 434** x 704	3 / 1	1600	45	1	**9.869 705**
UF55plus	53	400 x 330* x 400	585 x 514** x 784	4 / 1	2000	57	1	**9.869 706**
UF75plus	74	400 x 330* x 560	585 x 514** x 944	6 / 2	2500	66	1	**9.869 707**
UF110plus	108	560 x 400* x 480	745 x 584** x 864	5 / 2	2800	74	1	**9.869 708** 1
UF160plus	161	560 x 400* x 720	745 x 584** x 1104	8 / 2	3200	96	1	**9.869 709**
UF260plus	256	640 x 500* x 800	824 x 684** x 1183	9 / 2	3400	110	1	**9.869 710**
UF450plus	449	1040 x 600* x 720	1224 x 784** x 1247	8 / 2	5800	161	1	**9.869 711**
UF750plus	749	1040 x 600* x 1200	1224 x 784** x 1726	14/2	7000	217	1	**9.869 712**
UF1060plus	1060	1040 x 850* x 1200	1224 x 1035** x 1726	14/1	7000	252	1	**9.869 713**

*Power supply at 230 V, 50/60 Hz, model sizes 450, 750 and 1060 at 400 V and 3 x 220 V without neutral, 50/60 Hz
Type designation: N = Natural convection, F = Forced air circulation, plus = models with TwinDISPLAY
* Minus 39 mm for fan
**Depth without door handle, please add 56 mm

Glass door for Universal ovens

NEW!

Full-sight glass door (3 insulating glass) for UN, UNplus, UF, UFplus series.

Memmert

Type	PK	Cat. No.
B0 30	1	**6.257 761**
B0 55	1	**9.868 131**
B0 75	1	**6.263 335**
B0 110	1	**6.259 301**
B0 160	1	**9.868 132**
B0 260	1	**9.868 133**
B0 450	1	**9.868 134**
B0 750	1	**9.868 135**
B0 1060	1	**9.868 136**

For further accessories please see page 799.

1



1 Drying oven E28 series

BINDER

Robust, space-saving, low-profile ovens with mechanical and adjustable chamber ventilation.
- temperature range: 60°C to 230°C
- hydraulic thermostat temperature control
- chamber ventilation valve
- timer 0 to 120min
- available with, or without, overheat cut-out (Class 1)

Type	Internal volume litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Description	PK	Cat. No.
E 28	28	400 x 250 x 280	580 x 425 x 405	without overheat cut out	1	**9.883 543**
E 28*	28	400 x 250 x 280	580 x 425 x 405	with overheat cut out	1	**9.883 544**

* with overheat cut-out TB (Class 1)

2



9.883 545

Heating ovens, ED, FD, FED series

BINDER

Diversity for all types of thermal, whether efficient drying, long-term controlled elevated temperatures or sterilization tasks for homogeneous temperature distribution: a BINDER oven and heating chamber is up to any tasks thanks to its wide temperature range.
- Fast, even tempering
- Wide temperature range

ED Series: Drying ovens with gravity convection. Perfectly suited for routine drying and sterilisation applications up to 300°C.

FD Series: Drying ovens with forced convection. The right choice when it comes to fast drying and sterilization.

FED Series: Heating chambers with forced convection. The multi-talented unit with advanced control functions.

Euqipment:
- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range from 5°C above ambient temperature to 300°C
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- Optional RS 422 Interface for APT-COM™ Data Control System communication software

3



9.883 555

Type	Internal volume litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
ED 23	20	222 x 300 x 330	435 x 520 x 495	1	**9.883 529**
ED 23*	20	222 x 300 x 330	435 x 520 x 495	1	**9.883 530**
ED 53	53	400 x 350 x 400	635 x 575 x 620	1	**9.883 545** 2
ED 53*	53	400 x 350 x 400	635 x 575 x 620	1	**9.883 548**
ED 115	115	600 x 420 x 480	835 x 645 x 705	1	**9.883 546**
ED 115*	115	600 x 420 x 480	835 x 645 x 705	1	**9.883 549**
ED 240*	240	800 x 520 x 600	1035 x 745 x 825	1	**9.883 550**
ED 400*	400	1000 x 520 x 800	1235 x 765 x 1025	1	**9.883 551**
ED 720*	720	1000 x 620 x 1200	1235 x 865 x 1530	1	**9.883 552**
FD 23	20	222 x 300 x 330	435 x 520 x 495	1	**9.883 808**
FD 53	53	400 x 340 x 400	635 x 575 x 620	1	**9.883 800**
FD 115	115	600 x 410 x 480	835 x 645 x 705	1	**9.883 801**
FD 240	240	800 x 510 x 600	1035 x 745 x 825	1	**9.883 802**
FED 53*	53	400 x 340 x 400	635 x 575 x 620	1	**9.883 553**
FED 115*	115	600 x 410 x 480	835 x 645 x 705	1	**9.883 554**
FED 240*	240	800 x 510 x 600	1035 x 745 x 825	1	**9.883 555** 3
FED 400*	400	1000 x 510 x 800	1235 x 765 x 1025	1	**9.883 803**
FED 720*	720	1000 x 610 x 1200	1235 x 865 x 1530	1	**9.883 804**

* with RS 422

4



4 Safety drying ovens, FDL

BINDER

A safety drying oven from BINDER ensures the perfect test result of your solvent-based paints and coatings, absolute temperature precision even with high ventilation.
- Defined solvent quantity according to EN 1539
- Electronically controlled APT.line™ preheating chamber
- Temperature range: from 5°C above ambient temperature to 300°C
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- RS 422 interface for use with APT-COM™ DataControlSystem communication software

Type	Internal volume litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
FDL 115	115	600 x 435 x 435	835 x 685 x 800	1	**9.883 580**

E & OE.

Thermo Scientific™ Heratherm™ Ovens
Efficient, Safe, Easy

The Thermo Scientific™ Heratherm™ series provide bench-top models with 60, 100 or 180 l as well as floor models with 400 or 750 l chamber volume and 3 different fittings, each optionally with gravity- or mechanical convection.

- Very high energy efficiency, environmentally friendly materials (reduced use of formaldehyde), reduced heat emission
- Programmable timer
- Small footprint
- Flexible shelf system doubles the number of shelves and therefore the footprint
- Very good spatial and temporal temperature stability
- Automatic visual and acoustic over-temperature alarm
- Very low temperatures at outer wall
- Easy to read vacuum fluorescent display
- Intuitive user interface for setting temperature
- Easy cleaning due to edgeless fabrication

Heratherm™ General Protocol:
Perfect for routine daily work from 10 to 250°C. Chambers made from corrosion-resistant st. steel with rounded corners. Timer, mechanical exhaust vent as well as 2 shelves are incl. as standard.
Heratherm™ Advanced Protocol:
For a greater flexibility and accuracy of temperature values. With V2A st. steel interior, works up to 330°C at highly stable temperatures. Digital timer for daily or weekly On/OFF cycles. Up to 10 cycles can be stored and combined as ramps. Fan speed and air valve can be integrated into ramp programming. Selectable quick start function allows for extremely fast heating.
Heratherm™ Advanced Protocol Security:
Additional to equipment of the Advanced Protocol series: under-temperature alarm for improved sample protection. With door lock and door alarm to prevent disruption and allow for safe cultures for a long time. Optional auto-dry function deactivates oven when the samples are dry. The V2A inner chamber can be supplemented by a st. steel outer housing for pharmaceutical and clinical applications.

Specifications
Power supply: 230 V, 60 Hz
Temperature range: 10 to 250°C (General Protocol/Advanced Protocol floor models)
10 to 330°C (Advanced Protocol benchtop models/Advanced Protocol Security)

1 Heratherm™ General Protocol Ovens

Thermo Scientific™ Heratherm™ General Protocol ovens are perfect for routine daily work, providing the ideal heating and drying solution for your applications.

Thermo Scientific

- Low energy consumption
- Built in timer
- Excellent footprint/volume ratio
- Tabletop models in 3 sizes (60L, 100L, 180L), floor models in 2 sizes (400L, 750L)
- Inner chambers made from corrosion-resistant stainless steel with rounded corners for easy cleaning
- Large, easy to view vacuum fluorescent display
- Simple, microprocessor-based touch button controls
- Doors can be opened over 180° making these units easy to access
- Automatic overtemperature alarm system to protect samples
- Gravity convection units are designed to protect delicate samples while offering temperature uniformity of ±4°C with temperature stability of ±0.4°C at 150°C
- Mechanical convection models provide a temperature uniformity of ±3.3°C with temperature stability of ±0.3°C at 150°C
- The exhaust vent can be used as an access port for an external temperature sensor
- Lockable casters for easy mobility and stability (floor models only)
- All Heratherm™ ovens come standard with a RS232 data interface

1



Type	Internal volume litres	Description	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
OGS60	65	Convection Gravity	328 x 415 x 480	530 x 565 x 720	1	**4.009 206**
OGS100	105	Convection Gravity	438 x 414 x 580	640 x 565 x 820	1	**4.009 207**
OGS180	176	Convection Gravity	438 x 589 x 680	640 x 738 x 920	1	**4.009 208**
OGS400	419	Convection Gravity	544 x 590 x 1307	778 x 770 x 1545	1	**9.534 156**
OGS750	774	Convection Gravity	1004 x 590 x 1307	1261 x 770 x 1545	1	**9.534 159**
OGS750-3P	774	Convection Gravity	1004 x 590 x 1307	1261 x 770 x 1545	1	**9.534 161**
OMS60	66	Convection Mechanical	354 x 368 x 508	530 x 565 x 720	1	**4.009 209**
OMS100	104	Convection Mechanical	464 x 368 x 608	640 x 565 x 820	1	**4.009 210**
OMS180	179	Convection Mechanical	464 x 543 x 708	640 x 738 x 920	1	**4.009 211**

1 2 Heratherm™ Advanced Protocol Ovens

Thermo Scientific

As well as incorporating all the benefits of Thermo Scientific™ Heratherm™ General Protocol ovens, the Heratherm™ Advanced Protocol range boasts additional features providing even more flexibility, accuracy and dependability.

- Sophisticated timer extends the automation options available to the user: turn on or off after a pre-set time, choose between a recurring weekly timer or run oven based on the 24 hour clock
- Highest level of temperature uniformity
- Exceptionally low energy consumption - 60 litre models just need 170W (gravity convection) and 275W (mechanical convection) per hour to maintain 150°C
- Adjustable fan speed for application related airflow
- Programmable controller for temperature ramps and dwells (store up to 10 programs with 10 discrete steps, features electronically controlled fan speed and damper position)
- Access port allows the introduction of sensors for independent data monitoring
- A simple calibration routine ensures temperature accuracy over time
- Boost function enables rapid heating up - no need to run the oven 24/7 (tabletop models only)
- Optional stainless steel exterior

Specifications

Temperature range: 10 to 330°C
Power supply: 230 V/50 Hz

Type	Internal volume litres	Description	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
OGH60	61	Convection Gravity	328 x 389 x 480	530 x 565 x 720	1	**4.009 212**
OGH60 SS*	61	Convection Gravity	328 x 389 x 480	530 x 565 x 720	1	**4.009 215**
OGH100	99	Convection Gravity	438 x 389 x 580	640 x 565 x 820	1	**4.009 213**
OGH100 SS*	99	Convection Gravity	438 x 389 x 580	640 x 565 x 820	1	**4.009 216**
OGH180	168	Convection Gravity	438 x 564 x 680	640 x 738 x 920	1	**4.009 214**
OGH180 SS*	168	Convection Gravity	438 x 564 x 680	640 x 738 x 920	1	**4.009 217**
OMH60	62	Convection Mechanical	354 x 343 x 508	530 x 565 x 720	1	**4.009 218**
OMH60 SS*	62	Convection Mechanical	354 x 343 x 508	530 x 565 x 720	1	**4.009 221**
OMH100	97	Convection Mechanical	464 x 343 x 608	640 x 565 x 820	1	**4.009 219**
OMH100 SS*	97	Convection Mechanical	464 x 343 x 608	640 x 565 x 820	1	**4.009 222**
OMH180	170	Convection Mechanical	464 x 518 x 708	640 x 738 x 920	1	**4.009 220**
OMH180 SS*	170	Convection Mechanical	464 x 518 x 708	640 x 738 x 920	1	**4.009 223**
OMH400	396	Convection Mechanical	544 x 545 x 1335	778 x 770 x 1545	1	**9.534 157**
OMH400 SS	396	Convection Mechanical	544 x 545 x 1335	778 x 770 x 1545	1	**9.534 158**
OMH750	731	Convection Mechanical	1004 x 545 x 1335	1261 x 770 x 1545	1	**9.534 162**
OMH750 SS	731	Convection Mechanical	1004 x 545 x 1335	1261 x 770 x 1545	1	**9.534 163**
OMH750-3P	731	Convection Mechanical	1004 x 545 x 1335	1261 x 770 x 1545	1	**9.534 165**

*Stainless steel housing.

1



2



E & OE.

1 Heratherm™ Advanced Protocol Security Ovens

1

Thermo Scientific



The Thermo Scientific™ Heratherm™ Advanced Protocol Security portfolio combines the benefits of the Advanced Protocol line with an extra layer of security for applications where process reliability and sample protection are paramount.

Additional security features provide peace of mind for precious samples:
- Auto-dry function deactivates oven when the samples are dry, saving energy (optional sample temperature sensor is required to utilize this feature)
- Standard overtemperature alarm and an additional undertemperature alarm
- Door lock prevents disruption, tampering or accidental opening
- Door alarm notifies the operator when door is left open accidentally
- Socket for independent sample sensor (option): When connected, exact sample temperature is shown on display for additional peace of mind

Specifications
Temperature range: 10 to 330°C
Power supply: 230 V/50 Hz

Type	Internal volume litres	Description	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
OGH60-S	61	Convection Gravity	328 x 389 x 480	530 x 565 x 720	1	**4.009 224**
OGH60-S SS*	61	Convection Gravity	328 x 389 x 480	530 x 565 x 720	1	**4.009 227**
OGH100-S	99	Convection Gravity	438 x 389 x 580	640 x 565 x 820	1	**4.009 225**
OGH100-S SS*	99	Convection Gravity	438 x 389 x 580	640 x 565 x 820	1	**4.009 228**
OGH180-S	168	Convection Gravity	438 x 564 x 680	640 x 738 x 920	1	**4.009 226**
OGH180-S SS*	168	Convection Gravity	438 x 564 x 680	640 x 738 x 920	1	**4.009 229**
OMH60-S	62	Convection Mechanical	328 x 343 x 508	530 x 565 x 720	1	**4.009 230**
OMH60-S SS*	62	Convection Mechanical	328 x 343 x 508	530 x 565 x 720	1	**4.009 233**
OMH100-S	97	Convection Mechanical	438 x 343 x 608	640 x 565 x 820	1	**4.009 231**
OMH100-S SS*	97	Convection Mechanical	438 x 343 x 608	640 x 565 x 820	1	**4.009 234**
OMH180-S	170	Convection Mechanical	464 x 518 x 708	640 x 738 x 920	1	**4.009 232**
OMH180-S SS*	170	Convection Mechanical	464 x 518 x 708	640 x 738 x 920	1	**4.009 235**

*Stainless steel housing.

Accessories for Heratherm™ Ovens

Thermo Scientific

Description	For	PK	Cat. No.
Shelf incl. 2 shelf supports	OGS60, OGH60, OGH60 SS, OGH60-S, OGH60-S SS	1	**4.009 236**
Shelf incl. 2 shelf supports	OGS100, OGH100, OGH100 SS, OGH100-S, OGH100-S SS	1	**4.009 237**
Shelf incl. 2 shelf supports	OGS180, OGH180, OGH180 SS, OGH180-S, OGH180-S SS	1	**4.009 238**
Shelf incl. 2 shelf supports	OMS60, OMH60, OMH60 SS, OMH60-S, OMH60-S SS	1	**4.009 239**
Shelf incl. 2 shelf supports	OMS100, OMH100, OMH100 SS, OMH100-S, OMH100-S SS	1	**4.009 240**
Shelf incl. 2 shelf supports	OMS180, OMH180, OMH180 SS, OMH180-S, OMH180-S SS	1	**4.009 241**
Kit for stacking 60L units	OGS60, OGH60, OGH60 SS, OGH60-S, OGH60-S SS, OMS60, OMH60, OMH60 SS, OMH60-S, OMH60-S SS	1	**4.009 246**
Kit for stacking 100L units	OGS100, OGH100, OGH100 SS, OGH100-S, OGH100-S SS, OMS100, OMH100, OMH100 SS, OMH100-S, OMH100-S SS	1	**4.009 247**
Kit for stacking 180L units	OGS180, OGH180, OGH180 SS, OGH180-S, OGH180-S SS, OMS180, OMH180, OMH180 SS, OMH180-S, OMH180-S SS	1	**4.009 248**
Support stand with castors	OGS60, OGH60, OGH60 SS, OGH60-S, OGH60-S SS, OMS60, OMH60, OMH60 SS, OMH60-S, OMH60-S SS	1	**4.009 249**
Support stand with castors	OGS100, OGH100, OGH100 SS, OGH100-S, OGH100-S SS, OMS100, OMH100, OMH100 SS, OMH100-S, OMH100-S SS	1	**4.009 250**
Support stand with castors	OGS180, OGH180, OGH180 SS, OGH180-S, OGH180-S SS, OMS180, OMH180, OMH180 SS, OMH180-S, OMH180-S SS	1	**4.009 251**
Wire mesh shelf	OGS750 / OMH750	1	**9.534 167**
Wire mesh shelf	OMH750 3PH / IMH750-S	1	**9.534 168**
Silicone-free Viton sealing	400L Modelle	1	**9.534 171**
Silicone-free Viton sealing	750L Modelle	1	**9.534 172**

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9.537 928

2



2 Vacuum drying ovens VO

Memmert

Lean perfection, top precision. The Memmert vacuum ovens, based on state-of-the art technology, have been optimised to fulfil the most stringent demands, beyond merely vacuum control. In addition to direct heating of the shelves and digital control of the vacuum depth (adjustable from 10 mbar to 1100 mbar) these vacuum ovens have a weekly programmer and daily schedule function, protocol timer for temperature and pressure profiles of up to 40 ramps. The 8-digit, alphanumeric display (selection of language via set-up) makes programming easy and is also used for visualizing data during operation. The standard model is delivered with pump control for optimised rinsing procedures for the pump membranes as well as signal output for pump on/off, one thermoshelf made of aluminium, eloxadised, with works calibration certificate for +160°C at 20 mbar pressure, two connectors for thermoshelves, USB port, software "Celsius" as well as MEMoryCard. An internal datalogging memory with a capacity of 1024kB provides tamper-proof, storage and output of GLP-compliant, archive documentation of all relevant data. For total safety, a multi-level overtemperature protection system is provided, with audiovisual alarm system, protection class 3.1 microprocessor temperature monitor for over- and undertemperature, and additional integral Automatic Safety Function ASF for high and low temperature limits, automatically monitoring the set temperature and warning by an alarm when there is a temperature-related malfunction. Switching off the heating of the thermoshelf concerned when the temperature is exceeded. In addition, the VO series has a TB class 1 mechanical temperature control unit which activates when the actual temperature exceeds 10°C above the set value.

Proven Memmert quality: premium stainless steel for housing and interior. Interior hermetically welded, material 1.4404 (ASTM 316L). Safety glass door with spring-loaded safety glass on inside and anti-splinter screen ESG on outside of door

Working-temperature range:	from + 20°C up to +200°C from 5°C above ambient
Setting temperature range:	+20°C up to +200°C
Power supply:	230 V, 50/60 Hz

Type	Description	Internal volume litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
VO200	incl. 1 thermoshelf, max. 2 connections ** for thermoshelves in the rear	29	385 x 250 x 305	550 x 400* x 600	55	1	**9.537 928** 1
VO400	incl. 1 thermoshelf, max. 2 connections ** for thermoshelves in the rear	49	385 x 330 x 385	550 x 480* x 680	83	1	**9.537 929**
VO500	incl. 1 thermoshelf, max. 2 connections ** for thermoshelves in the rear	101	545 x 400 x 465	710 x 550* x 760	110	1	**9.537 932**

*Depth without door handle, please add 38 mm
**with standard equipment

Accessories for Vacuum ovens VO

Option inert gas inlet: Programmable and digitally controlled inlet for inert gas with flow rate reduction

Memmert

Premium module: The premium module comprises the inert gas inlet, one printer interface, extra connectors for thermoshelves, one for VO200, two for VO400/500, an additional thermoshelf for model size 400/500 and a drip tray.

Description	PK	Cat. No.
Vacuum pump module cabinet without pump for VO200	1	**9.537 933**
Vacuum pump module cabinet without pump for VO400	1	**9.537 934**
Vacuum pump module cabinet without pump for VO500	1	**9.537 935**
Chemically resistant vacuum pump, capacity 34 NI/min for VO200	1	**9.537 936**
Chemically resistant vacuum pump, capacity 60 NI/min for VO400/500	1	**9.537 937**
Thermoshelf, aluminium, eloxadised material 3.3547 (ASTM B209) for VO200	1	**9.537 938**
Thermoshelf, aluminium, eloxadised material 3.3547 (ASTM B209) for VO400	1	**9.537 939**
Thermoshelf, aluminium, eloxadised material 3.3547 (ASTM B209) for VO500	1	**9.537 940**
Thermoshelf stainless steel, material 1.4404 (ASTM 316L) for VO200	1	**6.071 767**
Thermoshelf stainless steel, material 1.4404 (ASTM 316L) for VO400	1	**9.537 941**
Thermoshelf stainless steel, material 1.4404 (ASTM 316L) for VO500	1	**6.225 112**
Option inert gas inlet	1	**9.537 942**
Premium module for VO200	1	**9.537 944**
Premium module for VO400	1	**9.537 945**
Premium module for VO500	1	**9.537 946**

E & OE.

1 Vacuum drying ovens, VD, VDL series



BINDER

The standard when it comes to gentle drying: Vacuum drying ovens from BINDER dry without residues, without incrustations or oxidation. In addition, they have a reliable safety concept.
- Safe work with one-of-a-kind safety concept
- Fast, condensation-free drying processes
- Homogeneous sample trying in a vacuum

VD Series: Vacuum drying oven for non-flammable solvents. A BINDER vacuum drying oven is the first choice when it comes to efficient drying using homogeneous temperature distribution in a vacuum.

VDL Series: Safety vacuum drying oven for flammable solvents. For a VDL series vacuum drying oven, safety is the top priority, even flammable solvents can be gently dried.

Equipment:
- Electronically controlled APT.line™ preheating chamber
- Temperature range from 15°C above ambient temperature to 200°C
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- Interface RS 422 for APT-COM™ DataControlSystem communication software
- Spring-mounted safety glass panel with shatter protection
- VDL safety concept: Pressure control device for heating activated <125mbar,
- Over pressure capsuled instrument panel with compressed air connection and maintenance unit, flame protection gasket
- 2 patented, flexible aluminum expansion racks
- Also available as complete system with module and vacuum pump

Type	Internal volume litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
VD 23	23	285 x 295 x 285	515 x 500 x 655	1	**9.883 540**
VD 53	53	400 x 340 x 400	635 x 550 x 775	1	**9.883 541**
VD 115	115	506 x 460 x 506	740 x 670 x 900	1	**9.883 542**
VDL 23	23	285 x 295 x 285	515 x 500 x 655	1	**9.883 531**
VDL 53	53	400 x 340 x 400	635 x 550 x 775	1	**9.883 532**
VDL 115	115	506 x 460 x 506	740 x 670 x 900	1	**9.883 533**

2 Compact vacuum oven, VT 6025



Thermo Scientific

For the gentle and rapid drying or heat treatment of temperature sensitive substances and components in the electronics, pharmacy, cosmetics and biochemistry fields. With double glazed safety glass door window, very low external casing temperature, freely adjustable overheat cut-out with separate temperature sensor, Kelvitron® microprocessor controlled temperature controller and pull-out, non-tilting shelves with end stops.

External dimensions (WxDxH):	480mm x 450mm x 600mm
Internal dimensions (WxDxH):	300mm x 307mm x 275mm
Interior volume:	25L
Usable height above shelf:	120mm
Nominal temperature:	200°C
Ultimate vacuum:	1 x 10-² mbar
Power supply:	230V 50/60Hz
System of protection:	IP 20

Type	PK	Cat. No.
Basic model	1	**9.883 480**
With stainless steel vacuum ball valve, inert gas connection, seamlessly welded chamber and DN25 vacuum connection	1	**9.883 482**
As above, with additional digital pressure display and recorder connection	1	**9.883 483**
As above, with digital pressure display, recorder connection, Digicon®S with analogue interface 0 to 20 mA / 0 to 10 V	1	**9.883 484**

Options for vacuum drying oven VT 6025

Thermo Scientific

Description	PK	Cat. No.
Fine control valve	1	**9.883 485**
Works calibration certificate, single point calibrated at 150°C in centre of chamber and at absolute pressure 50 mbar.	1	**9.883 486**
Insert set with pair of corner supports	1	**9.883 488**

1



1 Vacuum oven 6000

Thermo Scientific

For the careful, rapid drying and heat treatment of temperature sensitive substances and components in the electronics, pharmaceutical, cosmetic and biochemical industries.
With electro-polished and internally welded, rectangular chamber made of 1.4571 stainless steel and silicone door seal. Also features analogue pressure display, stainless steel ball valve to control vacuum, rapid air ventilation valve, inert gas connection with pressure relief safety valve for controlled chamber purging and corrosion resistant vacuum fittings. Small flange (DN 25 KF) vacuum fittings are positioned on the rear panel of the cabinet. A overheat cut-out (Class 2) is supplied as standard. 53L models are supplied with two shelves, 128L models are supplied with three shelves.

Type M, with heated jacket, range up to 200°C.
Heat is conducted from the heated chamber through the shelves to the sample. The shelves are removeable.
With Kelvitron® microprocessor temperature controller.

Type P, with heated shelves, range up to 300°C (up to 400°C on request).
Tubular heating elements in the shelves heat the sample directly, providing rapid heat-up and processing times.
With individual shelf temperature control, a common temperature value is set for all plates. With Digicon® electronic temperature controller.

Options for VT 6000:
- Inert gas connection
- Digital pressure display
- Pressure controller with electronic valve
- Viton door seal - Timers
- Digital sample temperature display
- Variety of temperature controllers
- Analogue interface
- Maximum temperature 400°C.
- Interface connection for central monitoring
- Temperature documentation
- Calibration certificate

Shelves - further options available on request. Fully equipped vacuum pump control station vacucenter 1 available as an accessory for Vacutherm 6060 and 6130 ovens. Choice of 3 different vacuum pumps available according to operating conditions.

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Internal volume litres	PK	Cat. No.
VT 6060 M	744 x 570 x 576	415 x 371 x 345	53	1	**9.883 511**
VT 6130 M	895 x 750 x 720	495 x 529 x 489	128	1	**9.883 512**
VT 6060 P	744 x 570 x 576	415 x 371 x 345	53	1	**9.883 513**
VT 6130 P	895 x 750 x 720	495 x 529 x 489	128	1	**9.883 514**
VT 6060 M-BL	744 x 570 x 576	415 x 371 x 345	53	1	**9.883 521**
VT 6130 M-BL	895 x 750 x 720	495 x 529 x 489	128	1	**9.883 522**
VT 6060 P-BL	744 x 570 x 576	415 x 371 x 345	53	1	**9.883 523**
VT 6130 P-BL	895 x 750 x 720	495 x 529 x 489	128	1	**9.883 524**

Accessories for vacuum drying cabinets 6000

Thermo Scientific

Description	PK	Cat. No.
Sample tray, aluminium 2mm, HXDXW = 30x415x460mm for VT 6130	1	**4.009 784**
Sample tray, stainless steel 1.5mm, HXDXW = 30x415x460mm for VT 6130	1	**4.009 785**
Sample tray, aluminium 2mm, HXDXW = 30x295x380mm for VT 6060	1	**4.009 786**
Flame filter for vacuum tubing	1	**7.024 635**
Insert with support bracket for VT 6060 M	1	**7.024 658**
Insert with support bracket for VT 6130 M	1	**7.024 659**
Sample tray, stainless steel 1.5mm, HXDXW = 30x295x380mm for VT 6060	1	**7.077 915**
Floor stand 780mm for T/UT 6060, ST/SUT 6060, B 6060 or VT 6060 M/P-BL	1	**9.534 066**
Floor stand 780mm for T/UT 6120, ST/SUT 6120 or B 6120	1	**9.534 068**
Vacuum connection set, stainless steel, for tubing, 10 mm	1	**9.883 489**

Accessories for vacuum drying oven 6000

Thermo Scientific

Description	PK	Cat. No.
Interface cable, 3m (9-pole) + adapter (9- to 25-pole)	1	**4.009 783**
Temperature controller Eurotherm 2404/P4 with RS422/485	1	**4.010 053**
Chamber, PTFE-coated VT 6060 M	1	**4.010 065**
Chamber, PTFE-coated VT 6130 M	1	**4.010 066**
Weekly program timer, mechanical for FT 6060-6200	1	**7.024 984**
Weekly program timer, digital for FT 6030, 6420-6760	1	**7.025 086**
Digicon with analogue interface 200C VT6060M/6130	1	**7.025 112**
Digicon with analogue interface 300C VT6060P/6130	1	**7.025 113**
Digicon with analogue interface 400C, 6060P	1	**7.025 114**
Digicon with analogue interface 400C, 6130P	1	**7.025 115**
Daily program timer, mechanical, crystal controlled	1	**7.025 119**
Interface RS232 for VT with temperatur controller Kelvitron T	1	**7.076 456**
Temperatur controller Eurotherm 2404/P4 with RS232	1	**7.510 157**
Temperatur controller Thermicon P	1	**9.867 403**
24 Hour Timer, 20h at 60Hz	1	**9.867 405**
Digital pressure display with recorder output 0-1 V	1	**9.883 402**
Digital pressure control with magnetic valve + recorder output 0-1 V	1	**9.883 403**
Viton door gasket for VT6060 M/P	1	**9.883 404**
Viton door gasket for VT6130 M/P	1	**9.883 405**
Digital load temperature monitoring, VT	1	**9.883 406**
Alarm Monitoring Connection	1	**9.883 414**
Chamber, round corners, 1.4571 VT6060M	1	**9.883 416**
Chamber, round corners, 1.4571 VT6060P	1	**9.883 417**
Chamber, round corners, 1.4571 VT6130M	1	**9.883 418**
Chamber, round corners, 1.4571 VT6130P	1	**9.883 419**
Rated temperature 400ºC for VT6060P	1	**9.883 421**
Rated temperature 400ºC for VT6130P	1	**9.883 422**

1 Vacuum pump cabinet Vacucenter 1

Thermo Scientific

This vacuum pump cabinet can be used with VT 6060 and VT 6130 vacuum drying ovens. It carries the vacuum pump (we offer three different pumps for a broad range of applications) and includes a central power supply and a main switch for both oven and pump.

Specifications

Nominal voltage:	V3N 400, 50/60Hz
Max power rating	
MD12H:	3.37kW
HMD 4C:	3.20kW
Dimensions (W x H x D):	895 x 65 x 900mm
Weight	
MD12H:	88 kg
HMD 4C:	80 kg
Protection class:	1
System of protection:	IP 20

1



Type	Flow rate m³ / hr.	PK	Cat. No.
with diaphragm pump MD12H	9.6	1	**9.883 431**
with diaphragm pump HMD 4C	3.0	1	**9.883 432**

Vacuum pumps please see page 971.

1



1 Incubators IN/IF and INplus/IFplus

The incubator generation with the unique ControlCOCKPIT for a quick and intuitive operation.
For the gentle heating of organic chamber loads. The heating and control system are especially optimised for low temperatures of up to +80°C.
Standard equipment:
- PID microprocessor control with integrated auto-diagnostic system
- Interior made of stainless steel, material 1.4301 (ASTM 304) with all-round deep-drawn ribs to integrate the large-area heating with ceramic-metal sheath
- Structured stainless steel housing, scratch-resistant, robust and durable; rear of zinc-plated steel
- High-temperature connectors on the rear of the appliance for single-phase power connection according to country specific systems and IEC standards
- Internal data logger with a storage capacity of at least 10 years
- German, English, French, Spanish language settings available on the ControlCOCKPIT
- Digital backwards counter with target time setting adjustable between 1 minute and 99 days
- The SetpointWAIT function guarantees that the process time does not start until the set temperature is reached at all measuring points - optional for temperature values recorded by the freely positionable Pt100 sensors inside the chamber.
- Adjustment of three calibration values for temperature and additional appliance specific parameters directly at the ControlCOCKPIT

Type designation: plus = Models with TwinDISPLAY

Specifications

Type designation:	N = Natural convection, F = Forced air circulation
Working-temperature range:	at least 5°C (IN/INplus), at least 10°C (IF/IFplus) above ambient temperature to +80°C
Setting temperature range:	+20°C to +80°C
Setting accuracy:	0.1°C
Power supply:	230 V, 50/60 Hz; 115 V, 50/60 Hz no extra cost

2



9.537 961

Incubators IN and IF

SingleDISPLAY: ControlCOCKPIT with one TFT colour display *Memmert*
- Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time, time zones, summertime/wintertime
- One temperature sensor Pt100 DIN class A in a 4-wire circuit
- AtmoCONTROL software for reading out, managing and organising the data logger via Ethernet interface (temporary trial version can be downloaded). USB stick with AtmoCONTROL software available as accessory (on demand)
- Ethernet interface on the rear of the appliance for reading out the protocol log and for online logging
- Double overtemperature protection: Electronic temperature monitoring with freely adjustable monitoring temperature, with option A6 TWW/TWB (protection class 3.1 or 2), mechanical temperature limiter TB acc. to DIN 12880

Type	Internal volume	Int. dimensions (W x D x H)	Shelf support ribs/shelves	Housing (W x D x H)	Power consumption	Weight	PK	Cat. No.
	litres	mm		mm	W	kg		
IN30	32	400 x 250* x 320	3 / 1	585 x 434** x 704	1600	48	1	**9.537 961** 2
IN55	53	400 x 330* x 400	4 / 1	585 x 514** x 784	1000	57	1	**9.537 962**
IN75	74	400 x 330* x 560	6 / 2	585 x 514** x 944	1250	66	1	**9.537 963**
IN110	108	560 x 400* x 480	5 / 2	745 x 584** x 864	1400	76	1	**9.537 964**
IN160	161	560 x 400* x 720	8 / 2	745 x 584** x 1104	1600	96	1	**9.537 965**
IN260	256	640 x 500* x 800	9 / 2	824 x 684** x 1183	1700	110	1	**9.537 966**
IN450	449	1040 x 600* x 720	8 / 2	1224 x 784** x 1247	1800	161	1	**9.537 967**
IN750	749	1040 x 600* x 1200	14 / 2	1224 x 784** x 1726	2000	217	1	**9.537 968**
IF30	32	400 x 250* x 320	3 / 1	585 x 434** x 704	1600	48	1	**9.537 977**
IF55	53	400 x 330* x 400	4 / 1	585 x 514** x 784	1000	57	1	**9.537 978**
IF75	74	400 x 330* x 560	6 / 2	585 x 514** x 944	1250	66	1	**9.537 979**
IF110	108	560 x 400* x 480	5 / 2	745 x 584** x 864	1400	76	1	**9.537 980**
IF160	161	560 x 400* x 720	8 / 2	745 x 584** x 1104	1600	96	1	**9.537 981**
IF260	256	640 x 500* x 800	9 / 2	824 x 684** x 1183	1700	110	1	**9.537 982**
IF450	449	1040 x 600* x 720	8 / 2	1224 x 784** x 1247	1800	161	1	**9.537 983**
IF750	749	1040 x 600* x 1200	14 / 2	1224 x 784** x 1726	2000	217	1	**9.537 984**

Type designation: N = Natural convection, F = Forced air circulation
* Minus 39 mm for an air vent in centre of rear panel
**Depth without door handle, please add 56 mm

E & OE.

Incubators INplus and IFplus

NEW!

Memmert

TwinDISPLAY: ControlCOCKPIT with two TFT colour displays

- Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time, time zones, summertime/wintertime
- Two Pt100 sensors DIN class A in a 4-wire circuit for mutual monitoring, taking over functions in case of an error
- AtmoCONTROL software on a USB stick for programming, managing and transferring programmes via Ethernet interface or USB port
- HeatBALANCE function for application specific adjustment of heat output distribution (balance) between the upper and lower heating groups in an adjustment range between -50 % and +50 % (not valid for model size 30)
- ControlCOCKPIT with USB port for uploading programmes, reading out protocol logs, activating the User-ID function
- Displaying of already logged protocol data on the ControlCOCKPIT (max 10.000 values correspond to approx. 1 week)
- Ethernet interface on the rear of the appliance for reading out the protocol log and for uploading programmes and for online logging
- Multiple overtemperature protection: Electronic temperature monitoring TWW/TWB (protection class 3.1 or 2 and mechanical temperature limiter TB (protection class 1) acc. to DIN 12880, AutoSAFETY automatically adjusts to the set value within a freely adjustable tolerance range. Setting individual MIN/MAX values for over/undertemperature alarm

1



9.537 990

Type	Internal volume	Int. dimensions (W x D x H)	Shelf support ribs/shelves	Housing (W x D x H)	Power consumption	Weight	PK	Cat. No.
	litres	mm		mm	W	kg		
IN30plus	32	400 x 250* x 320	3 / 1	585 x 434** x 704	1600	48	1	**9.537 969**
IN55plus	53	400 x 330* x 400	4 / 1	585 x 514** x 784	1000	57	1	**9.537 970**
IN75plus	74	400 x 330* x 560	6 / 2	585 x 514** x 944	1250	66	1	**9.537 971**
IN110plus	108	560 x 400* x 480	5 / 2	745 x 584** x 864	1400	76	1	**9.537 972**
IN160plus	161	560 x 400* x 720	8 / 2	745 x 584** x 1104	1600	96	1	**9.537 973**
IN260plus	256	640 x 500* x 800	9 / 2	824 x 684** x 1183	1700	110	1	**9.537 974**
IN450plus	449	1040 x 600* x 720	8 / 2	1224 x 784** x 1247	1800	161	1	**9.537 975**
IN750plus	749	1040 x 600* x 1200	14 / 2	1224 x 784** x 1726	2000	217	1	**9.537 976**
IF30plus	32	400 x 250* x 320	3 / 1	585 x 434** x 704	1600	48	1	**9.537 985**
IF55plus	53	400 x 330* x 400	4 / 1	585 x 514** x 784	1000	57	1	**9.537 986**
IF75plus	74	400 x 330* x 560	6 / 2	585 x 514** x 944	1250	66	1	**9.537 987**
IF110plus	108	560 x 400* x 480	5 / 2	745 x 584** x 864	1400	76	1	**9.537 988**
IF160plus	161	560 x 400* x 720	8 / 2	745 x 584** x 1104	1600	96	1	**9.537 989**
IF260plus	256	640 x 500* x 800	9 / 2	824 x 684** x 1183	1700	110	1	**9.537 990** 1
IF450plus	449	1040 x 600* x 720	8 / 2	1224 x 784** x 1247	1800	161	1	**9.537 991**
IF750plus	749	1040 x 600* x 1200	14 / 2	1224 x 784** x 1726	2000	217	1	**9.537 992**

Type designation: N = Natural convection, F = Forced air circulation, plus = Models with TwinDISPLAY

* Minus 39 mm for fan

**Depth without door handle, please add 56 mm

Accessories for Universal ovens and Incubators

NEW!

Stainless steel grids max. loading: 30kg for sizes 30 - 260: 20 kg, sizes 450 + 750: 30 kg, UF1060 and UF1060plus: 60 kg

Memmert

Type	For	Description	PK	Cat. No.
E28884	for model size 30	stainless steel grid	1	**9.537 203**
E20164	for model size 55 und 75	stainless steel grid	1	**6.231 512**
E20165	for model size 110 und 160	stainless steel grid	1	**6.232 433**
E28891	for model size 260	stainless steel grid	1	**9.537 204**
E20182	for model size 450 und 750	stainless steel grid	1	**6.222 688**
B32550	for model size UF1060 und 1060plus	stainless steel grid	1	**6.266 337**

Additional stainless steel shelves are available on request

Special equipment for Universal ovens and Incubators

NEW!

Memmert

Type	Description	PK	Cat. No.
D00125	IQ/OQ document, with works test data incl. temperature distribution survey for one free-selectable temperature value, for 9 measuring points to DIN 12880:2007-05 for model 30, PQ check list as support for validation by customer	1	**9.867 756**
D00127	IQ/OQ document, with works test data incl. temperature distribution survey for one free-selectable temperature value, for 27 measuring points to DIN 12880:2007-05 for model 55 - 1060, PQ check list as support for validation by customer	1	**9.867 757**
E29778	USB User ID Stick (only for units with TwinDISPLAY)	1	**6.257 480**
E06192	USB Ethernet adapter	1	**9.867 717**
E06189	Ethernet connection cable 5 m for computer interface	1	**9.867 758**
E29780	USB stick with documentation Software AtmoCONTROL and operating instructions for products with SingleDISPLAY (for units with TwinDISPLAY included as standard)	1	**9.867 759**

Thermo Scientific Heratherm Microbiological Incubators
Efficient, Safe, Easy

Thermo Scientific Heratherm™ microbiological incubators are available in four different models, providing three different incubator airflow technologies in a choice of six sizes.

Heratherm Compact Incubator
The most compact unit of the Heratherm microbiological incubator family has an 18L capacity, ideal for personalized workspace.

Heratherm General Protocol Incubators
Designed for routine applications in pharmaceutical, medical, food and research laboratories.

Heratherm Advanced Protocol Incubators
Exceptional temperature performance for demanding applications.

Heratherm Advanced Protocol Security Incubators
Incorporates additional safety features for ultimate sample protection.

Safe
- Safe view of samples through internal glass door, without impact on temperature
- Safe conditions with superior temperature uniformity
- Safe containment with automatic alarm for temperature deviations

Easy
- Easy temperature setting with intuitive user interface
- Easy to remove shelf system
- Easy to clean interior with rounded corners
- Easy to read large display

Efficient
- Efficient small footprint to optimize benchtop space
- Conveniently stackable without the need for tools or stacking kits
- Efficient utilization of interior with flexible shelf system

1 2 Heratherm General Protocol Microbiological Incubators

Thermo Scientific Heratherm General Protocol incubators have been designed for your routine applications in pharmaceutical, medical, food and research laboratories.

Thermo Scientific

- Gravity convection provides gentle air flow and minimal drying out
- Corrosion resistant stainless steel chamber (AISI 430)
- Intuitive user interface for easy temperature setting
- Large vacuum fluorescent display for easy reading
- Safe view of samples through internal glass door, without impact on temperature
- Automatic overtemperature alarm
- Easy to remove "One Click" - shelf system
- Easy to clean interior with rounded corners
- Efficient small footprint to optimize benchtop space
- Efficient utilization of interior with flexible shelf system
- Tabletop models conveniently stackable without the need for tools or stacking kits
- Lockable casters for easy mobility and stability (floor models only)

Specifications

Temperature range: ambient +5°C to 75°C
Power supply: 230 V/50/60 Hz

Type	Internal volume litres	Description	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
IGS60	75	General Protocol	354 x 414 x 508	530 x 565 x 720	1	**4.009 191**
IGS100	117	General Protocol	464 x 414 x 608	640 x 565 x 820	1	**4.009 192**
IGS180	194	General Protocol	464 x 589 x 708	640 x 738 x 920	1	**4.009 193**
IGS400	405	General Protocol	544 x 569 x 1307	778 x 770 x 1545	1	**9.534 150**
IGS750	747	General Protocol	1004 x 569 x 1307	1261 x 770 x 1545	1	**9.534 153**

1



2



E & OE.

1 Heratherm Advanced Protocol Microbiological Incubators

1



Thermo Scientific

Thermo Scientific Heratherm Advanced Protocol incubators provide exceptional temperature performance for demanding applications.

- Dual convection for application versatility-fan speed adjustable from 0 to 100%
- Advanced digital timer for daily or weekly ON/OFF cycles
- Easy to clean, corrosion-resistant stainless-steel interior (AISI 304)
- Broad temperature range from 5°C above ambient to 105°C-suitable for drying applications
- Temperature uniformity of ±0.6 (Fan off) and between ±0.2°C and ±0.4C (Fan full speed) (measured at 37°C)
- Temperature stability of ±0.1°C (measured at 37°C)
- Intuitive user interface for setting temperature
- Large, easy to read vacuum fluorescent display
- Internal glass door allows sample viewing without impacting temperature
- Exceptionally small footprint

Specifications

Temperature range: ambient +5°C to 105°C

Type	Internal volume litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
IMH60	66	354 x 368 x 508	530 x 565 x 720	1	**4.009 194**
IMH100	104	464 x 368 x 608	640 x 565 x 820	1	**4.009 195**
IMH180	178	4648 x 543 x 70	640 x 738 x 920	1	**4.009 196**
IMH60 SS*	66	354 x 368 x 508	530 x 565 x 720	1	**4.009 200**
IMH100 SS*	104	464 x 368 x 608	640 x 565 x 820	1	**4.009 201**
IMH180 SS*	178	464 x 543 x 708	640 x 738 x 920	1	**4.009 202**

2 Heratherm Advanced Protocol Security Incubators

2



Thermo Scientific

Thermo Scientific Heratherm Advanced Protocol Security incubators incorporate additional safety features for ultimate sample protection.

- Lockable incubator door for restricted access
- Audible alarm if the door is left open accidently
- Automatic over- and under temperature alarm
- 140°C decontamination, contaminating microorganisms are reduced to a minimum, comparable to sterilisation, within a six hour cycle. No need for separate autoclaving of interior fittings. Certified by an accredited microbiological institute.

Specifications

Temperature range: ambient +5°C to 105°C
Power supply: 230V, 50/60Hz

Type	Internal volume litres	Description	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
IMH60-S	66	DUAL convection	354 x 368 x 508	530 x 565 x 720	1	**4.009 197**
IMH100-S	104	DUAL convection	464 x 368 x 608	640 x 565 x 820	1	**4.009 198**
IMH180-S	178	DUAL convection	464 x 543 x 708	640 x 738 x 920	1	**4.009 199**
IMH60-S SS*	66	DUAL convection	354 x 368 x 508	530 x 565 x 720	1	**4.009 203**
IMH100-S SS*	104	DUAL convection	464 x 368 x 608	640 x 565 x 820	1	**4.009 204**
IMH180-S SS*	178	DUAL convection	464 x 543 x 708	640 x 738 x 920	1	**4.009 205**
IMH400-S	381	Mechanical convection	544 x 569 x 1335	778 x 770 x 1545	1	**9.534 151**
IMH400-S SS	381	Mechanical convection	544 x 569 x 1335	778 x 770 x 1545	1	**9.534 152**
IMH750-S	702	Mechanical convection	1004 x 569 x 1335	1261 x 770 x 1545	1	**9.534 154**
IMH750-S SS	702	Mechanical convection	1004 x 569 x 1335	1261 x 770 x 1545	1	**9.534 155**

*Stainless steel housing.

Accessories for Heratherm Microbiological Incubators

Thermo Scientific

Description	PK	Cat. No.
Wire mesh shelf for 60L Incubators including 2 shelf supports, 338mm x 336mm	1	**4.009 239**
Wire mesh shelf for 100L Incubators including 2 shelf supports, 448mm x 336mm	1	**4.009 240**
Wire mesh shelf for 180L Incubators including 2 shelf supports, 448mm x 511mm	1	**4.009 241**
Kit for stacking 60L units	1	**4.009 246**
Kit for stacking 100L units	1	**4.009 247**
Kit for stacking 180L units	1	**4.009 248**
Perforated stainless steel insert for all 400 litre Incubators	1	**9.534 169**
Perforated stainless steel insert for all 750 litre Incubators	1	**9.534 170**
Silicone free viton door sealing for all 400 litre Incubators	1	**9.534 171**
Silicone free viton door sealing for all 750 litre Incubators	1	**9.534 172**

1



1 Thermo Scientific™ Heratherm™ Compact Incubator

Thermo Scientific

The most compact unit of the Heratherm™ microbiological incubator family has an 18L capacity, ideal for personalized workspace.
- Minimal footprint for space restricted lab areas
- Temperatures at or below ambient
- High temperature accuracy
- Internal light facilitates sample observartion

Specifications

Temperature range:	17 to 40°C
Convection technology:	Mechanical convection
Temperature deviation at 37°C (spatial):	±1.2°C
Temperature deviation at 37°C (over time):	±0.2°C
Footprint:	0.12m²
Chamber volume:	approx. 18l
Dimensions chamber (W x H x D):	180 x 310 x 290mm
Dimensions, external (W x H x D):	260 x 415 x 470mm
Number of shelves:	2 (incl. in delivery)/max. 3
Max. shelf load:	2kg
Power supply/max. current:	45W/0.45 - 0.85A
Weight:	7.2kg

Description	PK	Cat. No.
Heratherm™ Compact Incubator	1	**4.009 190**
Additonal shelf	1	**4.009 256**

2



2 Hybridisation Incubator 7601

GFL

For exact hybridisations of DNA and RNA probes with nucleic acid on filter paper and for incubations of protein blots with antibodies. The small quantity of hybridisation liquid that is required enables the user to work with high concentrations of probes or antibodies. Other applications are also possible. Instead of the removable rotating rack, the Incubator's interior can be equipped with up to five, non-tilt and pull-out, trays (accessories). The unit carries the CE mark.
- microprocessor-controlled temperature regulation. Temperature range: approx. 8°C above ambient to +99.9°C, Temperature constancy (temporal): ±0.5°C. Temperature setting and display: digital - LED, in 0.1°C increments.
- the ventilator ensures optimum temperature distribution throughout the cabinet interior
- overtemperature cut-out: electronical, with visual alarm at 4°C above the set temperature, and electro-mechanical > 130°C. Electronic monitoring.
- variable rotating rack for up to 8 hybridisation bottles 51mm dia. or 16 hybridisation bottles 32mm dia. Rack rotation speed: 10 per minute, fixed
- soft-touch keys with clear symbols
- clear view of the interior cabinet through a large 16mm thick, heat-insulating, acrylic glass window
- key to switch on two 25 W cabinet lamps temporarily
- interior parts of rotating rack made of stainless steel
- two clip wheels with 8 spring clips (type 7937) and 4 hybridisation bottles (type 7945) are included as standard
- housing: electrolytically galvanized sheet steel
- WxDxH (internal): 400 x 330 x 380mm W x D x H (external): 585 x 630 x 650mm
- supply requirements: 230V 50/60Hz, 650W (other voltages are available - details on request)
- weight: 45kg

Type	PK	Cat. No.
7601	1	**9.535 601**

3



3 Clip Wheel for Hybridisation Incubator 7601

GFL

Clip wheel 7940. Stainless steel, with holes for spring clips. Two clip wheels are included. Two more clip wheels can be inserted to double the capacity of shorter vessels.

Type	PK	Cat. No.
7940	1	**9.535 640**

E & OE.

1 Spring Clips for Hybridisation Incubator 7601

Spring clips 7935, 7936, 7937. To attach hybridisation bottles onto the clip wheels. *GFL*
Two spring clips are required for each bottle. The required fixings are supplied with each clip.
Eight spring clips 7937 are in the standard scope of supply.



Type	For diam. mm	PK	Cat. No.
7935	32 (16/32) *	1	**9.535 635**
7936	38 (8/16) *	1	**9.535 636**
7937	51 (8/16) *	1	**9.535 637**

* Maximum number of clips per clip plate/number of clips required.

2 Special Hybridisation Bottles

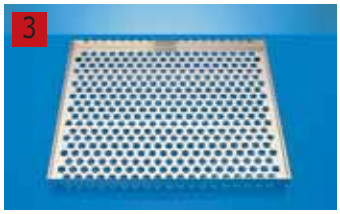
Accessories for Hybridisation Incubator 7601 (see also GFL Tube Roller Incubator 4020). *GFL*
Borosilicate glass, with plastic screw cap perforated with 0.5mm centre hole for pressure compensation (also available unperforated on request).



Type	Diam. mm	Length mm	Max. bottles per rack	PK	Cat. No.
7943	32	273	16	1	**9.535 643**
7944	38	273	8	1	**9.535 644**
7945	51	273	8	1	**9.535 645**

3 Perforated Tray for Hybridisation Incubator 7601

Perforated tray 7914. Stainless steel, can only be used instead of the rotating rack, max. five trays. *GFL*



Type	PK	Cat. No.
7914	1	**9.535 614**

4 5 Mini Incubator 4010 and Mini Tube Roller Incubator 4020

Both models are well suited for incubations that require exactly reproducible temperatures in standard and research laboratory applications. *GFL*
Mini Incubator 4010: also suitable for warming and drying of samples.
Mini Tube Roller Incubator 4020: also suitable for hybridisations that require exactly reproducible temperatures.
Compact, little space required for versatile applications directly on the workbench. Lift-up, transparent acrylic covers permit a clear view of the cultures in the interior cabinet. The units carry the CE mark.
- microprocessor-controlled temperature regulation, temperature range: approx. 8°C above ambient to +60°C, temperature constancy (temporal at 40°C): ±0.2°C
- temperature setting and display: digital - LED, in 0.1°C increments
- fan ventilation ensures optimum temperature distribution throughout the cabinet interior
- electronic monitoring of the temperature controller, electronic overtemperature cut-out, with visual alarm at 4°C above the set value, and electro-mechanical >135°C
- soft-touch keys with clear symbols
- Outer casings made of powder-coated, electrolytically galvanized sheet steel
- W/D/H (outside): 280/510/280
- Mains supply: 230 V 50/60 Hz/Type 4010: 330 W, Type 4020: 360 W (other are voltages on request)
- Net/gross weight: 4010 9.9/11.8kg, 4020 11.8/13.7kg

Mini Incubator 4010: Perforated tray and bottom tray made of stainless steel.
Mini Tube Roller Incubator 4020: Removable bottle rotating device, made of stainless steel, to accept hybridisation bottles from 32mm to 76mm dia. (can be placed individually or in pairs, even with different diameters - the outer axles can be placed into pre-fabricated seats without the use of tools). Even results and high resolutions of the detections even when in continuous use due to its constant frequency of 12rpm.
Special hybridisation bottles for Tube Roller Incubator 4020: see Hybridisation Incubator 7601 (accessories).





Type	Internal dimensions (W x D x H) mm	Max. load kg	Capacity Litres	Movement type	Speed rpm	PK	Cat. No.
Mini incubator 4010	230 x 310 x 170	5	12	-	-	1	**9.535 605**
Mini roller incubator 4020	230 x 300 x 140	3	10	rotating	12, fixed	1	**9.535 607**

1



1 Incubator, mechanical control, B 28 series

BINDER

Robust, small, space-saving unit with mechanical controller and adjustable ventilation for accurate and reliable incubation.

- temperature range: 30°C to 70°C
- Adjustable air vent
- Inner glass door
- Available with, or without, overheat cut-out (Class 1)
- Internal volume: 28L
- External dimensions: 580 x 425 x 405mm
- Internal dimensions: 400 x 250 x 280mm

Type	Description	PK	Cat. No.
B28	without cut-out	1	**9.883 556**
B28*	with cut-out	1	**9.883 557**

* with overheat cut-out TB (Class 1)

2



2 Incubators, BD, BF series and refrigerated incubators, KB series

BINDER

BINDER incubators and refrigerated incubators stand for optimal incubation and for results that are reproducible in every routine test, even under high batch throughputs in long-term operation.
- Safe and reproducible incubation
- Disinfection routine at 100°C
- Broad range of products and applications

Serie BD: Incubators with gravity convection. The specialist for incubating organisms, as well as microbiological heating and conditioning.

Serie BF: Incubators with forced convection. It shines with its homogeneity and quick recovery times, even under a full load and high throughput.

Serie KB: Refrigerated incubators with forced convection. Safe incubation at high ambient temperatures. Additional options and a weekly programming function make it very versatile.

3



9.883 570

Equipment:
- Electronically controlled APT.line™ preheating chamber
- Temperature range: from 5°C above room temperature to 100°C (BD/BF), -5°C to 100°C (KB)
- Independent temperature safety device class 3.1 (DIN 12880) with optical and audible temperature alarm
- RS 422 interface for use with APT-COM™ DataControlSystem communication software
- Inner glass door

Type	Internal volume litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
BD 23	20	222 x 277 x 330	435 x 520 x 495	1	**9.883 599**
BD 53	53	400 x 330 x 400	635 x 575 x 620	1	**9.883 605**
BD 115	115	600 x 400 x 480	835 x 645 x 705	1	**9.883 606**
BD 240	240	800 x 500 x 600	1035 x 745 x 825	1	**9.883 607**
BD 400	400	1000 x 500 x 800	1235 x 765 x 1025	1	**9.883 603**
BD 720	720	1000 x 600 x 1200	1235 x 865 x 1530	1	**9.883 604**
BF 53	53	400 x 330 x 400	635 x 575 x 620	1	**6.206 495**
BF 115	115	600 x 400 x 480	835 x 645 x 705	1	**6.902 328**
BF 240	240	800 x 500 x 600	1035 x 745 x 825	1	**6.224 050**
BF 400	400	1000 x 500 x 800	1235 x 765 x 1025	1	**6.203 549**
BF 720	720	1000 x 600 x 1200	1235 x 865 x 1530	1	**9.883 625**
KB 23	20	222 x 277 x 330	435 x 600 x 620	1	**9.883 528**
KB 53	53	400 x 330 x 400	635 x 665 x 840	1	**9.883 568**
KB 115	115	600 x 400 x 480	835 x 730 x 1025	1	**9.883 569**
KB 240	240	650 x 485 x 785	930 x 880 x 1460	1	**9.883 570** 3
KB 400	400	650 x 485 x 1270	930 x 880 x 1945	1	**9.883 571**
KB 720	720	970 x 576 x 1250	1255 x 970 x 1925	1	**9.883 572**

E & OE.

Cooling incubators, KT series

NEW!

BINDER

The energy-efficient solution for gentle incubation tasks.
The KT combines outstanding performance with impressive energy efficiency and environmental friendliness.
The KT incubator is state-of-the-art in application and protects the samples.

Features:
Energy efficient, environmentally friendly and secure
Disinfection at 100°C
Broad range of applications

Applications:
- Microbiology, genetics, zoology
- Food and beverage industry
- Hygiene, medicine and forensics
- Pharmaceuticals & cosmetics

Equipment:
- APT.line™ preheating chamber technology with Peltier cooling system and conventional heating
- Electronically controlled temperature range of 4°C to 100°C
- BINDER controller with monochrome 5.7 inch LCD monitor and pushbutton/rotary knob
- Independent temperature safety device class 3.1 (DIN 12880) with visual and audible alarm
- Ethernet interface
- Inner glass door made of safety glass
- 2 shelves made of stainless steel
- Units are stackable
- BINDER test confirmation

1



9.883 633

Type	Internal volume litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	PK	Cat. No.
KT 53	52	660 x 695 x 635	400 x 334 x 400	1	**9.883 634**
KT 115	102	860 x 720 x 715	600 x 355 x 480	1	**9.883 633** 1

2 Thermostatic cabinets

NEW!

AQUALYTIC

The incubators from AQUALYTIC® are designed for continuous tempering for different applications, mainly for the determination of BOD, the storage of wastewater samples and the determination of enzymatic activity.
The temperature range is +2°C up to +40°C and can be regulated in steps of 0.1°C. Temperature tolerance is defined with ±1°C respectively ±0.5°C (at 20°C). Low engergy consumption due to reinforced isolation. The interior of the cabinets is equipped with sockets for connecting stirrers. There are 4 models available with standard doors from 135 to 445 litres net capacity, and 2 models with glass doors with 140 and 255 litres net capacity. Illuminated LED display with actual/setpoint display.

Specifications

Coolant:	R134a
Fan:	Axial, delivery rate 320m³/h
Power supply:	220-230V/50Hz

Description	Capacity l	PK	Cat. No.
With metal door, 3 metal racks + 1 bottom grid + 4 sockets	135	1	**9.699 142**
With metal door, 3 metal racks + 1 bottom grid + 5 sockets	175	1	**9.699 143**
With metal door, 4 metal racks + 1 bottom grid + 7 sockets	255	1	**9.699 144**
With metal door, 4 metal racks + 1 bottom grid + 9 sockets	445	1	**9.699 145**
With glass door, 3 metal racks + 1 bottom grid + 4 sockets	140	1	**9.699 146**
With glass door, 4 metal racks + 1 bottom grid + 7 sockets	256	1	**9.699 147**

2



1



9.538 012

Storage cooled chamber, IPS

Memmert

Sample storage incubating and cooling in the food industry, medicine, the cosmetics industry, or pharmaceutics the storage cooled incubators with Peltier elements heat and cool seamlessly with one system.

Working-temperature range/setting temperature range: + 14°C to +45°C.
With gentle, fan-assisted, air circulation via Peltier fan.
Further equipment see IPP models

Type	Internal volume	Internal dimensions (W x D x H)	Shelf support ribs/shelves	External dimensions (W x D x H)	Weight	PK	Cat. No.
	litres	mm		mm	kg		
IPS260	256	640 x 500* x 800	9/2	824 x 774** x 1186	113	1	**9.538 011**
IPS750	749	1040 x 600* x 1200	14/2	1224 x 874** x 1726	230	1	**9.538 012**

* Minus 10 mm for fan - Peltier
**Depth without door handle, please add 38mm

2



2 Peltier incubators IPP and IPPplus

The incubator generation with the unique ControlCOCKPIT for a quick and intuitive operation. Heating and cooling seamlessly with one system thanks to Peltier technology. Environmentally friendly and energy-saving. Vibration-free and extremely quiet.
Standard equipment:
- PID microprocessor control with integrated auto-diagnostic system
- Interior of stainless steel material 1.4301 (ASTM 304) with all-round deep-drawn ribs to integrate the large-area heating with ceramic-metal sheath
- Structured stainless steel housing, scratch-resistant, robust and durable; rear of zinc-plated steel
- High-temperature connectors on the rear of the appliance for single-phase power connection according to country specific systems and IEC standards
- Internal data logger with a storage capacity of at least 10 years
- German, English, French, Spanish language settings available on the ControlCOCKPIT
- Digital backwards counter with target time setting adjustable between 1 minute and 99 days
- The SetpointWAIT function guarantees that the process time does not start until the set temperature is reached at all measuring points - optional for temperature values recorded by the freely positionable Pt100 sensors inside the chamber.
- Adjustment of three calibration values for temperature and additional appliance specific parameters directly at the ControlCOCKPIT

Type designation: plus = Models with TwinDISPLAY

Specifikations

Working temperature range without light:	0 (max. 25°C below ambient) to +70°C
Working temperature range with light:	+10 to +40°C
Setting temperature range:	0 to +70°C
Setting accuracy:	0.1°C
Power supply:	230 V, 50/60 Hz; 115 V, 50/60 Hz no extra cost

3



9.538 002

Peltier incubators IPP

Memmert

SingleDISPLAY: ControlCOCKPIT with one TFT colour display
- Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time, time zones, summertime/wintertime
- One temperature sensor Pt100 DIN class A in a 4-wire circuit
- AtmoCONTROL software for reading out, managing and organising the data logger via Ethernet interface (temporary trial version can be downloaded). USB stick with AtmoCONTROL software available as accessory (on demand)
- Ethernet interface on the rear of the appliance for reading out the protocol log and for online logging
- Double overtemperature protection: Electronic temperature monitoring with freely adjustable monitoring temperature with option A6 TWW/TWB (protection class 3.1 or 2), mechanical temperature limiter TB acc. to DIN 12880

Type	Internal volume	Internal dimensions (W x D x H)	Shelf support ribs/shelves	External dimensions (W x D x H)	Weight	PK	Cat. No.
	litres	mm		mm	kg		
IPP30	32	400 x 250* x 320	3 / 1	585 x 524** x 704	40	1	**9.538 001**
IPP55	53	400 x 330* x 400	4 / 1	585 x 604** x 784	52	1	**9.538 002**
IPP110	108	560 x 400* x 480	5 / 2	745 x 674** x 864	78	1	**9.538 003**
IPP260	256	640 x 500* x 800	9 / 2	824 x 774** x 1183	114	1	**9.538 004**
IPP750	749	1040 x 600* x 1200	14 / 2	1224 x 874** x 1726	230	1	**9.538 005**

* Minus 10 mm for fan - Peltier
**Depth without door handle, please add 56 mm

Peltier incubators IPPplus

NEW!

Memmert

TwinDISPLAY: ControlCOCKPIT with two TFT colour displays

- Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time, time zones, summertime/wintertime
- Two Pt100 sensors DIN class A in a 4-wire circuit for mutual monitoring, taking over functions in case of an error
- AtmoCONTROL software on a USB stick for programming, managing and transferring programmes via Ethernet interface or USB port
- HeatBALANCE function for application specific adjustment of heat output distribution (balance) between the upper and lower heating groups in an adjustment range between -50 % and +50 % (not valid for IPP110plus)
- ControlCOCKPIT with USB port for uploading programmes, reading out protocol logs, activating the User-ID function
- Displaying of already logged protocol data on the ControlCOCKPIT (max 10.000 values correspond to approx. 1 week)
- Ethernet interface on the rear of the appliance for reading out the protocol log and for uploading programmes and for online logging
- Multiple overtemperature protection: Electronic temperature monitoring TWW/TWB (protection class 3.3 or 2 resp. 3.3 for units with active cooling) and mechanical temperature limiter TB (protection class 1) acc. to DIN 12880, AutoSAFETY automatically adjusts to the set value within a freely adjustable tolerance range. Setting individual MIN/MAX values for over/undertemperature

Type	Internal volume	Internal dimensions (W x D x H)	Shelf support ribs/shelves	External dimensions (W x D x H)	Weight	PK	Cat. No.
	litres	mm		mm	kg		
IPP30plus	32	400 x 250* x 320	3 / 1	585 x 524** x 704	40	1	**9.538 006**
IPP55plus	53	400 x 330* x 400	4 / 1	585 x 604** x 784	52	1	**9.538 007**
IPP110plus	108	560 x 400* x 480	5 / 2	745 x 674** x 864	78	1	**9.538 008**
IPP260plus	256	640 x 500* x 800	9 / 2	824 x 774** x 1183	114	1	**9.538 009** 1
IPP750plus	749	1040 x 600* x 1200	14 / 2	1224 x 874** x 1726	230	1	**9.538 010**

Type designation: plus = Models with TwinDISPLAY
*Minus 10 mm for fan - Peltier
**Depth without door handle, please add 56mm

1



9.538 009

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

memmert Experts in Thermostatics

1



9.538 017

Cooled incubators with compressor cooling ICP

NEW!

Memmert

The cooled incubator generation with the unique ControlCOCKPIT for a quick and intuitive operation. Ideal at temperatures around zero and below.
For rapid and precise alternation between heating up and cooling down times in ramp operation. Extraordinarily quiet.

Standard equipment:
- PID microprocessor control with integrated auto-diagnostic system
- Interior stainless steel, material 1.4301 (ASTM 304)
- Structured stainless steel housing, scratch-resistant, robust and durable; rear of zinc-plated steel
- High-temperature connectors on the rear of the appliance for single-phase power connection according to country specific systems and IEC standards
- Internal data logger with a storage capacity of at least 10 years
- German, English, French, Spanish language settings available on the ControlCOCKPIT
- Digital backwards counter with target time setting adjustable between 1 minute and 99 days
- The SetpointWAIT function guarantees that the process time does not start until the set temperature is reached at all measuring points - optional for temperature values recorded by the freely positionable Pt100 sensors inside the chamber.
- Adjustment of three calibration values for temperature and additional appliance specific parameters directly at the ControlCOCKPIT
- mounted on lockable castors

TwinDISPLAY: ControlCOCKPIT with two TFT colour displays
- Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time, time zones, summertime/wintertime
- Two Pt100 sensors DIN class A in a 4-wire circuit for mutual monitoring, taking over functions in case of an error
- AtmoCONTROL software on a USB stick for programming, managing and transferring programmes via Ethernet interface or USB port
- ControlCOCKPIT with USB port for uploading programmes, reading out protocol logs, activating the User-ID function
- Displaying of already logged protocol data on the ControlCOCKPIT (max 10.000 values correspond to approx. 1 week)
- Ethernet interface on the rear of the appliance for reading out the protocol log and for uploading programmes and for online logging
- Multiple overtemperature protection: Electronic temperature monitoring TWW/TWB (protection class 3.3 or 2) and mechanical temperature limiter TB (protection class 1) acc. to DIN 12880, AutoSAFETY automatically adjusts to the set value within a freely adjustable tolerance range. Setting individual MIN/MAX values for over/undertemperature alarm

Specifikations

Working temperature range:	- 12 to +60°C (ICP55: 0 to +60°C)
Setting temperature range:	- 12 to +60°C (ICP55: -5 to +60°C)
Setting accuracy:	0.1°C
Power supply:	230 V, 50/60 Hz; 115 V, 50/60 Hz at extra cost

Type	Internal volume	Shelf support ribs/shelves	Internal dimensions (W x D x H)	External dimensions (W x D x H)	Weight	PK	Cat. No.
	litres		mm	mm	kg		
ICP55	53	4/1	400 x 330* x 400	585 x 514** x 1153	89	1	**9.538 013**
ICP110	108	5/2	560 x 400* x 480	745 x 584** x 1233	113	1	**9.538 014**
ICP260	256	9/2	640 x 500* x 800	824 x 684** x 1552	157	1	**9.538 015**
ICP450	449	8/2	1040 x 600* x 720	1224 x 784** x 1613	217	1	**9.538 016**
ICP750	749	14/2	1040 x 600* x 1200	1224 x 784** x 1950	249	1	**9.538 017** 1

* Minus 30 mm for fan
**Depth without door handle, please add 56 mm



E & OE.

1 2 Refrigerated incubators BK 800

Thermo Scientific

The BK 800 refrigerated incubator offering a temperature range from 3 to 40°C and a chamber volume of 220 liters is suitable for sample and chemical storage, microbiological sample testing, water pollution testing and biochemical oxygen demand protocols at or below ambient temperature. Furthermore it is applicable for determination of food expiration date and shelf-life testing of food and cosmetics. Easy-to-use soft touch control panel, built in rear wheels.

- Energy efficient
- Interiors are easy to clean due to rounded edges and to disinfect, minimising the potential for contamination of samples
- Fully configurable: internal sockets accommodate stirrers and other equipment inside that can be time-controlled for defined cycles

External dimensions (WxDxH):	467 x 435 x 1260 mm
Internal dimensions (WxDxH):	560 x 570 x 1480 mm
Internal capacity:	220L
Supply requirements:	230V /50Hz

Type	PK	Cat. No.
Refrigerated incubator BK 800	1	**4.010 028**
Additional shelf	1	**4.010 029**

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3 Cooled incubators, BK 6160

Thermo Scientific

With Kelvitron® K microprocessor controlled 3-point control system. temperature range: 0 to 50°C. Thermo Jacket around the chamber ensures uniform heating. Stainless steel chamber. Samples are protected from drying out by the remote positioning of the cooling coil outside the chamber, preventing de-humidification. The virtually continuous automatic defrosting unit minimises ice build-up in the cooling system and reduces heat into the chamber, eliminating downtime for defrosting. With overtemperature controller (TWW in accordance with DIN 12880, class 3.1) and two shelves.

External dimensions (WxDxH):	744mm x 725mm x 920mm
Internal dimensions (WxDxH):	607mm x 585mm x 470mm
Internal capacity:	166L
Supply requirements:	230V /50Hz

Type	PK	Cat. No.
BK 6160 with Kelvitron® K	1	**9.536 241**
BK 6160 with Kelvitron® KP, with t/T programming (10 steps)	1	**9.536 242**
BK 6160 with KKL with Kelvitron® KL	1	**9.536 243**

3



Accessories for cooled incubators, BK 6160

Thermo Scientific

Type	PK	Cat. No.
RS 232 interface, including Kelvilog documentation software	1	**9.536 245**
Connection for central monitoring	1	**9.536 251**
Tubular cable port with 4 vent plugs 19 mm Ø	1	**9.536 248**
Pt 100 sensor for connecting to external temperature recorder*	1	**9.536 249**
Stainless steel shelf with 2 supports	1	**9.534 095**
Fan in chamber	1	**9.536 246**

* Requires tubular cable port.

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9.867 732

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9.867 733

CO_2 Incubators INCOmed

Memmert

For cell cultivation and for in-vitro fertilisation, the precision and reliability are of crucial importance. The classification as class IIa medical device confirms that the INCOmed models comply with the basic safety requirements of the European Medical Devices Directive 93/42/EEC.

Standard equipment

Ventilation and Control:
- uniform atmosphere and temperature distribution owing to enclosed non-turbulent ventilation system in working chamber
- adaptive, fuzzy-supported multifunctional digital microprocessor PID-controller
- integral fault diagnostics on temperature, CO_2 and humidity limit control
- 2 x Class A , 4-wire circuit, Pt100 sensors mutually monitoring and maintaining the performance at the same temperature value
- digital 7-day programme timer with real time clock, precise minute setting
- digital display (LED) of all set parameters, such as temperature, weekdays, time, CO_2, humidity and set-up values
- language to be chosen in setup
- CO_2 supply via sterile filter
- digital electronic CO_2 control with automatic zeroing (infrared measuring system)
- CO_2-supply being interrupted upon door opening
- digital display of set and actual values (LED 0.1°C resolution) of temperature and CO_2-concentration
- integral humidity limit control (88 to 97%) with digital display of relative humidity - setting accuracy 1%
- non-volatile, programme memory
- chip card (STERICard) for sterilization of working chamber with fixed cycle (4 hours/160°C) without removal of sensors and mountings

Heating Concept:
- large-area multi-function heating system on four sides incl. additional door and back heating to avoid condensation
- incl. works calibration certificate for +37°C

Multiple Overtemperature Protection:
- with audible and visual alarm in case of over-/undertemperature and over-/under-CO_2,open door and empty gas cylinder
- independently working, digitally adjustable electronic overtemperature controller TWW protection class 3.1
- additional adjustable Auto-Safety-Function "ASF" for over- and undertemperature automatically following the set value at a preset tolerance range
- mechanical temperature limiter TB class 1 switching the heating off at approx. 10°C above max. oven temperature

Textured Stainless Steel Casing:
- fully insulated stainless steel door with double locking and 4-point adjustment
- inner glass door with opening (8mm dia.) to take gas samples
- zinc-plated, steel rear panel

Interior:
- easy-to-clean interior, made of stainless steel, reinforced by deep drawn ribbing, material no. 1.4301, hermetically welded

Temperature Range: from +20°C (however at least 8°C above ambient) up to +50°C
Power supply: 230V, 50/60Hz; 115 V, 50/60 Hz no extra cost

Type	Internal dimensions/housing (WxHxD) mm
INCO108med	560 x 480 x 400*/710 x 778 x 550**
INCO153med	480 x 640 x 500*/630 x 938 x 650**
INCO 246med	640 x 640 x 600*/790 x 938 x 750**

* Minus 25 mm for fan
** Depth without door handle, please add 38 mm

Type	Internal volume litres	Shelf support ribs	Shelves	Stainless steel water dishes	Rating W	Weight kg	PK	Cat. No.
INCO108med basic model	108	4*	2*	1*	1000	70	1	**9.867 732** 1
INCO53med basic model	153	6*	3*	1*	1500	80	1	**9.867 733** 2
INCO246med basic model	246	6*	3*	2**	2000	110	1	**9.867 734**
INCO108med with Premium-Modul T5	108	4*	2*	1*	1000	70	1	**9.867 703**
INCO153med with Premium-Modul T5	153	6*	3*	1*	1500	80	1	**9.867 704**
INCO246med with Premium-Modul T5	246	6*	3*	2**	2000	110	1	**9.867 705**

*full width
**half width

E & OE.

Accessories for CO_2 Incubators INCOmed

Memmert

Comfort module:
two gas connections with quick release connectors, automatic switch-over gas cylinders (impossible in combination with O_2 module)
Hygiene module:
electropolished interior, seamlessly welded by laser
Communication module:
USB interface, "Celsius" standard software for the control and logging of temperature, CO_2; O_2 (with O_2 module) and relative humidity; internal log memory 1024 kB as ring memory for all setpoint values, actual values, errors, settings with real time and date: logging approx. 3 months at 1 min. logging interval; parallel printer interface for all PCL3-compatible printers
CO_2 module:
extended CO_2 range from 0 to 20%
Premium module:
includes Comfort, Hygiene, Communication and CO_2 module (impossible in combination with O_2 module)
Humidity module:
active microprocessor control for humidifying and dehumidifying (40 - 97% rh), incl. digital indication and auto-diagnostic system; humidity supply with distilled water (from an external tank) , dehumidifying via sterile filter; (standard humidity limit control and water dishes are omitted)
O_2 module:
control of oxygen concentration by N2 inlet, adjustment range 1% bis 20% O_2, setting accuracy 0.1%

Combination O_2 module with Comfort and Premium module impossible

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9.867 702

Type	Description	PK	Cat. No.
B00325 INCO108med	Additional stainless steel shelf, full width	1	**9.867 707**
B00321 INCO153med	Additional stainless steel shelf, full width	1	**9.867 708**
B03813 INCO246med	Additional stainless steel shelf, full width	1	**9.867 748**
B02787 INCO108med	Additional stainless steel shelf, full width	1	**9.867 709**
B02784 INCO153med	Additional water tray, full width	1	**9.867 710**
B02786 INCO246med	Additional water tray, half width	1	**9.867 711**
E02087	CO_2 Pressure reduction valve (DIN 8546), incl. gas-cylinder monitor	1	**9.867 755**
E06162	N_2 Pressure reduction valve (DIN EN ISO 2503) incl. gas-cylinder-bottle monitor, for O_2 module	1	**9.867 712**
B04459	HEPA Interior filter	1	**9.867 731**
E04337	Additional Steri-Card (only for interior-sterilization)	1	**9.867 702**
W6	RS232 interface instead of USB	1	**9.867 722**
T1	Comfort module for INCO108/153/246med	1	**9.867 735**
T2	Hygiene module for INCO108med	1	**9.867 736**
T2	Hygiene module for INCO153med	1	**9.867 737**
T2	Hygiene module for INCO246med	1	**9.867 738**
T3	Communication module for INCO108med	1	**9.867 739**
T3	Communication module for INCO153med	1	**9.867 740**
T3	Communication module for INCO246med	1	**9.867 741**
T4	CO_2 module for INCO108med	1	**9.867 742**
T4	CO_2 module for INCO153med	1	**9.867 743**
T4	CO_2 module for INCO246med	1	**9.867 744**
T5	Premium module for INCO108med	1	**9.867 745**
T5	Premium module for INCO153med	1	**9.867 746**
T5	Premium module for INCO246med	1	**9.867 747**
T6	O_2 module for INCO108, 153, 246med	1	**9.867 749**
K7	Active humidity control microprocessor for INCO108/153/246med	1	**9.867 706**
F7	Entry port in the rear, heated, with silicone stopper, 40 mm inner diameter	1	**9.867 750**



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1 CO_2 incubators, C Series

BINDER

The BINDER C is the fitting partner for routine applications for cell cultivation, contamination-free due to hot-air sterilisation at 180°C, reliable pH-stable thanks to the drift-free FPI infrared measuring system, high temperature precision with excellent dynamic and no risk of condensation even in high humidity.

Equipment:
- Air jacket system assuring temperature accuracy and excellent cell growth
- Temperature range from 7°C above ambient up to 50°C
- Water pan with built-in condensation control maintains dry interior walls
- Standard-compliant hot air sterilisation at 180°C (DIN 58947)
- Seamless deep-drawn inner chamber made of stainless steel with integrated shelf support system
- Drift-free infrared CO_2 measurement system
- Microprocessor with LED display for temperature and CO_2 concentration
- Independent temperature safety device class 3.1 (DIN 12880) with optical and audible temperature alarm
- Gas mixing head
- Interior volume 150L

Type	Description	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
C 150	right hinged door	500 x 500 x 600	680 x 815 x 820	1	**9.883 720**
C 150	left hinged door	500 x 500 x 600	680 x 815 x 820	1	**9.883 721**
2 C 150	incl. stacking adapter, right hinged door	500 x 500 x 600	680 x 815 x 1785	1	**9.883 722**
2 C 150	incl. stacking adapter, left hinged door	500 x 500 x 600	680 x 815 x 1785	1	**9.883 723**

2



2 CO_2 incubators, CB series with sterilizable sensor

NEW!

BINDER

- VENTAIR™ air jacket system
- Temperature range: 7°C above room temperature up to 60°C

BINDER controller with LCD color display for simultaneous display of all important parameters (temperature, % CO_2, % O_2 concentration, humidity) and user-friendly push button/rotary knob
- Intuitive menu guidance
- Electronic chart recorder
- Variety of options for graphic display of process parameters
- Real-time clock
- **Standard-compliant hot air sterilization at 180°C with sterilizable built-in CO_2 sensor**
- Drift-free infrared CO_2 measurement system
- CO_2 introduction through patented gas mixing nozzle
- ANTI.PLENUM Design to avoid contamination of critical fixtures
- Permadry™, double pan humidification system with defined condensation site for condensate-free interior walls
- Seamless deep-drawn inner chamber made of stainless steel with round corners and integrated shelf support system
- Electronic error self-diagnostic system with visual and audible alarms, as well as potential-free contact for central monitoring
- Independent temperature safety device class 3.1 (DIN 12880) with visual and audible temperature alarm
- Tightly-fitted inner glass door made of safety glass
- Ethernet interface for communication software
- APT-COM™ DataControlSystem
- Three perforated shelves made of stainless steel
- Stackable units with new flat stacking adapter
- Door lock
- BINDER test certificate

Type	Internal volume litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
CB 60	53	580 x 550 x 720	400 x 330 x 400	60.00	1	**9.883 738**
CB 160	150	680 x 715 x 920	500 x 500 x 600	107.00	1	**9.883 739**
CB 220	210	740 x 715 x 1070	560 x 500 x 750	121.00	1	**9.883 740**
CB 60 UL	53	580 x 550 x 720	400 x 330 x 400	60.00	1	**9.883 741**
CB 160 UL	150	680 x 715 x 920	500 x 500 x 600	107.00	1	**9.883 742**
CB 220 UL	210	740 x 715 x 1070	560 x 500 x 750	121.00	1	**9.883 743**
CB 60*	53	580 x 550 x 720	400 x 330 x 400	60.00	1	**9.883 744**
CB 160*	150	680 x 715 x 920	500 x 500 x 600	107.00	1	**9.883 745**
CB 220*	210	740 x 715 x 1070	560 x 500 x 750	121.00	1	**9.883 746**
CB 60 UL*	53	580 x 550 x 720	400 x 330 x 400	60.00	1	**9.883 747**
CB 160 UL*	150	680 x 715 x 920	500 x 500 x 600	107.00	1	**9.883 748**
CB 220 UL*	210	740 x 715 x 1070	560 x 500 x 750	121.00	1	**9.883 749**

*gas tight, divided glass blind and divided drawers

E & OE.

1 2 3 Shaking Incubators 3031, 3032 and 3033 with Orbital Motion

GFL

Specialising in gentle mixing as well as vigorous shaking, GFL Shaking Incubators are used for applications that require exactly reproducible orbital motions and temperatures of up to +70°C, e.g. incubations, fermentations, homogenisations, chemical and biochemical reactions, enzyme and tissue studies, as well as for bacterial culture. The units carry the CE mark.
Incubation time, temperature and shaking frequency regulation are microprocessor-controlled. Fast and exact temperature setting, exact reproducibility of set values.

- built-in RS232 serial interface for remote control of measurement and control tasks via PC, compatible with PC software programme e.g. labworldsoft®
- temperature range: from 8°C above ambient to +70°C. Serial cooling coil for operation below ambient temperature. Operation with cooling coil: +20°C to +70°C (dependent on cooling media and ambient temperature)
- temperature constancy (temporal): ±0.2°C
- soft-touch keys with clear symbols
- setting and display of temperature (in 0.1°C increments), shaking frequency and incubation time: digital - LED.
- optimum temperature distribution throughout the cabinet interior with a ventilator
- electronic monitoring of the temperature controller. Over-temperature cut-out: electronical/dependent on the set value, to protect the test substances, and electro-mechanically, to protect the unit. Under-temperature cut-out: electronical, max. 9.9°C below set temperature.
- shaking motion: orbital, can be switched on and off.
- silent and robust shaking mechanism with gentle start-up.
- Incubation time: 1 minute to 999:59 hours
- the microprocessor-controlled timer continuously displays the remaining period of the incubation process and triggers an audible alarm at the finish
- Maximum load 3031/3032/3033: 12kg/12kg/20kg
- Supply requirements: 230V 50/60 Hz, 0.8kW (other voltages are available on request)







Type 3031:
Lift-up, transparent acrylic cover. Volume/capacity: approx. 46 litres/1 shaking tray. Outer casing made of heavy-duty ABS and powder-coated, electrolytically galvanized sheet steel. The aluminium shaking platform includes four plastic pins to accept a shaking tray or a universal mount (accessories).
- shaking frequency: 20 to 250rpm max.

Type 3032 (one-door design)/**Type 3033** (two-door design):
Acrylic window panels. Volume: approx. 45L/approx. 150L, capacity: 2 shaking trays (for vessel heights > 150 mm/180 mm: 1 shaking tray). Outer casing in powder-coated, electrolytically galvanized sheet steel. Interior cabinet, the insides of the doors and the shaking platform are stainless steel. The frame, permitting the use of two shaking trays, is included. A fluorescent lamp for interior illumination is separated from the interior cabinet by a diffusing screen.
- Shaking speed type 2032: 20 to max. 250rpm
- Shaking speed type 3033: 20 to max. 250rpm, if only bottom tray is fitted, max. 200rpm, if both trays are fitted

Type	Amplitude mm	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Max. kg	Weight kg	PK	Cat. No.
3031	30	450 x 450 x 280	525 x 665 x 570	12	38.50	1	**9.837 926**
3032	25	450 x 300 x 320	710 x 650 x 710	12	70.00	1	**9.837 927**
3033	25	674 x 540 x 430	930 x 890 x 820	20	135.00	1	**9.837 929**

4 Trays for Shaking Incubators

NEW!

GFL

Tray 3966 for Shaking Incubator 3031 and GFL Shakers 3011 to 3018
Stainless steel, 450mm x 450mm. With holes to accept clamps for Erlenmeyer flasks and other acessories.

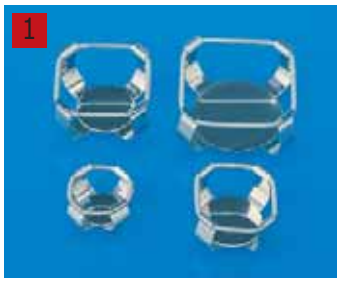
Tray 3970 for Shaking Incubator 3032
Stainless steel, 450mm x 300mm. With holes to accept clamps for Erlenmeyer flasks and other acessories.

Tray 3980 for Shaking Incubator 3033 and GFL Shakers 3019 to 3020
Anodised aliminium, 670mm x 537mm. With holes to accept clamps for Erlenmeyer flasks and other acessories.



Type	For Type	PK	Cat. No.
Tray 3966	3031 / 3011 to 3018	1	**9.837 936**
Tray 3970	3032	1	**9.837 990**
Tray 3980	3033 / 3019 / 3020	1	**9.837 980**

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1 Clamps for Erlenmeyer Flasks

NEW!

GFL

Clamps for Shaking Incubators 3031/3032/3033 with orbital motion, to be screwed onto **trays 3966, 3970 and 3980**. Made of stainless steel.
Complete with fixing material (see also GFL Shakers 3005 to 3020).

Type	For flasks ml	Clips required shaker Model 3966	Clips required shaker Model 3970	Clips required shaker Model 3980	PK	Cat. No.
3983	25	79	52	99	1	**9.837 983**
3984	50	49	33	99	1	**9.837 984**
3985	100	36	22	50	1	**9.837 985**
3986	200	22	15	26	1	**9.837 986**
3987	250-300	16	13	26	1	**9.837 987**
3988	500	12	10	26	1	**9.837 988**
3989	1000	9	6	12	1	**9.837 989**
3990	2000		3	9	1	**9.837 991**

3032 (Shaking tray 3970): Clamps for 300ml and larger: 1 tray only can be used
3033 (Shaking tray 3980): Clamps for 1000ml and larger: 1 tray only can be used

Other clamps on request

Other Accessories for GFL Shaking Incubators (Test Tube Rack, Holding Frame for a test plate, Non-slip Rubber Mat, Universal Mount) see GFL Shakers, page 472.

Shaking Incubators ES-20/ES-80

Grant

Stable and reliable orbital shaker-incubator for vigorous or even mixing and incubation of samples in a variety of flasks and vessels. For Life Sciences, suitable for growing cell cultures in flasks, extracting tissue samples at physiological, temperatures, and sample preparation processes, mixing of biological liquids as well as the incubation and cultivation of biological liquids, growing e-coli, bioluminescence preparation.

- Variable speed: 50 to 250rpm
- Digital control of time, temperature and shaking speed for accuracy and repeatability
- Display 2-line 16 character LCD
- Interchangeable platforms for shaking/incubating different vessels (please order separately)

Specifications

Speed range:	50 to 250rpm
Temperature range ES-20:	+25 to 42°C
Temperature range ES-80:	+25 to 80°C
Temperature setting resolution:	0.1°C
Stability:	±0.5°C
Shaking movement:	orbital
Orbit ES-20:	10mm
Orbit ES-80:	20mm
Continuous operation ES-20:	720hrs
Continuous operation ES-80:	168hrs
Timer:	1min to 96hrs
Load capacity ES-20:	2.5kg
Load capacity ES-80:	8kg
Power supply:	230V 50/60Hz
Supply requirements:	230V 50/60Hz

Type	Dimensions (W x D x H) mm	PK	Cat. No.
ES-20	340 x 340 x 435	1	**6.251 451** 2
ES-80	590 x 525 x 510	1	**9.721 056** 3

2



6.251 451

3



9.721 056

More shaking incubators, please see page 1260.

E & OE.

Accessories for Shaking Incubators ES-20/ES-80

NEW!

Grant

Type	Description	For Type	PK	Cat. No.
P12-100	Platform with clamps for 12 x 100ml flasks / 150ml beakers	ES-20	1	**9.721 023** 1
PP-4	Flat platform with non slip rubber mat	ES-20	1	**9.721 022**
P6-250	Platform with clamps for 6 x 250ml flasks / 400ml beakers	ES-20	1	**9.721 024**
PUP-12	Universal platform	ES-20	1	**9.721 021** 2
P16-88	Platform with spring holders for 88 tubes up to 30mm	ES-20	1	**9.721 049** 3
PP-400	Flat platform with non slip rubber mat	ES-80	1	**9.721 060**
P30-100	Platform with clamps for 30 x 100 ml flasks	ES-80	1	**9.721 061**
P16-250	Platform with clamps for 16 x 250 ml flasks	ES-80	1	**9.721 062**
P9-500	Platform with clamps for 9 x 500 ml flasks	ES-80	1	**9.721 063**
P6-1000	Platform with clamps for 6 x 1000 ml flasks	ES-80	1	**9.721 064**

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9.721 023

2



9.721 021

3



9.721 049

4 Benchtop Shaking Incubator 222DS

NEW!

Labnet

The Benchtop Shaking Incubator is a combination of a shaker and a temperature chamber, designed for shaking and heat treatment of sensitive samples. It replaces two devices, reduces time and space needed. It is very suitable for biochemistry, microbiology and medicine laboratories in which thermal and shaking treatment of samples is a daily used routine.

- High temperature working range.
- Can be used in cold rooms too.
- Digital readout of all parameters - read temporary or preset RPM, temperature, time, acceleration.
- Parameter changes while the device is running (except timer).
- Last parameter values reside in the memory even if the device was switched off.
- Precisely adjusted and maintained temperature regulation within 0.5°C of absolute deviation from the set temperature.
- HOLD and STEP time function with 1 minute resolution.
- Easy interchangeable platforms.
- Lid sensor.

Univeral attachement please order separately.

Specifications

Temperature range:	+5°C to 70°C
Precision:	±0.5°C
Speed range:	20 to 300rpm
Timer:	1 min - 99 hours or continuous
Platform size:	300 x 300 mm
Supply requirements:	230 V, 50 Hz

4



Type	Amplitude	External dimensions (W x D x H)	Weight	PK	Cat. No.
	mm	mm	kg		
222DS	19.0	370 x 530 x 400	19.50	1	**6.259 079**
Universal attachement		300 x 300		1	**6.259 080**

Block thermostats please see page 1298.

KS 3000 i control/KS 3000 ic control

IKA

Innovatively designed, compact incubator shaker to safely allow unattended operation in a temperature-controlled environment. The unit has a large LED display for speed, temperature and timer. An integrated PID temperature control allows the use of PT 1000 temperature sensors to assure highly accurate temperature control. The electronically controlled incubator comes equipped with RS 232 and USB ports for PC interface. All functions can be controlled and documented using labworldsoft® (software sold separately).

- Controls with antimicrobial coating for reduction of bacteria
- Junction box in the workspace for connection of an additional temperature sensor, e.g. PT 1000 (included with delivery)
- Wide range of attachments allows for using almost all shapes and sizes of vessels
- Unit stops automatically when hood is lifted
- Collecting tray with drain hose on rear of the unit
- Electronic timer
- Error code display

KS 3000 ic control additionally with built-in cooler for connection to an external cooling unit.

Specifications

Shaking movement:	orbital
Orbit:	20mm
Max. shaker weight (with attachment):	7.5kg
Motor rating input/output:	45/10W
Power consumption:	1.120W
Speed:	10 to 500rpm
Timer:	1s to 999h
Speed display:	LED
Heater power:	1000W
Temperature range KS 3000 i:	RT +5°C to +80°C
Temperature range KS 3000 ic:	RT -10°C to +80°C
Temperature stability (200ml H_2O at target T=37°C, RT 25°C):	±0.1K
Temperature range (inlet T>3°C) for KS 3000 ic:	+12 to +80°C
Dimensions (WxDxH):	465 x 695 x 430mm
Protection class acc. to DIN EN 60529:	IP 30
Interface:	RS 232, USB
Power supply:	230V, 50/60Hz

Type	PK	Cat. No.
KS 3000 i control	1	**9.837 881**
KS 3000 i control UK	1	**9.837 883**
KS 3000 i control CH	1	**9.837 884**
KS 3000 ic control	1	**9.837 882** 1
KS 3000 ic control UK	1	**9.837 885**
KS 3000 ic control CH	1	**9.837 886**

1



9.837 882

E & OE.

1 Incubator Shaker KS4000i control

IKA

Innovative incubator shaker design allowing unattended operation in a temperature-controlled environment.
- large LED display for speed and time settings
- controls with antimicrobial coating for reduction of bacteria
- integrated PID temperature control (two Pt1000 temperature sensors can be used)
- socket in the work area for connection of an additional temperature sensor e.g. PT1000.60 (included in delivery)
- electronic temperature and speed control
- electronic timer switch: 0 to 999h (set by the minute or by the hour)
- optional built-in cooler for connection to an external cooling unit e.g. KV600
- unit switches off automatically if disturbed
- unit stops automatically when hood is lifted
- collecting tray for spillages with draining tube at rear of unit
- all functions can be controlled and documented using labworldsoft® software
- attachments not included - Please order accessories as required

1



Specifications

Shaking movement:	orbital
Orbit:	20mm
Max. shaker weight (with attachment):	20kg
Motor rating input/output:	82/24W
Power consumption:	1120W (at 230V)
Operating time:	continuous
Speed range:	10 to 500rpm
Timer switch (select minutes/hours):	0 to 999 h/continuous
Heater power:	1000W
Temperature range:	RT +5°C to 80°C
Temperature stability (200 ml H_2O at target T = 37°C, RT 25°C):	0.1K
Recirculating cooler:	additional cooling function for KS 4000 ic
Dimensions (WxDxH):	580 x 750 x 525mm
Space required (W x D):	600 x 600mm
Weight:	55kg
Permissible ambient temperature:	15 to 32°C
Protection class acc. to DIN EN 60529:	IP30
Interface:	RS232
Supply requirements:	230V 50/60Hz

Tested to DIN EN IEC 61010-1.

Type	PK	Cat. No.
KS 4000 i control	1	**9.837 890**
KS 4000 i control UK	1	**4.008 075**
KS 4000 ic control*	1	**9.837 891**
KS 4000 ic control* UK	1	**4.008 077**

*with built-in cooler

Accessories for Incubator Shaker KS4000i control

IKA

AS 4000.1 Universal attachment
For various types of vessels. Infinitely variable clamping rolls allow universal adaptation to various vessels.
Included with delivery: 1 x AS 1.400 Basic holder, 6 x AS 1.401 Clamping roll, 12 x AS 1.402 Fastening screw

AS 4000.2 Fixing clip attachment
For shaking flasks, Erlenmeyer flasks and bottles with a round crosssection (without fixing clips).
Number of fixing clips (volume): 50 x AS 2.1(25ml), 48 x AS 2.2 (50ml), 25 x AS 2.3 (100ml), 16 x AS 2.4 (250ml), 12 x AS 2.5 (500ml), 7 x AS 2.6 (1000 ml)

AS 4000.3 Dish attachment
For smooth shaking operations in the low viscosity range, e.g. for cell cultures, nutrient media in Petri dishes, culture bottles and vessels with a low centre of gravity. With integrated slip-resistant foil (PP).

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9.837 894

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9.837 893

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9.837 892

Type	Description	Weight g	Dimensions Set-up plate (W x D) mm	PK	Cat. No.
AS 4000.1	Universal attachment	3200	360 x 410	1	**9.837 894** 2
AS 1.402	Fastening screw*			1	**9.837 897**
AS 4000.2	Fixing clip attachment	2650	430 x 430	1	**9.837 893** 3
AS 4000.3	Dish attachment	800	430 x 430	1	**9.837 892** 4
STICKMAX	Adhesive mat		200 x 200	1	**6.236 293**

*Spare parts for universal attachment.



1 MaxQ 4450 Compact Benchtop Incubated Shakers, orbital

Thermo Scientific

- Holds up to 4 x 1L flasks.
- Requires minimal bench space.
- Choose between two temperature ranges, 5°C above ambient to 80°C or 5°C below ambient to 80°C.
- Clear lid lets you view samples without disturbing internal temperature
- Triple eccentric drive handles heavy loads, provides uniform agitation and continuous 24-hour operation, even at high speeds.
- Monitor and control chamber temperature range with ±0.1°C accuracy and ±0.5°C uniformity at 37°C.
- View speed, operating time and temperature simultaneously on three individual LED displays.
- Visual/audible alarms alert you to temperature deviations. Heat turns off if temperature deviates ±1°C of set point.
- Soft start feature eliminates sudden starts and stops, splashing of vessel contents or wetting of flask closure.
- Retains parameters during power failure and restarts unit automatically after power is restored.
- Over-temperature safety feature with independent thermostat provides additional backup by controlling heat if main temperature controller fails.
- Safety interlock stops platform motion when lid is opened.
- 5 year warranty and 10 year on drive mechanism.

Also available with analog operating system.

Specifications

Speed range, rpm:	15 to 500 ±1 rpm digital 40 to 400 ±1 rpm analog
Temperature range:	±0.1°C accuracy at 37°
Operating time:	0.1 hour to 999 hours or 0.1 minute to 999 minutes
Dimensions (L x W x H):	691mm x 358mm x 401mm
Supply requirements:	240V, 50/60 Hz

Description	Temp. range °C	Load max. kg	Amplitude mm	PK	Cat. No.
Benchtop Incubated Shaker, mini analog	RT +5°C - 80°C	15.9	19.0	1	**4.011 052**
Benchtop Incubated Shaker with Cooling Coil, mini analog	RT -5°C - 80°C	15.9	19.0	1	**4.011 053**
Benchtop Incubated Shaker, digital	RT +5°C - 80°C	15.9	19.0	1	**4.011 063**
Benchtop Incubated Shaker with Cooling Coil, digital	RT -5°C - 80°C	15.9	19.0	1	**4.011 064**



2 MaxQ 5000 Incubated and Refrigerated Floor Shakers, orbital

Thermo Scientific

- Combines Incubated/Refrigerated Temperatures with an Orbital Shaker for Large Capacity Applications
- Spacious chamber holds four 6L flasks
- Wide temperature range, 10°C above ambient to 60°C on incubated models and 15°C below ambient to 60°C on refrigerated models
- Easy-access drain system with quick disconnect fitting permits easy clean up of spills
- Drip pan under platform contains spills
- Foot pedal opens lid for hands free operation
- Retractable foot casters allow easy positioning in the lab
- Observe flask contents without opening the door through a large viewing window
- Access ports for probes, thermocouples or sensors provided through side of cabinet wall
- Triple eccentric drive handles heavy loads, provides uniform agitation and continuous 24-hour operation, even at high speeds.
- View speed, operating time and temperature simultaneously on three individual LED displays.
- Unbalanced load sensor stops platform motion when excess vibration is detected and visual/audio alarms signal until condition is corrected.
- Soft start feature eliminates sudden starts and stops, splashing of vessel contents or wetting of flask closure.
- Retains parameters during power failure and restarts unit automatically after power is restored.
- Over-temperature safety feature with independent thermostat provides additional backup by controlling heat if main temperature controller fails.
- 5 year warranty and 10 year on drive mechanism.

Also available with analog operating system.

Specifications

Speed range, rpm:	15 to 500 ±1rpm digital 40 to 400 ±1rpm analog
Temperature accuracy:	±0.1°C accuracy at 37°
Operating time:	0.1 hour to 999 hours or 0.1 minute to 999 minutes
Dimensions (L x W x H):	813mm x 1041mm x 1041mm
Supply requirements:	240V, 50/60 Hz

Description	Load max. kg	Amplitude mm	Temp. range °C	PK	Cat. No.
Incubated Floor Shaker, analog	34.0	25.4	RT +10°C - 60°C	1	**4.011 054**
Incubated and Refrigerated Floor Shaker, analog	34.0	25.4	RT -15°C - 60°C	1	**4.011 055**
Incubated Floor Shaker, digital	34.0	25.4	RT +10°C - 60°C	1	**4.011 065**
Incubated and Refrigerated Floor Shaker, digital	34.0	25.4	RT -15°C - 60°C	1	**4.011 066**

E & OE.

1 MaxQ 6000 Incubated and Refrigerated Stackable Shakers, orbital

Thermo Scientific

- Available in incubated or refrigerated models.
- Units can be stacked two high on the floor with the stacking kit accessory.
- Two adjustable-height shelves provide added storage.
- Large viewing window and internal light offer sample visibility.
- View temperature, speed and time simultaneously on three individual displays.
- Door can be hinged from the right or left by the user for convenient placement in lab.
- Triple eccentric drive handles heavy loads, provides uniform agitation and continuous 24-hour operation, even at high speeds.
- Visual/audible alarms alert you to temperature deviations. Heat turns off if temperature deviates ±1°C of set point.
- Shaker shut down and visual/audible alarms signal if unit operates ±10% of set speed, preventing shaker from moving.
- Unbalanced load sensor stops platform motion when excess vibration is detected visual/audio alarms signal until condition is corrected.
- Soft start feature eliminates sudden starts and stops, splashing of vessel contents or wetting of flask closure.
- Retains parameters during power failure and restarts unit automatically after power is restored.
- Over-temperature safety feature with independent thermostat provides additional backup by controlling heat if main temperature controller fails.
- Safety interlock stops shaking motion when the door is open.
- 5 year warranty and 10 year on drive mechanism.



Specifications

Speed range:	15rpm to 300rpm ±1rpm (stacked) 15rpm to 500rpm ±1rpm (unstacked)
Temperature	
Floor Shaker:	10°C above ambient to 80°C
Refrigerated Floor Shaker:	15°C below ambient to 80°C
Timer:	0.1 hr. up to 999 hr. or 0.1 to 999 min.
Power supply	
Floor Shaker:	240V 50/60Hz, 4.5A, 1100W
Refrigerated Floor Shaker:	240V 50/60Hz, 7A, 1500W
Dimensions (L x W x H):	838 x 699 x 1029 mm

Description	Load max. kg	Amplitude mm	PK	Cat. No.
Stackable Incubated Floor Shaker, digital	15.9	19.0	1	**4.011 067**
Stackable Incubated and Refrigerated Floor Shaker	15.9	19.0	1	**4.011 068**

2 Universal Platform for MaxQ Shaker

Thermo Scientific

For	Dimensions (W x D) mm	PK	Cat. No.
MaxQ 2000 / 4450	280 x 330	1	**4.009 327**
MaxQ 2000	460 x 610	1	**4.009 329**
MaxQ 2000 / 4000 und MaxQ 6000	460 x 460	1	**4.009 330**
MaxQ 3000	760 x 460	1	**4.009 331**
MaxQ 3000 / 5000	760 x 460	1	**4.010 227**
MaxQ 3000	910 x 610	1	**4.010 228**
MaxQ 8000	750 x 460	1	**4.009 494**



3 Clamps for MaxQ Shaker (except MaxQ 8000)

Thermo Scientific

Description	PK	Cat. No.
Clamps for Microplate/Deep-well plate	1	**4.009 340**
Clamps for Erlenmeyer Flask 10ml	1	**4.010 229**
Clamps for Erlenmeyer Flask 25ml	1	**4.009 332**
Clamps for Erlenmeyer Flask 50ml	1	**4.010 230**
Clamps for Erlenmeyer Flask 125ml	1	**4.009 333**
Clamps for Erlenmeyer Flask 250ml	1	**4.010 231**
Clamps for Erlenmeyer Flask 300ml	1	**4.009 334**
Clamps for Erlenmeyer Flask 500ml	1	**4.010 232**
Clamps for Erlenmeyer Flask 1000ml	1	**4.010 233**
Clamps for Erlenmeyer Flask 2000ml	1	**4.009 335**
Clamps for Erlenmeyer Flask 4000ml	1	**4.009 336**
Clamps for Erlenmeyer Flask 6000ml	1	**4.009 337**
Clamps for Low Form Culture Flask 2500ml	1	**4.009 338**
Clamps for Fernbach Flask 2800ml	1	**4.009 339**



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1 MaxQ 8000 Incubated and Refrigerated Stackable Shakers

Thermo Scientific

Can be Stacked Two to Three High on the Floor for Space Savings
- Choose from two temperature ranges to fulfill a number of molecular biology applications.
- HEPA filter ensures air inside the chamber remains clean and reduces cross contamination improving culturing conditions.
- Slide out platform provides convenient 100% sample access.
- Crevice-free Type 304 stainless steel chamber with coved corners and built-in drain keeps spills within the work area and promotes easy cleaning.
- Chamber is tall enough to accommodate 2L Erlenmeyer flasks.
- Top platform height is under 61.0 in. (154.9 cm) when units are stacked three high, ensuring ease-of-use and convenient accessibility.
- Easy to clean platforms are constructed of 5/16 in., heavy duty brushed anodized aluminum, which does not chip or rust.
- Large viewing window and internal xenon light allow sample visibility minimizing the need to open the chamber door.
- Electronic components and HEPA filter are easily accessed from the front of the unit, eliminating the need to move the shaker during regular maintenance or service.
- 5 year warranty and 10 year on drive mechanism.

For a complete system order:
1. Shaker, 2. Platform, 3. Clamps

Specifications

Speed range:	speed ranges from 25rpm to 400rpm ±1rpm
Temperature range:	±0.15°C
Operating time:	5 min. to 199 hours and 59 min.
Dimensions (L x W x H):	605 x 846 x 300 mm
Supply requirements:	240V, 50/60 Hz

Type	Temp. range °C	Load max. kg	Amplitude mm	PK	Cat. No.
MaxQ 8000 Incubated shaker	10°C above ambient to 60°C	16.1	25.4	1	**4.011 070**
MaxQ 8000 Refrigerated shaker	5°C or 20°C below ambient to 60°C	16.1	25.4	1	**4.011 071**

2



2 Racks for MaxQ Shaker

Thermo Scientific

Racks for	Size mm	Description	Colour	PK	Cat. No.
Test Tube Racks - Full Size	10-13	6x12	red	1	**4.010 234**
Test Tube Racks - Full Size	14-16	6x12	orange	1	**4.009 342**
Test Tube Racks - Full Size	17-20	4x10	white	1	**4.009 344**
Test Tube Racks - Full Size	21-25	4x10	blue	1	**4.009 346**
Test Tube Racks - Full Size	26-30	3x8	green	1	**4.009 348**
Microcentrifuge, 1.5ml - Full Size		8x12	blue	1	**4.009 350**
Test Tube Racks - Half Size	10-13	6x6	red	1	**4.009 341**
Test Tube Racks - Half Size	14-16	6x6	red	1	**4.009 343**
Test Tube Racks - Half Size	17-20	4x5	white	1	**4.009 345**
Test Tube Racks - Half Size	21-25	4x5	blue	1	**4.009 347**
Test Tube Racks - Half Size	26-30	3x3	green	1	**4.009 349**
Microcentrifuge, 1.5ml - Half Size		4x6	white	1	**4.009 351**

3



3 Adhesive Flask Mat for MaxQ Shakers

Thermo Scientific

Our Adhesive Flask Mat is an alternative to flask clamps for securing odd shaped objects such as bottles, volumetric flasks and test tube racks to a shaker platform. Simply place the 23cm x 23cm Adhesive Flask Mat on an anodised aluminum or stainless steel shaker platform and secure the vessel to it. It will hold Erlenmeyer flasks as large as 4L that contain 2L of media at speeds up to 250rpm.
The mat is not suitable for use in water baths.
- Easy-to-view samples. The white background makes it easy to determine when to harvest your samples
- Simple to clean. Can be restored to like new condition by wiping with alcohol
- Long lasting. Months of use without losing adhesive properties

Description	PK	Cat. No.
Flask Mat 23cm x 23cm	1	**4.009 506**

E & OE.

Constant Climate Chambers HPP

NEW!

Memmert

The constant climate chamber generation with the unique ControlCOCKPIT for a quick and intuitive operation.
Perfectly suited for stability tests, storage in controlled environment and conditioning.
Energy efficient and maintenance free.

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9.868 022

Standard equipment:
- PID microprocessor control with integrated auto-diagnostic system
- Interior stainess stel 1.4301 (ASTM 304),deep-drawn
- Structured stainless steel housing, scratch-resistant, robust and durable; rear of zinc-plated steel
- High-temperature connectors on the rear of the appliance for single-phase power connection according to country specific systems and IEC standards
- Internal data logger with a storage capacity of at least 10 years
- German, English, French, Spanish language settings available on the ControlCOCKPIT
- Digital backwards counter with target time setting adjustable between 1 minute and 99 days
- The SetpointWAIT function guarantees that the process time does not start until the set temperature is reached at all measuring points - optional for temperature values recorded by the freely positionable Pt100 sensors inside the chamber.
- Adjustment of three calibration values for temperature and additional appliance specific parameters directly at the ControlCOCKPIT, for example relative humidity
- mounted on lockable castors

TwinDISPLAY: ControlCOCKPIT with two TFT displays
- Two high-resolution TFT colour displays with touch-sensitive buttons for selection of functions
- Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time, relative humidity, time zones, summertime/wintertime
- Two Pt100 sensors DIN class A in a 4-wire circuit for mutual monitoring, taking over functions in case of an error
- AtmoCONTROL software on a USB stick for programming, managing and transferring programmes via Ethernet interface or USB port
- HeatBALANCE function for application specific adjustment of heat output distribution (balance) between the upper and lower heating groups in an adjustment range between -50 % and +50 % (not valid for HPP110)
- ControlCOCKPIT with USB port for uploading programmes, reading out protocol logs, activating the User-ID function
- Displaying of already logged protocol data on the ControlCOCKPIT (max 10.000 values correspond to approx. 1 week)
- Ethernet interface on the rear of the appliance for reading out the protocol log and for uploading programmes and for online logging
- Multiple overtemperature protection: Electronic temperature monitoring TWW/TWB (protection class 3.1 or 2 and mechanical temperature limiter TB (protection class 1) acc. to DIN 12880, AutoSAFETY automatically adjusts to the set value within a freely adjustable tolerance range. Setting individual MIN/MAX values for over/undertemperature alarm

Specifications

Working-temperature range without light	0 (max. 25°C below ambient) to +70°C
Working-temperature range with light	+15 to +40°C
Setting temperatur range	0 to +70°C
Setting accuracy temperature	0.1°C
Adjustment range humidity without light	rh 10 to 90%
Adjustment range humidity with light	rh 10 to 85%
Setting accuracy humidity	0.5 % rh
Power supply	230 V, 50/60 Hz; 115 V, 50/60 Hz at no extra cost

Type	Capacity	Internal dimensions (W x D x H)	Shelf support ribs/shelves	Housing (W x D x H)	Weight	Rating	PK	Cat. No.
	l	mm		mm	kg	W		
HPP110	108	560 x 400* x 480	5/2	745 x 674** x 864	77	650	1	**9.868 021**
HPP260	256	640 x 500* x 800	9/2	824 x 774** x 1183	122	820	1	**9.868 022** 1
HPP750	749	1040 x 600* x 1200	14/2	1224 x 874** x 1726	208	1200	1	**9.868 023**

* Minus 10 mm for fan
**Depth without door handle, please add 56mm

1



6.263 247

Constant Climate Chambers HPP750life for keeping mice

NEW!

Memmert

Ventilation and Control
- forced ventilation by Peltier fan
- 2 fresh air inlets (40 mm Ø) in the rear at the bottom, can be closed with stopper
- 1 exhaust air outlet in the rear at the top (80 mm Ø) with fan, to control the air exchange rate, adjustable in 10 % steps (max. air exchange rate 38 times/h)
- adaptive multifunctional digital PID-microprocessor controller with 2 highdefinition TFT-colour displays
- integral fault diagnostics for temperature and humidity control
- 2 Pt100 sensors Class A in 4-wire-circuit, mutually monitoring and taking over the performance at the same temperature value
- digital timer adjustable from 1 minute to 99 days
- parameters adjustable on ControlCOCKPIT: temperature (Celsius or Fahrenheit), relative humidity, programme time, time zones, summertime/wintertime
- SetpointWAIT function - the process time does not start until the set temperature is reached
- AtmoCONTROL software on a USB stick for programming, managing and transferring programmes via Ethernet interface or USB port
- heating and cooling performance distribution by individual control of the Peltier elements in the upper and lower row
- HeatBALANCE function for adapting the distribution of the heating performance of the upper and lower heating circuit from -50 % to +50 %
- setting of languages on ControlCOCKPIT: German/English/Spanish/French
- resolution of display for setpoint and actual temperature values 0.1°C
- calibration facility directly at ControlCOCKPIT for three freely selectable temperature values, 2-point calibration for humidity: 20 and 90 % rh
- programme stored in case of power failure
- including works calibration certificate for +30°C/45 % rh

Humidifying and dehumidifying system
- active humidifying and de-humidifying adjustable from 10 - 90 % rh with digital display of relative humidity
- resolution of display 0.1 %, setting accuracy 0.5 %
- dehumidification by means of compressed air for safe and stable humidity values in compliance with GV Solas guidelines
- humidity supply with distilled water from external tank by self-priming pump
- humidification by hot steam generator
- dehumidification by cold trap using the Peltier technology

Multiple Overtemperature Protection
- with audible and visual alarm
- over- and undertemperature monitor TWW, protection class 3.3 or adjustable temperature limiter TWB, protection class 2, selectable on display
- additionally integrated over- and undertemperature protection "ASF", automatically following the setpoint value at a preset tolerance range; alarm in case of overor undertemperature, heating function is switched off in case of overtemperature, cooling function in case of undertemperature

Textured Stainless Steel Casing
- fully insulated stainless steel doors with 2-point locking (compression door lock)
- inner glass doors
- rear zinc-plated steel
- on lockable castors

Interior - Heating Concept
- energy-saving Peltier heating-/cooling system integrated in the rear (heat pump principle)
- 2 special stainless steel grids, reinforced, each with 2 LED light strips, adjustable in 1 % steps (5.500 K cold white or 2.700 K warm white)
- max. loading of chamber: 200 kg

Temperature range:
- from 0°C to +70°C
- from +5°C to +40°C with light

Type	Capacity	Internal dimensions (W x D x H)	Housing (W x D x H)	Weight	Rating	Shelf support ribs/shelves	PK	Cat. No.
	l	mm	mm	kg	W			
HPP750life	749	1040 x 600 x 1200	1224 x 874 x 1726	208	1200	4/2	1	**6.263 247** 1

E & OE.

Constant climate chambers, KBF/KBF P/KBF LQC series

BINDER

The BINDER constant climate chambers for long-term stable temperature/humidity/light simulation in one chamber. They are ideal for norm-compliant work according to ICH guidelines and work independent of water supply. Their special feature: climate and light tests can be performed at the same time in on chamber.

- Long-term stabile test conditions
- Independent of the water supply
- one-stop solution: Temperature/humidity/light simulation in one chamber

KBF Series: Constant climate chambers. The specialist for reliable stability testing.
KBF P Series: Constant climate chambers with ICH-compliant illumination. The ICH-compliant illumination device with BINDER Q1B Synergy Light™ makes it the expert for reliable photostability testing.
KBF LQC Series: Constant climate chambers with additional photometry. The constant climate chamber with Light Quantum Control is ideal for advanced photostability testing with precision light measurement.

Equipment:
- Electronically controlled APT.line™ preheating chamber with cooling system
- 2 variable position illumination cassettes (KBF P)
- Temperature range 0°C to 70°C (without humidity and illumination)
- Humidity range 10% to 80% RH (without illumination cassettes)
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
- Electronically controlled humidification and dehumidification system with capacitive humidity sensor
- Inner glass door with seal
- Independent temperature safety device class 3.1 (DIN 12880) with optical and audible temperature alarm
- Access port with silicone plug diam. 30mm, left side
- Ethernet interface for communication software APT-COM™ DataControlSystem

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9.883 584

2



9.883 630

Type	Internal volume litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
KBF 115	115	600 x 351 x 483	885 x 650 x 1050	1	**9.883 630** 2
KBF 240	240	650 x 485 x 785	930 x 800 x 1460	1	**9.883 582**
KBF 720	700	973 x 576 x 1250	1255 x 890 x 1925	1	**9.883 579**
KBF P 240	240	650 x 485 x 785	930 x 880 x 1460	1	**9.883 583**
KBF P 720	700	973 x 576 x 1250	1255 x 890 x 1925	1	**9.883 584** 1
KBF LQC 240	240	650 x 485 x 785	930 x 800 x 1460	1	**6.236 223**
KBF LQC 720	720	973 x 576 x 1250	1255 x 890 x 1925	1	**6.236 224**

Constant climate chambers, KMF series

NEW!

BINDER

The KMF is the specialist for unconditionally reliable stress testing and precise maintenance of constant test conditions.
It has particularly large power reserves and an extremely broad climate range: from
- 10°C to +100°C. It works condensation-free up to 90% r. H. These features make the KMF unique in its class.

Stable test conditions up to 85°C/85% r. H.
Optimal ratio of usable space and footprint
Applications:
- Plastics Industry, Packaging Industry, Automotive

Equipment:
- Temperature range from -10°C to 100°C
- Humidity range 10 % to 98 % r. H.
- MCS controller which can store 25 programs of 100 sections each for a maximum of 500 program segments
- User-friendly LCD color screen
- Easy-to-read menu guide
- Integrated electronic chart recorder
- Variety of options for the graphic display of process parameters
- Real-time clock
- Electronically controlled humidification and dehumidification system with capacitive humidity sensor
- Inner glass door
- Independent temperature safety device class 3.1 (DIN 12880) with visual and audible alarm
- Access port with silicone plug Ø 30 mm, left side
- Complete safety connection kit for water supply and drainage, up to 1m in height
- Ethernet interface for communication software APT-COM™ DataControlSystem
- Shelf, stainless steel
- Four casters, two with brakes (KMF 240/720)

3



9.883 628

Type	Internal volume litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	PK	Cat. No.
KMF 115	102	885 x 650 x 1050	600 x 351 x 483	1	**6.254 841**
KMF 240	247	930 x 800 x 1460	650 x 485 x 785	1	**9.883 628** 3
KMF 720	700	1255 x 890 x 1925	973 x 576 x 1250	1	**9.883 629**

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9.883 710

2



9.883 565

Material test chambers, FP and M series

BINDER

The material test chambers from BINDER are highly precise and have a wide temperature range, as well as comprehensive programming options, with which you can customise ramps, profiles and processes.
- The specialists for demanding heating profiles
- Adjustable high air change rate

FP Series: Material test chamber with forced convection. For complex temperature testing.
M Series: Material test chambers with individual programming. Temperatures up to 300°C, high-performance fan and individual programming make it the first choice in material testing and aging testing.

- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range from 5°C above ambient temperature to 300°C
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- RS 422 interface for use with APT-COM™ DataControlSystem communication software

Type	Internal volume litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
FP 53	53	400 x 340 x 400	635 x 575 x 620	1	**9.883 710** 1
FP 115	115	600 x 410 x 480	835 x 645 x 705	1	**9.883 711**
FP 240	240	800 x 510 x 600	1035 x 745 x 825	1	**9.883 712**
FP 400	400	1000 x 510 x 800	1235 x 765 x 1025	1	**9.883 713**
FP 720	720	1000 x 610 x 1200	1235 x 865 x 1530	1	**9.883 714**
M 53	53	400 x 340 x 400	635 x 575 x 780	1	**9.883 563**
M 115	115	600 x 410 x 480	835 x 645 x 865	1	**9.883 564**
M 240	240	800 x 510 x 600	1035 x 745 x 985	1	**9.883 565** 2
M 400	400	1000 x 510 x 800	1235 x 765 x 1185	1	**9.883 566**
M 720	720	1000 x 610 x 1200	1235 x 865 x 1695	1	**9.883 567**

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9.883 535

4



9.883 576

Climate chambers with illumination, KBW, KBWF series

BINDER

Homogeneous lighting conditions with constant temperature and humidity conditions, the BINDER climate chambers. The responsive humidification system, the high-performance cooling and uniform light distribution ensure optimal growth conditions.

- Homogeneous light distribution
- Natural growth conditions
- KBWF: Temperature, humidity & light in one unit

KBW Series: The KBW confidently meets all demands for optimal lighting and temperature conditions for precisely defined processes.
KBWF Series: The perfect combination of heat or cold, humidity and light in one chamber: The BINDER KBWF.

Equipment:
- Electronically controlled APT.line™ preheating chamber
- Temperature range 0°C to 70°C (without humidity and illumination)
- Humidity range 10% to 80% RH (without illumination)
- 2 variable position illumination cassettes each with 5 daylight fluorescent illumination tubes
- MCS controller for temperature, humidity, and lighting control with 25 storable programs of 100 sections each for a maximum of 500 program segments, for programming of day/night cycles
- Integrated electronic chart recorder
- Controlled humidification and dehumidification system with capacitive humidity sensor
- Independent temperature safety device class 3.1 (DIN 12880) with optical and audible temperature alarm
- Access port with silicone plug diam. 30mm, left side
- RS 422 interface for communication software APT-COM™ DataControlSystem

Type	Internal volume litres	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
KBW 240	247	650 x 485 x 785	925 x 800 x 1460	1	**9.883 573**
KBW 400	400	650 x 485 x 1270	925 x 800 x 1945	1	**9.883 535** 3
KBW 720	698	970 x 576 x 1270	1255 x 887 x 1925	1	**9.883 574**
KBWF 240	247	650 x 485 x 785	930 x 800 x 1460	1	**9.883 575**
KBWF 720	720	973 x 576 x 1250	1255 x 890 x 1925	1	**9.883 576** 4

Muffle furnaces series LE 1/11 - LE 14/11

Nabertherm

- Tmax 1100°C, 1050°C working temperature
- Heating from both sides with heating elements in quartz tubes
- Multi-layer fibreboard insulation within the furnace
- Housing manufactured from high-grade textured stainless steel
- Folding door which can be used as a clipboard
- Exhaust air outlet in the furnace rear wall
- Silent, solid-state power control relay
- R6 controller supplied with models LE1 - LE4 with adjustable target temperature. Models LE6 and LE14 available with controller B150 (one ramp, one holding time, delayed start time) or optionally with controller P300 (9 programmes each with 4 ramps and holding times).
- Controller mounted in side space (LE1 - LE4 space saving under the door)

Optional:
- Chimney
- Chimney with fan or catalyser
- Temperature limiter

1



9.764 543

2



9.764 538

Type/Controller	Capacity litres	Rating kW	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
LE 1/11/R6	1	1.5	90 x 115 x 110	250 x 265 x 340	10.00	1	**9.764 543** 1
LE 2/11/R6	2	1.8	110 x 180 x 110	275 x 380 x 350	10.00	1	**9.764 537**
LE 4/11/R6	4	1.8	170 x 200 x 170	335 x 400 x 410	15.00	1	**9.764 538** 2
LE 6/11/B150	6	1.8	170 x 200 x 170	510 x 400 x 320	18.00	1	**9.764 539**
LE 6/11/P300	6	1.8	170 x 200 x 170	510 x 400 x 320	18.00	1	**9.764 540**
LE 14/11/B150	14	2.9	220 x 300 x 220	555 x 500 x 370	25.00	1	**9.764 541**
LE 14/11/P300	14	2.9	220 x 300 x 220	555 x 500 x 370	25.00	1	**9.764 542**

3 Muffle furnaces L 1/12 - L 40/11 series

Nabertherm

- Tmax 1100°C or 1200°C
- Ceramic heating plates with built-in heating wire, easy to replace
- Hardened vacuum-fibre, high-resistance muffle
- Housing manufactured from high grade stuctured stainless steel
- Double-walled housing for low surface temperature and high stability
- Available with folding door (L) which can be used as a clipboard or without additional charge with a lift gate (LT), where the hot side will be averted from the user
- Adjustable air inlet in the door
- Exhaust air outlet in the furnace rear wall
- Silent electronic relay
- Controller B180 with adjustable ramp holding temperature and holding time or controller P330 with 9 programmes each with 4 ramps and holding times, PC interface.

3



Type/Controller	Capacity litres	Rating kW	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
L 1/12/R6	1	1.5	90 x 11 x 110	250 x 265 x 340	10.00	1	**9.764 508**
L3/11/B180	3	1.2	160 x 140 x 100	380 x 370 x 420	20.00	1	**6.059 769**
L5/11/B180	5	2.4	200 x 170 x 130	440 x 470 x 520	35.00	1	**6.092 769**
L9/11/B180	9	3.0	230 x 240 x 170	480 x 550 x 570	45.00	1	**6.302 391**
L15/11/B180	15	3.6	230 x 340 x 170	480 x 660 x 570	55.00	1	**6.056 446**
L24/11/B180	24	4.5	280 x 340 x 250	560 x 660 x 650	75.00	1	**6.206 861**
L3/11/P330	3	1.2	160 x 140 x 100	380 x 370 x 420	20.00	1	**9.764 503**
L5/11/P330	5	2.4	200 x 170 x 130	440 x 470 x 520	35.00	1	**9.764 505**
L9/11/P330	9	3.0	230 x 240 x 170	480 x 550 x 570	45.00	1	**9.764 509**
L15/11/P330	15	3.6	230 x 340 x 170	480 x 660 x 570	55.00	1	**9.764 507**
L24/11/P330	24	4.5	280 x 340 x 250	560 x 660 x 650	75.00	1	**9.764 504**
L40/11/P330	40	6.0	320 x 490 x 250	600 x 790 x 650	95.00	1	**9.764 506**

Other models available on request.

Safety gloves, heat protection - please see page 223.

1



1 Laboratory muffle furnaces M 104 and M 104 G

Thermo Scientific

- Environmentally friendly and economical
- Reliable solution for routine high temperature applications
- Recommended for Chemical analysis, Annealing loss determination, Materials testing and Ashing processes
- Easy handling and loading via tilting door that also protects users from hot inside surface
- Standard model equipped with electronic controller, digital display and upper limit cut-out; deluxe models available with electronic or programmable controller, timer, and exhaust fan
- M104G models feature glazed annealing muffle for use in analytical processes requiring extreme purity

Type	Description	PK	Cat. No.
M 104	Basic version with Digicon® and upper limit cut-out	1	**9.764 185**
M 104	With Digicon®, upper limit cut-out and 24 hour timer	1	**9.764 186**
M 104	With Digicon®, upper limit cut-out, 24-hour-timer and exhaust fan	1	**9.764 187**
M 104	With Thermicon® P and upper limit cut-out	1	**9.764 188**
M 104	With Thermicon® P, upper limit cut-out and exhaust fan	1	**9.764 189**
M 104	With adjustable fresh air supply	1	**7.079 801**
M 104	Economy version with Digicon®, excluding upper limit cut-out	1	**7.024 558**
M 104 G	Digicon®, 24 hour timer, glazed muffle	1	**9.764 195**
M 104 G	Digicon® with adjustable fresh air supply	1	**4.009 791**
M 104 G	Digicon® 24 hour timer, exhaust fan, glazed muffle	1	**9.764 196**
M 104 G	Thermicon®, glazed muffle	1	**9.764 197**
M 104 G	Thermicon® P, exhaust fan, glazed muffle	1	**9.764 198**
M 104 G	Thermicon® P, with adjustable fresh air supply	1	**4.009 809**

2



2 Laboratory chamber furnaces, K114-series

Thermo Scientific

Extremely short heating and recovery times
Annealing chamber made of ceramic fiber for rapid heat-up and recovery times.
Accurate temperature control
Outstanding temperature distribution and control ensure efficient operation.
Ideal for use in crowded laboratory
Compact size, excellent insulation and patented safety door mechanism.
Common application areas
Uses include materials testing, burning and rapid heat processes.

Type	Description	PK	Cat. No.
K 114	Basic version with Digicon® and upper limit cut-out	1	**9.764 231**
K 114	With Digicon®, upper limit cut-out and 24 hour timer	1	**9.764 232**
K 114	With Thermicon® P and upper limit cut-out	1	**9.764 233**
K 114	With adjustable fresh air supply (for incinerating processes)	1	**4.009 788**
K 114	Economy version with Digicon®, excluding upper limit cut-out	1	**9.764 235**
K 114	with Digicon® and exhaust fan	1	**4.009 781**
K 114	with Thermicon® P and exhaust fan	1	**4.009 790**

Accessories for M 104/M 104 G and K 114 high-temperature muffle furnaces

Thermo Scientific

Type	PK	Cat. No.
Exhaust flue	1	**9.764 191**
Tray	1	**9.764 192**

3



3 Muffle furnaces, M110-series

Thermo Scientific

- Economical operation: high quality fiber insulation ensures low energy consumption
- Even heat distribution: two-shell design, outstanding insulation and heating element arrangement give even heat distribution with minimal fluctuation.
- Rugged and flexible for all types of lab applications. Including heating of metals and drying at high temperatures.
- All basic models come with Digicon controller and upper limit cut-out

Type	Description	PK	Cat. No.
M 110	Basic version with Digicon® and upper limit cut-out	1	**9.764 210**
M 110	With Digicon®, upper limit cut-out and 24 hour timer	1	**4.009 808**
M 110	Basic version with Digicon®, upper limit cut-out, exhaust fan and flue	1	**9.764 213**
M 110	With Digicon®, upper limit cut-out, 24 hour timer and exhaust fan	1	**4.009 806**
M 110	With Thermicon® P and upper limit cut-out	1	**9.764 211**
M 110	With Thermicon® P, upper limit cut-out, exhaust fan and flue	1	**9.764 212**
	Exhaust flue	1	**9.763 381**
	Tray	1	**9.763 382**

E & OE.

Ashing/Burn off furnaces LV 3/11 - LVT 15/11

1

Nabertherm

The models LV 3/11 - LVT 15/11 are especially designed for ashing in the laboratory. A special air intake and exhaust system allows air exchange of more than 6 times per minute. Incoming air is preheated to ensure a good temperature uniformity.

- Tmax 1100°C
- Heating from two sides by ceramic heating plates
- Ceramic heating plates with integral heating element which is safeguarded against fumes and splashing, and easy to replace
- Highly durable, high-performance cured vacuum fiber module lining
- Housing made of sheets of textured stainless steel
- Dual shell housing for low external temperatures and stability
- Optional flap door (LV) which can be used as work platform or lift door (LVT) with hot surface facing away from the operator
- Solid state relays provide for low noise operation
- Air exchange of more than 6 times per minute
- Good temperature uniformity due to preheating of incoming air



9.764 575

Type/ Controller	Capacity litres	Rating kW	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
LV 3/11/B180	3	1.2	160 x 140 x 100	380 x 370 x 750	1	**6.239 505**
LV 5/11/B180	5	2.4	200 x 170 x 130	440 x 470 x 850	1	**6.228 436**
LV 9/11/B180	9	3.0	230 x 240 x 170	480 x 550 x 900	1	**6.204 399**
LV 15/11/B180	15	3.6	230 x 340 x 170	480 x 650 x 900	1	**6.235 585**
LV 3/11/P330	3	1.2	160 x 140 x 100	380 x 370 x 750	1	**9.764 575** 1
LV 5/11/P330	5	2.4	200 x 170 x 130	440 x 470 x 850	1	**6.233 889**
LV 9/11/P330	9	3.0	230 x 240 x 170	480 x 550 x 900	1	**9.764 576**
LV 15/11/P330	15	3.6	230 x 340 x 170	480 x 650 x 900	1	**9.764 577**
LVT 3/11/B180	3	1.2	160 x 140 x 100	380 x 370 x 750	1	**9.764 578**
LVT 5/11/B180	5	2.4	200 x 170 x 130	440 x 470 x 850	1	**9.764 580**
LVT 9/11/B180	9	3.0	230 x 240 x 170	480 x 550 x 900	1	**6.232 352**
LVT 15/11/B180	15	3.6	230 x 340 x 170	480 x 650 x 900	1	**6.235 611**
LVT 3/11/P330	3	1.2	160 x 140 x 100	380 x 370 x 750	1	**9.764 579**
LVT 5/11/P330	5	2.4	200 x 170 x 130	440 x 470 x 850	1	**6.256 163**
LVT 9/11/P330	9	3.0	230 x 240 x 170	480 x 550 x 900	1	**6.255 458**
LVT 15/11/P330	15	3.6	230 x 340 x 170	480 x 650 x 900	1	**6.235 610**

2 High-temperature chamber furnaces with SiC rod heating HTC/HTCT 01/14 - 08/16 series

2

Nabertherm

These powerful laboratory muffle furnaces are available for temperatures up to 1400°C, 1500°C, or 1600°C. The durability of the SiC rods in periodic use, in combination with their high heating speed, make these furnaces to all-rounders in the laboratory. Heating times of 40 minutes to 1400°C can be achieved, depending on the furnace model and the conditions of use.

- Tmax 1400°C, 1500°C, or 1600°C
- Working Temperature 1550°C (for models HTC ../16), increased wear and tear of heating elements must be expected in case of working at higher temperatures
- Model HTCT 01/16 with single phase connection
- High-quality fiber material, selected for the working temperature
- Housing made of sheets of textured stainless steel
- Dual shell housing for low external temperatures and high stability
- Optional flap door (HTC) which can be used as work platform or lift door (HTCT) with hot surface facing away from the operator (HTCT 01/.. only with lift door)
- Switching system with solid-state-relays, power tuned to the SiC rods
- Controller P330 as standard with 9 programmes each with 4 ramps and holding times, PC interface
- Easy replacement of heating rods



Type/ Controller	Temp. max. °C	Capacity L	Rating kW	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
HTCT 03/14	1400	3.0	9.0	120 x 210 x 120	400 x 535 x 530	1	**9.764 582**
HTCT 08/14	1400	8.0	13.0	170 x 290 x 170	450 x 620 x 570	1	**6.252 321**
HTCT 03/15	1500	3.0	9.0	120 x 210 x 120	400 x 535 x 530	1	**9.764 584**
HTCT 08/15	1500	8.0	13.0	170 x 290 x 170	450 x 620 x 570	1	**9.764 585**
HTCT 01/16	1600	1.5	3.5	110 x 120 x 120	340 x 300 x 460	1	**9.764 586**
HTCT 03/16	1600	3.0	9.0	120 x 210 x 120	400 x 535 x 530	1	**9.764 587**
HTCT 08/16	1600	8.0	13.0	170 x 290 x 170	450 x 620 x 570	1	**9.764 588**
HTC 03/14	1400	3.0	9.0	120 x 210 x 120	400 x 535 x 530	1	**6.222 778**
HTC 08/14	1400	8.0	13.0	170 x 290 x 170	450 x 620 x 570	1	**9.764 589**
HTC 03/15	1600	3.0	9.0	120 x 210 x 120	400 x 535 x 530	1	**9.764 590**
HTC 08/15	1600	8.0	13.0	170 x 290 x 170	450 x 620 x 570	1	**9.764 591**
HTC 03/16	1600	3.0	9.0	120 x 210 x 120	400 x 535 x 530	1	**6.235 199**
HTC 08/16	1600	8.0	13.0	170 x 290 x 170	450 x 620 x 570	1	**9.764 592**

1 Rapid incinerator

Gestigkeit

For individual and series incineration of solids and liquids. Upper platform with 8 openings of 34mm diameter, for porcelain crucibles up to 50mm diameter. Upper platform and housing made of stainless steel.
With 120 minute timer with audible signal after timed period and separate continuous operation switch.
A safety switch switches the mains supply off/on automatically on opening/closing the incinerator chamber.
With 1.5 metre cable and earthed plug.

Type SVR/E
With electronic temeprature control which allows stepless heating adjustment from 10 to 100%. Complete for use.

Type SVD 95
With digital temperature adjustment and display. Complete for use.

Type	Temp. range max. °C	Rating W	Dimensions (W x D x H) mm	Weight kg	Supply requirements V	PK	Cat. No.
SVR/E	950	2500	450 x 310 x 180	7.0	230	1	**9.884 140**
SVD 95	950	2500	450 x 310 x 180	7.0	220	1	**9.884 141**

1



Spare parts for Rapid incinerator

Gestigkeit

Type EH 400
Complete, built-in heating element; Weight 1.6kg, for SVR/E.
Type EH 95
Complete, built-in heating element and integral thermocouple, for SVD 95.

Type	PK	Cat. No.
Heating element EH 400 for SVR/E	1	**9.884 142**
Heating element EH 95 for SVD 95	1	**9.884 143**



E & OE.

Volumetric apparatus 830

Measuring cylinders ... 830
Mixing cylinders ... 834
Graduated flasks ... 835

Pipettes 842

Volumetric pipettes ... 842
Graduated pipettes ... 846
Pasteur pipettes ... 852
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Pipettes Accessories ... 859
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Microlitre pipettes ... 868
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Dispensing 914

Hand dispensers ... 914
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Titration 932

Burettes ... 932
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Digital burettes ... 943

Pumps 948

Drum pumps ... 948
Peristaltic pumps ... 954
Dosing pumps ... 962
Gear pumps ... 966
Rotary piston pumps ... 967

1



9.274 176

Measuring cylinders, borosilicate glass 3.3, tall form, class A, blue graduated

Borosilicate glass 3.3. Conformity certified with batch ID. To DIN EN ISO 4788, DIN 12680. High form, hexagonal foot with spout. Calibrated to contain (IN) and all the tolerances are according to DIN/ISO Class A standards. *Isolab*

Capacity	Tolerance	Height	PK	Cat. No.
ml	± ml	mm		
5	0.050	115	1	**9.274 170**
10	0.100	140	1	**9.274 171**
25	0.250	170	1	**9.274 172**
50	0.500	200	1	**9.274 173**
100	0.500	260	1	**9.274 174**
250	1.000	335	1	**9.274 175**
500	2.500	390	1	**9.274 176** 1
1000	5.000	470	1	**9.274 177**
2000	10.000	570	1	**9.274 178**

2



9.274 184

Measuring cylinders, DURAN®, tall form, class A, blue graduation

IN (TD) calibrated. With spout and hexagonal glass base. Main point ring graduation. With dated batch identification. Conformity certified. Graduation in durable blue enamel, acc.to DIN EN ISO 4788. *Hirschmann*

For those products batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Capacity	Grad.	Tolerance	Height	PK	Cat. No.
ml	ml	± ml	mm		
5	0.1	0.05	115	1	**9.274 180**
10	0.2	0.1	140	1	**9.274 181**
25	0.5	0.25	170	1	**9.274 182**
50	1	0.5	200	1	**9.274 183**
100	1	0.5	260	1	**9.274 184** 2
250	2	1.0	335	1	**9.274 185**
500	5	2.5	390	1	**9.274 186**
1000	10	5.0	470	1	**9.274 187**
2000	20	10.0	500	1	**9.274 188**

Also available with dated batch identfication acc. to USP (US Pharmacopeia).

3



9.274 138

Measuring cylinders, borosilicate glass 3.3, tall form, class A, blue graduated

With spout, tall form. BLAUBRAND®. To DIN EN ISO 4788. DE-M marking with works certified batch number. With spout and hexagonal foot. Graduations and inscriptions in highly contrasting blue enamel. Calibrated to contain (IN). All BLAUBRAND® cylinders are delivered with batch number and batch certificate. Also available with individual works, USP, or DAkkS (former DKD) calibration certificate on request. The batch certificate is also available to download from the manufacturer's website. *BRAND*

Capacity	Grad.	Tolerance	Height	PK	Cat. No.
ml	ml	± ml	mm		
5	0.1	0.05	115	1	**9.274 105**
10	0.2	0.10	140	1	**9.274 108**
25	0.5	0.25	170	1	**9.274 120**
50	1	0.5	200	1	**9.274 128**
100	1	0.5	260	1	**9.274 138** 3
250	2	1.0	335	1	**9.274 148**
500	5	2.5	365	1	**9.274 154**
1000	10	5.0	465	1	**9.274 162**
2000	20	10	505	1	**9.274 164**



Measuring cylinders, DURAN®, tall form, class A, amber stain graduation

IN (TC) calibrated. With spout and hexagonal glass base. Main point ring graduation. With dated batch identification. Conformity certified. With durable amber stain graduation, acc. to DIN EN ISO 4788.
For those products batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Hirschmann

Capacity	Grad.	Tolerance	Height	PK	Cat. No.
ml	ml	± ml	mm		
5	0.1	0.05	115	1	**6.901 399**
10	0.2	0.1	140	1	**6.250 413**
25	0.5	0.25	170	1	**6.700 903**
50	1.0	0.5	200	1	**6.201 104**
100	1.0	0.5	260	1	**6.303 988** 1
250	2.0	1.0	335	1	**6.250 483**
500	5.0	2.5	390	1	**6.222 339**
1000	10.0	5.0	470	1	**6.200 496**
2000	20.0	10.0	500	1	**6.206 675**

1



6.303 988

Measuring cylinders, borosilicate glass 3.3, tall form, class A, white graduated

High form, hexagonal with spout, foot PP. Borosilicate glass 3.3. Conformity certified with batch ID.To DIN EN ISO 4788, DIN 12680.

Isolab

Capacity	Grad.	Tolerance	Height	PK	Cat. No.
ml	ml	± ml	mm		
10	0.200	0.100	135	1	**4.008 307**
25	0.500	0.250	160	1	**4.008 308**
50	1.000	0.500	195	1	**6.238 840**
100	1.000	0.500	240	1	**6.237 709** 2
250	2.000	1.00	320	1	**6.237 710**
500	5.000	2.50	380	1	**4.008 309**
1000	10.00	5.00	465	1	**4.008 310**

2



6.237 709

Measuring cylinders, DURAN®, tall form, class B, blue graduation

IN (TD) calibrated. With spout and hexagonal glass base, short line. Tolerances better than class B requirements. Graduation in durable blue enamel, acc.to DIN EN ISO 4788.

Hirschmann

Capacity	Grad.	Tolerance	Height	PK	Cat. No.
ml	ml	± ml	mm		
5	0.1	0.075	115	1	**9.274 198**
10	0.2	0.15	140	1	**9.274 199**
25	0.5	0.375	170	1	**9.274 200**
50	1	0.75	200	1	**9.274 201**
100	1	0.75	260	1	**9.274 202** 3
250	2	1.5	335	1	**9.274 203**
500	5	3.75	390	1	**9.274 204**
1000	10	7.5	470	1	**9.274 206**
2000	20	15.0	500	1	**9.274 207**

3



9.274 202

Measuring cylinders, DURAN®, tall form, class B, amber stain graduation

IN (TC) calibrated. With spout and hexagonal glass base, short line. Tolerances better than class B requirements. With durable amber stain graduation, DIN EN ISO 4788.

Hirschmann

Capacity	Grad.	Tolerance	Height	PK	Cat. No.
ml	ml	± ml	mm		
5	0.1	0.075	115	1	**6.078 159**
10	0.2	0.15	140	1	**6.200 432**
25	0.5	0.375	170	1	**6.200 433**
50	1.0	0.75	200	1	**7.200 508**
100	1.0	0.75	260	1	**6.510 180** 4
250	2.0	1.5	335	1	**6.200 434**
500	5.0	3.8	390	1	**6.510 181**
1000	10.0	7.5	470	1	**6.510 182**
2000	20.0	15.0	500	1	**6.510 183**
5000*	50.0	37.5	650	1	**7.510 242**

* Supplementary to DIN.

4



6.510 180

1



9.274 038

Measuring cylinders, borosilicate glass 3.3, tall form, class B, amber graduation

BRAND

Available with glass, or detachable plastic, feet and PP protective collars (plastic feet and collar are not autoclavable). With spout, tall form. SILBERBRAND Eterna. Class B. To DIN EN ISO 4788. With spout and hexagonal foot. Graduations and inscriptions in Eterna permanent amber stain. Calibrated to contain (IN).

Capacity ml	Grad. ml	Height mm	Tolerance ± ml	Foot	PK	Cat. No.
5	0.1	115	0.08	Glass	1	**9.274 005**
10	0.2	140	0.15	Glass	1	**9.274 008**
25	0.5	170	0.4	Glass	1	**9.274 020**
50	1	200	0.8	Glass	1	**9.274 028**
100	1	260	0.8	Glass	1	**9.274 038** 1
250	2	335	1.5	Glass	1	**9.274 048**
500	5	365	4	Glass	1	**9.274 054**
1000	10	465	8	Glass	1	**9.274 062**
2000	20	505	15	Glass	1	**9.274 064**

2



9.274 193

Measuring cylinders, DURAN®, low form, class B, amber stain graduation

Hirschmann

IN (TC) calibrated. With spout and hexagonal glass base. Tolerances better than class B requirements. Short line graduation. With durable amber stain graduation, DIN EN ISO 4788.

Capacity ml	Grad. ml	Tolerance ± ml	Height mm	PK	Cat. No.
10	1	0.3	100	1	**9.274 190**
25	1	0.5	125	1	**9.274 191**
50	2	1.0	150	1	**9.274 192**
100	2	1.0	170	1	**9.274 193** 2
250	5	2.0	220	1	**9.274 194**
500	10	5.0	255	1	**9.274 195**
1000	20	10.0	295	1	**9.274 196**
2000	50	20.0	345	1	**9.274 197**

3



9.274 084

Measuring cylinders, PP, tall form, class B, blue graduated

Isolab

Tall form, highly transparent, with blue graduations, hexagonal base, calibrated to contain (IN). Tolerances class B according to DIN 12681/ISO 6706. Exposure to temperatures above 60°C may effect accuracy. Cleaning up to max. 60°C is recommended to preserve marks and inscriptions.

Capacity ml	Tolerance ± ml	Height mm	PK	Cat. No.
10	0.200	135	1	**9.274 080**
25	0.500	160	1	**9.274 081**
50	1.000	195	1	**9.274 082**
100	1.000	240	1	**9.274 083**
250	2.000	320	1	**9.274 084** 3
500	5.000	380	1	**9.274 085**
1000	10.000	465	1	**9.274 086**

4



4 Measuring cylinders, PP, tall form, class B, moulded graduations

NEW!

Isolab

-Manufactured from ultra clear, virgin polypropylene and its thick walls eliminate distortion.
- They offer high transperency, chemical resistance and remarkable heat tolerance.
- They meet the highest quality standards according to DIN 12681 and ISO 6706.
- Individually calibrated through automatic calibration process carried out by robots.
- Permanent quality control through all steps eliminate possible deviations from nominal values.
- Cylinders are calibrated to contain (In) and the tolerances are according to DIN/ISO Class "B" standards.
- Graduations are embossed and specially designed for plastic and resistant to 60°C.
- For consistent accurracy, polypropylene measuring cylinders should not be used with liquids over 60°C and should not be kept under direct sunlight or overheated conditions.

Capacity ml	Tolerance ± ml	Grad. ml	Height mm	PK	Cat. No.
10	0.200	0.200	135	1	**6.243 541**
25	0.500	0.500	160	1	**6.243 542**
50	1.000	1.000	195	1	**6.243 543**
100	1.000	1.000	240	1	**6.243 544**
250	2.000	2.000	320	1	**6.243 545**
500	5.000	5.000	380	1	**6.243 546**
1000	10.000	10.000	465	1	**6.243 547**

E & OE.

Measuring cylinders, PP, tall form, class B, blue moulded graduations

VITLAB

Highly transparent.
With easily readable, raised, embossed blue scale and ring marks at the primary scale points.
Calibrated 'In'. Class B tolerances according to DIN 12681/ISO 6706.
Hexagonal base with bottom studs provides high stability. Thermal stress up to 80ºC does not cause tolerance limits to be permanently exceeded. To preserve markings, do not clean at temperatures exceeding 60ºC.
Food-safe (suitable for contact with foodstuff in accordance with Regulation (EC) No. 10/2011).

Capacity ml	Grad. ml	Height mm	Tolerance ± ml	Diam. mm	PK	Cat. No.
10	0.20	145	0.2	15	1	**9.274 408**
25	0.50	170	0.5	22	1	**9.274 409**
50	1.00	200	1.0	27	1	**9.274 410**
100	1.00	250	1.0	33	1	**9.274 411** 1
250	2.00	315	2.0	44	1	**9.274 412**
500	5.00	360	5.0	58	1	**9.274 413**
1000	10.00	440	10.0	69	1	**9.274 414**
2000	20.00	482	20.0	97	1	**9.274 415**

1



9.274 411

Measuring cylinders, PP, tall form, class B, moulded graduations

VITLAB

Tall form. Highly transparent. With a raised scale and ring marks at the primary scale points, calibrated 'In'. Class B tolerances according to DIN 12681/ISO 6706.
Hexagonal base with bottom studs provides high stability. Thermal stress up to 80ºC does not cause tolerance limits to be permanently exceeded. Food-safe (suitable for contact with foodstuff in accordance with Regulation EC No. 10/2011).

Capacity ml	Grad. ml	Height mm	Tolerance ± ml	Diam. mm	PK	Cat. No.
10	0.20	145	0.2	15	1	**7.075 031**
25	0.50	170	0.5	22	1	**9.274 420**
50	1.00	200	1.0	27	1	**9.274 428**
100	1.00	250	1.0	33	1	**9.274 438** 2
250	2.00	315	2.0	44	1	**9.274 448**
500	5.00	360	5.0	58	1	**9.274 454**
1000	10.00	440	10.0	69	1	**9.274 462**
2000	20.00	482	20.0	97	1	**9.274 464**

2



9.274 438

3 Measuring cylinders, PP, with handle, moulded graduations

Bel-Art Products

The large handle provides a secure grip for safer, more controlled and convenient pouring. A double scale is accurate and easy to read. The wide hexagonal base prevents tip over and rolling on the benchtop. One litre and two litre sizes.
Autoclavable at 121°C

Capacity ml	Height mm	PK	Cat. No.
1000	440	1	**7.638 738**
2000	490	1	**9.274 870**

3



Measuring cylinders, PMP, tall form, class A, blue graduations

BRAND

Tall form. PMP. Class A DIN 12681 and ISO 6706. Transparent, with blue printed graduations and inscriptions. Exposure to temperatures up to 121 ºC (autoclaving) will not cause permanently exceeded error limits. Cleaning at temperatures below 60°C is recommended to preserve graduations and inscriptions.
Conformity certified. With batch number and batch certificate. Single calibration reports or DAkkS certificates are available on request. The batch certificate is available to download from the manufacturer's website.

Class A tolerance is not affected even after 20 washes and 10 autoclave treatments.
(DIN 12681 requires: 10 washes and 3 autoclave treatments).

Capacity ml	Grad. ml	Tolerance A ± ml	Height mm	PK	Cat. No.
10	0.2	0.10	145	1	**9.274 790**
25	0.5	0.25	170	1	**9.274 791**
50	1	0.5	200	1	**9.274 792** 4
100	1	0.5	250	1	**9.274 793**
250	2	1.0	315	1	**9.274 794**
500	5	2.5	360	1	**9.274 795**
1000	10	5	440	1	**9.274 796**
2000	20	10	535	1	**9.274 797**

4



9.274 792

1



7.008 999

Measuring cylinders, SAN, low form, class B, moulded graduations

Short form. Crystal clear. With a raised scale and ring marks at the primary scale points, calibrated IN. Thermal stress up to 60ºC does not cause tolerance limits to be permanently exceeded. Food-safe (suitable for contact with foodstuff in accordance with Regulation EC No. 10/2011). *VITLAB*

Capacity ml	Grad. ml	Height mm	Tolerance ± ml	Diam. mm	PK	Cat. No.
25	0,50	122	0,50	22	1	**7.060 690**
50	1,00	142	1,00	27	1	**7.060 691**
100	2,00	163	2,00	37	1	**7.008 999** 1
250	5,00	192	5,00	51	1	**7.060 692**
500	10,00	218	10,00	67	1	**7.060 693**
1000	20,00	285	20,00	78	1	**7.060 694**

2



7.009 014

Measuring cylinders, SAN, tall form, class B, moulded graduations

Tall form. Crystal clear. With a raised scale and ring marks at the primary scale points, calibrated IN. Class B tolerances according to DIN 12681/ISO 6706. Hexagonal base with bottom studs provides high stability. Thermal stress up to 60ºC does not cause tolerance limits to be permanently exceeded. Food-safe (suitable for contact with foodstuff in accordance with Regulation EC No. 10/2011). *VITLAB*

Capacity ml	Grad. ml	Height mm	Tolerance ± ml	Diam. mm	PK	Cat. No.
10	0,20	140	0,20	16	1	**7.009 005**
25	0,50	169	0,50	21	1	**7.009 008**
50	1,00	199	1,00	28	1	**7.009 011**
100	1,00	260	1,00	34	1	**7.009 014** 2
250	2,00	315	2,00	47	1	**7.009 017**
500	5,00	350	5,00	61	1	**7.009 020**
1000	10,00	415	10,00	76	1	**7.009 023**
2000	20,00	482	20,00	97	1	**7.009 026**

3



9.275 074

Mixing cylinders, borosilicate glass 3.3, tall form, class A, blue graduated

Borosilicate glass 3.3. Tall form. Conformity certified, with certified batch number. PP stoppers and hexagonal foot. To DIN EN ISO 4788, DIN 12680. *Isolab*

Capacity ml	Tolerance ± ml	Height mm	PK	Cat. No.
10	0.100	160	1	**9.275 070**
25	0.250	195	1	**9.275 071**
50	0.500	230	1	**9.275 072**
100	0.500	290	1	**9.275 073**
250	1.000	370	1	**9.275 074** 3
500	2.500	395	1	**9.275 075**
1000	5.000	510	1	**9.275 076**

4



9.275 083

Mixing cylinders, borosilicate glass 3.3, tall form, class A, white graduated

Borosilicate glass 3.3 High form. Conformity certified, with certified batch number. PP stoppers and hexagonal foot. To DIN EN ISO 4788, DIN 12680. *Isolab*

Capacity ml	Tolerance ± ml	Height mm	PK	Cat. No.
10	0,100	160	1	**9.275 080**
25	0,250	195	1	**9.275 081**
50	0,500	230	1	**9.275 082**
100	0,500	290	1	**9.275 083** 4
250	1,000	370	1	**9.275 084**
500	2,500	395	1	**9.275 085**
1000	5,000	510	1	**9.275 086**

Mixing cylinders, borosilicate glass 3.3, tall form, class A, blue graduated

BLAUBRAND®. To DIN EN ISO 4788. DE-M marking, with works certified batch number. *BRAND*
PP stoppers and hexagonal foot. Graduations and inscriptions in highly contrasting blue enamel. Calibrated to contain (IN). Height given is overall height without stopper. All BLAUBRAND® cylinders are delivered with batch number and one batch certificate is included in the manufacturer's outer pack. Individual works, USP, or DAkkS calibration certificates are also available on request. The batch certificate is also available to download from the supplier's website.

Capacity ml	Grad. ml	Neck NS	Height mm	PK	Cat. No.
10	0.2	10/19	160	1	**9.275 208**
25	0.5	14/23	190	1	**9.275 220**
50	1	19/26	220	1	**9.275 228**
100	1	24/29	285	1	**9.275 238** 1
250	2	29/32	350	1	**9.275 248**
500*	5	34/35	395	1	**9.275 254**
1000*	10	45/40	500	1	**9.275 262**

* Fitted with PE octagonal stoppers.

1

9.275 238

Mixing cylinders, borosilicate glass 3.3, stoppered, class B, amber graduated

SILBERBRAND Eterna. Class B. To DIN EN ISO 4788. *BRAND*
With PP stoppers and hexagonal foot. Graduations and inscriptions in Eterna amber stain. Calibrated to contain (IN). Height given is overall height without stopper

Capacity ml	Grad. ml	Joint size (NS)	Height mm	PK	Cat. No.
10	0.2	10/19	160	1	**9.275 008**
25	0.5	14/23	190	1	**9.275 020**
50	1.0	19/26	220	1	**9.275 028**
100	1.0	24/29	285	1	**9.275 038** 2
250	2.0	29/32	350	1	**9.275 048**
500*	5	34/35	395	1	**9.275 054**
1000*	10	45/40	500	1	**9.275 062**

* Fitted with PE octagonal stoppers.

2

9.275 038

Volumetric trapezoidal flasks, Borosilicate glass 3.3, class A, blue graduated

Borosilicate glass 3.3. Conformity certified, with batch certificate. Trapezoidal. *Isolab*
With NS and PP stoppers, to DIN 12664, to DIN EN ISO 1042.

Capacity ml	Joint size (NS)	Tolerance ± ml	PK	Cat. No.
1	07/16	0.025	1	**6.237 705**
2	07/16	0.025	1	**6.236 426**
3	07/16	0.025	1	**7.930 290**
4	07/16	0.025	1	**7.930 291** 3

3

7.930 291

Volumetric trapezoidal flasks, DURAN®, class A, blue graduation

IN (TD) calibrated. With dated batch identification. Conformity certified. NS ground with poly stopper. Ring mark and graduation in high contrasting blue enamel. *Hirschmann*
According to DIN EN ISO 1042. For those products batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

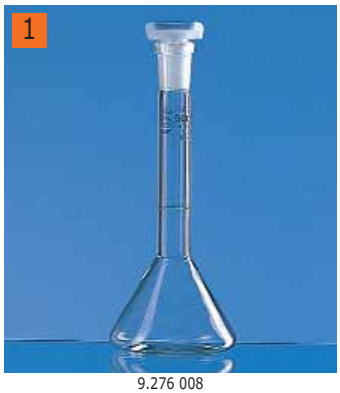
Capacity ml	Joint size (NS)	Tolerance ± ml	Height mm	PK	Cat. No.
1	7/16	0.025	60	1	**9.276 645**
2	7/16	0.025	70	1	**9.276 646**
5	7/16	0.025	70	1	**9.276 647**
5*	10/19	0.04	70	1	**9.276 648**
10	7/16	0.025	90	1	**9.276 649**
10*	10/19	0.04	90	1	**9.276 650**
20	10/19	0.04	110	1	**9.276 651**
25	10/19	0.04	110	1	**9.276 652** 4
50	12/21	0.06	140	1	**9.276 653**

* wide neck.

4


9.276 652

1



9.276 008

Volumetric trapezoidal flasks, borosilicate glass 3.3, class A, blue graduations

BRAND

BLAUBRAND®. DIN EN ISO 1042. DE-M marking. With batch number. Graduations and inscriptions in highly contrasting blue enamel. Calibrated to contain (IN). With PP stoppers.
All BLAUBRAND® volumetric flasks are delivered with batch number and one batch certificate included per pack.
Also available with individual works or DAkkS calibration certificate, please enquire. BLAUBRAND® volumetric flasks (except wide-neck flasks). Individual and batch works, USP calibration certificates are also available on request.
Models with glass stoppers available on request.
The batch certificate is also available to download from the supplier's website.

Capacity ml	Joint size (NS)	Tolerance ± ml	PK	Cat. No.
2	7/16	0.025	1	**9.276 002**
5	7/16	0.025	1	**9.276 003**
10*	10/19	0.04	1	**9.276 004**
20	10/19	0.04	1	**9.276 006**
25	10/19	0.04	1	**9.276 007**
50	12/21	0.06	1	**9.276 008** 1

* Wide neck version

2



9.276 610

Volumetric flasks, borosilicate glass 3.3, class A, blue graduated, with PP stoppers

Isolab

Borosilicate glass 3.3. Conformity certified, with batch certificate. With NS and PP stoppers, to DIN 12664, to DIN EN ISO 1042. Calibrated to contain (IN) and all the tolerances are according to DIN/ISO Class A standards.

Capacity ml	Joint size (NS)	Tolerance ± ml	PK	Cat. No.
5	10/19	0.025	1	**9.276 600**
10	10/19	0.025	1	**9.276 601**
20	10/19	0.040	1	**9.276 602**
25	12/21	0.040	1	**4.008 300**
25	10/19	0.040	1	**9.276 603**
50	12/21	0.060	1	**9.276 604**
50	14/23	0.060	1	**9.276 605**
100	12/21	0.100	1	**9.276 606**
100	14/23	0.100	1	**9.276 607**
200	14/23	0.150	1	**9.276 608**
250	14/23	0.150	1	**9.276 609**
400	19/26	0.200	1	**4.008 302**
500	19/26	0.250	1	**9.276 610** 2
1000	24/29	0.400	1	**9.276 611**
2000	29/32	0.600	1	**9.276 612**
5000	34/35	1.200	1	**9.276 613**
10000	45/40	2.000	1	**9.276 614**

3



9.276 451

Volumetric flasks, borosilicate glass 3.3, class A, blue graduations, with PP stoppers

NEW!

BRAND

BLAUBRAND®. Class A. DIN EN ISO 1042. DE-M marking with works certified batch number. Ring marks and inscriptions in highly contrasting blue enamel. Calibrated to contain (IN). PP stoppers. All BLAUBRAND® volumetric flasks are delivered with batch number and one batch certificate included per pack. Also available with individual works or DAkkS (former DKD) calibration certificate, please enquire.
The batch certificate is also available to download from the manufacturer's website.

Capacity ml	Joint size (NS)	Tolerance ± ml	PK	Cat. No.
5*	10/19	0.04	1	**9.276 438**
10*	10/19	0.04	1	**9.276 443**
20	10/19	0.04	1	**9.276 446**
20*	12/21	0.06	1	**6.239 438**
25	10/19	0.04	1	**9.276 447**
25*	12/21	0.06	1	**4.000 074**
50	12/21	0.06	1	**9.276 448**
50*	14/23	0.10	1	**9.276 456**
100	12/21	0.10	1	**9.276 449**
100	14/23	0.10	1	**9.276 457**
200	14/23	0.15	1	**9.276 450**
250	14/23	0.15	1	**9.276 451** 3
500	19/26	0.25	1	**9.276 452**
1000	24/29	0.40	1	**9.276 453**
2000	29/32	0.60	1	**9.276 454**
5000	34/35	1.20	1	**9.276 455**
10000**	45/40	2.0	1	**9.276 436**

*wide neck version
**Supplementary to DIN.

E & OE.

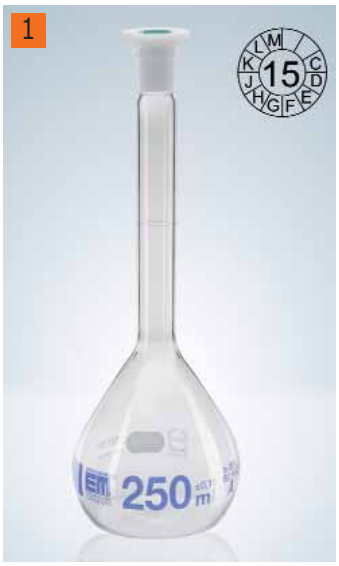
Volumetric flasks, DURAN®, tall form, class A, blue graduation, with PE stoppers

IN (TD) calibrated. With dated batch identification. Conformity certified. With NS ground and polystopper. Ring mark and graduation in durable blue enamel, acc.to DIN EN ISO 1042. For those products batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available. *Hirschmann*

Capacity ml	Joint size (NS)	Tolerance ± ml	Height mm	PK	Cat. No.
5	7/16	0.025	70	1	**9.276 680**
5**	10/19	0.04	70	1	**9.276 681**
10	7/16	0.025	90	1	**9.276 682**
10**	10/19	0.04	90	1	**9.276 683**
20	10/19	0.04	110	1	**9.276 684**
20**	12/21	0.06	105	1	**9.276 679**
25	10/19	0.04	110	1	**9.276 685**
25**	12/21	0.06	110	1	**9.276 686**
50	12/21	0.06	140	1	**9.276 687**
50**	14/23	0.08	140	1	**9.276 688**
100	12/21	0.1	170	1	**9.276 689**
100	14/23	0.1	170	1	**9.276 690**
200	14/23	0.15	210	1	**9.276 691**
250	14/23	0.15	220	1	**9.276 692** 1
500	19/26	0.25	260	1	**9.276 693**
1000**	29/32	0.6	300	1	**9.276 694**
1000	24/29	0.4	300	1	**9.276 695**
2000	29/32	0.6	370	1	**9.276 696**
5000	34/35	1.2	470	1	**9.276 697**
10000*	45/40	2.0	570	1	**9.276 698**

* Supplementary to DIN.
**Wide neck.
Also available with dated batch identfication acc. to USP (US Pharmacopeia)

1



9.276 692

Volumetric flasks, DURAN®, class A, blue graduation, with hollow glass stopper

IN (TD) calibrated. With dated batch identification. Conformity certified. NS ground with glass stopper. Ring mark and graduation in high contrasting blue enamel. According to DIN EN ISO 1042.For those products batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available. *Hirschmann*

Capacity ml	Joint size (NS)	Tolerance ± ml	Height mm	PK	Cat. No.
5	7/16	0.025	70	1	**9.276 470**
5**	10/19	0.04	70	1	**9.276 471**
10	7/16	0.025	90	1	**9.276 472**
10**	10/19	0.04	90	1	**9.276 473**
20	10/19	0.04	110	1	**9.276 474**
20**	12/21	0.06	105	1	**9.276 489**
25	10/19	0.04	110	1	**9.276 475**
25**	12/21	0.06	110	1	**9.276 476**
50	12/21	0.06	140	1	**9.276 477**
50**	14/23	0.08	140	1	**9.276 478**
100	12/21	0.1	170	1	**9.276 479**
100	14/23	0.1	170	1	**9.276 480**
200	14/23	0.15	210	1	**9.276 481**
250	14/23	0.15	220	1	**9.276 482** 2
500	19/26	0.25	260	1	**9.276 483**
1000**	29/32	0.6	300	1	**9.276 484**
1000	24/29	0.4	300	1	**9.276 485**
2000	29/32	0.6	370	1	**9.276 486**
5000	34/35	1.2	470	1	**9.276 487**
10000*	45/40	2.0	570	1	**9.276 488**

* Supplementary to DIN.
**wide neck.

2



9.276 482

1



9.276 767

Volumetric flasks, DURAN®, class A, amber stain graduation, with PE stoppers

IN (TD) calibrated. With dated batch identification. Conformity certified. *Hirschmann*
NS ground with polystopper. With durable amber stain graduation.
According to DIN EN ISO 1042. For those products batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Capacity ml	NS	Tolerance ± ml	Height ± 5mm	PK	Cat. No.
5*	10/19	0.04	70	1	**9.276 758**
10*	10/19	0.04	90	1	**9.276 759**
20	10/19	0.04	110	1	**9.276 760**
25	10/19	0.04	110	1	**9.276 761**
50	12/21	0.06	140	1	**9.276 762**
50*	14/23	0.08	140	1	**9.276 763**
100	12/21	0.1	170	1	**9.276 764**
100	14/23	0.1	170	1	**9.276 765**
200	14/23	0.15	210	1	**9.276 766**
250	14/23	0.15	220	1	**9.276 767** 1
500	19/26	0.25	260	1	**9.276 768**
1000	24/29	0.4	300	1	**9.276 769**
2000	29/32	0.6	370	1	**9.276 770**

* wide neck

2



2 Check flasks, DAkkS calibrated, borosilicate glass 3.3, class A, with 3 marks, blue graduations

BLAUBRAND®, DIN EN ISO 1042. Calibrated to contain (TC, IN). DAkkS (former DKD) certificate included. The volumetric flask with 3 marks is used to check the functioning of a dispenser. The mark in the middle shows the nominal volume, the upper and lower marks show the error limits as specified in the table below. If the error limit is exceeded even with repeated measurements, the dispenser is defective. The DAkkS-calibrated volumetric flask does not replace the gravimetric test of the monitoring of measuring instruments according to ISO 8655. *BRAND*

For bottle ml	Joint size (NS)	upper/ lower mark ± ml	PK	Cat. No.
10 ml	10 / 19*	0.070	1	**9.276 010**
25 ml	10 / 19	0.175	1	**9.276 011**
50 ml	12 / 21	0.35	1	**9.276 012**
100 ml	14 / 23	0.70	1	**9.276 013**

* Neck/ground socket connection enlarged, other sizes on demand.

3



9.276 630

Volumetric flasks, borosilicate glass 3.3 amber, class A, white graduated, with PP stoppers

Amber Borosilicate glass 3.3 with PP stoppers, DE-M marking, with batch certificate and white enamel graduations. To DIN EN ISO 1042, to DIN 12644. Calibrated to contain (IN) and all the tolerances are according to DIN/ISO Class A standards. *Isolab*

Capacity ml	Joint size (NS)	Tolerance ± ml	PK	Cat. No.
5	10/19	0.025	1	**9.276 620**
10	10/19	0.025	1	**9.276 621**
20	10/19	0.040	1	**9.276 622**
25	10/19	0.040	1	**9.276 623**
25	12/21	0.040	1	**4.008 303**
50	12/21	0.060	1	**9.276 624**
50	14/23	0.060	1	**9.276 625**
100	12/21	0.100	1	**9.276 626**
100	14/23	0.100	1	**9.276 627**
200	14/23	0.150	1	**9.276 628**
250	14/23	0.150	1	**9.276 629**
500	19/26	0.250	1	**9.276 630** 3
1000	24/29	0.400	1	**9.276 631**
2000	29/32	0.600	1	**4.008 306**

E & OE.

Volumetric flasks, borosilicate glass 3.3, class A, PUR Plastic coated, blue graduations

BRAND

BLAUBRAND® PURprotect, DE-M marking. Boro 3.3. DIN EN ISO 1042. Calibrated to contain (TC, IN). Ring mark and inscriptions in high contrast blue enamel. With PP stopper. The plain and high quality PUR coating envelops the volumetric flasks like a protective skin. In the event of breakage, the safety coating helps contain the glass fragments. The light blue coating facilitates optical distinction. Suitable for dishwashers (cleaning up to max. 95°C). All BLAUBRAND® volumetric flasks are supplied with a batch number and an accompanying batch certificate within the outer packaging. They are also available with individual works, or DAkkS (former DKD) calibration certificate on request. With the exception of the wide neck version, the graduated flasks with individual USPcertificate are available on request. Date of delivery on request.
The batch certificate is also available to download from the manufacturer's website.

Capacity ml	Joint size (NS)	Tolerance ± ml	PK	Cat. No.
50*	14/23	0.10	1	**9.276 460**
100	14/23	0.10	1	**9.276 461**
200	14/23	0.15	1	**9.276 462**
250	14/23	0.15	1	**9.276 463**
500	19/26	0.25	1	**9.276 464** 1
1000	24/29	0.4	1	**9.276 465**

*wide mouth
Further sizes availlable on request.

1



9.276 464

Volumetric flasks, borosilicate glass 3.3, class A, amber graduations, with PP stoppers

BRAND

BLAUBRAND® Eterna. To DIN EN ISO 1042. DE-M marking. With batch number.
Graduation and inscriptions in Eterna amber stain. Calibrated to contain (IN).
PP stoppers. All BLAUBRAND® volumetric flasks are delivered with batch number and one batch certificate included per pack. Also available with individual works or DAkkS (former DKD) calibration certificate, please enquire. BLAUBRAND® volumetric flasks (except wide-neck flasks) are also available with individual and batch USP certification.
The batch certificate is also available to download from the manufacturer's website.

Capacity ml	Joint size (NS)	Tolerance ± ml	PK	Cat. No.
5*	10/19	0,04	1	**9.276 260**
10*	10/19	0,04	1	**9.276 261**
20	10/19	0,04	1	**9.276 262**
20*	12/21	0,06	1	**4.007 850**
25	10/19	0,04	1	**4.007 849**
25*	12/21	0,06	1	**9.276 263**
50	12/21	0,06	1	**9.276 264**
50*	14/23	0,10	1	**9.276 265**
100	14/23	0,10	1	**9.276 270**
200	14/23	0,15	1	**9.276 271**
250	14/23	0,15	1	**9.276 272** 2
500	19/26	0,25	1	**9.276 273**
1000	24/29	0,40	1	**9.276 274**
2000	29/32	0,60	1	**9.276 275**

*Wide neck version

2



9.276 272

Volumetric flasks, DURAN® amber glass, class A, with polystopper

Hirschmann

IN (TD) calibrated. Amber glass. With dated batch identification. Conformity certified.
With NS and polystopper. Ring mark and graduation in durable white enamel,
acc.to DIN EN ISO 1042. For these products batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Capacity ml	Joint size (NS)	Tolerance ± ml	Height mm	PK	Cat. No.
5	7/16	0.025	70	1	**9.276 699**
5*	10/19	0.04	70	1	**9.276 700**
10	7/16	0.025	90	1	**9.276 701**
10*	10/19	0.04	90	1	**9.276 702**
20	10/19	0.04	110	1	**9.276 703**
25	10/19	0.04	110	1	**9.276 704**
25*	12/21	0.06	110	1	**9.276 710**
50	12/21	0.06	140	1	**9.276 705**
50*	14/23	0.08	140	1	**9.276 713**
100	12/21	0.1	170	1	**9.276 706**
100	14/23	0.1	170	1	**9.276 714**
200	14/23	0.15	210	1	**9.276 707**
250	14/23	0.15	220	1	**9.276 708** 3
500	19/26	0.25	260	1	**9.276 709**
1000	24/29	0.4	300	1	**9.276 711**
2000	29/32	0.6	370	1	**9.276 712**

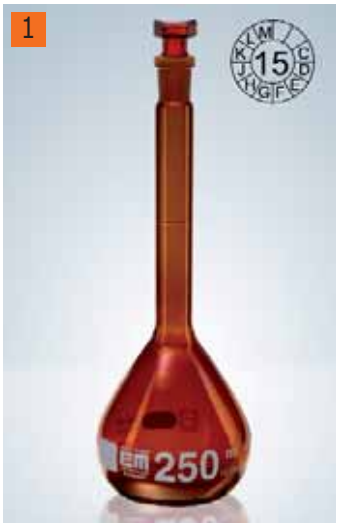
* Wide neck.
Also available with dated batch identfication acc. to USP (US Pharmacopeia).

3



9.276 708

1



9.276 511

Volumetric flasks, DURAN® amber glass, class A, white graduation, with amber glass stopper

IN (TD) calibrated. With dated batch identification. Conformity certified. *Hirschmann*
With hollow amber glass stopper. Ring mark and graduation in white enamel.
According to DIN EN ISO 1042. For these products batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Capacity ml	Joint size (NS)	Tolerance ± ml	Height mm	PK	Cat. No.
5	7/16	0.025	70	1	**9.276 500**
5*	10/19	0.04	70	1	**9.276 501**
10	7/16	0.025	90	1	**9.276 502**
10*	10/19	0.04	90	1	**9.276 503**
20	10/19	0.04	110	1	**9.276 504**
25	10/19	0.04	110	1	**9.276 505**
50	12/21	0.06	140	1	**9.276 506**
50*	14/23	0.08	140	1	**9.276 507**
100	12/21	0.1	170	1	**9.276 508**
100	14/23	0.1	170	1	**9.276 509**
200	14/23	0.15	210	1	**9.276 510**
250	14/23	0.15	220	1	**9.276 511** 1
500	19/26	0.25	260	1	**9.276 512**
1000	24/29	0.4	300	1	**9.276 513**
2000	29/32	0.6	370	1	**9.276 514**

* Wide neck.

2



9.276 251

Volumetric flasks, borosilicate glass 3.3, Class B.

SILBERBRAND. To DIN EN ISO 1042. Graduation and inscriptions in highly contrasting white enamel. Caibrated to contain (IN). With PP stoppers. *BRAND*

Capacity ml	Joint size (NS)	Tolerance ± ml	PK	Cat. No.
10*	10/19	0.06	1	**9.276 243**
20	10/19	0.06	1	**9.276 246**
25	10/19	0.06	1	**9.276 247**
50	12/21	0.09	1	**9.276 248**
100	12/21	0.15	1	**9.276 249**
200	14/23	0.25	1	**9.276 250**
250	14/23	0.25	1	**9.276 251** 2
500	19/26	0.40	1	**9.276 252**
1000	24/29	0.60	1	**9.276 253**
2000	29/32	0.90	1	**9.276 254**
5000	34/35	1.80	1	**9.276 255**

* Wide neck

3



9.276 734

Volumetric flasks, DURAN®, with beaded rim, class A, blue graduation

IN (TD) calibrated. With beaded rim and dated batch identification. Conformity certified. *Hirschmann*
Ring mark and graduation in high contrasting blue enamel. According to DIN EN ISO 1042.
For those products, batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Capacity ml	Tolerance ± ml	Height mm	PK	Cat. No.
5	0.025	70	1	**9.276 715**
10	0.025	90	1	**9.276 716**
20	0.04	110	1	**9.276 717**
25	0.04	110	1	**9.276 718**
50	0.06	140	1	**9.276 719**
100	0.1	170	1	**9.276 720**
200	0.15	210	1	**9.276 733**
250	0.15	220	1	**9.276 734** 3
500	0.25	260	1	**9.276 735**
1000	0.4	300	1	**9.276 736**
2000	0.6	370	1	**9.276 737**
5000	1.2	470	1	**9.276 738**
10000*	2.0	570	1	**9.276 739**

* additional to DIN

1 Volumetric flasks for determination of oil content, SILBERBRAND, Borosilicate glass 3.3

DIN 51 368. For determination of oil content in aqueous oil emulsions (e.g. drilling oil). With NS19/26, hollow glass stoppers. Graduations and inscriptions in highly contrasting white enamel. Capacity 100 ml, tolerance ±0.2 ml. Calibrated to contain (IN).

Subdivisions: 0 to 5 ml : 0.1 ml, tolerance: ±0.1 ml.
Subdivisions: 5 to 30 ml : 0.5 ml, tolerance: ±0.5 ml.

BRAND

Sample volume ml	PK	Cat. No.
100	1	**9.276 880**

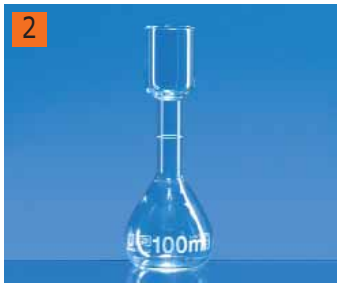


Volumetric flasks for sugar tests, Borosilicate glass 3.3, class B, white graduated

For sugar tests in the style of Kohlrausch. SILBERBRAND. Tolerance equivalent to class B. Ring marks and inscriptions in highly contrasting white enamel. Calibrated to contain (IN).

BRAND

Capacity ml	Tolerance ± ml	PK	Cat. No.
100	0.2	1	**9.276 885** 2
200	0.3	1	**9.276 887**



9.276 885

Volumetric flasks, PMP, class A

With NS stoppers, PP. Crystal clear. With ring mark individually calibrated to (IN). Class A tolerances according to DIN EN ISO 1042. With printed lot number and batch certificate. Thermal stress up to 121ºC (autoclaving) does not permanently exceed the tolerance limit. To preserve markings, do not clean at temperatures exceeding 60ºC

VITLAB

Capacity ml	Tolerance ± ml	Height mm	Stopper NS	PK	Cat. No.
10	0.04	90	10 / 19	1	**9.276 949**
25	0.04	115	10 / 19	1	**9.276 950**
50	0.06	150	12 / 21	1	**9.276 951**
100	0.10	180	14 / 23	1	**9.276 952** 3
250	0.15	235	19 / 26	1	**9.276 953**
500	0.25	270	19 / 26	1	**9.276 954**
1000	0.40	310	24 / 29	1	**9.276 955**



9.276 952

4 Volumetric flasks, plastic, class B, PP NS-stoppers

To DIN EN ISO 1042, with individually adjusted, blue printed graduation and inscriptions, with PP standard ground joint stoppers. Autoclavable.

Isolab

Capacity ml	Tolerance ± ml	Joint size (NS)	PK	Cat. No.
25	0,08	10/19	1	**9.276 590**
50	0,12	12/21	1	**9.276 591**
100	0,20	14/23	1	**9.276 592**
250	0,30	14/23	1	**9.276 593**
500	0,50	19/26	1	**9.276 594**
1000	0,80	24/29	1	**9.276 595**



5 Volumetric flasks, PP, Class B, NS-stoppers PP

Highly transparent.
With ring mark individually calibrated to In'.
Class B tolerances according to DIN EN ISO 1042.
Thermal stress up to 60ºC does not permanently exceed the tolerance limits.
To preserve markings, do not clean at temperatures exceeding 60ºC

VITLAB

Capacity ml	Height mm	Joint size (NS)	Tolerance ± ml	PK	Cat. No.
10	90	10 / 19	0.08	1	**9.276 818**
25	115	10 / 19	0.08	1	**9.276 820**
50	150	12 / 21	0.12	1	**9.276 828**
100	180	14 / 23	0.20	1	**9.276 838**
250	235	19 / 26	0.30	1	**9.276 848**
500	270	19 / 26	0.50	1	**9.276 854**
1000	310	24 / 29	0.80	1	**9.276 862**





1 Kipp dispenser heads, DURAN® tubing

NEW!

Made of DURAN® tubing.
Reservoir bottle, 1000ml with NS29/32 joint please order separately.

Description	PK	Cat. No.
Dispenser head for Kipp dispenser 5 ml	1	**9.277 105**
Dispenser head for Kipp dispenser 10 ml	1	**9.277 110**
Dispenser head for Kipp dispenser 20 ml	1	**9.277 120**
Dispenser head for Kipp dispenser 25 ml	1	**9.277 125**
Dispenser head for Kipp dispenser 50 ml	1	**9.277 150**
Reservoir bottle for dispenser heads	1	**6.224 318**



9.272 270

Volumetric pipettes, soda glass, class AS, 1 mark

Soda glass. Conformity-certified. With batch date identification. DIN EN ISO 648, DIN 12691 and BS 700 - 1583. Calibrated to deliver (EX).
Ring mark and inscriptions in permanent blue enamel. *Isolab*

Volume ml	Tolerance ± ml	Length mm	PK	Cat. No.
1	0.007	310	1	**9.272 260**
2	0.010	330	1	**9.272 261**
3	0.010	360	1	**9.272 262**
4	0.015	360	1	**9.272 263**
5	0.015	400	1	**9.272 264**
10	0.020	440	1	**9.272 265**
15	0.030	455	1	**9.272 267**
20	0.030	510	1	**9.272 268**
25	0.030	520	1	**9.272 269**
50	0.050	540	1	**9.272 270** 2



9.273 284

Volumetric pipettes, AR-glass®, class AS, 1 mark, blue graduation

EX (TD) calibrated. With dated batch identification. Conformity certified. *Hirschmann*
One mark pipettes, graduation in high-contrast blue colour. Acc. to DIN EN ISO 648.
For those products, batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Volume ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
1	0.008	325	1	**9.273 270**
2	0.01	350	1	**9.273 271**
2.5*	0.01	350	1	**9.273 272**
3*	0.01	350	1	**9.273 273**
5	0.015	410	1	**9.273 276**
10	0.02	450	1	**9.273 280**
15*	0.03	520	1	**9.273 281**
20	0.03	520	1	**9.273 282**
25	0.03	530	1	**9.273 284** 3
50	0.05	550	1	**9.273 286**
100	0.08	600	1	**9.273 288**

* Supplementary to DIN.



Volumetric pipettes, class AS, AR-Glass®, blue graduation

BLAUBRAND®. DIN EN ISO 648. DE-M marking. With batch number. Graduations and inscriptions in highly contrasting blue enamel. Adjusted to EX. *BRAND*
All BLAUBRAND® volumetric pipettes are supplied with batch number and one works batch certificate per manufacturer's outer pack (up to 2ml: 12 cylinders, above 2ml: 6 cylinders per pack). Also available with individual certificate or DAkkS (former DKD) calibration certificate, please enquire.
The batch certificate is also available to download from the supplier's website.

Volume ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
0,5	0.005	300	1	**9.273 101**
1	0.008	300	1	**9.273 102**
2	0.010	330	1	**9.273 103**
2,5	0.010	330	1	**9.273 104**
3	0.010	330	1	**9.273 105**
4	0.015	400	1	**9.273 106**
5	0.015	400	1	**9.273 107**
6	0.015	400	1	**9.273 108**
7	0.015	400	1	**9.273 109**
8	0.02	440	1	**9.273 110**
9	0.02	440	1	**9.273 111**
10	0.02	440	1	**9.273 112**
15	0.03	510	1	**9.273 113**
20	0.03	510	1	**9.273 114**
25	0.03	520	1	**9.273 115** 1
30	0.03	520	1	**9.273 116**
40	0.05	540	1	**9.273 117**
50	0.05	540	1	**9.273 118**
100	0.08	585*	1	**9.273 119**

* ±15 mm

1



9.273 115

Volumetric pipettes, USP, class AS, AR-Glass®, blue graduation

NEW!

BLAUBRAND®, DE-M marking. DIN EN ISO 648. Calibrated to deliver (TD, EX). *BRAND*
Marks and inscriptions in high contrast blue enamel. Incl. one USP batch certificate.
On request, also available with USP individual certificate or DAkkS certificate.
The batch certificate or individual certificate is also available to download from the manufacturer's website.

Volume ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
0,5*	0.005	300	1	**6.262 520**
1	0.006	300	1	**7.659 228**
2	0.006	330	1	**6.262 521**
3	0.01	330	1	**6.262 522**
4	0.01	400	1	**6.262 523**
5	0.01	400	1	**7.659 239**
6	0.01	400	1	**6.262 524**
7	0.01	400	1	**6.262 525**
8	0.02	440	1	**6.262 526**
9	0.02	440	1	**6.262 527**
10	0.02	440	1	**7.659 240**
15	0.03	510	1	**6.262 528**
20	0.03	510	1	**6.262 529**
25	0.03	520	1	**6.262 530** 2
30	0.03	520	1	**7.659 241**
40	0.05	540	1	**6.262 531**
50	0.05	540	1	**6.262 532**
100	0.8	585 (±15mm)	1	**7.659 242**

* Error limit USP ±0.006ml

2



6.262 530



1



6.084 072

Volumetric pipettes, AR-glass®, class AS, 1 mark, amber stain graduation

EX (TD) calibrated. With dated batch identification. Conformity certified. *Hirschmann*
With durable amber stain graduation, acc.to DIN EN ISO 648.
For those products, batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Volume ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
0,5	0.005	300	1	**6.200 955**
1	0.008	325	1	**6.052 959**
1,5*	0.01	350	1	**7.200 075**
2	0.01	350	1	**6.092 721**
2,5*	0.01	350	1	**6.079 397**
3*	0.01	350	1	**6.303 738**
4*	0.015	410	1	**6.300 028**
5	0.015	410	1	**6.081 798**
6*	0.015	410	1	**6.300 025**
7*	0.015	410	1	**6.300 026**
8*	0.02	450	1	**6.077 361**
9*	0.02	450	1	**6.300 299**
10	0.02	450	1	**6.050 827**
15*	0.03	520	1	**6.057 100**
20	0.03	520	1	**6.084 029**
25	0.03	530	1	**6.084 072** 1
30*	0.03	530	1	**6.057 101**
40*	0.05	550	1	**6.077 366**
50	0.05	550	1	**6.054 343**
100	0.08	600	1	**6.055 472**

* Supplementary to DIN.
Also available with dated batch identifikation acc. to USP (US Pharmacopeia).

2



9.273 225

Volumetric pipettes, AR-Glas®, class AS, 1 mark, amber graduation

BLAUBRAND® Eterna. DIN EN ISO 648. Calibrated to deliver (TD, EX). DE-M marking. *BRAND*
Graduations and inscriptions in Eterna amber stain (particularly resistant to aggressive cleaning methods).
All BLAUBRAND® bulb pipettes are supplied with a batch number and one batch certificate per manufacturer's outer pack. Also available with an individual works, USP, or DAkkS (former DKD) calibration certificate on request.
The batch certificate is also available to download from the supplier's website.

Volume ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
1	0.008	300	1	**9.273 220**
2	0.010	330	1	**9.273 221**
5	0.015	400	1	**9.273 222**
10	0.02	440	1	**9.273 223**
20	0.03	510	1	**9.273 224**
25	0.03	520	1	**9.273 225** 2
50	0.05	540	1	**9.273 226**

3



6.801 023

Volumetric pipettes, AR-glass®, class AS, 2 marks, amber stain graduation

EX (TD) calibrated. Volume between two marks (partial delivery). *Hirschmann*
With dated batch identification. Conformity certified. Volume mark, ringmark and graduation in durable amber stain graduation, acc. to DIN EN ISO 648.
For those products, batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Volume ml	Tolerance ± ml	Overall length mm	PK	Cat. No.
0.5	0.005	300	1	**6.801 018**
1	0.008	325	1	**6.801 019**
2	0.01	350	1	**6.801 020**
3*	0.01	350	1	**6.056 820**
5	0.015	410	1	**6.801 021**
10	0.02	450	1	**6.071 748**
15*	0.03	520	1	**6.225 909**
20	0.03	520	1	**6.801 022**
25	0.03	530	1	**6.801 023** 3
50	0.05	550	1	**6.801 024**
100	0.08	600	1	**6.800 124**

* Supplementary to DIN.

E & OE.

Volumetric pipettes, AR-Glas®, class AS, 2 marks, blue graduation

BLAUBRAND®. DE-M marking. DIN EN ISO 648. Adjusted to EX. Graduations and inscriptions in highly contrasting blue enamel. All BLAUBRAND® volumetric pipettes are supplied with batch number and one works batch certificate per manufacturer's outer pack. Also available with individual works or DAkkS (former DKD) calibration certificate on request. The batch certificate is also available to download from the supplier's website.

BRAND

Volume ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
0.5	0.005	300	1	**9.273 121**
1.0	0.008	300	1	**9.273 122**
2.0	0.010	330	1	**9.273 123**
3.0	0.010	330	1	**9.273 125**
5.0	0.015	400	1	**9.273 127**
10.0	0.02	440	1	**9.273 132**
15.0	0.03	510	1	**9.273 133**
20.0	0.03	510	1	**9.273 134**
25.0	0.03	520	1	**9.273 135** 1
50.0	0.05	540	1	**9.273 138**

1



9.273 135

Volumetric pipettes, AR-glass®, 1 mark, class B, amber stain graduation

EX (TD) calibrated. Tolerances better than class B requirements. With durable amber stain graduation, acc. to DIN EN ISO 648.

Hirschmann

Volume ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
0.5	0.008	300	1	**9.273 258**
1	0.012	325	1	**9.273 259**
2	0.015	350	1	**9.273 260**
3*	0.015	350	1	**9.273 261**
4*	0.023	410	1	**9.273 257**
5	0.023	410	1	**9.273 262**
10	0.03	450	1	**9.273 263**
15*	0.045	520	1	**9.273 264**
20	0.045	520	1	**9.273 265**
25	0.045	530	1	**9.273 266** 2
50	0.075	550	1	**9.273 268**
100	0.12	600	1	**9.273 269**

* Supplementary to DIN.

2



9.273 266

Volumetric pipettes, Class B, AR-Glas®, amber graduation

SILBERBRAND Eterna. DIN EN ISO 648. Graduations and inscriptions in Eterna permanent amber diffusion stain. Adjusted to EX.

BRAND

Volume ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
0.5	0.007	300	1	**9.273 001**
1	0.010	300	1	**9.273 002**
2	0.015	330	1	**9.273 003**
3	0.015	330	1	**9.273 005**
5	0.025	400	1	**9.273 007**
10	0.03	440	1	**9.273 012**
15	0.04	510	1	**9.273 013**
20	0.04	510	1	**9.273 014**
25	0.04	520	1	**9.273 015** 3
50	0.07	540	1	**9.273 018**
100	0.12	585*	1	**9.273 019**

* ±15 mm

3



9.273 015

1



9.273 238

Volumetric pipettes, PP, 1 mark

Highly translucent. Streak-resistant, blue-printed graduations and inscriptions. Adjusted to EX. Exposure to temperatures up to 60°C will not affect tolerances. Cleaning at temperatures below 60°C is recommended to preserve graduations and inscriptions.

BRAND

Volume ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
1	0.02	300	1	**9.273 232**
2	0.02	300	1	**9.273 233**
5	0.03	300	1	**9.273 235**
10	0.04	440	1	**9.273 236**
25	0.06	450	1	**9.273 238** 1
50	0.1	460	1	**9.273 239**

2



9.272 254

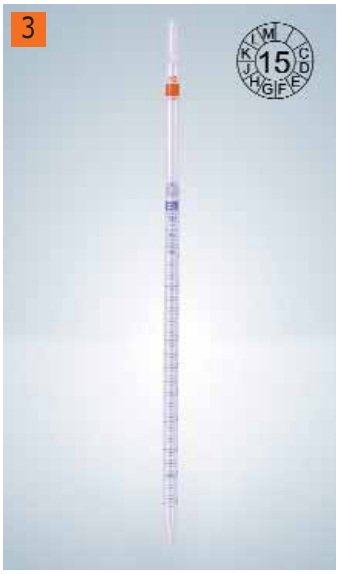
Graduated pipettes, soda glass, class AS, type 3

Soda glass. Conformity-certified. With batch date identification. DIN EN ISO 835, DIN 12697 and BS700 - 1583. Calibrated to deliver (EX).
Ring marks and graduations in permanent blue enamel.

Isolab

Volume ml	Graduations ml	Tolerance ± ml	Length mm	PK	Cat. No.
1	0.01	0.007	360	1	**9.272 250**
2	0.02	0.010	360	1	**9.272 251**
5	0.05	0.030	360	1	**9.272 252**
10	0.1	0.050	360	1	**9.272 253**
20	0.1	0.100	450	1	**9.272 254** 2
25	0.1	0.100	450	1	**9.272 255**
50	0.1	0.200	720	1	**9.272 256**

3



9.272 389

Graduated pipettes, AR-glass® , class AS , blue graduation, type 3

EX (TD) calibrated. Main point ring graduation. With dated batch identification.
Conformity certified. Main point ring graduation. High-contrast blue graduation.
Graduated to the tip, zero on top. Type 3, acc. to DIN EN ISO 835. From 5ml with cotton plug end as standard.
For those products batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Hirschmann

Volume ml	Grad. ml	Tolerance ± ml	Overall length ± 5 mm	PK	Cat. No.
0.5	0.01	0.006	360	1	**9.272 380**
1	0.01	0.007	360	1	**9.272 381**
1	0.10	0.007	360	1	**9.272 382**
2*	0.01	0.01	360	1	**9.272 383**
2	0.02	0.01	360	1	**9.272 384**
2	0.10	0.01	360	1	**9.272 385**
5	0.05	0.03	360	1	**9.272 387**
5	0.10	0.03	360	1	**9.272 388**
10	0.10	0.05	360	1	**9.272 389** 3
20	0.10	0.1	360	1	**9.272 390**
25	0.10	0.1	450	1	**9.272 391**
50*	0.20	0.2	450	1	**9.272 392**

* Supplementary to DIN

Graduated pipettes, Class AS, AR-Glas®, blue graduation, type 3 (zero at top)

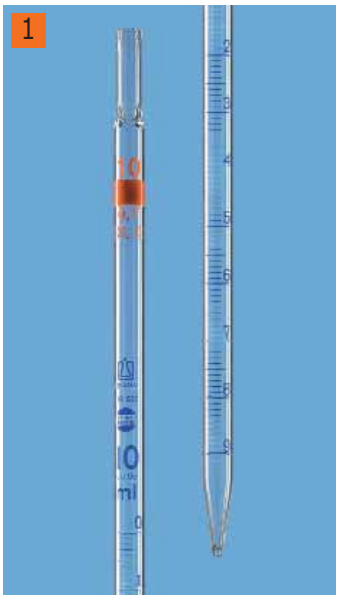
BLAUBRAND®. DIN EN ISO 835. Type 3 (Zero at top). DE-M marking, with batch number. Delivery to tip. Adjusted to EX. Waiting time 5 seconds. Ring mark and inscriptions in high contrast, blue enamel.
One batch certificate included per standard pack.
The batch certificate is also available to download from the manufacturer's website.

BRAND

Volume ml	Grad. ml	Tolerance ± ml	Length (± 10mm) mm	PK	Cat. No.
0.5	0.01	0.006	360	1	**9.272 105**
1	0.01	0.007	360	1	**9.272 106**
1***	0.01	0.007	360	1	**9.272 117**
1	0.1	0.007	360	1	**9.272 107**
2**	0.01	0.010	360	1	**9.272 108**
2	0.02	0.010	360	1	**9.272 109**
2***	0.02	0.010	360	1	**9.272 118**
2	0.1	0.010	360	1	**9.272 110**
5***	0.05	0.030	360	1	**9.272 111**
5***	0.1	0.030	360	1	**9.272 112**
10***	0.1	0.05	360	1	**9.272 113** 1
20***	0.1	0.10	360	1	**9.272 114**
25***	0.1	0.10	450	1	**9.272 115**
50* ***	0.5	0.2	450	1	**9.272 116**

* Supplementary to ISO.
**Supplementary to ISO, not DE-M marked.
***Cotton plugged

1



9.272 113

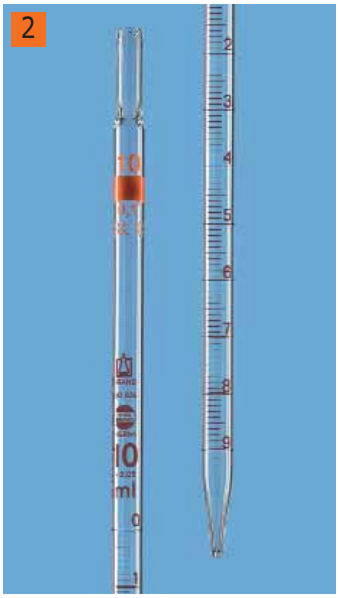
Graduated pipettes, AR-Glas®, Class AS, amber graduations, type 3

BLAUBRAND® ETERNA, DE-M marking, AR-Glas®. DIN EN ISO 835.
Type 3 (Zero point at the top), total delivery. Calibrated to deliver (TD, Ex).
Waiting time 5 seconds. Ring mark and inscription in ETERNA amber stain.
All BLAUBRAND® graduated pipettes are supplied with a batch number and an accompanying batch certificate in the original packaging. On request, they are also available with an individual certificate, USP individual certificate or DAkkS (former DKD) calibration certificate.

BRAND

Volume ml	Graduations ml	Tolerance ± ml	Suitable for cotton plugs	PK	Cat. No.
0.5	0.01	0.006	no	1	**9.272 031**
1	0.01	0.007	no	1	**9.272 032**
1	0.01	0.007	yes	1	**7.018 397**
2	0.02	0.010	no	1	**9.272 033**
2	0.02	0.010	yes	1	**7.018 398**
5	0.05	0.030	yes	1	**7.060 678**
5	0.1	0.030	yes	1	**9.272 034**
10	0.1	0.05	yes	1	**9.272 036** 2
20	0.1	0.10	yes	1	**7.018 413**
25	0.1	0.10	yes	1	**9.272 037**

2



9.272 036

We can supply this
manufacturer's
whole
product range !

partner of the
LLG
Lab Logistics Group

BRAND

1



6.058 191

Graduated pipettes, AR-glass®, class AS, amber stain graduation, type 3

Hirschmann

EX (TD) calibrated. Main point ring graduation. With dated batch identification.
Conformity certified. With durable amber stain graduation. Graduated to the tip,
zero on top. Type 3, acc. to DIN EN ISO 835. From 5ml with cotton plug end as standard.
For those products, batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Volume ml	Grad. ml	Tolerance ± ml	Overall length ± 5 mm	PK	Cat. No.
0.5	0.01	0.006	360	1	**6.059 364**
1	0.01	0.007	360	1	**6.301 732**
1	0.1	0.007	360	1	**6.303 032**
2*	0.01	0.01	360	1	**6.305 430**
2	0.02	0.01	360	1	**6.059 699**
2	0.1	0.01	360	1	**6.202 868**
5	0.05	0.03	360	1	**6.081 209**
5	0.1	0.03	360	1	**6.059 800**
10	0.1	0.05	360	1	**6.058 191** 1
20	0.1	0.1	360	1	**6.200 448**
25	0.1	0.1	450	1	**6.303 743**
50*	0.2	0.2	450	1	**6.234 515**

* in addition to DIN.
Available also with dated batch USP (U.S. Pharmacopeia).

2



9.272 353

Graduated pipettes, AR-glass®, class AS, amber stain graduation, type 2

Hirschmann

EX (TD) calibrated. Main point ring graduation. With dated batch identification.
Conformity certified. With durable amber stain graduation. Graduated to the tip,
zero in tip. Type 2, acc. to DIN EN ISO 835. From 5ml with cotton plug end as standard.
For those products, batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Volume ml	Grad. ml	Tolerance ± ml	Overall length ± 5 mm	PK	Cat. No.
0.5	0.01	0.006	360	1	**9.272 350**
1	0.01	0.007	360	1	**9.272 351**
1	0.1	0.007	360	1	**9.272 352**
2	0.02	0.01	360	1	**9.272 353** 2
2	0.1	0.01	360	1	**9.272 354**
5	0.05	0.03	360	1	**9.272 355**
5	0.1	0.03	360	1	**6.202 713**
10	0.1	0.05	360	1	**6.202 714**
20	0.1	0.1	360	1	**9.272 358**
25	0.1	0.1	450	1	**9.272 359**

3



9.272 007

Graduated pipettes, Class AS, amber graduations, type 2

BRAND

BLAUBRAND®, DE-M marking, AR-Glas®. DIN EN ISO 835. Type 2 (zero at top),
total delivery. Calibrated to deliver (TD, EX). Waiting time 5 seconds. Marks and inscriptions in high contrast blue enamel. All BLAUBRAND® graduated pipettes are supplied with a batch number and an accompanying batch certificate in the original packaging. Also available with individual works, USP, or DAkkS (former DKD) calibration certificate on request. Supplementary to the DIN range.The batch and single certificates are also available to download from the supplier's website.

Volume ml	Grad. ml	Tolerance ± ml	Overall length ± 10 mm	Suitable for cotton plugs	PK	Cat. No.
0.5	0.01	0.006	360	no	1	**9.272 000**
1	0.01	0.007	360	no	1	**9.272 001**
1	0.01	0.007	360	yes	1	**9.272 002**
2	0.02	0.010	360	no	1	**9.272 003**
2	0.02	0.010	360	yes	1	**9.272 004**
5	0.05	0.030	360	yes	1	**9.272 005**
5	0.10	0.030	360	yes	1	**9.272 006**
10	0.1	0.05	360	yes	1	**9.272 007** 3
20	0.1	0.10	360	yes	1	**9.272 008**
25	0.1	0.10	450	yes	1	**9.272 009**

E & OE.

Graduated pipettes, Class AS, AR-Glas®, blue graduation, type 2

NEW!

BLAUBRAND®, DIN EN ISO 835, DE-M marking. Type 2 (nominal volume at top), total delivery. Calibrated to deliver (TD, EX). Waiting time 5 seconds. Marks and inscriptions in high contrast blue enamel. All BLAUBRAND® graduated pipettes are supplied with batch number and one batch certificate per manufacturer's outer pack. Also available with individual works, USP, or DKD calibration certificate on request. The batch certificate is also available to download from the supplier's website. *BRAND*

Volume ml	Grad. ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
0,5	0.01	0.006	360	1	**9.272 016**
1	0.01	0.007	360	1	**9.272 017**
1	0.1	0.007	360	1	**9.272 018**
1***	0.01	0.007	360	1	**9.272 027**
2**	0.01	0.010	360	1	**9.272 029**
2	0.02	0.010	360	1	**9.272 019**
2	0.1	0.010	360	1	**9.272 020**
2***	0.02	0.010	360	1	**9.272 028**
5***	0.05	0.030	360	1	**9.272 021**
5***	0.1	0.030	360	1	**9.272 022**
10***	0.1	0.05	360	1	**9.272 023** 1
20***	0.1	0.10	360	1	**9.272 024**
25***	0.1	0.10	450	1	**9.272 025**
50* ***	0.5	0.2	450	1	**9.272 026**

* Supplementary to ISO.
**Supplementary to ISO, not DE-M marked
***Cotton plugged

1



9.272 023

Graduated pipettes, Class AS, USP, AR-Glas®, blue graduation, type 2

NEW!

BLAUBRAND®, class AS, nominal volume at the top, DE-M marking, AR-Glas®, DIN EN ISO 835. Type 2, total delivery. Calibrated to deliver (TD, EX). Waiting time 5 seconds. Ring mark and inscriptions in highly contrasting blue enamel. Incl. USP batch certificate. On request also available with USP individual certificate. The batch certificate or individual certificate is also available to download from the manufacturer's website. *BRAND*

Volume ml	Grad. ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
1*	0.01	0.007	360	1	**9.272 090**
2	0.02	0.01	360	1	**9.272 091**
5	0.05	0.02	360	1	**9.272 092**
10	0.1	0.03	360	1	**9.272 093** 2

* Error limit USP ±0.01ml

2



9.272 093

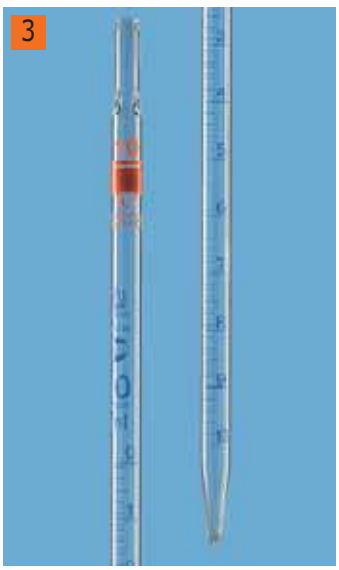
Graduated pipettes, BLAUBRAND®, partial delivery, blue graduations, type 1

AR-Glas®. DE-M marking. DIN EN ISO 835. Type 1 (Zero at top). Calibrated to deliver (TD, EX). Waiting time 5 seconds. Ring mark and and inscriptions in high contrast blue enamel. All BLAUBRAND® graduated pipettes are supplied with batch number and one batch certificate per manufacturer's outer pack (up to 10ml: 12 pipettes, 25 ml: 6 pipettes). Also available with individual works, USP, or DAkkS (former DKD) calibration certificate on request. The batch certificate is also available to download from the supplier's website. *BRAND*

Volume ml	Graduations ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
0.5	0.01	0.006	360	1	**9.272 121**
1	0.01	0.007	360	1	**9.272 122**
2*	0.01	0.010	360	1	**9.272 124**
2	0.02	0.010	360	1	**9.272 125**
5**	0.05	0.030	360	1	**9.272 127**
10**	0.1	0.050	360	1	**9.272 129** 3
25**	0.1	0.100	450	1	**9.272 131**

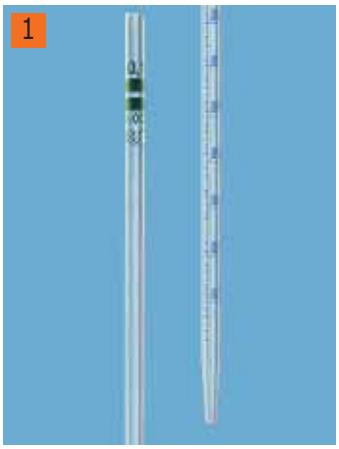
* in completion to ISO, not with conformity certificate
**Cotton plugged

3



9.272 129

1



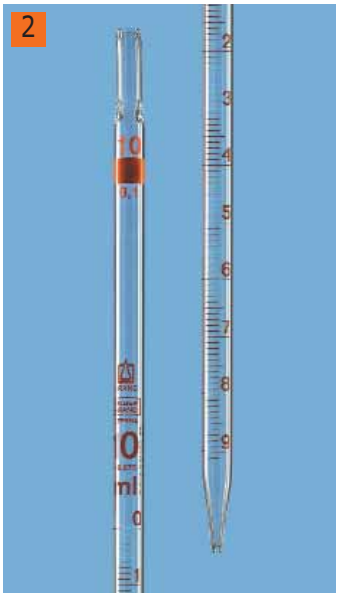
9.272 102

Graduated pipettes, BLAUBRAND®, class A, conformity certified, blue graduations

AR-Glas®. In addition to DIN 12689. DE-M marking. Length 360 mm. *BRAND*
Calibrated to contain (TC, IN). Graduations and inscriptions in high contrast blue enamel.
An excellent combination of resistance and readability. All BLAUBRAND® bulb pipettes are supplied with batch number and one batch works certificate per pack unit. Individual works or DAkkS (former DKD) calibration certificates are available - details on request.
The batch certificate is also available to download from the supplier's website.

Volume ml	Graduations ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
0.1	0.001	0.001	360	1	**9.272 102** 1
0.2	0.002	0.002	360	1	**9.272 104**

2



9.272 077

Graduated pipettes, Class B, AR-Glas®, amber graduations, type 3

SILBERBRAND Eterna. DIN EN ISO 835. Type 3 (zero at top). *BRAND*
Graduations and inscriptions in Eterna permanent amber diffusion stain. Adjusted to EX.

Volume ml	Grad. ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
0.5	0.01	0.006	360	1	**9.272 069**
1	0.01	0.010	360	1	**9.272 070**
1**	0.01	0.010	360	1	**9.272 086**
1	0.1	0.010	360	1	**9.272 071**
2*	0.01	0.015	360	1	**9.272 072**
2	0.02	0.015	360	1	**9.272 073**
2**	0.02	0.015	360	1	**9.272 089**
2	0.1	0.015	360	1	**9.272 074**
5**	0.05	0.05	360	1	**9.272 075**
5**	0.1	0.05	360	1	**9.272 076**
10**	0.1	0.08	360	1	**9.272 077** 2
20**	0.1	0.150	360	1	**9.272 078**
25**	0.1	0.150	450	1	**9.272 079**

* Supplementary to ISO.
**Cotton plugged

3



9.272 373

Graduated pipettes, AR-glass®, class B, amber stain graduation, type 3

EX (TD) calibrated. Tolerances better than class B requirements. *Hirschmann*
With durable amber stain graduation, short line, graduated to tip, zero on top, type 3, acc. to DIN EN ISO 835. From 5ml with cotton plug end as standard.

Volume ml	Grad. ml	Tolerance ± ml	Overall length ± 5 mm	PK	Cat. No.
0.5	0.01	0.0075	360	1	**9.272 366**
1	0.01	0.01	360	1	**9.272 367**
1	0.1	0.01	360	1	**9.272 368**
2*	0.01	0.015	360	1	**9.272 376**
2	0.02	0.015	360	1	**9.272 369**
2	0.1	0.015	360	1	**9.272 370**
5	0.05	0.045	360	1	**9.272 371**
5	0.1	0.045	360	1	**9.272 372**
10	0.1	0.075	360	1	**9.272 373** 3
20	0.1	0.15	360	1	**9.272 374**
25	0.1	0.15	450	1	**9.272 375**
50*	0.2	0.3	450	1	**9.272 377**

* Supplementary to DIN.

E & OE.

Graduated pipettes for tissue culture, clear glass, amber stain graduation

EX (TD) calibrated. Short form. Main point ring graduation. Specially for tissue culture and working on cleanroom benches. With durable amber stain graduation.
Zero to the tip, cotton plugged (8mm outer diameter). With mouth piece for cotton plug.

Hirschmann

Volume ml	Grad. ml	Tolerance ± ml	Overall length ± 3 mm	PK	Cat. No.
1	0.1	-	230	1	**6.080 498**
2	0.1	-	230	1	**6.090 340**
5	0.1	-	230	1	**6.080 523** 1
10	0.1	-	230	1	**6.510 172**
25	0.2	-	230	1	**6.510 335**

1



6.080 523

Graduated pipettes FORTUNA®, with suction piston, AR-Glass, class A, blue graduations

With permanent, amber, enamelled graduations. Tolerances similar to class A.
Graduated pipettes with blue enamelled graduations are also available on request.

Poulten & Graf

Capacity ml	Grad. ml	Tolerance ± ml	PK	Cat. No.
1	0.01	-	1	**9.273 301**
2	0.02	-	1	**9.273 302**
5	0.05	-	1	**9.273 305**
10	0.1	-	1	**9.273 310** 2
20	0.1	-	1	**9.273 320**
25	0.1	-	1	**9.273 325**
50	0.2	-	1	**9.273 350**
100	1.0	-	1	**9.273 399**

2



9.273 310

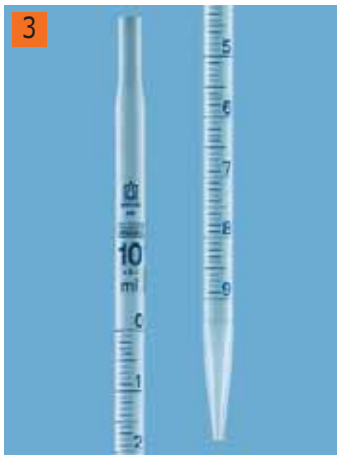
3 Graduated pipettes, PP, blue graduations

Highly transparent. Streak resistent. With blue graduations and markings. Particularly suitable for education and for applications where glass pipettes should not be used.
Calibrated for delivery (EX).
Exposure to temperatures up to 60°C will not cause permanent exceeding of tolerance limits.
Cleaning below 60°C is recommended to preserve graduations and inscriptions.

BRAND

Capacity ml	Graduations ml	Tolerance ± ml	Overall length ± 10 mm	PK	Cat. No.
1	0.1	0.02	300	1	**9.272 507**
2	0.1	0.02	300	1	**9.272 510**
5	0.1	0.05	330	1	**9.272 512**
10	0.1	0.1	330	1	**9.272 513**

3



1



1 LLG-Pasteur pipettes, Soda-lime glass

Single use. With uniform shape and length. With long drawn, 1.1mm diameter fine tip, 20mm suction tube and constriction for tight fitting of cotton wool plugs. External diameter: 7.1mm. Please order Pipette teats separately.

Length mm	PK	Cat. No.
150	1000	**9.411 015**
230	1000	**9.411 020**

2



2 Pasteur pipettes, Soda-lime-glass

NEW!

ISO 7712. Long drawn-out capillary tip. Suction end with constriction for a cotton plug. *BRAND*

Capacity ml	Length mm	PK	Cat. No.
2.0	145	250	**7.020 294**
2.0	225	250	**7.020 295**

3 LLG-Pasteur Pipettes, PE

Manufactured from transparent PE. Sterile or non-sterile. Graduated.

Capacity ml	Type	Length mm	PK	Cat. No.
1.0	non-sterile	150	500	**9.401 081**
3.0	non-sterile	150	500	**9.401 080**
1.0	sterile, single wrapped	150	1000	**9.401 085**
3.0	sterile, single wrapped	150	1000	**9.401 084**

3



4 5 Pipettes, Pasteur, PE

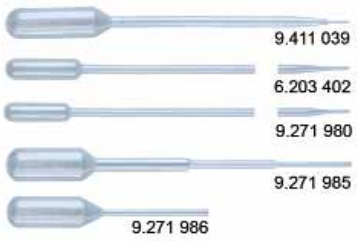
NEW!

For transfer of liquids. Resitant against almost all acids. Soft and elastic bulb.

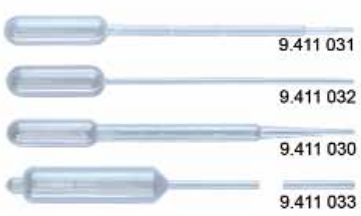
Type	Capacity ml	Length mm	PK	Cat. No.
Ultra Pastette® non-graduated, non-sterile	1.0	63	500	**9.271 986**
Mini Pastette® non-graduated, non-sterile	1.0	104	400	**9.271 985**
Capillary, grad., sterile, single wrapped*	1.0	144	500	**9.411 039**
Standard, without grad., sterile, single wrapped*	1.0	150	500	**9.411 038**
Standard, grad., non-sterile	1.0	155	500	**9.411 031**
Pasteur-Plast-Pipette, non sterile	1.5	230	400	**7.200 111**
Pasteur-Plast-Pipette, non sterile	2.0	155	500	**7.631 961**
Micro, without grad., non-sterile*	3.0	150	500	**9.411 032**
Macro, grad., sterile, single wrapped	3.0	150	500	**9.411 035**
Macro, grad., non-sterile	3.0	155	500	**9.411 030**
Jumbo Pastette® non-graduated, non-sterile	7.3	300	100	**9.271 980**
Standard, with ring mark, non-sterile	10.0	170	200	**9.411 033**
Pasteur-Plast-Pipette	10.0	300	100	**6.203 402**

* Total volume

4



5



E & OE.

LIFE SCIENCE APPLICATIONS

Top 7 Pipettes: 4, 11, 12, 15, 16, 17, 18

Cells in Flasks and Tubes – large volume, long pipettes

subculturing, harvesting, sampling 15, 50, 100 mL tubes and flasks	17, 18
remove supernatant and media from cell cultures	17, 18
wash cells	17, 18
post-centrifugation to remove all cell layers	17, 18

Isolating cells – large aperture pipette

prevent cells from getting stripped when removed or transferred	4
triturate cells	4
isolate platelets from blood and wash	4

Technique Control – narrow stem and fine tips

loading gels	11, 12, 15, 16
PCR work	11, 12, 15, 16
DNA sample removal	11, 12, 15, 16
feed hybridomas	11, 12, 15, 16
protein assays	11, 12, 15, 16
lipid extractions	11, 12, 15, 16
atomic absorption spectroscopy-reagent prep	11, 12, 15, 16
dropwise additions to culture plates	11, 12, 15, 16

Eliminate Steps – large bulb, narrow stem
Sedi-Pet

reaction chamber	15
storage ampule	15
portable aliquoting	15
pre-mix, collect, heat-seal, freeze, store, or incubate and dispense: - reagents buffer solutions - protozoa, nematode larvae, marine eggs, seeds - anti-serum urine	15

INDUSTRIAL RESEARCH AND TESTING

Top 10 Pipettes: 3, 5, 7, 8, 9, 11, 12, 16, 17, 18

Chromatography

sample preparation for: LC, GC, HPLC, TLC

using 1 mL auto-sampler vials	11, 16
using 2mL auto-sampler vials	7, 12
layering in columns / transfers in columns	17, 18
loading gels	11

Viscous liquid samples and transfers

creams	4
oils	4
perfumes	4
beverages	4
industrial slurries	4
paints	4
food	4

Field Testing

water sampling	16, 18
pre-filled with KCL and buffers	16, 18

pH Meter Maintenance

adding acids or bases	5
remove and replace electrode fill solutions	9

Reagent Handling

portable ampule	16
spreading and mixing	3
slide tests	8

CLINICAL APPLICATIONS

Top 7 Pipettes: 4, 8, 9, 14, 16, 17, 18

Blood Banking

rapid transfers (3.5 cc's in one squeeze)	8
narrow barrel fits tubes and donor bag tubing	8
controlled drop size	8
calibrated transfers	8

Remove, Dispense Small Volumes

remove and separate serum and blood	9 and other fine tips
dispense small drops - pediatric samples - load hemocytometers	9 and other fine tips
transfer in and out of multi-well plates	9 and other fine tips

Sedimentation and Storage

blood sedimentation	14, 16
access to Wintrobe tubes	16

Bottle Sampling

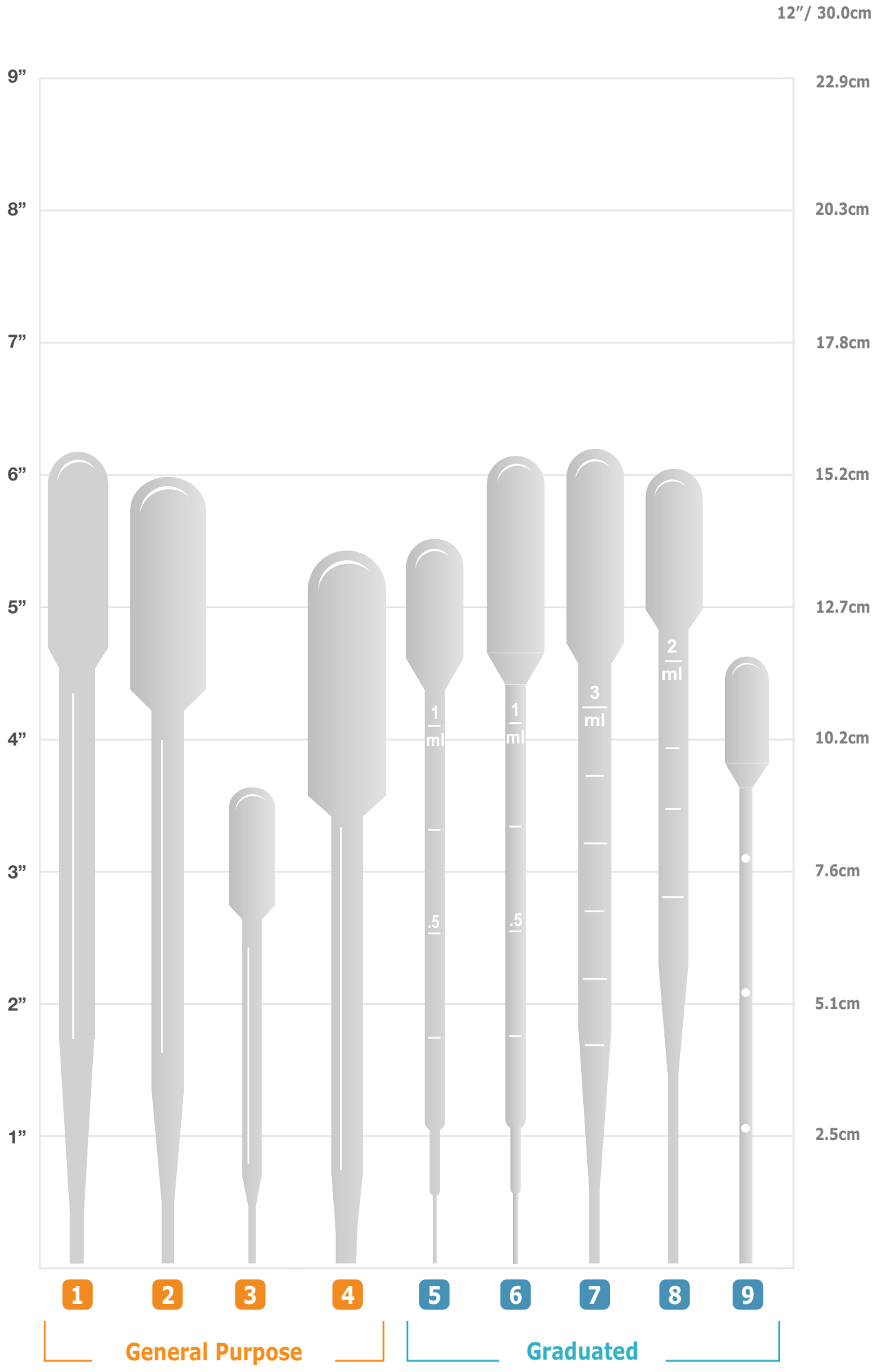
blood culture bottles	17, 18

Funnels / Filters / Scoops

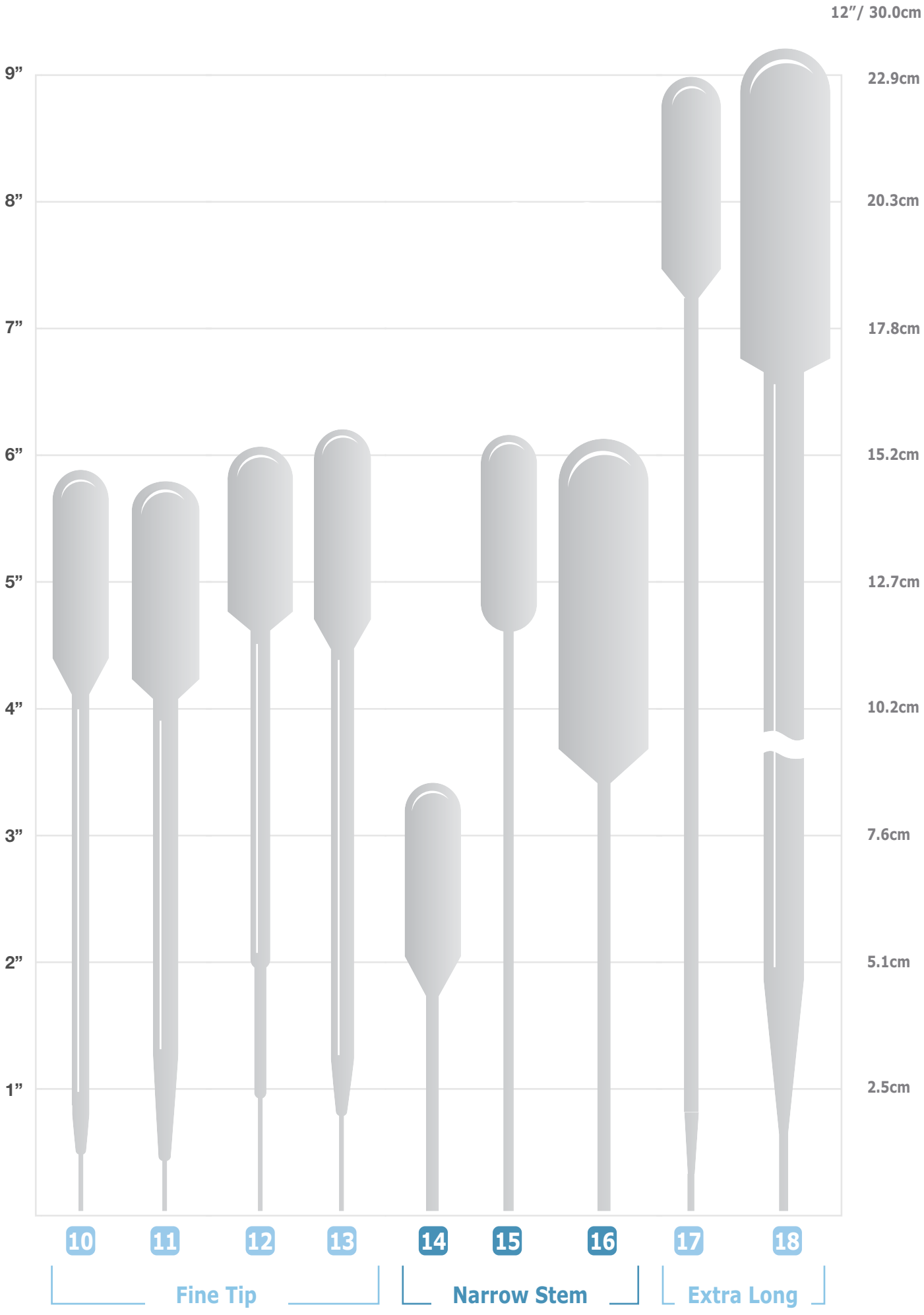
cut bulb in half and insert filter	4
cut bulb at angle for scoop	4



Thermo SCIENTIFIC
A Thermo Fisher Scientific Brand


12"/ 30.0cm
9"
22.9cm
8"
20.3cm
7"
17.8cm
6"
15.2cm
5"
12.7cm
4"
10.2cm
3"
7.6cm
2"
5.1cm
1"
2.5cm
1 ml
.5
1 ml
.5
3 ml
2 ml
1
2
3
4
5
6
7
8
9
General Purpose
Graduated

E & OE.


12”/ 30.0cm
9”
22.9cm
8”
20.3cm
7”
17.8cm
6”
15.2cm
5”
12.7cm
4”
10.2cm
3”
7.6cm
2”
5.1cm
1”
2.5cm
10
11
12
13
14
15
16
17
18
Fine Tip
Narrow Stem
Extra Long

General Purpose and Thermo Scientific™ B/B Pet™ Pipettes

Key	Product Description	Length (cm)	Stem Diameter (mm)	Overall Capacity (mL)	Bulb Draw (mL)	Drops per mL	PK	Cat. No.
1	General Purpose Standard	15.6	7.9	7.7	3.2	20	500	**4.653 952**
2	General Purpose Large Bulb	15.1	6.1	8.0	4.6	20	400	**4.653 961**
3	General Purpose 3″	8.7	4.8	1.7	0.9	25	500	**4.654 050**
4	62 µL Large Aperture Pipette	13.7	6.1	9.3	4.8	–	250	**4.654 086**

Graduated Pipettes

Key	Product Description	Length (cm)	Stem Diameter (mm)	Overall Capacity (mL)	Bulb Draw (mL)	Drops per mL	PK	Cat. No.
5	Graduated 1 mL Small Bulb	14.0	4.7	3.9	2.2	25	500	**4.653 964**
6	Graduated 1 mL Large Bulb	15.5	4.6	5.8	3.4	25	500	**4.653 969**
7	Graduated 3 mL Large Bulb	15.5	7.9	7.5	3.2	20	500	**4.653 977**
8	Graduated 2 mL (Blood Bank)	15.2	7.1	4.8	1.8	24	500	**4.654 055**
9	Graduated 0.3 mL (Pediatric)	11.6	3.0	1.5	0.8	21	500	**4.654 059**

Fine Tip Pipettes

Key	Product Description	Length (cm)	Stem Diameter (mm)	Overall Capacity (mL)	Bulb Draw (mL)	Drops per mL	PK	Cat. No.
10	Fine Tip Standard	14.7	4.6	5.8	3.3	55	500	**4.653 993**
11	Fine Tip Large Bulb	14.7	6.1	8.7	4.8	45	400	**4.654 002**
12	Extended Fine Tip Large Bulb	15.3	3.0	5.0	3.3	50	250	**4.653 999**
13	Extended Fine Tip Standard	15.7	4.6	5.8	3.5	50	500	**4.654 011**

Narrow Stem Thermo Scientific™ SEDI-PET™ and Q-Pet™ Pipettes

Key	Product Description	Length (cm)	Stem Diameter (mm)	Overall Capacity (mL)	Bulb Draw (mL)	Drops per mL	PK	Cat. No.
14	SEDI-PET Short Stem Large Bulb	8.5	2.5	4.0	3.0	25	500	**4.654 019**
15	SEDI-PET Standard	15.5	2.5	4.6	3.3	25	500	**4.654 024**
16	SEDI-PET Large Bulb	15.5	3.0	15.0	8.0	19	250	**4.654 028**

Extra Long Pipettes

Key	Product Description	Length (cm)	Stem Diameter (mm)	Overall Capacity (mL)	Bulb Draw (mL)	Drops per mL	PK	Cat. No.
17	Extra Long 9″	22.5	5.0	6.0	2.3	25	400	**4.654 033**
18	Extra Long 12″	30.0	8.6	23.0	7.3	20	100	**4.654 041**

Note: Sterile pipettes and other sizes available on request.

E & OE.

1 LLG-Serological pipettes type 1, PS, paper/plastic peel, sterile

- 1 ml, 5 ml, 10 ml, 25 ml and 50 ml pipettes contain a bi-directional secondary graduation scale for precise dosing
- Also available as short-pipettes (5 ml, 10 ml and 25 ml) or wide-mouth pipette (10 ml)
- Increased volume capacity through extra graduations
- Color coded ringmark for easy volume identification
- Single packed in easy-to-open plastic/paper packaging
- Plugged
- Pyrogen-free
- Sterile

1



Volume ml	Grad. ml	Colour code	Negative graduations up to	PK	Cat. No.
1	1/100	yellow	0,3	500	**9.380 440**
2	1/50	green	0,6	500	**9.380 441**
5	1/10	blue	3	200	**7.930 401**
10	1/10	orange	3	200	**6.268 240**
10	1/10	orange (wide mouth)	3	200	**9.380 442**
25	2/10	red	8	150	**7.930 403**
50	5/10	purple	10	100	**9.380 443**
5	1/10	blue (short form)	3	200	**6.265 881**
10	2/10	orange (short form)	10	150	**6.265 882**
25	5/10	red (short form)	9	100	**6.265 883**

2 3 LLG-Serological pipettes type 2, PS, paper/plastic peel, sterile

NEW!

- Single-piece pipette-bodies (except 50 ml pipette)
- 5 ml, 10 ml, 25 ml and 50 ml pipettes contain a bi-directional secondary graduation scale for precise dosing
- Increased volume capacity through extra graduations
- Color coded plug for easy volume identification
- Single packed in easy-to-open plastic/paper packaging
- Plugged
- Pyrogen-free
- Sterile

2



3



Volume ml	Grad. ml	Colour code	Negative graduations up to	PK	Cat. No.
1	1/100	yellow	0.3	500	**6.266 995**
2	1/50	green	0.4	500	**6.266 996**
5	1/10	blue	3	250	**6.266 997**
10	1/10	orange	3	200	**6.266 998**
25	2/10	red	2	100	**6.266 999**
50	5/10	purple	9	100	**6.267 100**

4 5 LLG-Serological pipettes Type 3, PS, plastic/plastic pack, sterile

NEW!

- Specially suited for use in clean rooms
- Single packed in easy-to-open plastic/plastic packaging
- Increased volume capacity through extra graduations
- Color coded for easy volume identification
- Plugged
- Pyrogen-free
- Sterile

4



5



Volume ml	Grad. ml	Colour code	Negative graduations up to	PK	Cat. No.
1	0.01	clear	0.3	1000	**6.268 099**
2	0.01	clear	0.3	1000	**6.268 100**
5	0.1	blue	2.0	200	**6.268 101**
10	0.1	orange	3.0	500	**6.268 102**
25	0.2	red	10.0	200	**6.268 103**
50	0.5	purple	10.0	200	**6.268 104**

1



1 Serological pipettes, PS, paper/plastic peel or bulk package, sterile

Thermo Scientific

- Single packed in easy-to-open paper/plastic packaging or bulk package
- Increased volume capacity through extra graduations
- Color coded for easy volume identification
- Plugged
- Pyrogen-free
- Sterile

Paper/Plastic peel

Capacity ml	Grad. ml	additional scale ml	Colour code	PK	Cat. No.
1	1/100	0.3	0.02	1000	**9.380 453**
2	1/100	0.3	0.04	500	**9.380 454**
5	1/10	2	0.10	200	**9.380 455**
10	1/10	3	0.20	200	**9.380 456**
25	2/10	10	0.50	200	**9.380 457**
50	2/10	10	0.75	100	**9.380 458**

Bulk pack

- 1 and 2ml pipettes: bulk, 50 pcs. per bag
- 5, 10, 25 and 50ml pipettes: bulk, 25 pcs. per bag

Capacity ml	Grad. ml	additional scale ml	Colour code	PK	Cat. No.
1	1/100	0.3	0.02	1000	**9.380 471**
2	1/100	0.3	0.04	500	**9.380 472**
5	1/10	2	0.10	500	**9.380 473**
10	1/10	3	0.20	500	**9.380 474**
25	2/10	10	0.50	200	**9.380 475**
50	2/10	10	0.75	100	**9.380 476**

2



2 Pipette teats

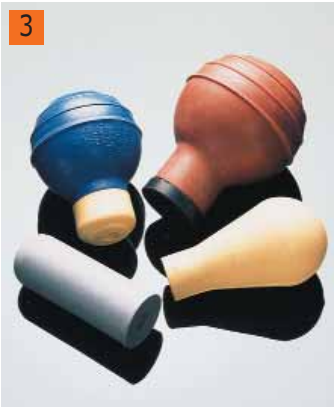
NEW!

Deutsch & Neumann

Choice of materials as indicated.
Natural rubber/Latex (NR)
Silicone (VMQ)
Styrene-butadiene-rubber (SBR)

Capacity ml	Material	Colour	PK	Cat. No.
1.8	NR	transparent	1	**9.072 681**
1.8	NR	transparent	1	**6.265 727**
2.0	VMQ	transparent/white	10	**9.072 682**
2.0	NR/SBR	red	1	**9.072 683**
5.0	NR	transparent	5	**9.072 684**
10.0	NR	transparent	3	**9.072 685**

3



3 Pipette bulbs

Rubber. For quick and easy pipetting. Colour coding to prevent confusion.

Capacity ml	Colour	PK	Cat. No.
1	Green	1	**9.115 501**
2	Grey	1	**9.115 502**
5	Yellow	1	**9.115 505**
10	Blue	1	**9.115 506**
15	Red	1	**9.115 507**

E & OE.

1 Rubber blowballs

Non-rigid PVC. Red-brown, smooth. With 6mm i.d. outlet hole. *Deutsch & Neumann*

Type	Capacity ml	Diam. mm	PK	Cat. No.
B oval	5	30	1	**9.115 404**
0	10	30	1	**9.115 411**
2	28	42	1	**9.115 430**
3	42	48	1	**9.115 450**
5	90	62	1	**9.115 480**
7	145	72	1	**9.115 485**
9	225	84	1	**9.115 487**



2 Safety pipette bulb Howorka-Ball®

Advantages:
- no rigid connection with tube
- no valves or side vent on tubes
- suitable for all standard tube diameters, including pipettes, burettes, filter tubes etc.
- no unstable air pockets
- long operational life due to durable components
- Easily cleaned and steam sterilized if contaminated with liquids

Capacity ml	PK	Cat. No.
20	1	**9.273 826**
50	1	**9.273 827**



3 Safety pipette bulb Flip™

Fits virtually all pipette sizes. *Deutsch & Neumann*
Only two valve operation points.
With automatic vent valve that can be removed for cleaning.

Type	PK	Cat. No.
Flip™	1	**9.273 838**



4 Safety pipette bulb, rubber

NEW!

Chemically resistant rubber. With valves for suction, emptying and air release, controlled by thumb and finger pressure. *Deutsch & Neumann*

Type	Figure	PK	Cat. No.
Standard, for pipettes up to 8mm diameter	1	1	**9.273 836**
Universal, for most pipettes	2	1	**9.273 837**
Standard, multicolor black/red/yellow	-	1	**6.223 504**



5 Pipette stand, horizontal, PP

Pipette stand for 12 pipettes, horizontal is made from moulded polypropylene which is autoclavable. On each side, 6 pipettes (longer than 22 cm) can be stored horizontally. Easy to clean. *Isolab*

Dimensions mm	PK	Cat. No.
240 x 180 x 290	1	**9.273 896**





1 Pipette stand vertical, PP

Pipette stand, vertical is made from moulded polypropylene. *Isolab*
This stand can hold up to 94 pipettes and rotates on a central vertical axis for easy selection of any particular pipette. The base plate has a raised edge which catches dripping liquids.

Type	PK	Cat. No.
Pipette stand "vertical"	1	**9.273 895**



2 Pipette tray, PVC

PVC. For pipettes of all sizes. Can accommodate 7 pipettes with overall stem diameter not exceeding 20mm longitudinally or 16 pipettes with stem diameter not exceeding 10mm laterally. *Kartell*

Width mm	Length mm	Height mm	PK	Cat. No.
220	280	39	1	**9.200 392**



3 Pipette tray, PVC

PVC. Tidy tray. With 4 long compartments for approx. 30 graduated pipettes (1ml to 20ml). *Kartell*

Width mm	Length mm	Height mm	PK	Cat. No.
300	420	30	1	**9.200 394**



4 Pipette baskets, PE-HD

Cylindrical, with handle. *Kartell*

For pipette length mm	Bottom diam. mm	Height mm	PK	Cat. No.
360	145	495	1	**9.273 980**
460	145	645	1	**9.273 985**
600	145	870	1	**9.273 990**



5 Pipette storage container

With lid. Base dia. x height: 130 x 430mm, int. dia.: 83mm. *Kartell*
Suitable for dust-proof storage of pipettes up to 400mm long.

Type	Bottom diam. mm	Height mm	PK	Cat. No.
With lid (PP container, HDPE lid)	83	430	1	**9.273 900**



6 Pipette soaking jar, PE-HD

Kartell

For pipette length mm	Int. diam. mm	Height mm	PK	Cat. No.
250	125	250	1	**9.273 928**
500	160	500	1	**9.273 920**
650	160	650	1	**9.273 925**



7 Pipette rinsers, PE-HD

For easy and gentle cleaning of pipettes using the repetitive siphon principle. *Kartell*
The complete rinsing system comprises rinser, soaking jar and pipette basket. Water flow should be adjusted to approx. 2 litres/min. Please order soaking jar and pipette basket separately.

For pipette length mm	Capacity Litres	Int. diam. mm	Height mm	PK	Cat. No.
460	13	150	740	1	**9.409 238**
600	17	150	1000	1	**9.409 239**

Further pipette cleaning devices please see our chapter 11

E & OE.

1 Rack for serological pipettes



Ideal for your serological pipettes. Use as individual units, or click together horizontally or vertically. Magnets on both sides of units connect safely to metal surface such as file cabinets, fume hoods, refrigerators, and freezers. Angled shelves store your 0.1ml to 50ml pipettes within arm's reach for use. Protective lid encloses the unit to prevent dust build up. Colour: 3 different shades of blue. Dimensions (L x W x H): 301mm x 100mm x 127.5mm each. *Heathrow Scientific*

Type	PK	Cat. No.
Cargo Manual Pipette Rack	3	**9.273 930**

2 Variable pipette boxes



Comprising two, sliding aluminium sections which can be gently pressed together in a telescopic fashion to fit the length of the pipettes to be sterilized. This means that only one container size for 280 to 420 mm long standard pipettes and one for 145 to 235 mm long short or pasteur pipettes are required. 2mm thick silicone rubber pad prevents damage to pipettes when loading and transporting. Silicone rubber pad - please order separately. *Isolab*

Type	Variable length mm	Int. diam. mm	PK	Cat. No.
Pipette box	145 to 235	60	1	**9.010 801**
Pipette box	280 to 420	60	1	**9.010 800**
Silicone pad		58	1	**9.010 770**

3 Pipette sterilizing boxes



Cylindrical. 18/10 stainless steel. With silicone pad in base and lid.
Rotating the lid exposes or hides the lid perforations.
Sterilizable up to 205°C. *Bochem*

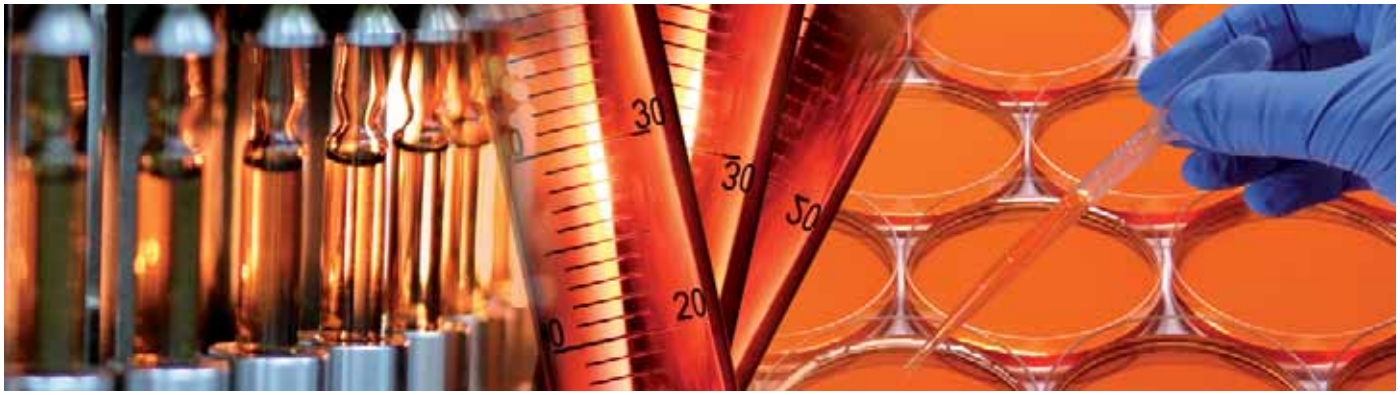
Height mm	Effective length mm	Diam. mm	PK	Cat. No.
450	442	65	1	**9.010 793**
380	372	80	1	**9.010 794**
500	492	80	1	**9.010 795**

4 Pipette sterilizing boxes, square



Square section. Stackable.18/10 stainless steel. With silicone pad in base and lid.
Box W x D: 70 x 70 mm. Sterilizable up to 205°C. *Bochem*

Length mm	Effective length mm	Diam. mm	PK	Cat. No.
210	202	70 x 70	1	**9.010 781**
290	282	70 x 70	1	**9.010 782**
340	332	70 x 70	1	**9.010 783**
435	427	70 x 70	1	**9.010 784**



1 2 3 Pipette Box, Aluminium

NEW!

Ratiolab

Pipette boxes with optimized easy handling in everyday work. The cylindrical pipette boxes are the best option for autoclaving various glass items with a length from 150 to 480mm like mixing rods, pasteur, volumetric and graduated pipettes.

- autoclaving: the new construction guarantees the entrance of steam into the container and optimizes the process of autoclaving
- opening and closing: soft sliding performance of top section onto the base section makes working easy
- base and top section are filled with a silicon layer at the bottom as a shock absorber to protect the glass items from splintering
- the sterilizing pipette boxes are available in 4 various lengths

Description	Length mm	PK	Cat. No.
Pipet box aluminium	150-200	1	**6.266 679**
Pipet box aluminium	235-305	1	**6.266 680**
Pipet box aluminium	315-385	1	**6.266 681**
Pipet box aluminium	315-485	1	**6.266 682**

1



2



3



4



4 Disposable micropipettes ring marked, intraMARK

BRAND

BLAUBRAND®. DIN ISO 7550.
DE-M marking from 5µl upwards, in accordance with German Weights and Measure Regulations. Calibrated to contain (IN). Colour code according to ISO for clear identification.

Length 125 mm
Accuracy ≤ ±0.25 %.
Precision ≤ 0.5 %.
(Capacity 5 µl: Accuracy ≤ ±0.3 %, precision ≤ 0.6 %).
CE-marked according to IVD 98/79 EG.

Marks at µl	Colour	PK	Cat. No.
1/2/3/4/5*	White	250	**9.411 307**
10	Orange	250	**9.411 309**
20	Black	250	**9.411 318**
25*	White - white	250	**9.411 322**
40*	Red - red	250	**9.411 327**
20 + 40*	Red - red	250	**9.411 328**
50	Green	250	**9.411 333**
100	Blue	250	**9.411 344**
50 +100	Blue	250	**9.411 345**
200	Red	200	**9.411 357**

* DE-M marking for 5 µl division only.

5



5 Disposable micropipettes, delbrück pattern, intraEND

BRAND

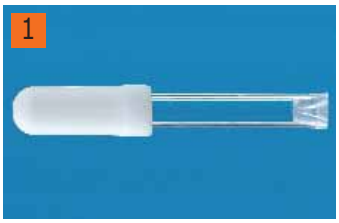
BLAUBRAND®. DIN ISO 7550. DE-M marking. Volume defined by end-to-end filling.
Calibrated to contain (IN). Sodium heparinised. Ideal for blood capillary sampling.
With a length of only 30mm the pipette can be placed directly into the microcentrifuge tube where it releases the sample during centrifugation. CE-marked according to IVD directive 98/79 EC.
Accuracy: ≤ ±0.5 %.
Precision: ≤ 1 %.

Capacity µl	Length mm	PK	Cat. No.
20	30.0	100	**9.411 242**
50	30.0	100	**9.411 246**

1 Pipetting aid, intraEnd

For BLAUBRAND® intraEnd micropipettes. *BRAND*
Consists of the PET plastic tube, silicone adapter, and TPE suction bellows with venting hole.

Type	PK	Cat. No.
Pipetting aid, intraEnd	10	**9.411 440**



2 Pipette holders

For intraEND micropipettes. *BRAND*

Type	PK	Cat. No.
Pipette holders	1	**9.411 260**



3 Capillary pipettes, ringcaps®

Disposable capillary pipettes with ring marks. ringcaps® are exclusively made out of DURAN® glass (CE acc. IVD 98/79 EC, ISO 7550). *Hirschmann*
The accurately designed ring mark guarantees precise determination of volume, the international color code on every single micropipette prevents the risk of confusion.
Unit = 1 box of 250 pieces.
Version 100 + 200 = 1 bos of 100 pieces.

Advantages:
- No risk of cross contamination owing to single use
- DURAN® glass
- Handy length of 125mm
- DE-M marking in accordance with the applicable weights and measures regulations

Type	Capacity µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
5 marks	1 + 2 + 3 + 4 + 5	0.30	0.6	250	**9.600 105**
1 mark	10	0.25	0.5	250	**9.600 110**
1 mark	20	0.25	0.5	250	**9.600 120**
1 mark	25	0.25	0.5	250	**9.600 125**
1 mark	40	0.25	0.5	250	**9.600 140**
1 mark	50	0.25	0.5	250	**9.600 150**
1 mark	100	0.25	0.5	250	**9.600 199**
1 mark	200	0.25	0.5	100	**9.600 122**
2 marks	5 + 10	0.25	0.5	250	**9.600 210**
2 marks	20 + 40	0.25	0.5	250	**9.600 240**
2 marks	50 + 100	0.25	0.5	250	**9.600 299**
2 marks	100 + 200	0.25	0.5	100	**9.600 222**

3



4 Micro capillaries

These disposable micro capillaries fill automatically from end to end. Their accuracy is better than 1%. A capillary tube holder is supplied with each pack. Also contains a small bulb with aperture which can be inserted into capillary and used as an effective support for filling and emptying tubes.

Capacity µl	PK	Cat. No.
0.5	100	**9.020 192**
1.0	100	**9.020 193**
2.0	100	**9.020 194**
5.0	100	**9.020 195**
10.0	100	**9.020 196**



Capillary pipettes, minicaps®, end-to-end

Minicaps® micro capillary pipettes, end-to-end. Available in sodium-heparinized and non-heparinized. Conformity certified. Acc. the German "Eichordnung". With batch number on the packaging. Made in Germany out of original SCHOTT DURAN®.Acc. ISO 7550. CE acc. IVD 98/79 EG. *Hirschmann*

Advantages:
- Error-free filling end-to-end
- Only 30mm to 32mm long
- Easy-to-remove, color-coded dispenser cap
- Conformity certified in accordance with the applicable weights and measures regulations

Supplied in drums of 100 within an outer pack of 1000.

1



9.411 254

Disposable micro capillary pipettes, DURAN®, minicaps® end-to-end acc. "Prof. Dr. Delbrück"

minicaps® - disposable micro capillary pipettes, end-to-end. Conformity certified. With batch number on packaging. Made out of original SCHOTT DURAN®. Suitable for the analysis acc. to Prof. Dr. Delbrück. Sodium-heparinized, acc. ISO 7550. CE acc. IVD 98/79 EC. Packaging unit: 100 minicaps in each glass cartridge, 10 cartridges and a pipette filler. *Hirschmann*

Capacity µl	Length mm	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
20	30 ±0.5	0.5	1.0	100	**9.411 254** 1
40	30 ±0.5	0.5	1.0	100	**9.411 256**
50	30 ±0.5	0.5	1.0	100	**9.411 258**

Other sizes on request.

2



2 Disposable Capillary pipettes, DURAN®, minicaps® end-to-end

Non-heparinized. Conformity ceritfied ISO 7550, CE acc. IVD 98/79 EC. *Hirschmann*

Capacity µl	Length mm	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
0.5	30 - 32	0.5	1.0	100	**9.411 265**
1	30 - 32	0.5	1.0	100	**9.411 266**
2	30 - 32	0.5	1.0	100	**9.411 267**
3	30 - 32	0.5	1.0	100	**9.411 268**
4	30 - 32	0.5	1.0	100	**9.411 270**
5	30 - 32	0.5	1.0	100	**9.411 271**
10	30 - 32	0.5	1.0	100	**9.411 273**
20	30 ± 0.5	0.5	1.0	100	**9.411 274**
25	30 - 32	0.5	1.0	100	**9.411 275**
30	30 - 32	0.5	1.0	100	**9.411 276**
40	30 ± 0.5	0.5	1.0	100	**9.411 277**
50	30 ± 0.5	0.5	1.0	100	**9.411 279**
100	100	0.5	1.0	100	**9.411 280**

3



3 Disposable Capillary pipettes, DURAN®, minicaps® end-to-end, Na-hep

Sodium heparinized. Conformity certified, ISO 7550 CE acc. IVD 98/79 EC. *Hirschmann*

Capacity µl	Length mm	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
5	30 to 32	0.5	1.0	100	**9.411 252**
10	30 to 32	0.5	1.0	100	**9.411 253**
25	30 to 32	0.5	1.0	100	**9.411 255**

Other sizes available.

4



6.200 639

5



7.200 409

Haematocrit capillary tubes

Disposable capillaries for blood centrifugation tests, length 75mm, nominal volume approx. 75µl, outer diameter 1.42mm - 1.68mm, inner diameter 1.07mm - 1.23mm, with heavy wall thickness and color-coded acc. to DIN 12 772, CE acc. IVD 98/79 EC. *Hirschmann*

Type	Colour	PK	Cat. No.
Plain	blue	1000	**6.200 639** 4
Sodium-heparinized	red	1000	**7.200 409** 5

1 Micro-haematocrit capillary tubes

BRAND

Comply with BS 4316-68 and DIN ISO 12 772 specifications.
For use in microhaematocrit centrifuges. Without calibration marks.

Heparinised: For capillary blood sampling. The entire inner surface is coated with sodium-heparinate. Code: red.

Non-heparinised: To determine heparinised venous blood. Code: blue.

CE-marked according to IVD 98/79 EG.

Length:	75 mm ±0.5 mm
Wall thickness:	approx. 0.2 mm
Internal diameter:	1.1 to 1.2 mm
External diameter:	1.5 to 1.6 mm



Type	PK	Cat. No.
Heparinised	100	**9.411 215**
Non-heparinised	100	**9.411 220**

2 Haematocrit sealing compound

BRAND

Non-drying vinyl plastic compound on a plastic plate.
For rapid and safe sealing of micro-haematocrit capillaries.
24 capillaries can be placed upright in the numbered storage places on each side of the plate.
CE marked.



Type	PK	Cat. No.
Haematocrit sealing compound	10	**9.411 240**

3 Micropipette controller

BRAND

For disposable pipettes with micro ring mark and many other small glass pipettes up to 1ml.
Autoclavable (121°C). The micropipette controller reduces risk of infection.
Contaminated disposable micropipettes can be removed using the integral ejection button.



Type	PK	Cat. No.
Micropipette controller	1	**9.288 200**
Spare suction system	3	**9.288 201**

4 Pipette controllers, micro-classic

BRAND

Specially designed for IVF laboratory applications. Comfortable and reliable. Thanks to its ergonomic design and easy handling, the micro-classic pipette controller provides the comfort needed for difficult work under the microscope. Suitable for disposable micropipettes with ring marks and other microlitre volume pipettes with a capacity up to 1ml.
Suitable for left, or right-handed operation. The adapter and suction tube are autoclavable at 121°C.



Description	PK	Cat. No.
Micro-classic, complete, with 2 spare tubes	1	**9.281 080**
Spare adapter with suction tube	3	**9.281 085**

5 Macropipette controllers

Isolab

The handwheel allows precise suction of the liquid into the pipette with one hand.
The handwheel which enables the suction piston is designed for easy operation by using only the thumb. When the wheel stops, the piston remains in the desired position. The liquid can be blown out by pressing the piston back or allowed to flow out by setting the lateral switch to "Ex". A slight pressure applied to the discharge lever opens the valve and lets the liquid flow out easily



For	PK	Cat. No.
Pipette volume up to 2ml	1	**4.008 322**
Pipette volume up to 10ml	1	**4.008 323**
Pipette volume up to 25ml	1	**4.008 324**

1



1 Maxi pipette filler, 1 to 100ml

Isolab

Large capacity bulb which works perfectly with all pipette sizes from 1ml up to 100ml.
First squeeze the silicone bulb and the thumb lever controls both the aspirate and dispense modes. Incorporates central button to blow out the residual liquid into the pipettes

Type	PK	Cat. No.
Maxi pipette filler	1	**6.238 525**

2



2 Pipette controllers macro 0.1 to 200ml

NEW!

BRAND

One single macro pipette controller covers the entire range of bulb and graduated pipettes from 0.1 to 200 ml.
The conical silicone adapter offers a secure fit for the different diameters. The unique valve system allows for easy compression of the newly designed bellows. The spring loaded lever enables an even more sensitive filling and delivery of liquids. The meniscus is easily adjustable.The unit is fully autoclavable at 121°C (2 bar) according to DIN EN 285.
A hydrophobic membrane filter protects the system from liquid penetration.

Supplied with: pipette controller incl. 3 µm spare membrane filter.
Pipette Package includes pipette controller macro, grey, 3 graduated pipettes 5ml, 3 graduated pipettes 10ml, plastic cover

Type	PK	Cat. No.
Pipette controller macro, grey	1	**9.273 850**
Pipette controller macro, magenta	1	**9.273 853**
Pipette controller macro, green	1	**9.273 851**
Pipette controller macro, blue	1	**9.273 852**
Spare hydrophobic membrane filter	1	**9.273 868**
Valve assembly	1	**9.273 860**
Spare adapter, silicone	1	**9.273 861**
Pipette Package	1	**9.273 970**

3



3 Pipette controller accu-jet® pro

BRAND

- Exceptionally sensitive meniscus control, even with low-volume pipettes
- Light weight (190g) and smoothly rounded grip ensure comfort and minimize fatigue
- Securely holds all pipettes from 0.1ml to 200ml
- Active vapour exhaust, check valve and filter help protect instrument from liquids and vapours
- Additional battery compartment cover (included) allows instrument to be inverted on the bench to avoid contamination of the pipette adapter.
- 8 hours of continuous pipetting (with a 10ml pipette) on each charge; LED low-battery signal; instrument operates during recharge.

Items supplied: accu-jet® pro, incl. wall support, 2 membrane filters 0.2µm sterile, NiMH battery pack, 2 battery compartment covers, instruction manual and 100-240V 50/60Hz power supply unit for continental Europe.

Description	PK	Cat. No.
accu-jet® pro, dark blue	1	**9.281 090**
accu-jet® pro, magenta	1	**9.281 086**
accu-jet® pro, green	1	**9.281 087**
accu-jet® pro, royal blue	1	**9.281 088**

4



4 Accessories for accu-jet® controller

NEW!

BRAND

Description	PK	Cat. No.
NiMh-Akku battery charger only	1	**9.281 096**
Silicone adapter, with non-return valve (PTFE)	1	**9.281 094**
Membrane filter, 0.2 µm, in blister pack, sterile*	1	**9.281 092**
Membrane filter, 0.2 µm, in PE bag, non-sterile	10	**9.281 091**
Membrane filter, 3 µm in blister pack, non-sterile	1	**9.273 868**
Membrane filter, 3 µm, in PE bag, non-sterile	10	**9.281 095**

* Sterilized with ethylene oxide (ETO), SAL of 10^{-6}, with red colour code

E & OE.

1 LLG-Electrical pipette pump *Plus*



This ergonomic pipette controller is lightweight, made from UV resistant material, features adjustable valves and is microprocessor controlled for reliability and accuracy. The powerful pump offers rapid yet sensitive aspiration and dispensing. Filling and dispensing speed is easily set using the same hand by pressing the large control button.
The bright LED display will indicate which of the three modes has been selected, High, Low or Gravity Mode.
The user labelling area enables customization and instant recognition and/or task designation. Additional features include hand neutral design, concave padded triggers, a 1ml pipette adapter to increase stability of small pipettes, a long life Li-Ion battery that allows 20 hours of continuous usage, low battery indicator and two holders as standard

- For 1-100ml glass or plastic pipettes
- Soft touch triggers
- 5 different coloured autoclavable nose pieces as standard
- Uses standard 0.45µm hydrophobic filters
- Long life, easily changeable rechargeable battery
- Sensitive and adjustable aspiration and dispensing
- Labelling area for identification
- Delivered completely with universal voltage and plug faced charger
- Comes with bench stand and magnetic/fixable wall mount

Description	PK	Cat. No.
LLG-Electrical pipette pump *Plus*	1	**9.281 041**
Membrane filter, 0.45µm, PTFE, non-sterile	5	**9.281 005**

2 Pipette filler, pipetus®

Hirschmann



The pipetus® is ergonomically sophisticated in every detail despite most modern technology, powerful and light-weight. Fits graduated, volumetric and Pasteur pipettes from 0.1ml to 200 ml. Without reloading it can be operated up to one week.
The colour display shows the selected defaults (speed) and the current battery capacity
- Automatic inductive charge in the park station guarantees constant readiness
- Controlled pipetting by a simple push of a button
- EX/Blow out switch for precise operating
- Speed key for 5 operating speeds
- No memory effect by inserted microcontroller
- Clear colour display with permanent display
- Optimal meniscus adjustment by sensitive valve technique
- Standard relief valve against penetration of liquid
- Ergonomic design for fatigue-free serial pipetting
- Power supply 100-240V, with EU, UK, US plugs

Supplied with:
pipetus® complete with mains operated charging unit and inductive charging stand, color display with battery level indicator, 2 additional round PTFE filters, additional safety valve and wall mount.

Type	PK	Cat. No.
pipetus®	1	**9.283 958**

Pipette controllers, pipetus®, accessories

Hirschmann

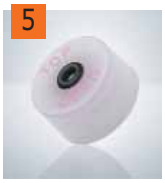
Type	PK	Cat. No.
Pipette holder, complete	1	**9.283 970** 3
Round filter set with one-sided connection	5	**9.283 965** 4
Spare silicone adapter	1	**9.283 961**
Spare safety valve	1	**9.283 962** 5
Charging set 230 V including inductive charging station, EU, UK, US plug	1	**9.283 966**
Mounting bracket	1	**9.283 967**
Retainer Ring, chrome	1	**9.283 968** 6
Pipette holder housing	1	**9.283 969**
Table Stand	1	**9.287 859**



9.283 970



9.283 965



9.283 962



9.283 968

1



1 2 3 4 5 6 LLG-Digital single channel microliter pipettes

Available with fixed or adjustable volume.

Ergonomic shape for a very comfortable handling
The rounded shape and the unique soft grip of the LLG pipette ensures a safe and comfortable handling.
A minimal effort is required for pipetting so that the risk of repetitive strain injuries (RSI) is reduced.

Maximum Precision and Accuracy
Thermal insulation of the internal components, using the innovative soft grip, improves the accuracy.

2



Universal Blow-out System
The two-step plunger operation allows reverse pipetting. This also facilitates last drop dispensing by soft plunger movements. High accuracy and precision are guaranteed.

Colour-coded push-button for quick operation
The colour code enables a quick choice of the right pipette depending of the volume to be pipetted (see corresponding column in the table below).

3 4



Easy Maintenance and Adjustment
The volume setting is easy and precise, using the push-button, even when wearing gloves. Maintenance and adjustment take only a few minutes with just one tool. (Included in delivery)

Contamination-free Pipetting
The pipette is fully autoclavable, ideal for applications where sterility is important.

5 6



Satisfaction Guaranteed
Each pipette is individually tested and calibrated twice, conforming to EN ISO 8655 and DIN 12600 Standards.
A certificate is included.

Made in Germany, CE certified.

LLG-Digital single channel microliter pipettes, fix

NEW!

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	PK	Cat. No.
5	-	1.0	0.5	grey	1	**9.277 515**
10	-	1.0	0.5	grey	1	**9.277 516**
20	-	4.5	1.0	grey	1	**9.277 517**
25	-	2.5	0.6	yellow	1	**9.277 518**
50	-	2.5	0.6	yellow	1	**9.277 519**
100	-	2.5	0.6	yellow	1	**9.277 520**
200	-	2.5	0.6	blue	1	**9.277 521**
250	-	2.9	0.6	blue	1	**9.277 522**
500	-	2.9	0.6	blue	1	**9.277 523**
1000	-	2.4	0.6	violet	1	**9.277 524**
2000	-	2.4	0.6	violet	1	**9.277 525**
2500	-	2.4	0.6	violet	1	**9.277 526**
5000	-	2.4	0.6	turquoise	1	**9.277 527**
10000*	-	3.0	0.6	turquoise	1	**9.277 528**

* 10000µl pipette does not have a tip ejector

LLG-Digital single channel microliter pipettes, variable

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	PK	Cat. No.
0.1 - 2.5	0.05	1.5	0.8	grey	1	**9.280 000**
0.5 - 10	0.1	1.0	0.5	grey	1	**9.280 001**
2 - 20	0.5	4.5	1.0	grey	1	**9.280 002**
10 - 100*	1.0	2.8	0.8	yellow	1	**9.280 003**
20 - 200	1.0	2.5	0.6	yellow	1	**9.280 004**
100 - 1000*	5.0	2.9	0.6	blue	1	**9.280 005**
500 - 5000*	50.0	2.4	0.6	purple	1	**9.280 006**
1000 - 10000**	100.0	3.0	0.6	turquoise	1	**9.280 007**

*Filters for pipettes available on request.
** 10000µl pipette does not have a tip ejector

1 LLG-Digital single channel microliter pipettes, Packages, variable

1



Package 1 Micro contains:
a) 3 Microlitre pipettes with the volumes
- LLG-microlitre pipette 0.5 to 10µl
- LLG-microlitre pipette 10 to 100µl
- LLG-microlitre pipette 100 to 1000µl

b) for each pipette one bag of tips
- crystal (0.1 to 10µl) 1000 tips
- yellow (10 to 100µl), 1000 tips
- blue (100 to 1000µl), 1000 tips

Package 2 Macro contains:
a) 3 Microliter pipettes with the volumes
- LLG-microlitre pipette 100 to 1000µl
- LLG-microlitre pipette 500 to 5000µl
- LLG-microlitre pipette 1000 to 10000µl

b) for each pipette one bag of tips
- blue (100 to 1000µl), 1000 tips
- clear (100 to 5000µl), 250 tips
- clear (1000 to 10000µl), 100 tips

Package 1 Micro and 2 Macro are also available as packages with 4-place or 6-place pipette stand, made of PMMA.

Type	PK	Cat. No.
Package 1 Micro	1	**9.280 008**
Package 2 Macro	1	**9.280 009**
Package 1 Micro + 4-place-pipette stand	1	**6.237 000**
Package 1 Micro + 6-place-pipette stand	1	**6.237 001**
Package 2 Macro + 4-place-pipette stand	1	**6.237 002**
Package 2 Macro + 6-place-pipette stand	1	**6.237 003**

2 LLG-Pipette stands for single channel microliter pipettes, PMMA

2



White, stable plastic (PMMA), industrial grade. Pipettes are held in an ergonomic position for easy withdrawal and replacement. Adjustable heights.
Suitable for all kind of pipettes.

Description	PK	Cat. No.
for 4 pipettes	1	**9.280 014**
for 6 pipettes	1	**9.280 011**

3 4 5 LLG-Electronic single channel microliter pipettes, variable

3



The LLG-Electronic pipettes have been designed for maximum performance, accuracy and simple operation.
The microprocessor-based system reduces the possibility for human error. Lightweight and ergonomic controls help to reduce the risk of repetitive strain injuries which is common in manual pipetting. Attractively designed with an extraordinary finishing of parts due to high grade mould selection. That gives the LLG-Electronic Pipette its final touch.

Ingenious single operation
All software controls and functions of the LLG-Electronic Pipettes are done by one patented user-friendly innovative knob (jog-dial). No small switches and no snippy button keys as in old, conventional electronic pipettes. Each pipette can be easily selected and identified by colour coding.

Modern visual display
An innovatic OLED-Display for a graphic readout of status indicator for all functions of the new LLG-Electronic Pipettes.

Self-calibration system
The user can calibrate the pipettor for solutions of different viscosity. The system also permanently controls all functions and indicates all errors.

Resourceful SCS-System
This system controls the piston movement of the LLG-Electronic Pipettes and guarantees highest precision and accuracy.

Calibration
The LLG-Electronic Pipette is adjusted for the delivery (Ex) of its nominal volume as defined in ISO 8655.

4 5



Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
0.2 - 10	0.01	5.0	6.0	1	**9.281 050**
5 - 100	0.1	2.5	1.5	1	**9.281 051**
10 - 200	0.2	0.9	0.5	1	**9.281 052**
50 - 1000	1.0	0.4	0.5	1	**9.281 053**
100 - 5000	5.0	0.4	0.5	1	**9.281 054**

All LLG-Electronic pipettes are supplied with EU, UK and US chargers.

1



1 Pipette stands Flip & Grip™ for single and multi-channel microliter pipettes

Heathrow Scientific

Unique pipette holder that gives you the option of using on the bench top, or hanging under shelf holder to help maximize your working space available.
- Will hold up to 6 single channel pipette, or a combo of 3 single and 3 multichannel
- Holds most common brands. Rubber grips prevent scratching pipette
- Holder rotates for easy pipette selection and storage
- Weighted base. Fixing screw provided for under shelf option
- Dimensions (W x H): 193 x 332mm (bench top style); 193 x 187mm (under shelf style)

Colour	PK	Cat. No.
Blue	1	**9.194 002**
Lime	1	**9.194 003**
Magenta	1	**9.194 004**

2



2 Pipette clamp for single and multi-channel microliter pipettes Clamp-Ette®, PP

Heathrow Scientific

Chemical-resistant PP. Autoclavable.

Type	Dimensions mm	PK	Cat. No.
Pipette clamp, plastic	110 x 45 x 105	1	**9.280 012**



E & OE.

1 Single channel microliter pipettes, Transferpette® S, variable

BRAND



The Transferpette® S models are the perfect manual pipettors for the most demanding applications in the laboratory. They include all of the features requested by Life Science users: rugged construction, one-hand volume adjustment, complete autoclavability, highest precision, and Easy Calibration™ technology for convenient, long-term reliability.

- Familiar, centrally placed pipetting key and separate tip ejector
- Ergonomic finger rest that adapts to your hand for a relaxed grip
- Easy, one-handed volume setting for right-or left-handed users
- Easy-to-read 4-digit volume display for highest precision
- Entirely autoclavable at 121°C (2 bar), DIN EN 285
- Colour indicates volume range
- Corrosion-resistant piston and ejector for durability
- Easy Calibration technology on the Transferpette® S digital models, providing calibration adjustments without tools, and a clear indication when the pipettes have been adjusted from factory settings
- Volume range from 0.1µl to 10 ml!
- CE-IVD-conform
- UV-resistant

Items supplied: Transferpette® S, DE-M marking, with quality certificate, shelf mount and silicone oil.

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Tip µl	PK	Cat. No.
0.1 -1	0.001	2.0	1.2	0.1 - 20, 0.1 - 1*	1	**9.280 050**
0.5 - 10	0.01	1.0	0.5	0.1 - 20, 0.5 - 20, 1 - 50, 0.1 - 1*, 0.5 - 10*, 1 - 20*	1	**9.280 051**
2 - 20	0.02	0.8	0.4	2 - 200, 5 - 300, 2 - 20*, 5 - 100*	1	**9.280 052**
10 - 100	0.1	0.6	0.2	2 - 200, 5 - 300, 2 - 20*, 5 - 100*	1	**9.280 053**
20 - 200	0.2	0.6	0.2	2 - 200, 5 - 300, 2 - 20*, 5 - 100*, 5 - 200*	1	**9.280 054**
100 - 1000	1	0.6	0.2	50 - 1000, 50 - 1000*	1	**9.280 055**
500 - 5000	5	0.6	0.2	0.5 - 5 ml	1	**9.280 056**
1000 - 10000	10	0.6	0.2	1 - 10 ml	1	**9.280 057**

* Filter tips

2 Single channel pipettes Starter-Kits, variable, Transferpette® S

BRAND



Cost-saving Starter-Kits containing three Transferpette® S pipettes of different volumes with corresponding racked pipette tips from BRAND and shelf-mounting, pipette holders.

Items supplied: 3 Transferpette® S, variable, 3 x Tip-Boxes (filled), 3 shelf mounts.

Type	Description	PK	Cat. No.
Starter-Kit Micro	0.1 to 1 µl, 0.5 to 10 µl, 10 to 100 µl	1	**9.280 060**
Starter-Kit Midi	2 to 20 µl, 20 to 200 µl, 100 to 1000 µl	1	**9.280 061**
Starter-Kit Macro	100 to 1000 µl, 500 to 5000 µl, 1000 to 10000 µl	1	**9.280 062**
Starter-Kit Standard	0,5 to 10 µl, 10 to 100 µl, 100 to 1000 µl	1	**9.280 063**

3 Pipette stands for Single and multichannel microliter pipettes Transferpette® S

BRAND



Description	PK	Cat. No.
Bench stand for 1 multichannel pipette	1	**7.510 391**
Bench stand for 6 single and multichannel pipettes	1	**9.280 065**
Shelf hanger for 1single or multichannel pipette	1	**9.280 066**

1



1 Single channel microliter pipettes, Transferpette® electronic, variable

BRAND

The Transferpette® electronic design ensures significantly easier operation and is the first microlitre pipette worldwide to be awarded the "Ergonomics Approved" certificate from the TUV Rhineland.

The optimal design, the arrangement of the operating keys and the adjustable finger rest allow the motorized Transferpette® electronic to be tailored to the shape of your hand.

- motor-driven, to reduce the risk of RSI and imprecision/inaccuracy caused by operator variability
- five operating modes: Pipetting mode, Reverse pipetting, Mixing, Dispensing, Gel-electrophoresis modes
- Easy Calibration function for rapid adjustment of the unit without tools
- extremely fast pipetting speed
- simple, in-lab maintenance
- completely autoclavable pipette shafts and multichannel manifolds
- NiMH rechargeable battery pack and battery regeneration-mode
- CE-marked according to IVD-Directive 98/79 EC

Every single-channel Transferpette® electronic is supplied with its own power supply unit. As an alternative the three-pipette accessory stand can charge up to three instruments at the same time. With the charging stand, individual chargers are not needed.

Items supplied: Transferpette® electronic, DE-M marking, with performance certificate, battery, 230V/50Hz power supply adapter (with continental European plug, alternative versions available on request), silicone oil.

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Tip µl	PK	Cat. No.
0.5 - 10	0.01	1.0	0.4	0.1 - 20, 0.5 - 20, 1 - 50, 0.1 - 1*, 0.5 - 10*, 1 - 20*	1	**9.280 113**
2 - 20	0.02	1.0	0.4	0.1 - 20, 0.5 - 20, 1 - 50. 0.5 - 10*, 1 - 20*	1	**9.280 100**
20 - 200	0.2	0.8	0.2	2 - 200, 5 - 300, 2 - 20*, 5 - 100*, 5 - 200*	1	**9.280 101**
100 - 1000	1.0	0.6	0.2	50 - 1000, 50 - 1000*	1	**9.280 102**
500 - 5000	5.0	0.6	0.2	500 - 5000	1	**9.280 114**
0.5 - 10**	0.01	1.0	0.4	0.1 - 20, 0.5 - 20, 1 - 50, 0.1 - 1*, 0.5 - 10*, 1 - 20*	1	**9.280 115**
2 - 20**	0.02	1.0	0.4	0.1 - 20, 1 - 50, 0.5 - 20, 0.5 - 10*, 1 - 20*	1	**9.280 103**
20 - 200**	0.2	0.8	0.2	2 - 200, 5 - 300, 2 - 20*, 5 - 100*, 5 - 200*	1	**9.280 104**
100 - 1000**	1.0	0.6	0.2	50 - 1000, 50 - 1000*	1	**9.280 105**
500 - 5000**	5.0	0.6	0.2	500 - 5000	1	**9.280 116**

* Filter tips
**without a.c. adapter, please order with 3-device charging stand 9.280 106

2



9.280 130

Pipette stands for Single channel microliter pipettes Transferpette® electronic

BRAND

Type	PK	Cat. No.
3-pipettor charging stand up to 1000 µl with adapter (230V 50Hz, EU plug)	1	**9.280 106**
Single stand, for pipettors up to 1000 µl	1	**9.280 129**
Single stand, for 500 to 5000 µl pipettors	1	**9.280 130** 2



1 Multichannel microliter pipettes Transferpette® S-8/S-12, variable

1



BRAND

The new Transferpette® S -8/-12 multichannel pipettes are the perfect manual pipettes for the most demanding applications in the lab. They provide all of the features required by users working in the life sciences field. A particular advantage of the new multichannel pipette is the easy operation, e.g. when performing serial pipetting of immunological assays, while serial dilutions or when filling the 96-well plates for cell cultures.
The use of new innovative materials results in a pipette that is light, precise, rugged and reliable.
Transferpette® S -8/-12 pipettes are available in 5 different models and cover the volume range from 0.5µl to 300µl.

Highlights at a glance:
- Central pipetting button and big separate tip ejector for reducing tip ejection forces.
- Short pipetting stroke; reduces the risk of RSI and enhances comfort for operators with smaller hands.
- Curved finger rest supports pipette for relaxed pipetting.
- Real one-handed operation; volume change and volume change protection.
- 4-digit volume display for precise volumes; always remains visible during pipetting.
- Completely autoclavable at 121°C (2 bar) without disassembly, DIN EN 285.
- Corrosion-resistant piston.
- Easy Calibration Technique: calibration and adjustments are done within seconds; adjustment from factory settings is clearly visible from the outside.
- Replaceable nose cones and seals to simplify service for long instrument life.
- Compatible with most common tips.
- Color indicates volume range
- CE-marked according to IVD-Directive 98/79 EC.
- UV-resistant

Items supplied: Transferpette® S -8/-12, DE-M marking, performance certificate, 2 x TipBox filled with BRAND® tips, 1 shelf/rack mount, 1 reagent-reservoir, 1 set of sealing rings made of FKM, 1 mounting tool and silicone oil.

Type	Capacity	Increments	Accuracy max. vol.	Precision max. vol.	Tip	PK	Cat. No.
	µl	µl	(≤ ± R%)	(≤ CV%)	µl		
S-8	0.5 - 10	0.01	1.6	1.0	0.1 - 20, 0.5 - 20, 0.1 - 1*, 0.5 - 10*, 1 - 50, 1 - 20*	1	**9.280 030**
S-8	5 - 50	0.1	0.8	0.4	2 - 200, 5 - 300, 2 - 20*, 5 - 100*, 5 - 200*	1	**9.280 031**
S-8	10 - 100	0.2	0.8	0.3	2 - 200, 5 - 300, 2 - 20*, 5 - 100*, 5 - 200*	1	**9.280 032**
S-8	20 - 200	0.2	0.8	0.3	2 - 200, 5 - 300, 2 - 20*, 5 - 100*, 5 - 200*	1	**9.280 033**
S-8	30 - 300	0.5	0.6	0.3	2 - 200, 5 - 300, 5 - 100*, 5 - 200*	1	**9.280 034**
S-12	0.5 - 10	0.01	1.6	1.0	0.1 - 20, 0.5 - 20, 1 - 50, 0.1 - 1*, 0.5 - 10*, 1 - 20*	1	**9.280 035**
S-12	5 - 50	0.1	0.8	0.4	2 - 200, 5 - 300, 2 - 20*, 5 - 100*, 5 - 200*	1	**9.280 036**
S-12	10 - 100	0.2	0.8	0.3	2 - 200, 5 - 300, 2 - 20*, 5 - 100*, 5 - 200*	1	**9.280 037**
S-12	20 - 200	0.2	0.8	0.3	2 - 200, 5 - 300, 2 - 20*, 5 - 100*, 5 - 200*	1	**9.280 038**
S-12	30 - 300	0.5	0.6	0.3	2 - 200, 5 - 300, 5 - 100*, 5 - 200*	1	**9.280 039**

* Filter tips

2 Dilution microliter pipette Acura® *manual* 810, fix

2



Socorex

This air displacement micropipette allows subsequent pipetting of 1 and 0.1mL of same liquid. The two pre-calibrated fixed volumes eliminate any setting. A universal metal nozzle accommodates straw tips (length 190mm, diameter 4 mm), most adequate to aspirate from deep, narrow vials or Stomacher bags.
Ideal alternative to conventional graduated glass pipettes when performing serial 1:10 dilutions in bacteriology.

Volume	Increments	Accuracy max. vol.	Precision max. vol.	PK	Cat. No.
ml	µl	(≤ ± R%)	(≤ CV%)		
1 / 0.1	-	0.5	0.4	1	**6.203 235**

3 Straw tips, PP, for Dilution pipette Acura® *manual* 810

3



Socorex

Colourless Polypropylene straw tips with a diameter of 4mm are specially designed for easy reach deep into narrow vials and Stomacher bags. Their large diametre allows pick up of particle containing liquids.
Qualitips® straw tips can be used directly in microbiological tests. They are supplied sterilized, in sealed bags.

Capacity ml	Length mm	PK	Cat. No.
1.1	190	1000	**6.210 059**

Blender bags - please see page 567

1



1 Single channel microliter pipettes Acura® *manual* 825/835

Socorex

Available with fixed or adjustable volume.
The latest Acura® manual pipette line was built with the same attention to detail that made the brand famous over several instrument generations. Introducing a smooth, modern design with easy volume reading.
It also features a number of innovations enabling safe and easy, high performance pipetting.

The Acura® line features:
- Effortless activation
- Smart and reliable volume adjustment
- Precision digital display visible at all times
- Justip™ adjustable tip ejector fitting most tips
- *Swift-set* user calibration system
- Shock, UV-light and autoclaving resistance
- CE certified IVD 98/79 EEC
- Three-year warranty
- Eight micropipettes: 0.1 to 1000ml- Three micropipettes: 0.2 to 10ml - Four fixed volume micropipettes: 2 to 10ml

Single channel microliter pipettes Acura® *manual* 825/835

NEW!

Socorex

Type	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
835	2000	-	0.8	0.5	1	**6.235 043**
835	2500	-	0.8	0.5	1	**6.258 006**
835	5000	-	0.7	0.3	1	**6.205 429**
835	10000	-	0.5	0.2	1	**6.205 430**

Single channel microliter pipettes Acura® *manual* 825/835, variable

NEW!

Socorex

Type	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
825	0.1 - 2	0.002	2.0	1.5	1	**9.411 590**
825	0.5 - 10	0.01	1.0	0.5	1	**9.411 591**
825	1 - 10	0.01	1.0	0.7	1	**9.411 592**
825	2 - 20	0.02	1.0	0.5	1	**9.411 593**
825	5 - 50	0.1	1.0	0.4	1	**9.411 594**
825	10 - 100	0.1	0.8	0.2	1	**9.411 595**
825	20 - 200	0.2	0.6	0.2	1	**9.411 596**
825	100 - 1000	1	0.5	0.2	1	**9.411 597**
835	200 - 2000	0.002	0.5	0.2	1	**6.230 186**
835	500 - 5000	0.01	0.6	0.3	1	**9.411 598**
835	1000 - 10000	0.01	0.5	0.2	1	**9.411 599**

2



2 Single channel microliter pipettes Acura® *manual* 825/835 Triopack™, variable

Socorex

Set with 3 pipettes.
Nine different packs up to 10ml, each containing three adjustable micropipettes to cover all individual requirements in any research or routine application. Available at attractive saver prices.

Type	Capacity µl	PK	Cat. No.
Acura 825 Triopack.C	0.1 - 2, 0.5 - 10, 5 - 50	3	**9.411 620**
Acura 825 Triopack.J	0.1 - 2, 2 - 20, 20 - 200	3	**9.411 621**
Acura 825 Triopack.M	1 - 10Y*, 5 - 50, 20 - 200	3	**9.411 622**
Acura 825 Triopack.O	0.5 - 10, 10 - 100, 100 - 1000	3	**9.411 628**
Acura 825 Triopack.P	1 - 10Y*, 10 - 100, 100 - 1000	3	**9.411 623**
Acura 825 Triopack.S	2 - 20, 20 - 200, 100 - 1000	3	**9.411 624**
Acura 825 Triopack.T	5 - 50, 20 - 200, 100 - 1000	3	**9.411 625**
Acura 825 Triopack.V	10 - 100, 100 - 1000, 500 - 5000	3	**9.411 626**
Acura 825 Triopack.Y	100 - 1000, 500 - 5000, 1000 - 10000	3	**9.411 627**

*10µl pipette for use with 200 µl tips

Accessories for single channel microliter pipettes Acura® manual 835

NEW!

Socorex

Description	PK	Cat. No.
Protection filter for 10ml model	100	**9.411 484**
Glass Pasteur pipette for 2ml model	250	**9.411 731**
Nozzle filter for model 2 and 5ml	250	**6.205 906**

E & OE.

1 Microliter pipettes TwiXS Pack Acura® *manual* XS 826, variable

Six different pipette packs up to 1.000 µl. For all individual requirements in any research application. Available at attractive saver prices.

Socorex

Ready-to-use set includes:
- Two Acura® manual XS pipettes
- Shelf pipette holder for two pipettes
- Qualitips® samples
- QC certificate
- Operating instructions



Type	Capacity	Tip	PK	Cat. No.
	µl	µl		
Pack E	0,1 - 2 + 2 - 20	Ultra 10 - 200	2	**9.411 650**
Pack G	0,5 - 10 + 10 - 100	Ultra 10 - 200	2	**9.411 651**
Pack H	2 - 20 + 20 - 200	200 - 200	2	**9.411 654**
Pack K	5 - 50 + 20 - 200	200 - 200	2	**9.411 652**
Pack N	10 - 100 + 100 - 1000	200 - 1000	2	**9.411 653**
Pack Q	20 - 200 + 100 - 1000	200 - 1000	2	**9.411 655**

2 Single channel microliter pipettes, Calibra® *digital* 822/832

Socorex

- Seven micropipettes: 0.2 to 1000µl
- two macropipettes: 0.2 to 10ml
- Instant, volume adjustment
- Unsurpassed performance and calibration stability
- Shock, heat, chemicals and UV light resistance
- Reliable user calibration
- Macro models accommodate interchangeable nozzle filters
- CE certified conform to IVD 98/79 EEC
- Autoclavable at 121°C/250°F
- Three-year warranty



Type	Capacity	Increments	Accuracy max. vol.	Precision max. vol.	Tip	PK	Cat. No.
	µl	µl	(≤ ± R%)	(≤ CV%)	µl		
822	0.2 - 2	0.1	2.0	1.5	10	1	**9.411 473**
822	1 - 10	0.05	1.0	0.5	10	1	**9.411 474**
822	1 - 10	0.05	1.0	0.7	200	1	**9.411 475**
822	2 - 20	0.1	1.0	0.5	200	1	**9.411 476**
822	10 - 100	0.5	0.8	0.2	200	1	**9.411 477**
822	20 - 200	1	0.6	0.2	200	1	**9.411 478**
822	100 - 1000	5	0.5	0.2	1000	1	**9.411 479**
832	200 - 2000	10	0.5	0.2	2000	1	**9.411 480**
832	1000 - 10000	100	0.5	0.15	10000	1	**9.411 481**

3 Accessories for Single channel microliter pipettes Calibra® *digital* 832

NEW!

Socorex



Description	PK	Cat. No.
Protection filter for 2ml model	250	**9.411 482**
Glass Pasteur pipette for 2ml model	250	**9.411 731**
Protection filter for 10ml model	100	**9.411 484**
Autoclaving box for 24 x 10ml tips	4	**9.411 503**

1



1 Single channel microliter pipettes Acura® *electro* XS 926/936, variable

NEW!

Socorex

Microprocessor-controlled instrument line featuring intuitive software avoiding any complicated programming steps. No particular skills are required to get quick access to six working modes and many volumes to select from. Unsurpassed metrological performance and stability.

Pipetting modes:
- Forward: aspiration and pipetting of set volume
- Reverse: aspiration in excess, followed by dosing of set volume
- Stepper: tip filling and step-by-step distribution
- Dilution: aspiration of 2 or 3 different volumes for restitution in one shot
- Tactile: "start-stop-start" slow liquid measurement, titration and gel loading
- Mixing: "Up and down" liquid flow

The Acura® *electro* features:
- Optimal ergonomics, light weight
- Easy, intuitive, self-teaching programme
- Large display, reversible right/left reading
- Swift-interchange battery pack
- Fast charge, long working autonomy
- Adjustable tip ejector fitting most tips
- Pipetting cycle counter
- Interchangeable volumetric modules
- Two years warranty

Supplied with: Electronic pipette with 4.8V battery, operating instructions and QC certificate, Qualitips® pipette tips samples, silicone grease

Type	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Tip µl	PK	Cat. No.
Acura® *electro* XS 926	0.1 - 2	0.01	0.9	0.8	Ultra 10	1	**9.411 660**
Acura® *electro* XS 926	0.5 - 10	0.05	0.6	0.35	Ultra 10	1	**9.411 661**
Acura® *electro* XS 926	0.5 - 10	0.05	0.6	0.4	200	1	**9.411 662**
Acura® *electro* XS 926	1 - 20	0.1	0.5	0.3	200	1	**9.411 663**
Acura® *electro* XS 926	2.5 - 50	0.25	0.5	0.25	200	1	**9.411 664**
Acura® *electro* XS 926	5 - 100	0.5	0.5	0.2	200	1	**9.411 665**
Acura® *electro* XS 926	10 - 200	1.0	0.4	0.15	200	1	**9.411 666**
Acura® *electro* XS 926	50 - 1000	5.0	0.4	0.1	1000	1	**9.411 667**
Acura® *electro* 936	100 - 2000	10	0.5	0.15	2000	1	**9.411 680**
Acura® *electro* 936	250 - 5000	50	0.5	0.15	5000	1	**9.411 681**
Acura® *electro* 936	500 - 10000	50	0.5	0.15	10000	1	**9.411 682**

2



2 Single channel microliter pipettes Initial package Acura® *electro* XS 926/electro 936, variable

NEW!

Socorex

Initial package is recommended when purchasing an Acura® *electro* for the first time. Each initial package contains one electronic pipette, QC certificate and operating instructions, charging stand, power supply, additional battery pack, Qualitips® pipette tips samples. Thereafter, additional pipettes can be purchased alone and charged on existing stand.

Initial package supplied with:
electronic pipette with 4.8V battery, additional battery pack, charging stand, power supply, operating instructions and QC certificate, Qualitips® pipette tips samples, silicone grease

Type	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Tip µl	PK	Cat. No.
Initial package Acura® *electro* XS 926 Acura® *electro* XS 926	0.1 - 2	0.01	0.9	0.8	Ultra 10	1	**9.411 668**
Initial package Acura® *electro* XS 926	0.5 - 10	0.05	0.6	0.35	Ultra 10	1	**9.411 669**
Initial package Acura® *electro* XS 926	0.5 - 10	0.05	0.6	0.4	200	1	**9.411 670**
Initial package Acura® *electro* XS 926	1 - 20	0.1	0.5	0.3	200	1	**9.411 671**
Initial package Acura® *electro* XS 926	2.5 - 50	0.25	0.5	0.25	200	1	**9.411 672**
Initial package Acura® *electro* XS 926	5 - 100	0.5	0.5	0.2	200	1	**9.411 673**
Initial package Acura® *electro* XS 926	10 - 200	1.0	0.4	0.15	200	1	**9.411 674**
Initial package Acura® *electro* XS 926	50 - 1000	5.0	0.4	0.1	1000	1	**9.411 675**
Initial package Acura® *electro* 936	100 - 2000	10	0.5	0.15	2000	1	**9.411 683**
Initial package Acura® *electro* 936	250 - 5000	50	0.5	0.15	5000	1	**9.411 684**
Initial package Acura® *electro* 936	500 - 10000	50	0.5	0.15	10000	1	**9.411 685**

E & OE.

1 Multichannel microlitre pipettes Acura® *manual* 855, variable

Socorex

- 8- and 12-channel models up to 350µl
- Light weight and perfect hand fitting
- Easy to handle
- Precision digital display visible at all times
- 360° rotation of volumetric module
- Adjustable tip ejector fitting most tips
- Integrated user calibration system
- CE certified conform to IVD 98/79 EEC
- Autoclavable at 121°C/250°F
- Three-year warranty



Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Tip µl	PK	Cat. No.
8	0.5 - 10	0.01	1.5	1.0	10	1	**9.411 630**
8	5 - 50	0.1	0.8	0.4	200	1	**9.411 631**
8	20 - 200	0.2	0.7	0.3	200	1	**9.411 632**
8	40 - 350	0.4	0.8	0.3	350	1	**9.411 633**
12	0.5 - 10	0.01	1.5	1.0	10	1	**9.411 634**
12	5 - 50	0.1	0.8	0.4	200	1	**9.411 635**
12	20 - 200	0.2	0.7	0.3	200	1	**9.411 636**
12	40 - 350	0.4	0.8	0.3	350	1	**9.411 637**

2 Multichannel microliter pipettes Acura® electro 956, variable

NEW!

Socorex

Microprocessor-controlled instrument line featuring intuitive software avoiding any complicated programming steps. No particular skills are required to get quick access to six working modes and many volumes to select from. Unsurpassed metrological performance and stability.

Pipetting modes:
- Forward: aspiration and pipetting of set volume
- Reverse: aspiration in excess, followed by dosing of set volume
- Stepper: tip filling and step-by-step distribution
- Dilution: aspiration of 2 or 3 different volumes for restitution in one shot
- Tactile: "start-stop-start" slow liquid measurement, titration and gel loading
- Mixing: "Up and down" liquid flow

The Acura® *electro* features:
- Optimal ergonomics, light weight
- Easy, intuitive, self-teaching programme
- Large display, reversible right/left reading
- Swift-interchange battery pack
- Fast charge, long working autonomy
- Adjustable tip ejector fitting most tips
- Pipetting cycle counter
- Interchangeable volumetric modules
- Two years warranty

Supplied with: Electronic pipette with 4.8V battery, operating instructions and QC certificate, Qualitips® pipette tips samples, silicone grease



Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Tip µl	PK	Cat. No.
8	0.5 - 10	0.05	1.0	0.7	Ultra 10	1	**9.411 690**
8	2.5 - 50	0.25	0.8	0.4	200	1	**9.411 691**
8	10 - 200	1.0	0.6	0.25	200	1	**9.411 692**
8	20 - 350	5.0	0.6	0.25	350	1	**9.411 693**
12	0.5 - 10	0.05	1.0	0.7	Ultra 10	1	**9.411 694**
12	2.5 - 50	0.25	0.8	0.4	200	1	**9.411 695**
12	10 - 200	1.0	0.6	0.25	200	1	**9.411 696**
12	20 - 350	5.0	0.6	0.25	350	1	**9.411 697**

1



1 Multichannel microliter pipettes Acura® *electro* 956, variable

NEW!

Initial package supplied with:
electronic pipette with 4.8V battery, additional battery pack, charging stand, power supply, operating instructions and QC certificate, Qualitips® pipette tips samples, silicone grease

Socorex

Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Tip µl	PK	Cat. No.
8	0.5 - 10	0.05	1.0	0.7	Ultra 10	1	**9.411 700**
8	2.5 - 50	0.25	0.8	0.4	200	1	**9.411 701**
8	10 - 200	1.0	0.6	0.25	200	1	**9.411 702**
8	20 - 350	5.0	0.6	0.25	350	1	**9.411 703**
12	0.5 - 10	0.05	1.0	0.7	Ultra 10	1	**9.411 704**
12	2.5 - 50	0.25	0.8	0.4	200	1	**9.411 705**
12	10 - 200	1.0	0.6	0.25	200	1	**9.411 706**
12	20 - 350	5.0	0.6	0.25	350	1	**9.411 707**

Accessoires for Acura® *electro* microliter pipettes

Socorex

Description	PK	Cat. No.
Stand for pipettes or battery packs, 3 positions	1	**6.225 818**
Stand for power handles only, 3 positions	1	**6.225 848**
Spare battery for blue Acura® *electro* line, NiMH, 4.8V	1	**9.411 708**

2



2 Shelf pipette holder for Single and Multi channel microliter pipettes, Type 332

For two Acura® and Calibra® micro and/or multichannel pipettes.
Material: polycarbonate (PC). Maintenance: clean with mild detergent. Not autoclavable.

Socorex

Type	PK	Cat. No.
Shelf pipette holder 332	1	**6.235 370**

3



3 Pipette stands Twister™ universal 336 for single channel microliter pipettes

Unique design 6-position pipette work station with great characteristics. Model fits six pipettes of most brands providing for an ideal storage solution in any laboratory.
Rotation enables quick instrument selection. Easy disassembling for simple maintenance.
Available in seven translucent colours. Discs are exchangeable.

Socorex

Colour	PK	Cat. No.
Sapphire blue	1	**6.253 916**
Emerald green	1	**6.253 917**
Topaz orange	1	**6.253 918**
Quartz grey	1	**6.253 919**
Ruby red	1	**6.253 920**
Diamond white	1	**6.253 921**
Citrine yellow	1	**6.253 922**

4



4 Pipette stand for Single and Multichannel microliter pipettes, for Calibra® and Acura® models

Innovative design fits all Calibra® and Acura® models. Easy reach of each instrument.
Heavy base plate and anti-slip pads guarantee high stability. Polyamide construction.

Socorex

Description	PK	Cat. No.
Pipette stand 340 for 3 pipettes	1	**9.411 505**

E & OE.

1 Pipette stands for Single channel microliter pipettes, Type 337

Socorex

- Holds up to 7 single-channel pipettes of most brands
- Available in 5 attractive colours
- Space-saving table-mounted models
- Polyacrylamide (PA) material is easy to clean

Colour	PK	Cat. No.
Light grey	1	**9.411 491**
Pink	1	**9.411 504**
Ice blue	1	**9.411 492**
Mint green	1	**9.411 493**
Vanilla yellow	1	**9.411 494**

1



2 Single channel pipette mLine®, mechanical, variabel

NEW!

Sartorius Weighing

The mechanical pipettes of Sartorius are known for their ergonomic, user-friendly design and reliability. mLINE ® pipettes represent an ergonomic choice for quality-conscious users who perform long lasting and repetitive manual pipetting. These pipettes are used in (bio)pharmaceutical laboratories, research institutes, universities, health care and industrial laboratories for various liquid handling tasks

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Optifit Tips µl	PK	Cat. No.
0.1 - 3	0.002	± 1.30	± 0.80	10	1	**6.234 095**
0.5 - 10	0.01	± 1.00	± 0.60	10	1	**6.234 096**
2 - 20	0.02	± 0.90	± 0.40	200	1	**6.237 371**
10 - 100	0.10	± 0.80	± 0.15	200 350	1	**6.228 993**
20 - 200	0.20	± 0.60	± 0.15	200 350	1	**6.228 995**
100 - 1000	1.00	± 0.60	± 0.20	1000	1	**6.206 379**
500 - 5000	10.0	± 0.50	± 0.20	5000	1	**6.237 372**
1000 - 10000	20.0	± 0.60	± 0.20	10000	1	**6.239 043**

2



3 Pipette stand for single channel pipettes mLine®

NEW!

Carousel stand for 6 mechanical pipettes.

Sartorius Weighing

Type	PK	Cat. No.
Pipette stand for single channel pipettes mLine®	1	**6.238 583**

3



1



1 Single channel/Multichannel microliter pipettes F1-ClipTip™

Thermo Scientific

Available with fixed or adjustable volume.
The innovative ClipTip™ interlocking technology ensures a complete seal with minimal tip attachment and ejection force. Achieve newfound confidence knowing that once attached, your tips are locked firmly in place, and will not loosen or fall off regardless of application pressure. The innovative three interlocking clip design ensures the tip is held securely on the F1-ClipTip™ pipette only until it is released.

- Tip is locked and sealed in place until ejected, no dropped tips that waste valuable samples
- Complete seal to secure the sample volume in the tip, enhanced accuracy and precision
- Tips are attached and ejected with a light touch, which eliminates the frustration of banging tips on the pipette
- Ergonomic design and Soft-touch tip ejection: Offering low attachment, ejection and plunger forces for safe and comfortable use
- Remarkably lightweight: Modern design protects user from the risk of Repetitive Strain Injuries (RSI)
- Adjustable comfort: The 120° adjustable finger rest for both right- and left-handed operator comfort, allows the hand to relax during pipetting cycles
- Super blow-out: 150% increase in air boost to ensure efficient delivery of micro-volumes and prevent capillary action (Available for models up to 50µl)
- Volume Lock Adjustment for Variable Volume models: The secure volume setting prevents undesirable volume drift during operation
- Industry-leading lifetime warranty: With convenient online registration
- Compliance: The F1-ClipTip™ Pipetting system is CE-marked in accordance with IVD Directive in Europe
- Certifications: Manufactured according to ISO 9001, ISO 14001 and ISO 13485.

Single channel microliter pipettes F1-ClipTip™, fix

Thermo Scientific

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Tip	PK	Cat. No.
1	-	4.0	4.0	ClipTip™ 20	1	**9.282 638**
5	-	1.4	1.4	ClipTip™ 20	1	**9.282 639**
10	-	0.9	0.8	ClipTip™ 20	1	**9.282 640**
20	-	0.7	0.5	ClipTip™ 20	1	**9.282 641**
25	-	0.6	0.5	ClipTip™ 50	1	**9.282 642**
50	-	0.6	0.4	ClipTip™ 50	1	**9.282 643**
100	-	0.4	0.3	ClipTip™ 200	1	**9.282 644**
200	-	0.4	0.3	ClipTip™ 200	1	**9.282 645**
250	-	0.4	0.3	ClipTip™ 300	1	**9.282 646**
500	-	0.3	0.3	ClipTip™ 1000	1	**9.282 647**
1000	-	0.3	0.3	ClipTip™ 1000	1	**9.282 648**

Single channel microliter pipettes F1-ClipTip, variable

Thermo Scientific

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Tip	PK	Cat. No.
1 - 10	0.02	2.5	2.0	Pink	ClipTip™ 20	1	**9.282 631**
2 - 20	0.02	3.0	2.5	Pink	ClipTip™ 20	1	**9.282 632**
5 - 50	0.1	3.0	2.5	Violet	ClipTip™ 50	1	**9.282 633**
10 - 100	0.2	3.0	1.0	Yellow	ClipTip™ 200	1	**9.282 634**
20 - 200	0.2	1.8	0.7	Yellow	ClipTip™ 200	1	**9.282 635**
30 - 300	1.0	1.5	0.6	Orange	ClipTip™ 300	1	**9.282 636**
100 - 1000	1.0	1.0	0.6	Blue	ClipTip™ 1000	1	**9.282 637**

Multichannel microliter pipettes F1-ClipTip™, variable

Thermo Scientific

Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Tip	PK	Cat. No.
8	1 - 10	0.02	12.0	8.0	Pink	ClipTip 20	1	**9.282 651**
8	5 - 50	0.1	5.0	2.0	Violet	ClipTip 50	1	**9.282 652**
8	10 - 100	0.2	5.0	2.0	Yellow	ClipTip 200	1	**9.282 653**
8	30 - 300	1.0	5.0	2.0	Orange	ClipTip 300	1	**9.282 654**
12	1 - 10	0.02	12.0	8.0	Pink	ClipTip 20	1	**9.282 655**
12	5 - 50	0.1	5.0	2.0	Violet	ClipTip 50	1	**9.282 656**
12	10 - 100	0.2	5.0	2.0	Yellow	ClipTip 200	1	**9.282 657**
12	30 - 300	1.0	5.0	2.0	Orange	ClipTip 300	1	**9.282 658**

E & OE.

1 Single channel microliter pipettes F1-ClipTip™ GLP Kits, variable



Thermo Scientific

F1-ClipTip™ GLP Kit 1 includes:
- one F1-ClipTip™ single channel pipette with 1-10µl, 10-100µl and 100-1000µl each
- one F series stand
- ClipTip™ 20, 200 and 1000 pipette tips (one rack with 96 tips each)
- one 25ml reservoir
- two divided reservoirs (25 and 100ml)

F1-ClipTip™ GLP Kit 2 includes:
- one F1-ClipTip™ single channel pipette with 2-20µl, 10-200µl and 200-2000µl each
- one 8-channel pipette with 30-300µl
- one F series stand
- ClipTip™ 20, 200, 300 and 1000 pipette tips (one rack with 96 tips each)
- one 25ml reservoir
- two divided reservoirs (25 and 100ml)

Type	PK	Cat. No.
F1-ClipTip™ GLP Kit 1	1	**9.282 614**
F1-ClipTip™ GLP Kit 2	1	**9.282 615**

2 Electronic single channel and multichannel microliter pipettes E1-ClipTip™



Thermo Scientific

With enhanced versatility and customization, E1-ClipTip™ Electronic microliter pipettes automate e.g. daily 96-and 384-well microplate pipetting tasks.

Innovative ClipTip interlocking tip interface technology
- Tip is locked and sealed in place until ejected: No dropped tips that waste valuable samples
- Complete seal to secure the sample volume in each tip for enhanced accuracy and precision
- Tips are attached and ejected with a light touch: Eliminates the frustration of banging tips on the pipette

Unified operation for multiple users and environments
- Personalized user interface and password protection ensure consistent operation among multiple users.
- Designed for optimum comfort and ease of use, electronic tip ejection and index finger pipetting

MyPipette™: One click access for more efficient and unified pipetting: Customise your main menu view by organising icons in your preferred order or creating shortcuts for your favorite programs and pipetting functions. You can also protect important settings from unintentional editing with a password.

Store up to 20 programs

A pipette for every application: Choose from single channels, 8- and 16-channel multichannels, or 6- and 12-channel adjustable tip spacing Equalizer multichannel pipettes within the volume range of 0.5-1250µL

Track your pipette

Liquid specific calibrations: Higher quality results with liquid specific calibrations

Li-Ion battery: Long lasting performance and fast recharging.

Flexible re-charging: Use either charging stand or a plug, you decide

2-year warranty: With convenient web registration

Electronic single channel microliter pipettes E1-ClipTip™, variable

NEW!

Thermo Scientific

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Tip	PK	Cat. No.
0.5 - 12.5	0.01	1.0 - 4.0	0.4 - 4.0	Pink	ClipTip™ 12.5	1	**9.282 694**
2 - 125	0.1	0.6 - 2.4	0.2 - 0.8	Yellow	ClipTip™ 200	1	**9.282 695**
10 - 300	0.1	0.6 - 1.7	0.2 - 0.5	Orange	ClipTip™ 300	1	**9.282 696**
50 - 1250	1.0	0.5 - 2.4	0.1 - 0.5	Turquoise	ClipTip™ 1250	1	**9.282 697**

Electronic multichannel microliter pipettes E1-ClipTip™, variable

NEW!

Thermo Scientific

Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Tip	PK	Cat. No.
8	0.5 - 12.5	0.01	2.5 - 12.0	1.6 - 12.0	Pink	ClipTip™ 12.5	1	**9.282 698**
8	2 - 125	0.1	2.0 - 8.0	0.6 - 4.0	Yellow	ClipTip™ 200	1	**9.282 699**
8	10 - 300	0.1	2.0 - 5.0	0.6 - 2.0	Orange	ClipTip™ 300	1	**9.282 700**
8	50 - 1250	1	1.4 - 4.0	0.6 - 1.5	Turquoise	ClipTip™ 1250	1	**9.282 701**
12	0.5 - 12.5	0.01	2.5 - 12.0	1.6 - 12.0	Pink	ClipTip™ 12.5	1	**9.282 702**
12	2 - 125	0.1	2.0 - 8.0	0.6 - 4.0	Yellow	ClipTip™ 200	1	**9.282 703**
12	10 - 300	0.1	2.0 - 5.0	0.6 - 2.0	Orange	ClipTip™ 300	1	**9.282 704**
12	30 - 850	1	1.5 - 4.7	0.6 - 2.0	Blue	ClipTip™ 1000	1	**9.282 705**
16	0.5 - 12.5	0.01	2.5 - 12.0	1.6 - 12.0	Pink	ClipTip™ 384 12.5	1	**9.282 706**
16	1 - 30	0.01	2.0 - 10.0	0.9 - 7.0	Violet	ClipTip™ 384 30	1	**9.282 707**
16	2 - 125	0.1	2.0 - 8.0	0.6 - 4.0	Yellow	ClipTip™ 384 125	1	**9.282 708**

1



1 Electronic multichannel microliter pipettes E1-ClipTip™ Equalizer, variable

NEW!

Thermo Scientific

Perform sample transfers between virtually any tube, rack, microplate or horizontal gel box quickly and efficiently with the Thermo Scientific™ E1-ClipTip™ Equalizer Pipette. Adjustable tip spacing allows you to set the distance between tips by simply sliding the scale to expand or contract to the desired labware format. Feel the difference.

An ideal choice for sample transfers: Reduce repetition and save time between labware formats with adjustable tip spacing in Equalizer models.

Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Tip	Adjustable Tip spacing mm	PK	Cat. No.
6	50 - 1250	1	1.4 - 4.0	0.6 - 1.5	Turquoise	ClipTip™ 1250	9.0 - 19.8	1	**9.282 709**
8	2 - 125	0.1	2.0 - 8.0	0.6 - 4.0	Yellow	ClipTip™ 200	9.0 - 14.2	1	**9.282 710**
8	10 - 300	0.1	2.0 - 5.0	0.6 - 2.0	Orange	ClipTip™ 300	9.0 - 14.2	1	**9.282 711**
8	50 - 1250	1	1.4 - 4.0	0.6 - 1.5	Turquoise	ClipTip™ 1250	9.0 - 14.2	1	**9.282 712**
8	0.5 - 12.5	0.01	2.5 - 12.0	1.6 - 12.0	Pink	ClipTip™ 384 12.5	4.5 - 14.2	1	**9.282 713**
8	1 - 30	0.01	2.0 - 10.0	0.9 - 7.0	Violet	ClipTip™ 384 30	4.5 - 14.2	1	**9.282 714**
8	2 - 125	0.1	2.0 - 8.0	0.6 - 4.0	Yellow	ClipTip™ 384 125	4.5 - 14.2	1	**9.282 715**
12	0.5 - 12.5	0.01	2.5 - 12.0	1.6 - 12.0	Pink	ClipTip™ 384 12.5	4.5 - 9.0	1	**9.282 716**
12	1 - 30	0.01	2.0 - 10.0	0.9 - 7.0	Violet	ClipTip™ 384 30	4.5 - 9.0	1	**9.282 717**
12	2 - 125	0.1	2.0 - 8.0	0.6 - 4.0	Yellow	ClipTip™ 384 125	4.5 - 9.0	1	**9.282 718**

2



2 Pipette stand for electronic single and multichannel microliter pipettes E1-ClipTip™

NEW!

Thermo Scientific

Description	PK	Cat. No.
Pipette stand E1-ClipTip™ with power supply	1	**9.282 719**

3



3 Pipette Tips ClipTip™

Thermo Scientific

Thermo Scientific ClipTip™ pipette tips provide security with a unique and innovative interlocking technology that ensures a complete seal on every channel with minimal tip attachment and ejection force. Achieve newfound confidence knowing that once attached, your tips are locked firmly in place, and will not loosen or fall off. The innovative three interlocking clip design ensures the tip is held securely on the F1-ClipTip™ pipette only until it is released.

- Tips are attached and ejected with a light touch: Eliminates the frustration of banging tips on the pipette
- Low retention: Special technology to enable maximium sample recovery
- Versatile Tip Range: Choose from five sizes: 20, 50, 200, 300 and 1000µL
- Immediate traceability
- Compliance: The F1-ClipTip™ pipetting system is CE-marked in accordance with IVD Directive in Europe.
- Certifications: Manufactured according to ISO 9001, ISO 14001, ISO 13485 and free of RNase, DNase, DNA, ATP and endotoxin contamination

Pipette Tips ClipTip™ 12.5 for 96 and 384

NEW!

Thermo Scientific

Capacity µl	Package contents	Description	PK	Cat. No.
0.5 - 12.5	10 racks of 384	ClipTip™ 384 12.5	3840	**9.282 720**
0.5 - 12.5	10 racks of 384	ClipTip™ 384 12.5, sterile	3840	**9.282 721**
0.5 - 12.5	10 racks of 384	ClipTip™ 384 12.5, Filter tips, sterile	3840	**9.282 722**
0.5 - 12.5	10 racks of 96	ClipTip™ 96 12.5	960	**9.282 729**
0.5 - 12.5	10 racks of 96	ClipTip™ 96 12.5, sterile	960	**9.282 730**
0.5 - 12.5	10 racks of 96	ClipTip™ 96 12.5, Filter tips, sterile	960	**9.282 731**

E & OE.

Pipette Tips ClipTip™ 20 for 96

Length 4.6cm, volume range 1-20µl, colour code pink. *Thermo Scientific*
Suitable for F1-ClipTip™ Cat. No. 9.282 631, 9.282 632, 9.282 638, 9.282 639, 9.282 640, 9.282 641, 9.282 651 and 9.282 655.

Capacity µl	Description	Package contents	PK	Cat. No.
1 - 20	non sterile	10 racks of 96	960	**9.282 661**
1 - 20	sterile	10 racks of 96	960	**9.282 662**
1 - 20	non sterile	10 refill packs of 96	960	**9.282 663**
1 - 20	sterile	10 refill packs of 96	960	**9.282 664**
1 - 20	Filter tips, sterile	10 racks of 96	960	**9.282 665**
1 - 20	Filter tips, sterile	10 refill packs of 96	960	**9.282 666**

Pipette Tips ClipTip™ 30 for 384

NEW!

Thermo Scientific

Capacity µl	Description	Package contents	PK	Cat. No.
1 - 30	non-sterile	10 racks of 384	3840	**9.282 723**
1 - 30	sterile	10 racks of 384	3840	**9.282 724**
1 - 30	Filter tips, sterile	10 racks of 384	3840	**9.282 725**

Pipette Tips ClipTip™ 50 for 96

Length 5.1cm, volume range 5-50µl, colour code violet. *Thermo Scientific*
Suitable for F1-ClipTip™ Cat. No. 9.282 633, 9.282 642, 9.282 643, 9.282 652 and 9.282 656.

Capacity µl	Description	Package contents	PK	Cat. No.
5 - 50	non sterile	10 racks of 96	960	**9.282 667**
5 - 50	sterile	10 racks of 96	960	**9.282 668**
5 - 50	non sterile	10 refill packs of 96	960	**9.282 669**
5 - 50	sterile	10 refill packs of 96	960	**9.282 670**
5 - 50	Filter tips, sterile	10 racks of 96	960	**9.282 671**
5 - 50	Filter tips, sterile	10 refill packs of 96	960	**9.282 672**

Pipette Tips ClipTip™ 125 for 384

NEW!

Thermo Scientific

Capacity µl	Description	Package contents	PK	Cat. No.
1 - 125	non-sterile	10 racks of 384	3840	**9.282 726**
1 - 125	sterile	10 racks of 384	3840	**9.282 727**
1 - 125	Filter tips, sterile	10 racks of 384	3840	**9.282 728**

Pipette Tips ClipTip™ 200 for 96

Length 5.6cm, volume range 10-200µl, colour code yellow. *Thermo Scientific*
Suitable for F1-ClipTip™ Cat. No. 9.282 634, 9.282 635, 9.282 644, 9.282 645, 9.282 653 and 9.282 657.

Capacity µl	Description	Package contents	PK	Cat. No.
10 - 200	non sterile	10 racks of 96	960	**9.282 673**
10 - 200	sterile	10 racks of 96	960	**9.282 674**
10 - 200	non sterile	10 refill packs of 96	960	**9.282 675**
10 - 200	sterile	10 refill packs of 96	960	**9.282 676**
10 - 200	Filter tips, sterile	10 racks of 96	960	**9.282 677**
10 - 200	Filter tips, sterile	10 refill packs of 96	960	**9.282 678**

Pipette Tips ClipTip™ 300 for 96

Length 6.3cm, volume range 30-300µl, colour code orange. *Thermo Scientific*
Suitable for F1-ClipTip™ Cat. No. 9.282 636, 9.282 646, 9.282 654 and 9.282 658.

Capacity µl	Description	Package contents	PK	Cat. No.
30 - 300	non sterile	10 racks of 96	960	**9.282 679**
30 - 300	sterile	10 racks of 96	960	**9.282 680**
30 - 300	non sterile	10 inserts of 96	960	**9.282 681**
30 - 300	sterile	10 inserts of 96	960	**9.282 682**
30 - 300	Filter tips, sterile	10 racks of 96	960	**9.282 683**
30 - 300	Filter tips, sterile	10 inserts of 96	960	**9.282 684**

Pipette Tips ClipTip™ 1000 for 96

Length 9.5cm, volume range 100-1000µl, colour code blue.
Suitable for F1-ClipTip™ Cat. No. 9.282 637, 9.282 647 and 9.282 648.

Thermo Scientific

Capacity µl	Description	Package contents	PK	Cat. No.
100 - 1000	non sterile	10 racks of 96	768	**9.282 685**
100 - 1000	sterile	10 racks of 96	768	**9.282 686**
100 - 1000	non sterile	10 refill packs of 96	768	**9.282 687**
100 - 1000	sterile	10 refill packs of 96	768	**9.282 688**
100 - 1000	Filter tips, sterile	10 racks of 96	768	**9.282 689**
100 - 1000	Filter tips, sterile	10 refill packs of 96	768	**9.282 690**

Pipette Tips ClipTip™ 1250 for 96

NEW!

Thermo Scientific

Capacity µl	Description	Package contents	PK	Cat. No.
50 -1250	non-sterile	8 racks of 96	768	**9.282 732**
50 -1250	sterile	8 racks of 96	768	**9.282 733**
50 -1250	Blister Reload	8 inserts of 96	768	**9.282 734**
50 -1250	Blister Reload, sterile	8 inserts of 96	768	**9.282 735**
50 -1250	Filter tips, sterile	8 racks of 96	768	**9.282 736**
50 -1250	Filter tips Reload, sterile	8 inserts of 96	768	**9.282 737**

Empty Racks for Pipette Tips F1-ClipTip™

Thermo Scientific

Type	For	PK	Cat. No.
ClipTip™ Rack small	ClipTip™ 20, ClipTip™ 50	10	**9.282 691**
ClipTip™ Rack medium	ClipTip™ 200, ClipTip™ 300	10	**9.282 692**
ClipTip™ Rack large	ClipTip™ 1000	8	**9.282 693**

1



1 Single channel microliter pipettes Finnpipette™ F1

Thermo Scientific

The Thermo Scientific Finnpipette™ F1 pipette incorporates state-of-the-art innovations for ease of use and proven results. The Advanced Volume Gearing mechanism (AVG) is a self-supporting modular volume adjustment mechanism that enhances pipetting performance. It also delivers dependable accuracy and precision with real durability with its separate pipetter body.

- Integrated surface protection - helps keep the pipette clean and free from contaminants
- Set and Forget pipetting button - easy and secure locking mechanism to adjust the volume
- Adjustable finger rest - can be adjusted 120° for optimal pipetting and tip ejection position
- Advanced Volume Gearing (AVG) Mechanism - increased accuracy, precision and durability
- Light pipetting forces - improved ergonomics to minimise the risk of RSI
- Patented super blow-out piston in models with volumes of 50µl and below to ensure the delivery of micro-size drops
- Patented soft touch tip ejection mechanism
- 5 year warranty

Single channel microliter pipettes Finnpipette™ F1, fix

Thermo Scientific

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Suitable Finntip Tips	PK	Cat. No.
1	-	4.0	4.0	Flex 10, 10, 50 Mikro	1	**9.282 400**
5	-	1.4	1.4	Flex 10, 10, 50 Mikro	1	**9.282 401**
10	-	0.9	0.8	Flex 200, 250 Univ., 200 Ext.	1	**9.282 402**
25	-	0.6	0.5	Flex 200, 250 Univ., 200 Ext.	1	**9.282 403**
50	-	0.6	0.4	Flex 200, 250 Univ., 200 Ext.	1	**9.282 404**
100	-	0.4	0.3	Flex 200, 250 Univ., 200 Ext.	1	**9.282 405**
250	-	0.4	0.3	Flex 1000, 1000, 1000 Ext.	1	**9.282 406**
500	-	0.3	0.3	Flex 1000, 1000, 1000 Ext.	1	**9.282 407**
1000	-	0.3	0.3	Flex 1000, 1000, 1000 Ext.	1	**9.282 408**
2000	-	0.3	0.2	5ml	1	**9.282 409**
3000	-	0.3	0.2	5ml	1	**9.282 410**
5000	-	0.3	0.2	5ml	1	**6.240 071**
10000	-	0.3	0.2	10ml	1	**9.282 411**

E & OE.

Single channel microliter pipettes Finnpipette™ F1, variable

Thermo Scientific

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Suitable Finntip Tips	PK	Cat. No.
0,2 - 2*	0.002	12.0	2.0	Pink	Flex 10, 10, 50 Mikro	1	**9.282 412**
0,5 - 5*	0.01	6.0	1.0	Pink	Flex 10, 10, 50 Mikro	1	**9.282 413**
1 - 10*	0.02	2.5	0.5	Pink	Flex 10, 10, 50 Mikro	1	**6.242 557**
1 - 10	0.02	3.5	0.8	Yellow	Flex 200, 250 Univ.	1	**9.282 414**
2 - 20*	0.02	3.0	0.4	Turquoise	50 Mikro	1	**9.282 415**
2 - 20	0.02	3.0	0.4	Yellow	Flex 200, 250 Univ.	1	**9.282 416**
10 - 100	0.2	3.0	0.2	Yellow	Flex 200, 250 Univ., 300, 200 Ext.	1	**9.282 417**
20 - 200	0.2	1.8	0.2	Yellow	Flex 200, 250 Univ., 300, 200 Ext.	1	**6.241 373**
30 - 300	1.0	1.5	0.2	Orange	Flex 300, 300	1	**9.282 418**
100 - 1000	1.0	1.0	0.2	Blue	Flex 1000, 1000, 1000 Ext.	1	**9.282 419**
500 - 5000	10.0	2.0	0.2	Green	5 ml	1	**9.282 420**
1000 - 10000	20.0	2.0	0.2	Red	10 ml	1	**9.282 421**

*Microtip

1 Single channel microliter pipettes Finnpipette™ F2

1

Thermo Scientific

Introducing the new Thermo Scientific Finnpipette™ F2, a pipette that has all the right qualities. It has a light pipetting action, it is easy to use, and it is fully autoclavable.
Furthermore, the Finnpipette™ F2 offers outstanding reliability, which we guarantee with a 5 year warranty.
Add to this great accuracy and precision, and you know the Finnpipette™ F2 is a winner.
- Advanced Volume Gearing (AVG) mechanism - increased accuracy, precision and durability
- Light pipetting forces - improved ergonomics to minimise the risk of RSI
- Double-action pipetting button - prevents accidental volume alteration during pipetting
- Very large Ergovisio display - very big and clear display
- Both single channel and multichannel pipettes are fully autoclavable
- 5 year warranty



Single channel microliter pipettes Finnpipette™ F2, fix

Thermo Scientific

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Suitable Finntip Tips	PK	Cat. No.
1	-	4.0	4.0	Flex 10, 10, 50 Mikro	1	**9.282 450**
5	-	1.4	1.4	Flex 10, 10, 50 Mikro	1	**9.282 451**
10	-	0.9	0.8	Flex 200, 250 Univ., 200 Ext.	1	**9.282 452**
25	-	0.6	0.5	Flex 200, 250 Univ., 200 Ext.	1	**9.282 453**
20	-	0.6	0.5	Flex 200, 250 Univ., 200 Ext.	1	**9.282 463**
50	-	0.6	0.4	Flex 200, 250 Univ., 200 Ext.	1	**9.282 454**
100	-	0.4	0.3	Flex 200, 250 Univ., 200 Ext.	1	**9.282 455**
200	-	0.4	0.3	Flex 200, 250 Univ., 200 Ext.	1	**9.282 464**
250	-	0.4	0.3	Flex 1000, 1000, 1000 Ext.	1	**9.282 456**
500	-	0.3	0.3	Flex 1000, 1000, 1000 Ext.	1	**9.282 457**
1000	-	0.3	0.3	Flex 1000, 1000, 1000 Ext.	1	**9.282 458**
2000	-	0.3	0.2	5ml	1	**9.282 459**
3000	-	0.3	0.2	5ml	1	**9.282 460**
5000	-	0.3	0.2	5ml	1	**9.282 461**
10000	-	0.3	0.2	10ml	1	**9.282 462**

Single channel microliter pipettes Finnpipette™ F2, variable

Thermo Scientific

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Suitable Finntip Tips	PK	Cat. No.
0,2 - 2*	0.002	12.0	2.0	Pink	Flex 10, 10, 50 Mikro	1	**6.240 102**
0,5 - 5*	0.01	6.0	1.0	Pink	Flex 10, 10, 50 Mikro	1	**6.233 742**
1 - 10*	0.02	2.5	0.5	Pink	Flex 10, 10, 50 Mikro	1	**9.282 465**
1 - 10	0.02	3.5	0.8	Yellow	Flex 200, 250 Univ.	1	**6.240 360**
2 - 20*	0.02	3.0	0.4	Turquoise	50 Mikro	1	**9.282 466**
2 - 20	0.02	3.0	0.4	Yellow	Flex 200, 250 Univ.	1	**6.233 743**
5 - 50*	0.1	0.3	0.3	Turquoise	50 Mikro	1	**6.251 900**
5 - 50	0.1	0.3	0.3	Yellow	Flex 200, Flex 300, 250 Univ., 200 Ext.	1	**6.239 178**
10 - 100	0.2	3.0	0.2	Yellow	Flex 200, 250 Univ., 300, 200 Ext.	1	**9.282 467**
20 - 200	0.2	1.8	0.2	Yellow	Flex 200, 250 Univ., 300, 200 Ext.	1	**6.233 744**
100 - 1000	1.0	1.0	0.2	Blue	Flex 1000, 1000, 1000 Ext.	1	**6.233 745**
500 - 5000	10.0	2.0	0.2	Green	5 ml	1	**6.238 106**
1000 - 10000	20.0	2.0	0.2	Red	10 ml	1	**6.239 136**

*Microtip

1



1 Electronic single channel microliter pipettes Finnpipette™ Novus, variable

Thermo Scientific

Thermo Scientific Finnpipette™ Novus Single Channel Electronic Pipetters offer performance with simple operation and reduced stress for comfortable, productive pipetting.

- Easy to use simple text guided user interface and operator button layout.
- Large display shows all the names of the functions without abbreviations.
- Ergonomic and lightweight design with balanced weight distribution enables longer work periods without fatigue.
- Finger rest is adjustable by 120 degrees to find the optimal pipetting position for both left hand and right hand users.
- Adjustable finger rest leaves your index finger free to control pipetting with minimum effort using the trigger action pipetting button.
- Light-touch tip ejector minimizes strain on your thumb with the very low tip ejection force and can be used with both right and left-hand.
- Finnpipette™ Novus has 10 different pipetting functions to cover most pipetting applications in the laboratory.
- 9 different speeds which can be separately adjusted for dispensing and aspirating, to optimize pipetting with different reagents.
- 9 built-in memory slots to store your own combination of the 10 different pipetting functions.
- Intuitive menu ensures easy access to pipetting functions for all laboratory pipetting applications.
- Light, long lasting battery allowing over 4000 pipetting actions.
- Fast recharge battery, fully recharged within 1 hour and the pipette is fully operational while recharging.
- Finnpipette™ Novus designed for easy in-lab calibration and service.
- The tip cone is fully autoclavable.
- Color coded buttons and color coded ring help identify the matching Finntip model.

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Suitable Finntip Tips	PK	Cat. No.
1 - 10*	0.01	3.5	3.0	pink	10	1	**6.228 698**
1 - 10	0.01	7.0	6.0	yellow	250 Univ., 200 Ext.	1	**9.282 480**
5 - 50*	0.1	3.0	2.5	turquoise	50	1	**6.228 699**
5 - 50	0.1	3.0	2.5	yellow	250 Univ., 200 Ext.	1	**6.228 700**
10 - 100	0.1	3.0	1.0	yellow	250 Univ., 200 Ext.	1	**6.228 701**
30 - 300	1.0	3.0	0.7	orange	300	1	**6.228 702**
100 - 1000	1.0	3.0	0.6	blue	1000, 1000 Ext.	1	**6.228 703**
500 - 5000	10.0	3.0	0.8	green	5ml	1	**6.228 704**
1000 - 10000	10.0	3.0	0.8	red	10ml	1	**6.228 705**

*Microtip

2



2 Multichannel microliter pipettes Finnpipette™ F1, variable

Thermo Scientific

Finnpipette™ F1 multichannel pipettes are available in 8-, 12- and 16-channel models with a wide selection of volume ranges. As with the single channel Finnpipette™ F1 pipettes, the AVG mechanism ensures a high level of accuracy and precision.
The soft-touch tip ejection is especially useful on multichannel models, significantly reducing the effort needed to eject multiple tips. In addition, in the low volume models the super blow-out function ensures accurate dispensing for even the lowest volumes.

Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Suitable Finntip Tips	PK	Cat. No.
8	1 - 10	0.02	12.0	8.0	pink	Flex 10, 10, 50 Mikro	1	**9.282 430**
8	5 - 50	0.1	5.0	2.0	yellow	Flex 200, 250 Univ., 200 Ext.	1	**9.282 431**
8	10 - 100	0.2	5.0	2.0	yellow	Flex 200, 250 Univ., 200 Ext.	1	**9.282 432**
8	30 - 300	1.0	5.0	2.0	orange	Flex 300, 300	1	**9.282 433**
12	1 - 10	0.02	12.0	8.0	pink	Flex 10, 10, 50 Mikro	1	**9.282 434**
12	5 - 50	0.1	5.0	2.0	yellow	Flex 200, 250 Univ., 200 Ext.	1	**9.282 435**
12	10 - 100	0.2	5.0	2.0	yellow	Flex 200, 250 Univ., 200 Ext.	1	**9.282 436**
12	30 - 300	1.0	5.0	2.0	orange	Flex 300, 300	1	**9.282 437**
16	1 - 10	0.02	12.0	8.0	violet	Flex 10 (384), 50 Mikro	1	**9.282 438**
16	5 - 50	0.1	5.0	2.0	turquoise	50 Mikro	1	**9.282 439**

E & OE.

1 Multichannel microliter pipettes Finnpipette™ F2, variable

1



Thermo Scientific

The Finnpipette™ F2 multichannel pipettes are available in 8-, 12- and 16-channel models with a selection of volume ranges. As with the single channel Finnpipette™ F2 pipettes, the AVG mechanism ensures a high level of accuracy and precision.
In addition, in the low volume models the super blow-out function ensures accurate dispensing for even the lowest volumes.

Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Suitable Finntip Tips	PK	Cat. No.
8	1 - 10	0.02	0.24	8.0	pink	Flex 10, 10, 50 Mikro	1	**9.282 470**
8	5 - 50	0.1	0.75	2.0	yellow	Flex 200, 250 Univ., 200 Ext.	1	**9.282 471**
8	10 - 100	0.2	1.3	2.0	yellow	Flex 200, 250 Univ., 200 Ext.	1	**9.282 472**
8	30 - 300	1.0	3.0	2.0	orange	Flex 300, 300	1	**9.282 473**
12	1 - 10	0.02	0.24	8.0	pink	Flex 10, 10, 50 Mikro	1	**9.282 474**
12	5 - 50	0.1	0.75	2.0	yellow	Flex 200, 250 Univ., 200 Ext.	1	**9.282 475**
12	10 - 100	0.2	1.3	2.0	yellow	Flex 200, 250 Univ., 200 Ext.	1	**9.282 476**
12	30 - 300	1.0	3.0	2.0	orange	Flex 300, 300	1	**9.282 477**
16	1 - 10	0.02	0.24	8.0	violet	Flex 10 (384), 50 Mikro	1	**9.282 478**
16	5 - 50	0.1	0.75	2.0	turquoise	50 Mikro	1	**9.282 479**

2 Electronic multichannel microliter pipettes Finnpipette™ Novus, variable

2



Thermo Scientific

Thermo Scientific Finnpipette™ Novus Multichannel Pipetters offer superior performance for microplate applications.
- Easy to use simple text guided user interface and operator button layout.
- Large display shows all the names of the functions without abbreviations.
- Features multi-language programming: English, French, German, Italian, Japanese, Spanish, and Swedish.
- Ergonomic and lightweight design with balanced weight distribution enables longer work periods without fatigue.
- Finger rest is adjustable by 120 degrees to find the optimal pipetting position for both left hand and right hand users.
- Adjustable finger rest leaves your index finger free to control pipetting with minimum effort using the trigger action pipetting button.
- Light-touch tip ejector minimizes strain on your thumb with the very low tip ejection force and can be used with both right and left-hand.
- Finnpipette™ Novus has 10 different pipetting functions to cover most pipetting applications in the laboratory.
- 9 different speeds which can be separately adjusted for dispensing and aspirating, to optimize pipetting with different reagents.
- 9 built-in memory slots to store your own combinations of the 10 different pipetting functions.
- Intuitive menu ensures easy access to pipetting functions for all laboratory pipetting applications.
- Light, long lasting battery allowing over 4000 pipetting actions.
- Fast recharge battery, can be fully recharged within 1 hour and the pipette is fully operational while recharging.
- Finnpipette™ Novus designed for easy in-lab calibration and service.
- The module is fully autoclavable.
- Color coded buttons to help identify the matching Finntip model.
- Wide range of multichannel models for demanding laboratory tasks.
- Lightweight handle and module has a balanced weight distribution preventing muscle stress and strain.

Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	Suitable Finntip Tips	PK	Cat. No.
8	1 - 10	0.01	12.0	8.0	pink	10, 20, 50	1	**6.228 706**
8	5 - 50	0.1	5.0	2.0	yellow	250	1	**6.228 707**
8	30 - 300	1.0	3.0	0.9	orange	300	1	**6.228 708**
8	100 - 1200	1.0	3.0	0.9	turquoise	1200	1	**6.228 709**
12	1 - 10	0.01	12.0	8.0	pink	10, 20, 50	1	**9.282 481**
12	5 - 50	0.1	5.0	2.0	yellow	250	1	**9.282 482**
12	30 - 300	1.0	3.0	1.0	orange	300	1	**9.282 483**
16	5 - 50	0.1	5.0	2.0	turquoise	50	1	**9.282 484**

3 Pipette stand for single and multichannel microliter pipettes F1/F2

3



Thermo Scientific

Description	PK	Cat. No.
With 6 slots	1	**9.282 440**

1



1 Pipette stand for Multichannel microliter pipettes

Multichannel Pipette Stand, 1 position. *Thermo Scientific*

Description	PK	Cat. No.
Multichannel Pipette Stand	1	**9.282 441**

2



2 Pipette stand for multichannel microliter pipettes Finnpipette™ Novus

For Thermo Scientific Finnpipette™ Novus pipettes. *Thermo Scientific*

Type	PK	Cat. No.
Novus	1	**6.228 761**

Single channel microliter pipettes Eppendorf Research® plus

Available with fixed or adjustable volume. *Eppendorf*

The ultra light Eppendorf Research plus pipettor meets the highest requirements in precision and accuracy - combined with ultimate ergonomics and increased flexibility.
A spring loaded tip cone, a secondary calibration option, an improved volume display - and all this within a fully autoclavable pipette.

Ergonomics:
- ultra light
- pipetting forces greatly reduced
- the spring-loaded tip cone

Flexibility:
- calibrate your Research plus to your needs,
- autoclave the entire pipettor, or only the lower housing
- choose among single channel, multichannel and fixed volume pipettors in different sizes.

Robustness:
- durability has been tested thoroughly and meets the highest quality requirements
- resistance to chemical, thermal and mechanical stress is now unchallenged

- volume adjustment: Only a few turns needed to reach your desired volume
- control button: Requires minimal operating force, colour indicates volume, ergonomically positioned for comfort
- ejector: requires minimal operating force, ergonomically positioned for comfort
- volume display: 4 digits, magnifying window
- calibration display & adjustment opening: Calibrate your pipettor to a specific liquid and volume.

3



3 Single channel microliter pipettes Eppendorf Research® plus, fix

- Eppendorf PerfectPiston™: ultra-light piston made of Fortron® (except 2.5µl, 10µl, 5ml and 10ml pipettors) *Eppendorf*
- quick connection clip: remove lower housing easily (except 5ml and 10ml pipettors)

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	PK	Cat. No.
10	-	1.2	0.6	mid grey	1	**9.283 210**
10	-	1.2	0.3	yellow	1	**9.283 211**
20	-	0.8	0.6	light grey	1	**9.283 212**
20	-	1.0	0.3	yellow	1	**9.283 213**
25	-	1.0	0.3	yellow	1	**9.283 214**
50	-	0.7	0.3	yellow	1	**9.283 215**
100	-	0.6	0.2	yellow	1	**9.283 216**
200	-	0.6	0.2	yellow	1	**9.283 217**
200	-	0.6	0.2	blue	1	**9.283 218**
250	-	0.6	0.2	blue	1	**9.283 219**
500	-	0.6	0.2	blue	1	**9.283 220**
1000	-	0.6	0.2	blue	1	**9.283 221**

E & OE.

1 Single channel microliter pipettes Eppendorf Research® plus, variable

Eppendorf

- Eppendorf PerfectPiston™: Ultra light piston made of Fortron® (except 2.5µl, 10µl, 5ml and 10ml pipettors)
- quick connection clip: easily removable lower part (not in 5ml and 10ml pipettes)
- spring loaded tip cone: Improved ergonomics, tight fit to the tip (except 5ml and 10ml pipettors)

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Colour code	PK	Cat. No.
0,1 - 2,5	0.002	1.4	0.7	dark grey	1	**9.283 200**
0,5 - 10	0.01	1.0	0.4	mid grey	1	**9.283 201**
2 - 20	0.02	1.0	0.3	yellow	1	**9.283 202**
2 - 20	0.02	1.0	0.3	light grey	1	**9.283 208**
10 - 100	0.01	0.8	0.2	yellow	1	**9.283 203**
20 - 200	0.02	0.6	0.2	yellow	1	**9.283 204**
30 - 300	0.02	0.6	0.2	orange	1	**9.283 209**
100 - 1000	1.0	0.6	0.2	blue	1	**9.283 205**
500 - 5000	2.0	0.6	0.15	purple	1	**9.283 206**
1000 - 10000	10.0	0.6	0.15	turquoise	1	**9.283 207**

2 Single channel microliter pipettes Eppendorf Research plus 3-Packs, variable

Eppendorf

3 adjustable Eppendorf Research® plus pipettes per pack, choice of 3 packs. Special "mL"
large-volume pack with up to 10ml nominal volume, ideal for pipetting cell culture media.
Ready-to-use: delivered with matching Eppendorf pipette tips for ultimate user comfort and precision!

Option 1: 0.5-10µl, 10-100µl, 100-1.000µl + 3 reusable epT.I.P.S.® boxes with 96 pipette tips each.
Option 2: 2-20µl, 20-200µl, 100-1.000µl + 3 reusable epT.I.P.S.® boxes with 96 pipette tips each.
Option 3: 100-1.000µl, 0.5-5ml, 1-10ml with samples of matching pipette tips.

Type	PK	Cat. No.
Research plus 3-Packs, Option 1	1	**9.283 228**
Research plus 3-Packs, Option 2	1	**9.283 229**
Research plus 3-Packs, Option 3	1	**9.283 230**

1



2



We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

eppendorf

Single channel micoliter pipettes Eppendorf Reference® 2

Eppendorf

The Reference® 2 is the successor to the highly successful Reference pipette, and enhances the range's already high standards with a new design, reduced weight and operating forces and multi-channel versions. As the premium product in Eppendorf's pipette portfolio, the Reference® 2 provides the most accurate results possible alongside robust, reliable handling and optimum user safety.
New features: An embedded RFID chip contains all relevant data regarding the pipette and offers with Eppendorf TrackIT a simple identification and documentation. The range of the variable single channel pipettes have been extended by the volume sizes up to 5000µl and 10.000µl.

- Color coded and volume labeled for quick identification of the volume size/ tip size
- Round upper part makes it possible to work in every position
- 4-digit display for exact volume setting (clearly visible from every angle)
- Quick and secure volume setting, include volume lock
- Fully autoclavable
- Movable parts and external edges made from stainless steel equip the pipette with outstanding robustness at potential impact sites and for internal components

1



1 Single channel microliter pipettes Reference® 2, fix

NEW!

Eppendorf

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Control button colour	PK	Cat. No.
1	-	2.5	1.8	dark grey	1	**9.284 920**
2	-	2.0	1.2	dark grey	1	**9.284 921**
5	-	1.5	0.8	mid grey	1	**9.284 922**
10	-	1.0	0.5	mid grey	1	**9.284 923**
10	-	1.0	0.5	yellow	1	**9.284 924**
20	-	0.8	0.3	light grey	1	**9.284 925**
20	-	0.8	0.3	yellow	1	**9.284 926**
25	-	0.8	0.3	yellow	1	**9.284 927**
50	-	0.7	0.3	yellow	1	**9.284 928**
100	-	0.6	0.2	yellow	1	**9.284 929**
200	-	0.6	0.2	yellow	1	**9.284 930**
200	-	0.6	0.2	blue	1	**9.284 931**
250	-	0.6	0.2	blue	1	**9.284 932**
500	-	0.6	0.2	blue	1	**9.284 933**
1000	-	0.6	0.2	blue	1	**9.284 934**
2000	-	0.6	0.2	red	1	**9.284 935**
2500	-	0.6	0.15	red	1	**9.284 936**

2



2 Single channel microliter pipettes Eppendorf Reference® 2, variable

NEW!

Eppendorf

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Control button colour	PK	Cat. No.
0.1 - 2.5	0.002	1.4	0.7	dark grey	1	**9.284 900**
0.5 - 10	0.01	1.0	0.4	mid grey	1	**9.284 901**
2 - 20	0.02	1.0	0.3	light grey	1	**9.284 902**
2 - 20	0.02	1.0	0.3	yellow	1	**9.284 903**
10 - 100	0.1	0.8	0.2	yellow	1	**9.284 904**
20 - 200	0.2	0.6	0.2	yellow	1	**9.284 905**
30 - 300	0.2	0.6	0.2	orange	1	**9.284 906**
100 - 1000	1.0	0.6	0.2	blue	1	**9.284 907**
250 - 2500	2.0	0.6	0.2	red	1	**9.284 908**
500 - 5000	5.0	0.6	0.15	purple	1	**9.284 909**
1000 - 10000	10.0	0.6	0.15	turquoise	1	**9.284 910**

3



3 Single channel microliter pipettes epReference® 2, 3-Pack

NEW!

Eppendorf

Economic package containing three variable single channel pipettes and suitable tips for each pipette.

Option 1: 0.5-10µl, 10-100µl, 100-1000µl+ 3 reusable epT.I.P.S.® boxes with 96 pipette tips each.
Option 2: 2-20µl, 20-200µl, 100-1000µl + 3 reusable epT.I.P.S.® boxes with 96 pipette tips each.
Option 3: 100-1000µl, 0.5-5ml, 1-10ml with musters of the fitting pipette tips.

Type	PK	Cat. No.
Option 1: 0.5-10µl, 10-100µl, 100-1000µl	1	**9.284 897**
Option 2: 2-20µl, 20-200µl, 100-1000µl	1	**9.284 898**
Option 3: 100-1000µl, 0.5-5ml, 1-10ml	1	**9.284 899**

E & OE.

1 2 Electronic single channel microliter pipettes Eppendorf Xplorer®, variable

Eppendorf

The new electronic pipette Eppendorf Xplorer® sets new standards in terms of simplicity, precision and reproducibility.

- Multifunctional rocker: "Up is up and down"™ principle
- Easy selection of all functions with the practical selection dial
- Operate in the language of your choice
- Clearly arranged colour display
- No sub-menus
- Help function
- Innovative rocker: When the tip is ejected, the piston automatically returns to zero position
- Tips always rest in the same position
- Volume & speed precisely and reproducibly adjustable
- Adjustable to your work environment and requirements
- Incl. 230V/50Hz charging adapter. The pipette can be charged directly with the charging adapter. Additionally the charging adapter can also be used with the optional charging stand (Cat. No. 9.283 254) which holds the pipette safely whilst charging.

1



2



Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Control button colour	PK	Cat. No.
0.5 - 10	0.01	1.0	0.4	medium grey	1	**9.283 240**
5 - 100	0.1	0.8	0.2	yellow	1	**9.283 241**
15 - 300	0.2	0.6	0.2	orange	1	**9.283 242**
50 - 1000	1.0	0.6	0.2	blue	1	**9.283 243**
250 - 5000	5.0	0.6	0.15	purple	1	**9.283 244**
500 - 10000	10.0	0.6	0.15	turquoise	1	**9.283 245**

3 Electronic single channel microliter pipettes Eppendorf Xplorer® plus, variable

NEW!

Eppendorf

The electronic pipettes Eppendorf Xplorer plus were specially designed for high professional standards to provide optimal support for you in your work, with a new intuitive operating concept and design based on the proven Eppendorf PhysioCare® Concept.

- Autodispense
- Manual pipetting, multi-aspirate,dilution, sequential pipetting, sequential dispensing, reverse pipetting
- Programming of multiple modes in a sequence
- Setting of fixed volumes
- Password protection
- History function
- Service interval warning

3



Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Control button colour	PK	Cat. No.
0.5 - 10	0.01	1.0	0.4	medium grey	1	**9.283 181**
5 - 100	0.1	0.8	0.2	yellow	1	**9.283 182**
15 - 300	0.2	0.6	0.2	orange	1	**9.283 183**
50 - 1000	1.0	0.6	0.2	blue	1	**9.283 184**
250 - 5000	5.0	0.6	0.15	purple	1	**9.283 185**
500 - 10000	10.0	0.6	0.15	turquoise	1	**9.283 186**

4 Charging stand for Single and multichannel microliter pipettes Eppendorf Xplorer®

Eppendorf

Charging stand for holding one single channel or multichannel pipette Eppendorf Xplorer® using the charger adapter (230V/50Hz) which is supplied with each pipette.

4



Type	PK	Cat. No.
Charging stand	1	**9.283 254**

1



1 Multichannel microliter pipettes Eppendorf Research® plus, variable

Eppendorf

The ultra light Eppendorf Research plus pipettor meets the highest requirements in precision and accuracy - combined with ultimate ergonomics and increased flexibility.
A spring loaded tip cone, a secondary calibration option, an improved volume display - and all this within a fully autoclavable pipette.
- volume adjustment: Only a few turns needed to reach your desired volume
- control button: Requires minimal operating force, colour indicates volume, ergonomically positioned for comfort
- ejector: requires minimal operating force, ergonomically positioned for comfort
- volume display: 4 digits, magnifying window
- calibration display & adjustment opening: Calibrate your pipettor to a specific liquid and volume.
- channel indicator: - use the pipette the same way round - all the time
- remove individual channels: gain flexibility for individual needs
- Eppendorf PerfectPiston™: ultra-light piston made of Fortron® (except 10µl pipettors)
- quick connection clip:Easily removable lower housing
- spring loaded tip cone: improved ergonomics, tight fit to the tip

Channels	Capacity	Increments	Accuracy max. vol.	Precision max. vol.	Control button	PK	Cat. No.
	µl	µl	(≤ ± R%)	(≤ CV%)	colour		
8	0.5 - 10	0.01	1.0	0.4	mid grey	1	**9.283 222**
8	10 - 100	0.1	0.8	0.2	yellow	1	**9.283 224**
8	30 - 300	0.2	0.6	0.2	orange	1	**9.283 226**
12	0.5 - 10	0.01	1.0	0.4	mid grey	1	**9.283 223**
12	10 - 100	0.1	0.8	0.2	yellow	1	**9.283 225**
12	30 - 300	0.2	0.6	0.2	orange	1	**9.283 227**

2



2 Multichannel microliter pipettes Eppendorf Reference® 2, variable

NEW!

Eppendorf

The Reference® 2 is the successor to the highly successful Reference pipette, and enhances the range's already high standards with a new design, reduced weight and operating forces and multi-channel versions. As the premium product in Eppendorf's pipette portfolio, the Reference® 2 provides the most accurate results possible alongside robust, reliable handling and optimum user safety.
New features: An embedded RFID chip contains all relevant data regarding the pipette and offers with Eppendorf TrackIT simple identification and documentation. The new Reference 2 multi channel offers a channel indicator and a spring-loaded tip cone for optimum tip fit and reduced effort. The range of the variable single channel pipettes have been extended by the volume sizes up to 5000µl and 10.000µl.

- Color coded and volume labeled for quick identification of the volume size/ tip size
- Round upper part makes it possible to work in every position
- 4-digit display for exact volume setting (clearly visible from every angle)
- Quick and secure volume setting, include volume lock
- Fully autoclavable
- Movable parts and external edges made from stainless steel equip the pipette with outstanding robustness at potential impact sites and for internal components

- Channel indicator guarantees a continuously identical pipette alignment during the work process
- Spring-loaded tip cone for reproducible tip fit and reduced effort (to be switched on/off optionally)
- High flexibility and simple maintenance with the ability to remove single cones

Channels	Capacity	Increments	Accuracy max. vol.	Precision max. vol.	Control button	PK	Cat. No.
	µl	µl	(≤ ± R%)	(≤ CV%)	colour		
8	0.5 - 10	0.01	2.0	1.0	medium grey	1	**9.284 940**
8	10 - 100	0.1	0.8	0.3	yellow	1	**9.284 942**
8	30 - 300	0.2	0.6	0.3	orange	1	**9.284 944**
12	0.5 - 10	0.01	2.0	1.0	medium grey	1	**9.284 941**
12	10 - 100	0.1	0.8	0.3	yellow	1	**9.284 943**
12	30 - 300	0.2	0.6	0.3	orange	1	**9.284 945**

1 Electronic multichannel microliter pipettes Eppendorf Xplorer®, variable



Eppendorf

The new electronic pipette Eppendorf Xplorer® sets new standards in terms of simplicity, precision and reproducibility.

- Multifunctional rocker: "Up is up and down"™ principle
- Easy selection of all functions with the practical selection dial
- Operate in the language of your choice
- Clearly arranged colour display
- No sub-menus
- Help function
- Innovative rocker: When the tip is ejected, the piston automatically returns to zero position
- Tips always rest in the same position
- Volume & speed precisely and reproducibly adjustable
- Adjustable to your work environment and requirements
- Incl. 230V/50Hz charging adapter. The pipette can be charged directly with the charging adapter. Additionally the charging adapter can also be used with the optional charging stand (Cat. No. 9.283 254) which holds the pipette safely whilst charging.

Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Control button colour	PK	Cat. No.
8	0.5 - 10	0.01	2.0	0.8	medium grey	1	**9.283 246**
8	5 - 100	0.1	0.8	0.25	yellow	1	**9.283 248**
8	15 - 300	0.2	0.6	0.25	orange	1	**9.283 250**
8	50 - 1200	1.0	1.2	0.3	green	1	**9.283 252**
12	0,5 - 10	0.01	2.0	0.8	medium grey	1	**9.283 247**
12	5 - 100	0.1	0.8	0.25	yellow	1	**9.283 249**
12	15 - 300	0.2	0.6	0.25	orange	1	**9.283 251**
12	50 - 1200	1.0	1.2	0.3	green	1	**9.283 257**

2 Electronic multichannel microliter pipettes Eppendorf Xplorer® plus, variable



Eppendorf

The electronic pipettes Eppendorf Xplorer plus were specially designed for high professional standards to provide optimal support for you in your work, with a new intuitive operating concept and design based on the proven Eppendorf PhysioCare® Concept.

- Autodispense
- Manual pipetting, multi-aspirate,dilution, sequential pipetting, sequential dispensing, reverse pipetting
- Programming of multiple modes in a sequence
- Setting of fixed volumes
- Password protection
- History function
- Service interval warning

Channels	Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Control button colour	PK	Cat. No.
8	0.5 - 10	0.01	2.0	0.8	medium grey	1	**9.283 187**
8	5 - 100	0.1	0.8	0.25	yellow	1	**9.283 189**
8	15 - 300	0.2	0.6	0.25	orange	1	**9.283 191**
8	50 - 1200	1.0	1.2	0.3	green	1	**9.283 193**
12	0.5 - 10	0.01	2.0	0.8	medium grey	1	**9.283 188**
12	5 - 100	0.1	0.8	0.25	yellow	1	**9.283 190**
12	15 - 300	0.2	0.6	0.25	orange	1	**9.283 192**
12	50 - 1200	1.0	1.2	0.3	green	1	**9.283 194**

3 Pipette stands for single and multi-channel microliter pipettes

NEW!



Eppendorf

- Space saving pipettor rack to hold up to six pipettes
- Carousel pipette stand
- Can accommodate a wide range of pipettes using accessory pipette adapters

Type	PK	Cat. No.
Carousel stand for 6 pipettors (except for Reference® 2)	1	**9.283 581**
Carousel stand for 6 pipettors (only for Reference® 2)	1	**9.284 947**
Pipette holder for attachment to the wall	1	**9.283 580**
Multipette adapter for pipette carousel	1	**9.283 656**
Multipette adapter for wall mounting	1	**9.283 657**

1 Pipette Leak Testing Unit (PLT unit)

BRAND

Improved process reliability with functional validation of air-displacement pipettes.
The most frequent cause of inaccuracy in piston-operated pipettes is leakage. This arises from damage either to the seals, pistons or tip cones. Often not detectable by the naked eye, leaks lead to significant volume errors.
The BRAND pipette leak tester (PLT unit) for air displacement pipettes finds even the smallest leaks within seconds.

- Limit values for the commercially available single- and multichannel pipettes in the volume range 1µl to 10ml are pre-programmed.
- Testing with and without tips
- Test results in seconds
- Patent pending

According to monitoring of measuring instruments, air-displacement pipettes must be checked at regular intervals and the results must be compared with the ISO 8655-2 error limits. However, a calibration certificate only reflects the results at the time of testing. The time between these calibrations is crucial, since leaks can occur at any time. Well over 80% of pipettes sent in for repair have leaks and are outside their volume tolerances, even if they don't drip.

While the PLT unit cannot replace regular gravimetric testing, daily pipette checks can provide a safeguard during the periods between calibrations. Even the smallest leaks are detected. Process reliability for the pipettes is thus significantly improved.

Items supplied:
PLT unit (Pipette Leak Testing Unit) including one adapter each for testing air-displacement pipettes with tip (mounted) and without tip, 2 plugs, 3 replacement PE filters for the pipette adapters, universal AC adapter, quality certificate and operating manual.

Type	PK	Cat. No.
Pipette Leak Testing Unit	1	**4.007 886**

Accessories for Pipette Leak Testing Unit (PLT unit)

BRAND

Description	PK	Cat. No.	
1-channel pipette adapter, for testing with tip, incl. 1 blind plug	1	**9.280 575**	2
1-channel pipette adapter, for testing without tip, incl. 1 blind plug	1	**9.280 576**	3
4-channel pipette adapter, for testing with and without tip, incl. 1 blind plug	1	**9.280 577**	4
Filters, PE, for pipette adapter	10	**9.280 578**	5
Universal AC adapter, Input: AC 100V - 240V, 50/60Hz, Output: DC 6.5V, 800mA	1	**9.280 579**	6





9.280 575



9.280 576



9.280 577



9.280 578



9.280 579

E & OE.

1 Positive displacement pipettes, Transferpettor



BRAND

For easy, clean pipetting of problematic media.
Transferpettor operates by positive displacement, which makes it ideal for pipetting:
- Highly viscous media such as oils, resins and fats up to a viscosity of 140.000mm²/sec. (dependent on instrument size)
- Media with high vapour pressure up to 500mbar (Alcohols, ethers, hydrocarbons etc.)
- Media with a high density up to 13.6g/cm³ (e.g. mercury and sulphuric acid)
- Media that tend to foam (surfactant solutions).
- Working temperature range: 15°C to 40°C

Capillary tubes and tips can be used over and over again, since residual wetting is negligible and generally has no influence on the overall result. This leads to lower material costs and reduced waste.
But: In cases, where no contamination is permitted, e.g. with infectious or radioactive media, the Brand Transferpette® is recommended, an air displacement pipettor for comfortable working with disposable tips.
Items supplied: Transferpettor, DE-M marking, with quality certificate.

Single channel pipettes Transferpettor Fixed-volume

With pipette caps and seals.

BRAND

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Seal material	Cap material	PK	Cat. No.
1	-	4.0	4.0	-	glass	1	**9.280 696**
50	-	0.6	0.4	PTFE	glass	1	**9.280 705**
100	-	0.6	0.4	PTFE	glass	1	**9.280 710**
200	-	0.5	0.2	PTFE	glass	1	**9.280 720**

Single channel pipettes Transferpettor Digital-adjustable

BRAND

Capacity µl	Increments µl	Length Handle mm	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Cap material	PK	Cat. No.
2.5 - 10	0.01	orange	1.0	0.8	glass*	1	**9.280 602**
5 - 25	0.1	2 x white	0.8	0.5	glass*	1	**9.280 605**
10 - 50	0.1	green	0.6	0.4	glass*	1	**9.280 610**
20 - 100	0.1	blue	0.6	0.4	glass*	1	**9.280 620**
100 - 500	1.0	green	0.5	0.2	PP**	1	**9.280 724**
200 - 1000	1.0	yellow	0.5	0.2	PP**	1	**9.280 726**
1000 - 5000	10.0	red	0.5	0.2	PP**	1	**9.280 730**
2000 - 10000	10.0	orange	0.5	0.2	PP**	1	**9.280 732**

* PTFE-Seals
**PE-Seals

2 3 Caps for single channel pipettes Transferpettor





BRAND

Capacity µl	Material	PK	Cat. No.
1, 2, 5	glass	100	**9.280 800**
10	glass	100	**9.280 801**
20	glass	100	**9.280 802**
25	glass	100	**9.280 803**
50	glass	100	**9.280 805**
100 / 200	glass	50	**9.280 810**
100 to 500	PP	10	**9.280 741**
200 to 1000	PP	10	**9.280 742**
1000 to 5000	PP	10	**9.280 743**
2000 to 10000	PP	10	**9.280 745**

4 Seals for pipettes Transferpettor



BRAND

Capacity µl	Material	PK	Cat. No.
20 / 25	PTFE	3	**9.280 901**
50	PTFE	3	**9.280 903**
100 / 200	PTFE	3	**9.280 905**
100 to 500	PE	10	**9.280 751**
200 to 1000	PE	10	**9.280 752**
1000 to 5000	PE	10	**9.280 753**
2000 to 10000	PE	10	**9.280 755**

1



1 Stands for single channel pipettes Transferpettor

Transferpettor stations. For storage of
4 instruments up to 200 µl with accessories or
2 instruments from 0.5 to 10 ml with accessories.

BRAND

Type	PK	Cat. No.
For 2 pipettes with accessories	1	**9.280 581**
For 4 pipettes with accessories	1	**9.280 850**

2



2 Positive displacement micropipettes Acura® capillary 846

NEW!

Socorex

High performance positive displacement micropipettes with interchangeable glass capillary tube and ETFE tipped plunger.
The soft shaped handle and smooth plunger activation provides for enhanced hand comfort while handling viscous liquids, foaming solutions or volatile solvents.

Five models cover a range from 1 to 200 µL.
- Slim body shape, comfortable finger rest
- Smooth plunger activation
- Reliable, step-wise volume adjustment
- Colour codes matching on pipettes, plungers and capillaries
- Stainless steel, ETFE tipped plunger
- Three-year warranty

Capacity µl	Increments µl	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Cap material	PK	Cat. No.
1 - 5	1	2.0	1.2	ETFE	1	**6.263 911**
5 - 25	5	0.8	0.6	ETFE	1	**6.263 912**
10 - 50	10	0.7	0.4	ETFE	1	**6.263 913**
60 - 100	10	0.7	0.3	ETFE	1	**6.263 914**
100 - 200	25	0.7	0.3	ETFE	1	**6.263 915**

3



3 Accessories for Positive displacement micropipettes Acura® capillary 846

NEW!

Socorex

Description	PK	Cat. No.
Spare glass capillary, white	200	**6.308 832**
Spare glass capillary, 2 x white	200	**6.225 698**
Spare glass capillary, green	200	**6.307 233**
Spare glass capillary, blue	200	**6.803 126**
Spare glass capillary, red	100	**6.210 150**
Spare plunger, steel	5	**6.308 831**
Spare plunger, white	5	**6.304 882**
Spare plunger, green	5	**6.210 135**
Spare plunger, blue	5	**6.803 127**
Spare plunger, red	5	**6.320 887**



E & OE.

1 LLG-Pipette tips *economy*, non-sterile

1



Certified free of DNase, RNase, suitable for microbiology. Guaranteed metal-free.

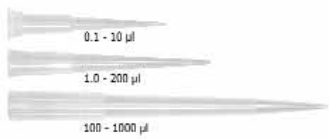
LLG universal fit tips are engineered for a wide variety of pipettes and are ideal for laboratories with multiple brands of pipettes, even multi-channel pipettes. Our universal tips feature the universal grip design, using flexible materials with a series of bands and supports producing a positive seal. LLG tips have thin walls and a small surface area at the tip, greatly minimising the possibility of the tip retaining sample droplets. In addition the small surface area reduces the touch-off angle between the outer tip wall and the receiving sample tube. This reduced touch-off angle virtually eliminates the potential of capillary retention between the tip orifice and tube wall. Each of our tips is moulded to give a flash-free and uniform delivery orifice for consistent accuracy and reproducible sample delivery. All our tips are provided with calibration lines at specific volumes, acting as visual checks to minimise any risk of errors during sample aspiration.

Capacity µl	Colour	Package contents	PK	Cat. No.
0.1 - 10	clear	1 bag of 1000	1000	**9.409 099**
0.1 - 10	clear	10 racks of 96	960	**9.409 045**
1 - 200	yellow	1 bag of 1000	1000	**9.409 046**
1 - 200	clear	10 racks of 96	960	**6.253 577**
1 - 200	yellow	10 racks of 96	960	**9.409 047**
100 - 1000	blue	2 bags of 500	1000	**9.409 048**
100 - 1000	blue	10 racks of 96	960	**9.409 049**
100 - 5,000*	clear	1 bag of 250	250	**9.409 097**
100 - 5,000**	clear	1 bag of 250	250	**6.254 364**
1,000 - 10,000	clear	1 bag of 100	100	**9.409 098**

*for manual pipettors
**for electronic pipettors

2 LLG-Low-Retention Pipette tips pipettes *premium,* non-sterile

2



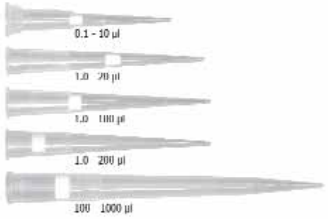
Certified free of DNase, RNase, suitable for microbiology. Guaranteed metal-free.

Sample retention can be a major contributor to pipetting inaccuracy, and siliconization of tips has proved unsatisfactory because of autoclaving and contamination problems. For LLG pipette tips "*Premium*" a new polymer, Novelle-Polypropylene has been developed, that produces a "super slick surface" on our new LLG pipette tips "*Premium*", that actually improves with autoclaving and cannot leach from the tip surface. On average, Novelle Polymer and LLG pipette tips "*Premium*" reduces the tip retention by near 85% and decreases the standard deviation of the retained volume by more than 75%. Liquid handling accuracy and precision are crucial to success in today's molecular biology laboratories, especially for DNA analysis and protein handling. A significant culprit of pipette inaccuracy is binding of sample. The LLG pipette tips "*Premium*" reduces the binding, thus increasing sample delivery accuracy. Tests demonstrate that LLG pipette tips "*Premium*" significantly reduces the amount of DNA and protein bound by the tip. Furthermore LLG pipette tips "*Premium*" offer a marked improvement over the best low retention technologies.

Capacity µl	Colour	Package contents	PK	Cat. No.
0.1 - 10	Clear	1 bag of 1000	1000	**9.409 038**
0.1 - 10	Clear	10 racks of 96	960	**9.409 039**
1 - 200	Clear	1 bag of 1000	1000	**9.409 041**
1 - 200	Clear	10 racks of 96	960	**9.409 042**
100 - 1000	Clear	2 bags of 500	1000	**9.409 043**
100 - 1000	Clear	10 racks of 96	960	**9.409 044**

3 LLG-Low retention filter tips *premium,* sterile

3

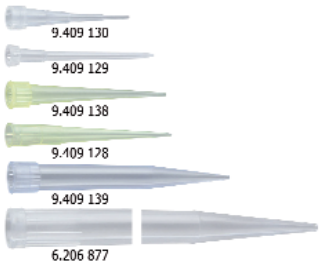


Certified free of DNase, RNase, suitable for microbiology. Guaranteed metal-free.
Sterility acc. to EN 552/ISO 11137 and DIN EN 556.

Filter pore size (effective) 4 to 6µm.
Also liquid handling accuracy and precision are crucial to success in today's molecular biology laboratories, especially for DNA analysis and protein handling. A significant culprit of pipette inaccuracy is binding of sample. The LLG-Filter tips reduce the binding, thus increasing sample delivery accuracy. Tests demonstrate that LLG-Filter tips *"Premium"* significantly reduce the amount of DNA and protein bound by the tip. Furthermore LLG-Filter tips *"Premium"* offer a marked improvement over the best low retention technologies.

Capacity µl	Colour	Package contents	PK	Cat. No.
0.1 - 10	Clear	10 racks of 96	960	**9.409 033**
1 - 20	Clear	10 racks of 96	960	**9.409 034**
1 - 100	Clear	10 racks of 96	960	**9.409 035**
1 - 200	Clear	10 racks of 96	960	**9.409 036**
100 - 1000	Clear	10 racks of 96	960	**9.409 037**

1



1 Pipette tips, non-sterile

Ratiolab

Precise design and manufacture ensures highest quality tips.
- Moulded with high quality polypropylene
- Firm fit on pipettor cones
- Optimum handling due to straight shape
- Special ionization process guarantees dust free tip production
- Excellent transparency due to optimum surface quality
- Minimum fluid retention due to controlled raw material quality
- Excellent volumetric accuracy due to precisely moulded tip orifices
- Most practical tip volumes
- Non-sterile
- Autoclavable

2



9.409 140

Type A fits pipettors ratiopetta®, Biohit® Proline, Biohit® m-Line, Brand® Transferpette®, Eppendorf® Research®, Eppendorf® Reference®, Finnpipette® Digital, Finnpipette® Focus, Gilson® Pipetman®, Gilson® Ultra, Socorex® Acura and Socorex® Calibra
Type B fits pipettors ratiopetta®, Gilson® Pipetman®, Gilson® Ultra, Socorex® Acura und Socorex® Calibra
Type C fits pipettors ratiopetta®, Gilson® Pipetman®, Gilson® Ultra

Capacity µl	Colour	Fits	Package contents	PK	Cat. No.
0.1 - 10	Crystal	Type C	1 bag of 1000	1000	**9.409 130**
0.5 - 20	Crystal	Type A	1 bag of 1000	1000	**9.409 129**
1 - 200	Yellow	Type A	1 bag of 1000	1000	**9.409 138**
1 - 250	Yellow	Type B	1 bag of 1000	1000	**9.409 128**
200 - 1000	Blue	Type A	1 bag of 1000	1000	**9.409 139**
1000 - 5000	Transparent	Type A	1 folding box of 75	75	**9.409 140** 2

3



6.262 867

Filter tips, PE-HD

NEW!

Ratiolab

Pipette tips with special filters, to effectively prevent the inner pipettor shaft from contamination with aerosols and liquids to be drawn into the pipettor.
- sterile
- certified RNase- and DNase-free
- pipette tips and aerosol filters made of ultra-hydrophobic PE-HD
- minimized retention due to special surface treatment
- perfect and close fit on all major pipettor brands
- aeroject® 10µl xl has extended length for operation with narrow vessels and reduced risk of cross-contamination
- packed in plastic racks with hinge lids
- 10 to 200 µl tips packed acc. to 8 x 12 micro test plate footprint
- 100 - 1000 µl in 6 x 10 format

Fits pipettors: ratiopetta®, Biohit® Proline, Biohit® m-Line, Brand® Transferpette®, CappAero, Eppendorf® Research®, Eppendorf® Reference®, Finnpipette® Digital, Finnpipette® Focus, Gilson® Pipetman®, Gilson® Ultra, Labmate® and Socorex® Calibra, Labpipetten

Capacity µl	Package contents	PK	Cat. No.
0.1 - 10	10 racks of 96	960	**6.262 343**
1 - 20	10 racks of 96	960	**6.262 867** 3
1 -100	10 racks of 96	960	**6.262 868**
1 - 200	10 racks of 96	960	**6.262 869**
100 - 1000	10 racks of 60	600	**6.262 275**



1 2 3 Pipette tips and filter tips

BRAND

Pipette tips and filter tips are manufactured by BRAND in a cleanroom under the most modern production conditions, and are automatically rack packed and packaged to ensure that the tips are of consistently high quality.
Quality features:
- High-purity polypropylene, free from DiHEMDA and oleamide
- Manufactured without lubricants
- Cadmium-free pigments
- Graduation for a quick volume check
- All tips and filter tips up to 1000 µl are free of DNA (<40 fg), RNase (<8.6 fg), endotoxins (<1 pg) and ATP (<1 fg)
- All sterile products in BIO-CERT® Quality: sterile acc. ISO 11 137 and AAMI guidelines, a SAL of 10-6 is obtained.
- Autoclavable at 121°C (2 bar), acc. DIN EN 285
- Environmentally friendly packaging systems
- CE-marked according to IVD-Directive 98/79 EC
- Pipette and filter tips from BRAND are tested for BRAND pipettes and most of the pipette types of Gilson®, Thermo Fisher Scientific Finnpipette®, Eppendorf® and Biohit.

The 5 ml tip is exclusively tested for BRAND pipettes and Thermo Fisher Scientific Finnpipette®. The 10 ml tip is suitable for BRAND, Eppendorf® and Gilson®.
All sizes up to 1000 µl available in 96-unit format.

Ultra Low Retention-tips

The surfaces of the Ultra Low Retention tips are produced through a special, patented physicochemical process. The homogeneous, defect-free surface thus produced has extremely low surface tension - over 50% less than PTFE. This significantly reduces sample loss and provides substantially higher reproducibility when working with critical media.
- Ideal for biological samples that contain detergents such as Triton® X-100, SDS, Tween etc.
- No additives that can be leached out! No siliconization of the surface!
- High chemical resistance. Ideal for working with solvents.
- The tips can be autoclaved at 121°C (2 bar) without damaging the material properties.

Filter Tips

Non-self-sealing filter tips from BRAND have a PE filter that is free from chemical additives. Permeability is controlled by the combination of pore size and filter length, so that no aerosols can reach the pipette shaft. These filters function with consistent reliability. On the other hand, liquids can pass very slowly should they accidentally contact the filter.
Since the filter does not swell as in the case of self-sealing filter tips, the sample can be recovered from the filter by simply actuating the pipettes blow-out function, or by centrifugation if necessary. This is clearly an important advantage of non-self-sealing filters, especially when working with valuable samples. As an added advantage, the absence of filter additives protects samples from this source of contamination.

Bulk packed in reclosable bags.

All tips and filter tips are produced under supervised state-of-the-art clean-room conditions and automatically shrink-wrapped in reclosable bags and packaged in cardboard boxes. The batch number is printed on every bag.

TipBox, sterile and non sterile, BIO-CERT®

PP. Two different sizes. Stackable and repeatedly autoclavable at 121°C (2 bar), acc. DIN EN 285.
- All sizes up to 1000 µl available in 96-unit format
- Dual function: hinged and push-on lid, simply rotate 180° to change closure method.
- Opening and closing with one hand. The clamping mechanism holds the tip-tray securely in the box.
- Transparent window for better all-round visual inspection.
- No deflection during tip loading. The tip-tray is fabricated from especially rigid PP.
- Usable with a partially loaded multichannel pipette. The rimless tip-tray border enables problem-free loading of individual pipette tips with multichannel instruments.
- Colored tip-trays with side panel labeling. The contents of the box are always clearly visible.

TipStack™, non sterile and sterile, BIO-CERT®

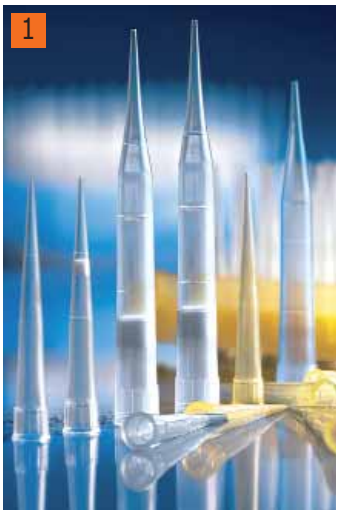
A tip tower containing 5 filled tip-trays and a TipBox constitute the new, space-saving refill system for 20 µl, 200 µl and 1000 µl tips. Tightly sealing spacers prevent the tips from getting stuck together, and ensure them to be free from DNA, RNases, endotoxins and ATP. The sterile TipStacks (BIO-CERT® quality) are supplied with a transfer aid for contamination-free use in a previously sterilized TipBox.
- All components are recyclable
- Reduced amount of waste
- Sterilizable and reusable TipBox
- High purity of the pipette tips and filter tips
- Space-saving design

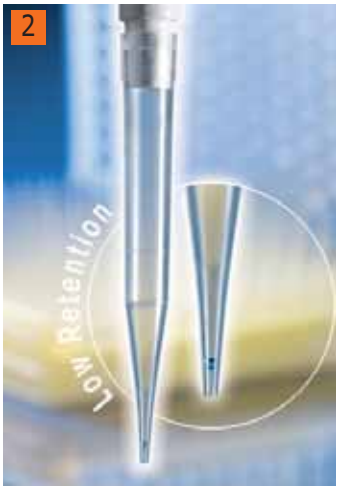
TipRack, sterile and non sterile, BIO-CERT®

Refill unit for TipBox. Compared to the filled TipBoxes, the amount of waste with the new refill units is reduced by over 20%. All pipette tips and filter tips up to 1000 µl are free of DNA, RNases, endotoxins and ATP.
TipRacks in BIO-CERT® quality are supplied with a transfer aid that enables simple, contamination-free transfer into a previously sterilized TipBox. All tip-trays are printed on one side with information on the contents.

TipBox 5/10 ml, non sterile

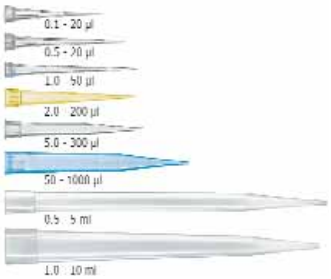
The 5 ml and 10 ml tips are only available as a racked tip version in these specially corresponding TipBox.







1



1 Pipette tips, bulk, in reclosable bags, non-sterile

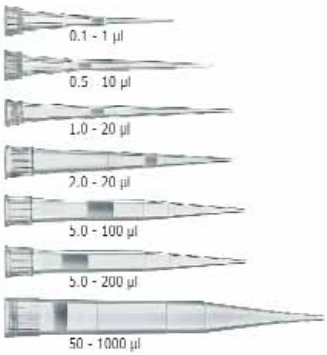
NEW!

All tips and filter tips are produced under supervised state-of-the-art clean-room conditions and automatically shrink-wrapped in reclosable bags and packaged in cardboard boxes. The batch number is printed on every bag.

BRAND

Capacity µl	Colour	Package contents	PK	Cat. No.
0,1 - 20	natural	2 bags of 1000	2000	**9.409 669**
0,5 - 20	natural	2 bags of 1000	2000	**9.409 670**
1 - 50	natural	2 bags of 1000	2000	**9.409 671**
2 - 200	yellow	1 bag of 1000	1000	**9.409 672**
5 - 300	natural	1 bag of 1000	1000	**9.409 673**
50 - 1000	blue	2 bags of 500	1000	**9.409 674**
500 - 5000	natural	1 bag 200	200	**9.409 223**
1000 - 10000	natural	2 bags of 100	200	**9.409 191**
0,1 - 20	natural	10 bags of 1000 (XXL)	10000	**9.409 675**
0,5 - 20	natural	10 bags of 1000 (XXL)	10000	**9.409 676**
1- 50	natural	10 bags of 1000 (XXL)	10000	**9.409 677**
2 - 200	yellow	10 bags of 1000 (XXL)	10000	**9.409 678**
5 - 300	natural	10 bags of 1000 (XXL)	10000	**9.409 679**
50 - 1000	blue	10 bags of 500 (XXL)	5000	**9.409 680**
500 - 5000	natural	5 bags of 200 (XXL)	1000	**9.409 199**
1000 - 10000	natural	10 bags of 100 (XXL)	1000	**9.409 192**

2



2 Filter pipette tips, in reclosable bags, non-sterile

NEW!

All tips and filter tips are produced under supervised state-of-the-art clean-room conditions and automatically shrink-wrapped in reclosable bags and packaged in cardboard boxes. The batch number is printed on every bag.

BRAND

Capacity µl	Package contents	PK	Cat. No.
0.1 - 1	1 bag of 960	960	**9.409 681**
0.5 - 10	1 bag of 960	960	**9.409 682**
1.0 - 20	1 bag of 960	960	**9.409 683**
2 - 20	1 bag of 960	960	**9.409 684**
5 - 100	1 bag of 960	960	**9.409 685**
5 - 200	1 bag of 960	960	**9.409 686**
50 - 1000	1 bag of 960	960	**9.409 687**

3



3 Pipette tips, racked in TipRack, non-sterile

NEW!

For TipBox. Refill unit, protected in an environmentally compatible packaging of recyclable PET.

BRAND

Capacity µl	Package contents	PK	Cat. No.
0.1 - 20	10 TipRacks of 96	960	**9.409 757**
0.5 - 20	10 TipRacks of 96	960	**9.409 758**
1 - 50	10 TipRacks of 96	960	**9.409 759**
2 - 200	10 TipRacks of 96	960	**9.409 760**
5 - 300	10 TipRacks of 96	960	**9.409 761**
50 - 1000	10 TipRacks of 96	960	**9.409 762**

4



4 Filter tips racked in TipRack, non-sterile

NEW!

For TipBox. Refill unit, protected in an environmentally compatible packaging of recyclable PET.

BRAND

Capacity µl	Package contents	PK	Cat. No.
0.1 - 1	10 TipRacks of 96	960	**9.409 769**
0.5 - 10	10 TipRacks of 96	960	**9.409 770**
1.0 - 20	10 TipRacks of 96	960	**9.409 771**
2 - 20	10 TipRacks of 96	960	**9.409 772**
5 - 100	10 TipRacks of 96	960	**9.409 773**
5 - 200	10 TipRacks of 96	960	**9.409 774**
50 - 1000	10 TipRacks of 96	960	**9.409 775**

E & OE.

1 Pipette tips racked in TipRack, sterile, BIO-CERT®

NEW!

For TipBox. Refill unit, protected in an environmentally compatible packaging of recyclable PET. Sterile TipRacks are supplied with a transfer aid so that the rack can be put into a previously autoclaved box without hand contact.

BRAND



Capacity µl	Package contents	PK	Cat. No.
0.1 - 20	10 TipRacks à 96	960	**9.409 763**
0.5 - 20	10 TipRacks à 96	960	**9.409 764**
1 - 50	10 TipRacks à 96	960	**9.409 765**
2 - 200	10 TipRacks à 96	960	**9.409 766**
5 - 300	10 TipRacks à 96	960	**9.409 767**
50 - 1000	10 TipRacks à 96	960	**9.409 768**

2 Filter tips racked in TipRack, sterile, BIO-CERT®

NEW!

For TipBox. Refill unit, protected in an environmentally compatible packaging of recyclable PET. Sterile TipRacks are supplied with a transfer aid so that the rack can be put into a previously autoclaved box without hand contact.

BRAND



Capacity µl	Package contents	PK	Cat. No.
0.1 - 1	10 TipRacks à 96	960	**9.409 776**
0.5 - 10	10 TipRacks à 96	960	**9.409 777**
1.0 - 20	10 TipRacks à 96	960	**9.409 778**
2 - 20	10 TipRacks à 96	960	**9.409 779**
5 - 100	10 TipRacks à 96	960	**9.409 780**
5 - 200	10 TipRacks à 96	960	**9.409 781**
50 - 1000	10 TipRacks à 96	960	**9.409 782**

3 4 Filter tips, racked in TipBox, PP, non-sterile

NEW!

PP. With hinged lid/push-on lid. Simply rotate 180° to change closure method. Usable with a partially loaded multichannel pipette. Two different sizes. Stackable and repeatedly autoclavable at 121°C (2 bar), acc. DIN EN 285.

BRAND

3



4



Capacity µl	Description	Package contents	PK	Cat. No.
0.1 - 1	Standard	5 boxes of 96	480	**9.409 700**
0.5 - 10	Standard	5 boxes of 96	480	**9.409 701**
1.0 - 20	Standard	5 boxes of 96	480	**9.409 702**
2 - 20	Standard	5 boxes of 96	480	**9.409 703**
5 - 100	Standard	5 boxes of 96	480	**9.409 704**
5 - 200	Standard	5 boxes of 96	480	**9.409 705**
50 - 1000	Standard	5 boxes of 96	480	**9.409 706**
0.1 - 1	Low Retention	5 boxes of 96	480	**9.409 707**
0.5 - 10	Low Retention	5 boxes of 96	480	**9.409 708**
1.0 - 20	Low Retention	5 boxes of 96	480	**9.409 709**
2 - 20	Low Retention	5 boxes of 96	480	**9.409 712**
5 - 100	Low Retention	5 boxes of 96	480	**9.409 713**
5 - 200	Low Retention	5 boxes of 96	480	**9.409 714**
50 - 1000	Low Retention	5 boxes of 96	480	**9.409 715**

5 Pipette tips, racked in TipBox, PP, non-sterile

NEW!

PP. With hinged lid/push-on lid. Simply rotate 180° to change closure method. Usable with a partially loaded multichannel pipette. Two different sizes. Stackable and repeatedly autoclavable at 121°C (2 bar), acc. DIN EN 285.

BRAND

5



Capacity µl	Description	Package contents	PK	Cat. No.
0.1 - 20	Standard	5 Boxes of 96	480	**9.409 688**
0.5 - 20	Standard	5 Boxes of 96	480	**9.409 689**
1 - 50	Standard	5 Boxes of 96	480	**9.409 690**
2 - 200	Standard	5 Boxes of 96	480	**9.409 691**
5 - 300	Standard	5 Boxes of 96	480	**9.409 692**
50 - 1000	Standard	5 Boxes of 96	480	**9.409 693**
0.1 - 20	Low Retention	5 Boxes of 96	480	**9.409 694**
0.5 - 20	Low Retention	5 Boxes of 96	480	**9.409 695**
1 - 50	Low Retention	5 Boxes of 96	480	**9.409 696**
2 - 200	Low Retention	5 Boxes of 96	480	**9.409 697**
5 - 300	Low Retention	5 Boxes of 96	480	**9.409 698**
50 - 1000	Low Retention	5 Boxes of 96	480	**9.409 699**



1 Pipette tips, racked in Tip-Box, sterile, Bio-Cert®

NEW!

BRAND

PP. With hinged lid/push-on lid. Simply rotate 180° to change closure method.
Usable with a partially loaded multichannel pipette. Two different sizes.
Stackable and repeatedly autoclavable at 121°C (2 bar), acc. DIN EN 285.

Capacity µl	Description	Package contents	PK	Cat. No.
0.1 - 20	Standard	10 boxes of 96	960	**9.409 716**
0.5 - 20	Standard	10 boxes of 96	960	**9.409 717**
1 - 50	Standard	10 boxes of 96	960	**9.409 718**
2 - 200	Standard	10 boxes of 96	960	**9.409 719**
5 - 300	Standard	10 boxes of 96	960	**9.409 721**
50 - 1000	Standard	10 boxes of 96	960	**9.409 722**
0.1 - 20	Low Retention	10 boxes of 96	960	**9.409 730**
0.5 - 20	Low Retention	10 boxes of 96	960	**9.409 733**
1 - 50	Low Retention	10 boxes of 96	960	**9.409 734**
2 - 200	Low Retention	10 boxes of 96	960	**9.409 735**
5 - 300	Low Retention	10 boxes of 96	960	**9.409 736**
50 - 1000	Low Retention	10 boxes of 96	960	**9.409 737**



2 Filter tips, racked in TipBox, sterile, Bio-Cert®

NEW!

BRAND

PP. With hinged lid/push-on lid. Simply rotate 180° to change closure method.
Usable with a partially loaded multichannel pipette. Two different sizes.
Stackable and repeatedly autoclavable at 121°C (2 bar), acc. DIN EN 285.

Capacity µl	Description	Package contents	PK	Cat. No.
0.1 - 1	Standard	10 boxes of 96	960	**9.409 723**
0.5 - 10	Standard	10 boxes of 96	960	**9.409 724**
1.0 - 20	Standard	10 boxes of 96	960	**9.409 725**
2 - 20	Standard	10 boxes of 96	960	**9.409 726**
5 - 100	Standard	10 boxes of 96	960	**9.409 727**
5 - 200	Standard	10 boxes of 96	960	**9.409 728**
50 - 1000	Standard	10 boxes of 96	960	**9.409 729**
0.1 - 1	Low Retention	10 boxes of 96	960	**9.409 738**
0.5 - 10	Low Retention	10 boxes of 96	960	**9.409 739**
1.0 - 20	Low Retention	10 boxes of 96	960	**9.409 740**
2 - 20	Low Retention	10 boxes of 96	960	**9.409 741**
5 - 100	Low Retention	10 boxes of 96	960	**9.409 742**
5 - 200	Low Retention	10 boxes of 96	960	**9.409 743**
50 - 1000	Low Retention	10 boxes of 96	960	**9.409 744**



3 Pipette tips refill TipStack™, non-sterile

NEW!

BRAND

Space-saving, environmentally compatible refill system for TipBox.
5 racks, each having 96 tips incl. 1 TipBox. Each packaging unit contains 2 TipStacks.

Capacity µl	Description	Package contents	PK	Cat. No.
0.5 - 20	Standard	2 x 5 TipRacks à 96	960	**9.409 745**
2 - 200	Standard	2 x 5 TipRacks à 96	960	**9.409 746**
50 - 1000	Standard	2 x 5 TipRacks à 96	960	**9.409 747**
0.5 - 20	Low Retention	2 x 5 TipRacks à 96	960	**9.409 751**
2 - 200	Low Retention	2 x 5 TipRacks à 96	960	**9.409 752**
50 - 1000	Low Retention	2 x 5 TipRacks à 96	960	**9.409 753**



4 Pipette tips refill TipStack™, sterile, BIO-CERT®

NEW!

BRAND

Space-saving, environmentally compatible refill system for TipBox.
5 racks, each having 96 tips incl. 1 TipBox. Sterile TipStacks are supplied with a transfer aid so that the rack can be put into a previously autoclaved box without hand contact.
Each packaging unit contains 2 TipStacks.

Capacity µl	Description	Package contents	PK	Cat. No.
0.5 - 20	Standard	2 x 5 racks of 96	960	**9.409 748**
2 - 200	Standard	2 x 5 racks of 96	960	**9.409 749**
50 - 1000	Standard	2 x 5 racks of 96	960	**9.409 750**
0.5 - 20	Low Retention	2 x 5 racks of 96	960	**9.409 754**
2 - 200	Low Retention	2 x 5 racks of 96	960	**9.409 755**
50 - 1000	Low Retention	2 x 5 racks of 96	960	**9.409 756**

E & OE.

1 TipBox 5/10 ml, non-sterile

NEW!

BRAND

The 5 ml and 10 ml tips are only available as a racked tip version in these specially corresponding TipBox.

Volume ml	Description	Package contents	PK	Cat. No.
0.5 - 5	Standard	1 TipBox of 28	28	**9.408 905**
1 - 10	Standard	1 TipBox of 18	18	**9.408 909**



2 TipBox, PP, with Tip-Tray, empty

NEW!

BRAND

PP. With hinged lid/push-on lid. Two different sizes. Stackable and repeatedly autoclavable at 121°C (2 bar), acc. DIN EN 285. This box can be refilled with TipRack (non-sterile) and TipStack (sterile).

Capacity µl	Description	PK	Cat. No.
up to 50	TipBox, empty	1	**9.409 783**
up to 200	TipBox, empty	1	**9.409 784**
up to 300	TipBox, empty	1	**9.409 785**
up to 1000	TipBox, empty	1	**9.409 786**



Pipette tips Qualitips®

NEW!

Socorex

The Socorex Qualitips® are exclusively made from high grade, virgin, metal-free polypropylene. Precision injection moulding care for air-tight fit. Stringent quality procedures ensure lot by lot consistency. Wide selection, superior quality. Compatibility with various pipette brands.

- High density filter prevents aerosol contamination
- DNAse and RNAse-free filter tips
- Pyrogen-free sterile filter tips

Capacity ml	Colour	Package contents	PK	Cat. No.
2	natural	2 bags of 250	500	**9.411 501** 5
5	natural	2 bags of 250	500	**9.411 449** 4
5	natural	2 racks of 50	100	**6.224 893**
10	natural	3 bags of 100	300	**9.411 502** 3



9.411 502



9.411 449



9.411 501



1



1 Pipete tips Optifit

NEW!

Sartorius Weighing

Optifit tips are designed for best possible fitting and sealing to secure the highest possible accuracy and precision. These pipette tips enable ergonomic and light tip attachment by being compatible with the Optiload feature in Sartorius Picus® NxT, Picus®, eLINE®, mLINE® and Proline® Plus pipettes. While Optifit Tip trays are colour coded for easy matching with a corresponding, colour coded Sartorius pipette, they do also match with most other pipettes due to their universal design. Optifit tips are manufactured in an ISO 8 certified cleanroom environment and are available in various packaging types.

Capacity µl	Description	Package contents	PK	Cat. No.
100 - 5000	150mm, Tip ID: J, non-sterile	1 rack of 50	50	**6.206 247**
100 - 5000	150mm, Tip ID: J, pre-sterilised	1 rack of 50	50	**6.238 066**
100 - 5000	150mm, Tip ID: J, non-sterile	1 box of 100	100	**7.607 378**
100 - 5000	150mm, Tip ID: J, non-sterile	1 box of 1000	1000	**6.203 851**
0.5 - 10	242mm, Tip ID: K, non-sterile Extra long Tip for MidiPlus	1 box of 100	100	**6.205 144**
0.5 - 200	51mm, Tip ID: C, non-sterile	10 racks of 96	960	**6.902 461**
50 - 1200	71.5mm, Tip ID: H, non-sterile	10 racks of 96	960	**6.204 651**
50 - 1200	71.5mm, Tip ID: H, pre-sterilised	10 racks of 96	960	**6.251 705**
50 - 1200	71.5mm, Tip ID: H, non-sterile	Refill Pack, 10 racks of 96	960	**6.224 347**
50 - 1200	71.5mm, Tip ID: H, pre-sterilised	Refill Pack, 10 racks of 96	960	**7.658 803**
50 - 1200	71.5mm, Tip ID: H, non-sterile	1 box of 1000	1000	**7.607 933**
10 - 1000	71.5mm, Tip ID: E, non-sterile	10 racks of 96	960	**6.226 809**
10 - 1000	71.5mm, Tip ID: E, pre-sterilised	10 racks of 96	960	**6.234 568**
10 - 1000	71.5mm, Tip ID: E, non-sterile	10 racks of 96	960	**6.226 833**
10 - 1000	71.5mm, Tip ID: E, pre-sterilised	Refill Pack, 10 racks of 96	960	**6.259 767**
10 - 1000	71.5mm, Tip ID: E, non-sterile	1 box of 1000	1000	**7.612 528**
10 - 1000	71.5mm, Tip ID: E, non-sterile	1 box of 400	400	**6.206 520**
10 - 1000	68.5mm, Tip ID: G, pre-sterilised	10 racks of 96	960	**6.233 869**
50 - 1200	90mm, Tip ID: Z, non-sterile	10 racks of 96	960	**6.206 521**
5 - 350	54mm, Tip ID: D, non-sterile	10 racks of 96	960	**6.225 217**
5 - 350	54mm, Tip ID: D, pre-sterilised	10 racks of 96	960	**6.234 567**
5 - 350	54mm, Tip ID: D, non-sterile	Refill Tower, 10 racks of 96	960	**6.239 400**
5 - 350	54mm, Tip ID: D, non-sterile	1 box of 1000	1000	**6.224 919**
0.1 - 10	31.5mm, Tip ID: A, non-sterile	10 racks of 96	960	**6.241 795**
0.1 - 10	31.5mm, Tip ID: A, pre-sterilised	10 racks of 96	960	**6.238 320**
0.1 - 10	31.5mm, Tip ID: A, non-sterile	Refill Tower, 10 racks of 96	960	**7.970 516**
0.1 - 10	31.5mm, Tip ID: A, pre-sterilised	Refill Pack, 20 racks of 96	1920	**7.970 541**
0.1 - 10	31.5mm, Tip ID: A, non-sterile	1 box of 1000	1000	**6.225 481**
0.5 - 200	51mm, Tip ID: C, pre-sterilised	10 racks of 96	960	**6.238 319**
0.5 - 200	51mm, Tip ID: C, non-sterile	Refill Tower, 10 racks of 96	960	**6.235 565**

2



2 Pipette tips Finntip 10

Thermo Scientific

This tip is specially designed for pipetting micro-sized drops. It is ideal for use with micro volume Finnpipettes.

Capacity µl	Description	Package contents	PK	Cat. No.
0.2 - 10	non sterile	1 bag of 1000	1000	**6.080 908**
0.2 - 10	non sterile	10 racks of 96	960	**6.084 681**
0.2 - 10	sterile	10 racks of 96	960	**6.224 231**
0.2 - 10	non sterile	4 racks of 192 + 10 refill packs of 192	2688	**6.228 718**
0.2 - 10	non sterile	20 refill packs of 196	3840	**6.228 719**

3



3 Pipette tips Finntip 20

Thermo Scientific

The Finntip 20 is suitable for applications requiring high precision and volumes of 0.2-20µl. The tips are provided in convenient racks of 384 tips.

Capacity µl	Description	Package contents	PK	Cat. No.
0.2 - 20	non sterile	1 bag of 1000	1000	**6.224 412**
0.2 - 20	non sterile	10 racks of 384	3840	**6.228 720**
0.2 - 20	sterile	10 racks of 384	3840	**9.282 500**

E & OE.

1 Pipette tips Finntip 50

For use with the 16 channel multichannel. Will also fit micro volume single channels, volume 50µl length 43mm.

Thermo Scientific



Capacity µl	Description	Package contents	PK	Cat. No.
0.5 - 50	non sterile	1 bag of 1000	1000	**6.301 604**
0.5 - 50	non sterile	10 racks of 384	3840	**6.301 538**
0.5 - 50	sterile	10 racks of 384	3840	**9.282 501**

2 Pipette tips Finntip 200 Extended

The Finntip 200 extended is an extra-long, tapered tip. It is designed to fit in extremely narrow vessels.

Thermo Scientific



Capacity µl	Description	Package contents	PK	Cat. No.
5 - 200	non sterile	1 box of 400	400	**6.222 480**
5 - 200	non sterile	10 racks of 96	960	**6.227 486**
5 - 200	sterile	10 racks of 96	960	**6.224 233**

3 Pipette tips Finntip 250 Universal

This quality product is ideal for single channel and multichannel Finnpipettes. It was also designed to be used with pipettes from other manufacturers. Finntip universals are also available in refill packs.

Thermo Scientific



Capacity µl	Description	Package contents	PK	Cat. No.
0.5 - 250	non sterile	1 box of 500	500	**6.070 424**
0.5 - 250	non sterile	1 bag of 1000	1000	**6.092 728**
0.5 - 250	non sterile	1 bag of 20,000	20000	**6.228 715**
0.5 - 250	non sterile	10 racks of 96	960	**6.082 633**
0.5 - 250	sterile	10 racks of 96	960	**6.510 864**
0.5 - 250	non sterile	4 racks of 96 + 10 refill packs of 96	1344	**6.228 716**
0.5 - 250	non sterile	20 refill packs of 96	1920	**6.803 185**

4 Pipette tips Finntip 300

These tips were specially designed for the Finnpipette multichannels (reverse pipetting is possible with the 300µl). The Finntip 300µl is also suitable for single channel pipets in the 5-200µl range. The packaging options include refill packs.

Thermo Scientific



Capacity µl	Description	Package contents	PK	Cat. No.
5 - 300	non sterile	1000/Bag	1000	**6.057 011**
5 - 300	non sterile	20.000/Bulk	20000	**6.224 235**
5 - 300	non sterile	10x96/Rack	960	**6.056 947**
5 - 300	sterile	10x96/Rack	960	**6.084 976**
5 - 300	non sterile	10x192/Refill	1920	**6.204 184**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

Thermo SCIENTIFIC

1



1 Pipette tips Finntip Flex

Thermo Scientific

The Thermo Scientific Finntip Flex system offers flexible, soft and sophisticated high-end tips for discerning users. Finntip Flex system consisting new-generation tips and easy-to-use operation rack and space-saving refill kit. All elements in the system have been designed to fulfill the most demanding requirements for ergonomics and flexibility in pipetting tasks for todays fast-paced aboratories.

- Low attachment and ejection forces
- High precision molding with virgin polypropylene
- Smooth surface for low liquid retention
- Non-slip rack with hinged cover
- Easy to use and economical refill system

2



2 Pipette tips Finntip Flex 10

Thermo Scientific

Capacity µl	Description	Package contents	PK	Cat. No.
0.2 - 10	non sterile	1 bag of 1000	1000	**9.282 510**
0.2 - 10	non sterile	10 racks of 96	960	**9.282 511**
0.2 - 10	sterile	10 racks of 96	960	**9.282 512**
0.2 - 10	non sterile	1 rack of 96 + 20 refill packs of 96	2016	**9.282 513**
0.2 - 10	non sterile	20 refill packs of 96	1920	**9.282 514**

3



9.282 516

Pipette tips Finntip Flex 200

Thermo Scientific

Capacity µl	Description	Package contents	PK	Cat. No.
1 - 200	non sterile	1 bag of 1000	1000	**9.282 515**
1 - 200	non sterile	10 racks of 96	960	**9.282 516** 3
1 - 200	sterile	10 racks of 96	960	**9.282 517**
1 - 200	non sterile	1 rack of 96 + 20 refill packs of 96	2016	**9.282 518**
1 - 200	non sterile	20 refill packs of 96	1920	**9.282 519**

4



6.224 234

Pipette tips Finntip Flex 300

Thermo Scientific

Capacity µl	Description	Package contents	PK	Cat. No.
5 - 300	non sterile	1 bag of 1000	1000	**6.228 755**
5 - 300	non sterile	10 racks of 96	960	**6.224 234** 4
5 - 300	sterile	10 racks of 96	960	**6.228 752**
5 - 300	non sterile	1 rack of 96 + 20 refill packs of 96	2016	**6.228 753**
5 - 300	non sterile	20 refill packs of 96	1920	**6.228 754**

5



6.230 775

Pipette tips Finntip Flex 1000

Thermo Scientific

Capacity µl	Description	Package contents	PK	Cat. No.
100 - 1000	non sterile	1 bag of 1000	1000	**6.235 571**
100 - 1000	non sterile	10 racks of 96	960	**6.230 775** 5
100 - 1000	sterile	10 racks of 96	960	**9.282 520**
100 - 1000	non sterile	1 rack of 96 + 16 refill packs of 96	1632	**9.282 521**
100 - 1000	non sterile	16 refill packs of 96	1536	**9.282 522**

1 Pipette tips Finntip Flex 1200

Thermo Scientific



Capacity µl	Description	Package contents	PK	Cat. No.
50 - 1200	non sterile	1 bag of 1000	1000	**6.228 758**
50 - 1200	non sterile	10 racks of 96	960	**6.228 756**
50 - 1200	sterile	10 racks of 96	960	**6.228 757**
50 - 1200	non sterile	1 rack of 96 + 16 refill packs of 96	1632	**9.282 523**
50 - 1200	non sterile	16 refill packs of 96	1536	**9.282 524**

2 Pipette tips Finntip Flex Extended

Thermo Scientific



Capacity µl	Description	Package contents	PK	Cat. No.
1000 - 10000	non sterile	1 bag of 100	100	**7.651 616**
1000 - 10000	sterile	1 bag of 50	50	**9.282 525**

3 Pipette tips Finntip Flex Filter, sterile

Thermo Scientific



Capacity µl	Description	Package contents	PK	Cat. No.
0.2 - 10	sterile	10 racks of 96	960	**9.282 526**
1 - 30	sterile	10 racks of 96	960	**9.282 527**
1 - 100	sterile	10 racks of 96	960	**9.282 528**
1 - 200	sterile	10 racks of 96	960	**9.282 529**
5 - 300	sterile	10 racks of 96	960	**9.282 530**
100 - 1000	sterile	10 racks of 96	960	**9.282 531**
50 - 1200	sterile	10 racks of 96	960	**9.282 532**
1000 - 10000	sterile	1 bag of 50	50	**9.282 533**

4 Pipette tips Finntip 1000

This mid-size tip comes in several pack sizes. The 10 x 96 rack is available sterile.

Thermo Scientific



Capacity µl	Description	Package contents	PK	Cat. No.
100 - 1000	non sterile	1 box of 200	200	**6.085 561**
100 - 1000	non sterile	1 bag of 1000	1000	**6.085 852**
100 - 1000	non sterile	1 bag of 10,000	10000	**6.076 481**
100 - 1000	non sterile	10 racks of 96	960	**6.802 498**
100 - 1000	sterile	10 racks of 96	960	**6.206 884**
100 - 1000	non sterile	5 refill packs of 192	960	**6.228 679**

5 Pipette tips Finntip 1000 Extended

Tapered to 105mm in length the Finntip 1000 extended allows access to the narrowest container.

Thermo Scientific



Capacity µl	Description	Package contents	PK	Cat. No.
100 - 1000	non sterile	1 bag of 1000	1000	**7.200 433**
100 - 1000	non sterile	5 racks of 96	480	**6.224 236**
100 - 1000	sterile	5 racks of 96	480	**6.228 676**

6 Pipette tips Finntip 5ml

Designed to prevent foaming and vortexing, this tip fits into all common sizes of laboratory vessels.

Thermo Scientific



Capacity µl	Description	Package contents	PK	Cat. No.
1000 - 5000	non sterile	1 box of 75	75	**6.076 989**
1000 - 5000	non sterile	1 bag of 500	500	**6.510 003**
1000 - 5000	non sterile	1 bag of 3000	3000	**6.058 016**
1000 - 5000	non sterile	5 racks of 54	270	**6.053 602**
1000 - 5000	sterile	5 racks of 54	270	**6.900 937**

1



1 Pipette tips Finntip 10 ml

The Finntip 10 ml was designed to eliminate vortexing and prevent foaming in the sample liquid.

Thermo Scientific

Capacity µl	Description	Package contents	PK	Cat. No.
2000 - 10000	non sterile	1 box of 40	40	**6.051 993**
2000 - 10000	non sterile	1 bag of 100	100	**6.051 307**
2000 - 10000	non sterile	5 racks of 24	120	**6.051 881**
2000 - 10000	sterile	5 racks of 24	120	**6.228 721**

2



2 Pipette tips Finntip with Filter Tips

Thermo Scientific

- Volume range 0.2µl-10ml
- Thirteen different models including extended versions
- Filters made from polyethylene, cannot be autoclaved
- Supplied in vacuum sealed sterilized tip racks
- Ideal for PCR and other amplification methods
- Pipetting of radioactive and infectious samples
- Certified free from endotoxin, DNA, DNase, RNase Type

Capacity µl	Length mm	Description	Package contents	PK	Cat. No.
0.2 - 10	32	sterile	10 racks of 96	960	**6.224 227**
0.2 - 20	33	sterile	10 racks of 384	3840	**9.282 544**
0.2 - 50	48	sterile	10 racks of 384	3840	**6.228 742**
0.5 - 10	52	sterile	10 racks of 96	960	**6.224 228**
0.5 - 20	52	sterile	10 racks of 96	960	**6.228 743**
0.5 - 30	52	sterile	10 racks of 96	960	**6.228 744**
0.5 - 100	52	sterile	10 racks of 96	960	**6.076 896**
5 - 100	78	sterile	10 racks of 96	960	**6.228 745**
0.5 - 200	52	sterile	10 racks of 96	960	**6.224 229**
5 - 200	78	sterile	10 racks of 96	960	**6.228 746**
5 - 300	52	sterile	10 racks of 96	960	**6.228 747**
100 - 1000	71	sterile	10 racks of 96	960	**6.085 289**
100 - 1000	105	sterile	5 racks of 96	480	**6.228 748**
500 - 5000	147	sterile	5 racks of 54	270	**6.224 230**
1000 - 10000	15	sterile	5 racks of 24	120	**6.228 750**

3



3 Pipette tips Finntip Wide

With its wide orifice tip, the Finntip Wide was designed especially for pipetting fragile cell suspensions and macromolecules like genomic DNA. This tip eliminates the mechanical shearing that causes cell fragmentation.

Thermo Scientific

Capacity µl	Description	Package contents	PK	Cat. No.
10 - 250	non sterile	1 bag of 1000	1000	**9.282 552**
10 - 250	non sterile	10 racks of 96	960	**9.282 554**
10 - 250	sterile	10 racks of 96	960	**9.282 555**
100 - 1000	non sterile	1 bag of 400	400	**6.206 960**
100 - 1000	non sterile	1 bag of 6500	6500	**6.228 740**
100 - 1000	non sterile	10 racks of 96	960	**6.089 601**
100 - 1000	sterile	10 racks of 96	960	**9.282 556**

4



4 Pipette tips Finntip BioCon

Thermo Scientific

- Certified free from endotoxin, DNA, DNase, RNase
- Supplied individually packed
- Ideal for PCR and other purity demanding applications

Capacity µl	Description	Package contents	PK	Cat. No.
0.2 - 10	sterile	1 box of 100	100	**6.224 232**
0.5 - 250	sterile	1 box of 100	100	**9.282 570**
10 - 1000	sterile	1 box of 50	50	**6.228 751**

E & OE.

1 epT.I.P.S. Set

Starter kit, consisting of one epT.I.P.S box filled with tips and 4 reload trays. *Eppendorf*



Capacity µl	Length mm	Colour	Package contents	PK	Cat. No.
0.1 - 10	34	anthracite	1 box with 5 trays of 96	480	**9.409 480**
0.1 - 20	40	grey	1 box with 5 trays of 96	480	**9.409 481**
0.5 - 20	46	light grey	1 box with 5 trays of 96	480	**9.409 482**
2 - 200	53	yellow	1 box with 5 trays of 96	480	**9.409 483**
20 - 300	55	orange	1 box with 5 trays of 96	480	**9.409 484**
50 - 1000	71	blue	1 box with 5 trays of 96	480	**9.409 485**
50 - 1250	76	green	1 box with 5 trays of 96	480	**9.409 486**
500 - 2500	115	red	1 box with 5 trays of 48	240	**9.409 487**

2 Pipette tips epT.I.P.S. Box

- Work box, filled with tips *Eppendorf*
- autoclavable
- contamination-free refilling system suitable for loading epT.I.P.S reloads



Capacity µl	Length mm	Colour	Package contents	PK	Cat. No.
0.1 - 10	34	anthracite	1 box of 96	96	**9.409 470**
0.1 - 20	40	grey	1 box of 96	96	**9.409 471**
0.5 - 20	46	light grey	1 box of 96	96	**9.409 472**
2 - 200	53	yellow	1 box of 96	96	**9.409 473**
20 - 300	55	orange	1 box of 96	96	**9.409 474**
50 - 1000	71	blue	1 box of 96	96	**9.409 475**
50 - 1250	76	green	1 box of 96	96	**9.409 476**
50 - 1250	103	dark green	1 box of 96	96	**6.238 120**
500 - 2500	115	red	1 box of 48	48	**9.409 477**
100 - 5000	120	purple	1 box of 24	24	**9.409 478**

3 Pipette tips epT.I.P.S. Standard

Original Eppendorf, high quality, pipette tips at an attractive price. *Eppendorf*
- packed in multi sealable bag
- tips available in various sizes from 10µl up to 10ml



Capacity µl	Length mm	Colour	Package contents	PK	Cat. No.
0.1 - 10	34	anthracite	2 bags of 500	1000	**9.409 410**
0.1 - 20	40	grey	2 bags of 500	1000	**9.409 411**
0.5 - 20	46	light grey	2 bags of 500	1000	**9.409 412**
2 - 200	53	yellow	2 bags of 500	1000	**9.409 413**
20 - 300	55	orange	2 bags of 500	1000	**9.409 414**
50 - 1000	71	blue	2 bags of 500	1000	**9.409 415**
50 - 1250	76	green	2 bags of 500	1000	**9.409 416**
50 - 1250	103	dark green	2 bags of 500	1000	**6.238 121**
500 - 2500	115	red	5 bags of 100	500	**9.409 417**
100 - 5000	120	purple	5 bags of 100	500	**9.409 418**
1000 - 10000	165	turquoise	2 bags of 100	200	**9.409 403**
1000 - 10000	243	turquoise	2 bags of 100	200	**9.409 404**

4 epT.I.P.S. Standard, clear

Eppendorf



Capacity µl	Length mm	Colour	Package contents	PK	Cat. No.
2 - 200	53	clear	1 pack of 1000	1000	**9.409 407**
20 - 300	55	clear	1 pack of 1000	1000	**9.409 408**
50 - 1000	71	clear	1 pack of 1000	1000	**9.409 409**

1



1 epT.I.P.S. Reloads

Eppendorf

- Practical refilling system for epT.I.P.S box
- Trays supplied either double-sided or as stack packs, depending on tip size
- Contamination-free transfer to the trays into the work box
- Autoclavable trays are available
- Colour-coded trays for simple identification of the tips.

Capacity µl	Length mm	Colour	Package contents	PK	Cat. No.
0.1 - 10	34	anthracite	10 trays of 96	960	**9.409 450**
0.1 - 20	40	grey	10 trays of 96	960	**9.409 451**
0.5 - 20	46	light grey	10 trays of 96	960	**9.409 452**
2 - 200	53	yellow	10 trays of 96	960	**9.409 453**
20 - 300	55	orange	10 trays of 96	960	**9.409 454**
50 - 1000	71	blue	10 trays of 96	960	**9.409 455**
50 - 1250	76	green	10 trays of 96	960	**9.409 456**
50 - 1250	103	dark green	10 trays of 96	960	**6.238 117**
500 - 2500	115	red	10 trays of 96	480	**9.409 457**

2



2 epT.I.P.S. Reloads

Eppendorf

- practical refilling system for epT.I.P.S. Box
- workbox with tips
- autoclavable
- PCR quality
- certified free from human DNA, DNase, RNase and PCR inhibitor

Capacity µl	Length mm	Colour	Package contents	PK	Cat. No.
0.1 - 10	34	anthracite	10 trays of 96	960	**9.409 460**
0.1 - 20	40	grey	10 trays of 96	960	**9.409 461**
0.5 - 20	46	light grey	10 trays of 96	960	**9.409 462**
2 - 200	53	yellow	10 trays of 96	960	**9.409 463**
20 - 300	55	orange	10 trays of 96	960	**9.409 464**
50 - 1000	71	blue	10 trays of 96	960	**9.409 465**
50 - 1250	76	green	10 trays of 96	960	**9.409 466**
50 - 1250	103	dark green	10 trays of 96	960	**6.238 118**
500 - 2500	115	red	10 trays of 48	480	**9.409 467**

3



3 epT.I.P.S. Racks, Biopur®

Eppendorf

Highest biological purity Eppendorf Biopur pipette tips
(sterile, pyrogen-, RNase-, DNA-, ATP-free)
- batch controlled
- batch specific certificate available on request
- individually boxed racks, 5 Boxes per pack

Capacity µl	Length mm	Colour	Package contents	PK	Cat. No.
0.1 - 20	40	grey	5 racks of 96	480	**9.409 430**
2 - 200	53	yellow	5 racks of 96	480	**9.409 431**
20 - 300	55	orange	5 racks of 96	480	**9.409 432**
50 - 1000	71	blue	5 racks of 96	480	**9.409 433**
50 - 1250	76	green	5 racks of 96	480	**9.409 434**
50 - 1250	103	dark green	5 racks of 96	480	**6.238 119**
500 - 2500	115	red	5 racks of 48	240	**9.409 435**
1000 - 10000	165	turquoise	5 racks of 24	120	**9.409 405**

4



4 epT.I.P.S. Singles, Biopur®

Eppendorf

- Eppendorf Biopur® Individually blister-packed tips
- Batch number and the date of expiry indicated on each blister pack
- Batch specific certificate on request
- Biopur quality: sterile, Pyrogen, RNAse-, DNA and ATP free

Capacity µl	Length mm	Colour	PK	Cat. No.
0.1 to 20	40	grey	100	**9.409 420**
2 to 200	53	yellow	100	**9.409 421**
50 to 1000	71	blue	100	**9.409 422**

E & OE.

1 2 epT.I.P.S. Dualfilter tips

Eppendorf

- Pipette tips boxed in racks with integral, twin-layer ep Dualfilter made from hydrophobic polyethylene without additives. One layer protects the user against aerosols, the other against airborne microbes
- All tips are **sterile, pyrogen free** and **PCR clean** (free from human DNA, DNase, RNase, PCR Inhibitors)
- batch specific certificate available on request
- The filter doesn´t retain liquid when accidentally wetted during aspiration, the whole sample can be recovered easily



2 two phase filter

Capacity µl	Length mm	Colour	Package contents	PK	Cat. No.
0.1 - 10	34	anthracite	10 racks of 96	960	**9.409 440**
0.1 - 10	40	anthracite	10 racks of 96	960	**9.409 441**
0.5 - 20	46	light grey	10 racks of 96	960	**9.409 442**
2 - 20	53	yellow	10 racks of 96	960	**9.409 443**
2 - 100	55	yellow	10 racks of 96	960	**9.409 444**
2 - 200	59	yellow	10 racks of 96	960	**9.409 448**
20 - 300	55	orange	10 racks of 96	960	**9.409 445**
50 - 1000	76	blue	10 racks of 96	960	**9.409 446**
50 - 1250	103	dark green	5 racks of 96	480	**6.237 379**
100 - 5000	120	purple	5 racks of 24	120	**9.409 447**
1000 - 10000	243	blue	100 tips, single packed	100	**9.409 406**

3 4 Pipette tips epT.I.P.S. LoRetention

Eppendorf

Ideally suited for all applications with samples that contain detergents:
- PCR and real-time PCR preparation of enzyme solutions and master mixes
- Isolation, purification and denaturation of proteins
- Restriction digestions and ligations
- Pipetting DNA ladders during gel electrophoresis

Features:
- Ultrahomogeneous surface for maximum reproducibility
- Ultrahydrophobic surface for minimum loss of sample
- Air bubbles and foaming are signifcantly reduced during pipetting
- Autoclavable, high chemical resistance - 5 year shelf life

Simple differentiation of racks and reloads through a new, clear lid with a white seal. When open, the text **LoRetention** can be seen from the inside. The reusable seal makes it also possible to label existing ep T.I.P.S. boxes.





Pipette tips epT.I.P.S. LoRetention Dual Filter, racks

PCR clean, sterile, pyrogene free. 10 x 96 tips.

Eppendorf

Capacity µl	Length mm	Package contents	PK	Cat. No.
0.1 - 10	34	10 racks of 96	960	**9.409 425**
0.5 - 20	46	10 racks of 96	960	**9.409 426**
2 - 100	55	10 racks of 96	960	**9.409 427**
20 - 300	55	10 racks of 96	960	**9.409 428**
50 - 1000	76	10 racks of 96	960	**9.409 429**

Pipette tips epT.I.P.S. LoRetention, Reloads

10 x 96 tips.

Eppendorf

Type	Length mm	Package contents	PK	Cat. No.
0.1 - 10	34	10 trays of 96	960	**9.409 495**
0.5 - 20	46	10 trays of 96	960	**9.409 496**
2 - 200	59	10 trays of 96	960	**9.409 497**
50 - 1000	76	10 trays of 96	960	**9.409 498**

Pipette tips epT.I.P.S. LoRetention, Reloads PCR clean

PCR clean, sterile, pyrogen-free. 10 x 96 tips.

Eppendorf

Capacity µl	Length mm	Package contents	PK	Cat. No.
0.1 - 10	34	10 trays of 96	960	**9.409 490**
0.5 - 20	46	10 trays of 96	960	**9.409 491**
2 - 200	59	10 trays of 96	960	**9.409 492**
50 - 1000	76	10 trays of 96	960	**9.409 493**

1



2



1 2 LLG-Disposable Reagent reservoirs, with clearly visible volume markings

LLG-Reagent reservoirs offer a convenient solution for the temporary storage of non-solvent based liquids during any pipetting application. The system consists of disposable, crystal clear polystyrene inserts that fit into reusable bases with clearly visible volume markings. The pour-back spouts in the corners of the reservoir allow pouring back the liquid into the original container without spills. The reagent reservoirs are available in 25 or 100 ml in size and are stackable for space saving storage.

Features and benefits:
- Light is refracted so that graduations below the liquid surface become invisible, making it easier to identify the exact desired volume line.
- Pour-back spouts moulded into the corners of each reagent reservoir control liquid flow and enable the easy, spill-free return of reagent to its original container.

Delivery: 4 packs of 50 pcs., sterile wrapped, 1 base per case.

Capacity ml	Description	PK	Cat. No.
25	LLG Reagent Reservoirs incl. 1 base	200	**9.409 731**
100	LLG Reagent Reservoirs incl. 1 base	200	**9.409 732**

3



3 Reagent Reservoirs

With 25ml interval graduations and indents to prevent stacked reservoirs from sticking together. For multichannel pipettors. The bottom of each reservoir tapers down into a narrow trough, to help you get the last drop of liquid. *Heathrow Scientific*

Capacity ml	Description	PK	Cat. No.
55	PVC, clear, non-sterile	100	**6.236 945**
55	PS, white, non-sterile	100	**9.409 663**
55	PS, white, sterile	50	**9.409 666**
100	PS, white, non-sterile	100	**9.409 664**
100	PS, white, sterile	50	**9.409 667**

4



4 Reagent reservoirs

Polypropylene solution basin/reagent reservoir has a standard 50mL basin on one side and 12 individual 5mL basins on the other side. Wells are angled both downward and outward, guiding multichannel pipettor tips toward a centered position, which helps to avoid contamination and waste. Imprinted indices identify samples; loose-fitting lids prevent evaporation and contamination. Non-sterile. *Heathrow Scientific*

Type	PK	Cat. No.
Dual Solution	25	**9.409 665**

5



5 Multichannel pipette reservoir

PP. Translucent. Maximum filling volume 60ml. Suitable for multichannel pipettes with 8 or 12 channels. Autoclavable (121°C). *BRAND*

Description	PK	Cat. No.
non-sterile, with lid	10	**9.280 131**
sterile, without lid (single packed)	100	**9.280 132**
sterile, without lid (in bags with 5 pieces)	200	**9.280 133**

E & OE.

1 Pipette reservoirs, PP

NEW!

BRAND



These reagent reservoirs were designed especially for use with automated liquid handling platforms. They can also be used with manual systems. Different partitions, bottom styles and profiles provide broas application flexibility.

- ANSI/SLAS standard format Compatible with nearly all liquid handling robots and other automated dispensing systems
- 5 different types for use with multichannel pipettes and automatic systems
- Excellent stability and chemical resistance made from high-quality polypropylene
- Free from RNases and DNases
- Autoclavable (121°C, 20 min)

Description	Working volume column each ml	Bottom shape	PK	Cat. No.
1-column	220	pyramid, 96-well	10	**6.266 275**
12-column, low profile	6	pyramid	10	**6.266 276**
4-column	60	pyramid	10	**6.266 277**
6-column	40	pyramid	10	**6.266 278**
1-column, low profile	50	flat	10	**6.266 279**

2 Multichannel Pipetting Reservoir



Thermo Scientific

Three different, autoclavable reservoirs are available:
- 60ml reservoir with a V-shape for optimal utilisation
- 125ml reservoir with a sloping bottom
- 8-channel reservoir with 8 x 10ml volume, floor sloping to one side

Volume ml	PK	Cat. No.
1 x 60	5	**6.077 002**
8 x 10	10	**6.222 853**
1 x 125	10	**6.238 478**

3 Storage system "MultiStore"



White, made of highly impact resistant plastic. Tilt bins made of crystal clear PS.
- for small components and accessories e.g. in industries, hospitals and laboratories
- dust-free and clean storage of contents
- multifunctional for individual storage solutions

Description	External dimensions (W x D x H) mm	Dimensions* (W x D x H) mm	PK	Cat. No.
4 tilt bins	601 x 171,5 x 206	125,5 x 128 x 133,5	1	**9.301 553**
3 tilt bins	601 x 198 x 238	176 x 149 x 161	1	**9.301 554**
2 tilt bins	601 x 310,5 x 353	265 x 221 x 241	1	**9.301 555**

*Dimensions of each single tilt bin



1



1 LLG- uni*DISPENS* manual Serial Dispenser

NEW!

The ergonomically designed manual dispenser LLG-uni*DISPENS* enables single handed volume selection, loading and dispensing. Due to its light weight it is ideally suited for serial dosing. You can flexibly select your desired dosing volume from 120 dosing programs for 12 tip sizes and with 10 stroke adjustments. You can view all settings and volumes at a single glance through the viewing window of the manual dispenser. The dispenser is compatible with Ritips®, PD-Tips® from Brand, Combitips ® and Combitips advanced® from Eppendorf™. The manual dispenser is made from high-quality materials and has a high resistance towards a broad range of chemicals. Thanks to a purely mechanical, maintenance-free construction, the manual dispenser is a practical and convenient device for daily laboratory use.

3 years warranty.

Description	PK	Cat. No.
LLG-uni*DISPENS*	1	**9.284 238**

2



2 Manual step dispenser, ripette®

NEW!

Ritter GmbH

Ritter ripette® is a very comfortable device for hand dispensing of long series.
A special technical mechanism guarantees the precision of all selected dosage volumes:
1 to 5000µl.

Product advantages:
- Chart with dosage setting volumes incorporated into each dispenser.
- Lightweight (approx. 100g)
- Easy-to-use adjustment dial for the selection of dosage volume and the number of steps
- No mechanical parts that wear out, no maintenance

Dispenser tips ritips® 25ml and 50ml cannot be used without adapter (Adapter included in delivery).

Description	PK	Cat. No.
ripette® with 25/50ml adapter	1	**9.284 190**
Spare adapter for 25ml	1	**6.266 071**
Spare adapter for 50ml	1	**6.266 072**

3



6.265 688

4



6.265 689

Dispenser tips, ritips®

NEW!

Ritter GmbH

- Three sizes, standard and bioclean® (sterile).
- Maximum of safety and repeatability as all tips are individually and mechanically tested.
- Guaranteed purity under the logo bioclean® is tested and confirmed by independent testing laboratories. Ritter bioclean® stands for sterile, pyrogen free, DNA-, RNase- and ATP-free.
- CE-marking according to IVD-directive 98/79 EG on each box.
- A quality certificate per lot can be obtained upon request.

Suitable for use together with Ritter ripette®, Multipette® 4780, HandyStep®, Minilab 100/101, Stepmate, EasyStep, Distriman® and HandyStep® electronic.

Please note: Dispenser tips ritips® 25ml and 50ml cannot be used without adapter.
If necessary, please order Cat.-No. 6.266 071 or 6.266 072 separately.

5



9.284 225

Type	PK	Cat. No.	
0.05ml / standard	100	**6.265 688**	3
1.25ml / standard	100	**6.265 689**	4
12.5ml / standard	100	**9.284 225**	5
0.05ml / sterile	25	**6.265 690**	
1.25ml / sterile	100	**6.265 691**	
12.5ml / sterile	100	**6.265 692**	
Adapter for 25ml	1	**6.266 071**	
Adapter for 50ml	1	**6.266 072**	

E & OE.

1 Manual repetitive pipette HandyStep® S

HandyStep® S - the repetitive pipette for any occasion! *BRAND*



Ideal for routine or research applications in diagnostics, molecular biology, environmental analysis, and many more. HandyStep® S and PD-tips work on the direct displacement principle. This offers the highest-precision dispensing of liquid media with high viscosity, high density, or high vapor pressure. Direct displacement permits contamination-free operation, since no aerosols are formed.

More data and facts:

- increased chemical resistance through innovative plastic materials
- easy tip mounting - PD-tip is now simply inserted from below
- dispensed volume range from 2 µl to 5ml
- up to 49 dispensing steps
- weighs only 108g
- suitable for use with BRAND PD-tips, Encode™ tips, Repet tips, Combitips®, Combitips® plus and other compatible dispenser tips
- CE- IVD -compliant

Items supplied
HandyStep® S, DE-M marking, with serial number, performance cerficate, operating manual, shelf/rack mount, 3 PD-Tips: 0.1ml, 1ml and 10ml.

Type	PK	Cat. No.
HandyStep® S incl. rack holder	1	**9.280 944**
Rack holder for HandyStep® S	1	**9.280 945**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

ritter MEDICAL

1



1 Repetitive pipette HandyStep® electronic

NEW!

BRAND

Microprocessor-controlled manual repetitive pipette for fatigue-free use, serial dispensing in a wide range of applications. Ergonomic shape permits comfortable use and provides uniform precision, independent of user influence.

- automatic size recognition of new Brand PD tips with piston coding
- can be used with most other commercial dispenser tips
- variable volume setting between 1µl and 50ml
- LCD readout of volume, number of dispensing steps and aspirating/dispensing speed
- functions: dispensing, auto dispensing, pipetting with continuously variable volume
- innovative recharging dock concept reduces downtimes
- user-friendly, intuitive menu system
- auto dispensing with learning feature (average speed of first three dispensings memorized, then used for subsequent procedures during session)
- CE marked according to IVD 98/79 EG.
- NiMH battery pack can be recharged when fitted or separately.

Supplied with: HandyStep® electronic, DE-M marking, performance certificate, with NiMH battery pack and charger. 1 PD-Tip sizes 0.5 ml, 1.25 ml, 2.5 ml, 5 ml and 12.5 ml each.

Type	PK	Cat. No.
HandyStep® electronic, incl. NiMH battery pack, charging dock and 230V 50Hz power adapter with continental European plug*	1	**9.284 040**
Manual repetitive pipette HandyStep® electronic, Package, with AC charger UK	1	**4.000 165**

*Other adapters (UK/Ireland, USA/Japan or Australia) are available on request.

Pipettors, positive displacement, stepper type, HandyStep® electronic, from BRAND

PD-Tip	Capacity	Subdivision		Accuracy (≤ ± R%) Nom. capacity	50%	10%	1%	Precision (≤ CV%) Nom. capacity	50%	10%	1%
0.1 ml	1 µl - 100 µl	1 µl - 100 µl	0.1 µl	1	1	1.6	8	0.5	1	2	12
0.5 ml	5 µl - 500 µl	5 µl - 100 µl 100 µl - 500 µl	0.1 µl 1 µl	0.9	0.9	1	5	0.3	0.6	1	5
1 ml	10 µl - 1 ml	10 µl - 1 ml	1 µl	0.6	0.9	1	5	0.3	0.5	0.8	4
1.25 ml	12.5 µl - 1.25 ml	12.5 µl - 100 µl 100 µl - 1000 µl 1 ml - 1.25 ml	0.5 µl 1 µl 10 µl	0.6	0.6	0.9	5	0.2	0.5	0.7	4
2.5 ml	25 µl - 2.5 ml	25 µl - 1000 µl 1 ml - 2.5 ml	1 µl 10 µl	0.5	0.6	0.7	3.5	0.15	0.3	0.6	3
5 ml	50 µl - 5 ml	50 µl - 1000 µl 1 ml - 5 ml	1 µl 10 µl	0.5	0.5	0.7	3.5	0.15	0.4	0.7	3
10 ml	100 µl - 10 ml	100 µl - 10 ml	10 µl	0.4	0.5	0.7	3.5	0.15	0.5	0.8	4
12.5 ml	125 µl - 12.5 ml	125 µl - 1000 µl 1 ml - 10 ml 10 ml - 12.5 ml	5 µl 10 µl 100 µl	0.5	0.5	0.8	3.5	0.15	0.6	1.4	6.5
25 ml	250 µl - 25 ml	250 µl - 10 ml 10 ml - 25 ml	10 µl 100 µl	0.5	0.5	0.6	3	0.15	0.3	1.0	6
50 ml	500 µl - 50 ml	500 µl - 10 ml 10 ml - 50 ml	10 µl 100 µl	0.5	0.5	0.5	3	0.15	0.4	1.2	9

Tolerances according to ISO 8655.

2



2 Accessories for pipettors, positive displacement, stepper type, HandyStep® electronic

BRAND

Type	PK	Cat. No.
European plug, 230 V 50 Hz power supply only*	1	**9.284 041**
Charging dock only, without power supply	1	**9.284 042**
NiMH battery pack, spare	1	**9.284 043**

* Other power supplies on request.

3



3 Adapters

Adapters for 25ml and 50ml PD tips.

BRAND

Type	PK	Cat. No.
Adapter, non-sterile	10	**9.280 942**
Adapter, sterile*	5	**9.280 943**

* Individually packed.

E & OE.

1 Precision Dispenser Tips for Stepper Pipettors

BRAND

The BRAND PD-Tips from BRAND with patented size encoding are the ideal system component for the HandyStep® electronic (with automatic tip size recognition), HandyStep® S and HandyStep® from Brand. They can be used also with compatible, third-party dispensing systems. The automatic size detection option is available with HandyStep® electronic, Gilson® Repetman®, and Rainin AutoRep™ E. In addition, PD-Tips can be used with HandyStep®, HandyStep® S, Rainin AutoRep™ M, Eppendorf® Multipette® 4780 and EDOS® 5221 among others. PD-Tips are DE-M marked, comply with ISO 8655 requirements and come with a batch certificate. CE-marked according to IVD-Directive 98/79 EC. PD-Tips are available in 10 different sizes from 0.1ml to 50ml. They are available non-sterile, sterile/endotoxin-free (individually wrapped), as well as in Bio-Cert® quality (available on request). Bio-Cert® products are free from DNA, RNase and ATP. Quality control is conducted at an independent, accredited test laboratory. A batch-related certificate will be provided. For 25 and 50ml tips, an adapter is required and is included.



Capacity ml	Type	PK	Cat. No.
0.10	non-sterile	100	**9.280 923**
0.50	non-sterile	100	**9.280 928**
1.00	non-sterile	100	**4.007 854**
1.25	non-sterile	100	**9.280 930**
2.50	non-sterile	100	**9.280 932**
5.00	non-sterile	100	**9.280 934**
10.00	non-sterile	100	**4.007 855**
12.50	non-sterile	100	**9.280 936**
25.00	non-sterile	50	**9.280 938**
50.00	non-sterile	25	**9.280 940**
0.10	sterile, endotoxin free	100	**9.280 924**
0.50	sterile, endotoxin free	100	**9.280 929**
1.00	sterile, endotoxin free	100	**4.007 856**
1.25	sterile, endotoxin free	100	**9.280 931**
2.50	sterile, endotoxin free	100	**9.280 933**
5.00	sterile, endotoxin free	100	**9.280 935**
10.00	sterile, endotoxin free	100	**4.007 857**
12.50	sterile, endotoxin free	100	**9.280 937**
25.00	sterile, endotoxin free	25	**9.280 939**
50.00	sterile, endotoxin free	25	**9.280 941**
0.10	sterile, Bio-Cert®	100	**6.229 625**
0.50	sterile, Bio-Cert®	100	**7.615 367**
1.00	sterile, Bio-Cert®	100	**4.007 858**
1.25	sterile, Bio-Cert®	100	**6.207 277**
2.50	sterile, Bio-Cert®	100	**9.409 653**
5.00	sterile, Bio-Cert®	100	**6.206 732**
10.00	sterile, Bio-Cert®	100	**4.007 859**
12.50	sterile, Bio-Cert®	100	**6.206 733**
25.00	sterile, Bio-Cert®	25	**9.409 656**
50.00	sterile, Bio-Cert®	25	**6.224 557**

2 Pipettors, positive displacement, variable, repeating, Stepper™ 411

Socorex

Highly comfortable pipette, intended for reliable repeat dispensing from 10 to 5000µl. Unique trigger action mechanism eliminates thumb fatigue. Selected materials ensure reliability in use, day after day. Compact shape greatly limits internal instrument contamination. Wide selection between 53 different volumes; up to 73 doses per filling. Two-year warranty.

Product advantages
- 4-finger activation
- setting knobs bear clear indication of volumes and number of aliquots
- three positive displacement syringes, colour coded
- self-locking mechanism
- clear setting indication



Description	PK	Cat. No.
Stepper™ 411 supplied with colour-coded adjustment knobs, adapter, samples of Ecostep syringes	1	**9.411 561**
Spare PVC workstation	1	**9.411 567**
Spare adapters for 37.5ml (red) Ecostep syringe tips	5	**9.411 568**

1



1 Syringe tips, Ecostep

Individually wrapped sterile, or loose-packed non-sterile. *Socorex*

Bioproof: Sterilized syringes are DNase-, RNase- and pyrogen-free certified.

Capacity µl	Capacity	Type	PK	Cat. No.
10 - 100	0.75	Non-sterile	100	**9.411 509**
10 - 100	0.75	Bioproof, sterile, single packed	100	**9.411 510**
50 - 500	3.75	Non-sterile	100	**9.411 511**
50 - 500	3.75	Bioproof, sterile, single packed	100	**9.411 512**
500 - 5000	3.75	Non-sterile	100	**9.411 513**
500 - 5000	3.75	Bioproof, sterile, single packed	100	**9.411 514**

2



2 Dispensers Multipette® M4

NEW!

Eppendorf

On the Multipette®/Combitip system, volumes are dispensed using the positive displacement principle. The liquid is directly dispensed without an air cushion, ensuring the correct volume is always dispensed regardless of the density and viscosity of the liquid.
In addition to serial dispensing, the Multipette is also the perfect instrument that is able to go beyond the limitations of a standard pipette.

Features Multipette®
- Light and ergonomic
- Stress-free work via integrated step counter: dispensing procedures can be continued error-free after an interruption or distraction
- Central Combitip ejector: fully emptied Combitip can be easily ejected with one hand using the operating lever
- Step counter: Displays the number of executed dispensing steps
- Only suitable with Eppendorf Combitips advanced
- Combitip sensor: Automatic Combitip recognition and volume display

Applications
- Repetitive Dispensing of volumes in long series such as plate filling or when aliquoting
- Contamination-free dispensing of toxic, radioactive and or other hazardous liquids
- Precise and accurate dispensing of viscous solutions (e.g. glycerol) or liquids with high vapor pressure (e.g. ethanol)

Type	PK	Cat. No.
Multipette® M4 incl. holder	1	**9.283 604**
Multipette® M4 Starter Kit, incl. Combitip Rack and Combitip Assortmentpack 1µl - 10ml	1	**9.283 681**

3



3 Dispensers Multipette® Stream and Multipette® Xstream

Eppendorf

Applications
- dispensing volumes in long series
- electronic dispensing with memory functions
- contamination-free dispensing using positive displacement principle
- ideal for viscous solutions (e.g. glycerol, oil) or liquids with high vapour pressure (e.g. acetone, ethanol)

Product features, Multipette® Stream
- dispensing and pipetting according to positive displacement principle
- automatic dispensing
- rapid, ergonomic dispensing with motorized piston
- one-button tip ejector
- Li-Ion battery
- selection wheel
- automatic Combitip® plus tip recognition
- volume range from 1µl to 50ml
- charging possible whilst in use

Type	PK	Cat. No.
Multipette® stream incl. charger	1	**9.283 615**
Multipette® Xstream incl. charger	1	**9.283 616**
Charge stand for Multipette®/Repeater Stream/Xstream	1	**9.283 618**

1 Pipette tips, Eppendorf Combitips advanced®

1



Eppendorf

The Eppendorf Combitips have been completely redesigned and optimised so that they are capable of meeting the increased requirements of a modern laboratory to a greater extent than ever before.
The result is the Combitips advanced®. As they offer a wide variety of advantages in comparison with the Combitips plus, we talk about the 360° Evolution. The Combitips advanced replace the Combitips plus.
The Combitips advanced also function according to the positive displacement principle. Thus they always dispense the correct desired volume independently of the density of the liquid and its flow characteristics (e.g. increased vapour pressure or increased viscosity). Working with radioactive, aggressive or toxic materials also becomes safer due to the hermetically sealed piston preventing aerosol contamination. After dispensing with the Multipette, just eject the Combitips advanced and dispose of.
Whether Multipette 4780, Multipette plus, Multipette stream or Xstream - the Combitips advanced are optimized for all Multipette models to create the perfect connection!

Type	Capacity ml	Colour code	PK	Cat. No.
Combitips advanced®	0.1	white	100	**9.283 135**
Combitips advanced®	0.2	light blue	100	**9.283 136**
Combitips advanced®	0.5	purple	100	**9.283 137**
Combitips advanced®	1.0	yellow	100	**9.283 138**
Combitips advanced®	2.5	green	100	**9.283 139**
Combitips advanced®	5.0	blue	100	**9.283 140**
Combitips advanced®	10.0	orange	100	**9.283 141**
Combitips advanced®	25.0	red	100	**9.283 142**
Combitips advanced®	50.0	light grey	100	**9.283 143**
Combitips advanced®, PCR clean	0.1	white	100	**9.283 144**
Combitips advanced®, PCR clean	0.2	light blue	100	**9.283 145**
Combitips advanced®, PCR clean	0.5	purple	100	**9.283 146**
Combitips advanced®, PCR clean	1.0	yellow	100	**9.283 147**
Combitips advanced®, PCR clean	2.5	green	100	**9.283 148**
Combitips advanced®, PCR clean	5.0	blue	100	**9.283 149**
Combitips advanced®, PCR clean	10.0	orange	100	**9.283 150**
Combitips advanced®, PCR clean	25.0	red	100	**9.283 151**
Combitips advanced®, PCR clean	50.0	light grey	100	**9.283 152**
Combitips advanced® Biopur®	0.1	white	100	**9.283 153**
Combitips advanced® Biopur®	0.2	light blue	100	**9.283 154**
Combitips advanced® Biopur®	0.5	purple	100	**9.283 155**
Combitips advanced® Biopur®	1.0	yellow	100	**9.283 156**
Combitips advanced® Biopur®	2.5	green	100	**9.283 157**
Combitips advanced® Biopur®	5.0	blue	100	**9.283 158**
Combitips advanced® Biopur®	10.0	orange	100	**9.283 159**
Combitips advanced® Biopur®	25.0	red	100	**9.283 160**
Combitips advanced® Biopur®	50.0	light grey	100	**9.283 161**
Combitips advanced® Assortment pack (1pc. of each size plus each 1pc. 25ml and 50ml adapter)			1	**9.283 167**

2 Accessories for Pipette tips, Eppendorf Combitips advanced®

2



Eppendorf

Type	Capacity ml	Colour code	PK	Cat. No.
advanced® Adapter	25.0	red	1	**9.283 162**
advanced® Adapter	50.0	light grey	1	**9.283 163**
advanced® Adapter biopur®	25.0	red	7	**9.283 164**
advanced® Adapter biopur®	50.0	light grey	7	**9.283 165**
advanced® Rack for 8 Combitips			1	**9.283 166**

3 4 Pipette tips, Biopur® Combitips®

3



Eppendorf

For RNase-, DNA-, ATP- and pyrogen-free work.
- continuous quality control by independent laboratory
- can be supplied with a batch-related quality certificate upon request

The Eppendorf Biopur seal stands for the highest biological purity. Eppendorf Biopur disposable products are guaranteed sterile, pyrogen-free, RNase-free, DNA-free and ATP-free. They therefore meet the highest requirements in the medical, pharmaceutical and food industries, in PCR technology, molecular biology and cell technology. This new dimension of purity is made possible because of a production process that is comprehensively automated through all of the manufacturing stages up to the end product and that excludes contamination with biological substances.
Biopur Combitips, individually blister packed in outer cases of 100.

4

Type	Minimum Interval (µl)	Maximum Interval (µl)	PK	Cat. No.
1.25ml	25	125	100	**9.283 502**
12.5ml	250	1250	100	**9.283 505**

1



1 Self-filling syringes Dosys™

Socorex

- Optimal hand balance and ergonomics
- Fast and reliable volume setting
- Excellent reproducibility
- Plunger tightness without O-ring
- High chemical resistance
- Fully autoclavable at 121°C/250°F
- Self-refilling automatic

Dosys™ basic 162/172
- Fill-by-fill (automatic) through needle or cannula
- Supplied without valve system
- Luer Lock nozzle

Package includes syringe, PVC protection sleeve and operating instructions.

Dosys™ classic 163/173
- Integrated valve system
- Luer Lock nozzle

Package includes syringe, one meter silicone feed tube, sinker, PVC protection sleeve, aspiration and vent cannulas, set of spare for valve, operating instructions.

Dosys™ premium 164/174
- Detachable valve system
- Enhanced corrosion resistance
- Luer Lock nozzle

Package includes syringe, one meter silicone feed tube, sinker, PVC protection sleeve, aspiration, vent and dosing cannulas, set of spare for valve, operating instructions.

Further Self-filling syringes available on request.

Type	Volume ml	Valve	With	PK	Cat. No.
Dosys™ basic 162	0.5 to 5	without	2-ring handle	1	**6.229 740**
Dosys™ classic 163	0.3 to 2	integrated	2-ring handle	1	**6.206 201**
Dosys™ premium 164	0,3 to 2	detachable	2-ring handle	1	**6.204 472**
Dosys™ premium 164	1 to 10	detachable	2-ring handle	1	**6.224 207**
Dosys™ basic 172	0.1 to 1	without	pistol grip	1	**9.411 524**
Dosys™ basic 172	0.3 to 2	without	pistol grip	1	**9.411 525**
Dosys™ basic 172	0.5 to 5	without	pistol grip	1	**9.411 526**
Dosys™ basic 172	1 to 10	without	pistol grip	1	**9.411 527**
Dosys™ classic 173	0.1 to 1	integrated	pistol grip	1	**6.205 165**
Dosys™ classic 173	0.5 to 5	integrated	pistol grip	1	**6.231 686**
Dosys™ classic 173	1 to 10	integrated	pistol grip	1	**6.230 535**
Dosys™ classic 173	5 to 20	integrated	pistol grip	1	**7.630 775**
Dosys™ premium 174	0.1 to 1	detachable	pistol grip	1	**9.411 520**
Dosys™ premium 174	0.3 to 2	detachable	pistol grip	1	**9.411 521**
Dosys™ premium 174	0.5 to 5	detachable	pistol grip	1	**9.411 522**
Dosys™ premium 174	1 to 10	detachable	pistol grip	1	**9.411 523**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

SOCOREX SWISS

E & OE.

LLG-Bottletop dispenser uni*TOPDISPENS* with glass piston and clear glass cylinder

NEW!

1



9.283 806

The LLG-uni*TOPDISPENS* is a reasonably priced bottle-top dispenser with PTFE-coated glass piston available in 2 volumes: 10ml and 50ml. Precise, reliable and robust. The PTFE-coating of the glass piston is ideal when dispensing of crystallizing media. The high quality of the material used and the precision of the grinding ensures the perfect seal of the complete dispensing system. 3 years warranty.

- Precise and reliable volume setting
- Visible dosing procedure
- Valve block made of PP gives optimised protection of the glass made dosing cylinder
- Precise grinding of the glass piston into the glass cylinder forms a perfect seal
- Ergonomic finger guard
- Delivered with 2 PP-adapters GL 40 and 45
- With glass piston and clear glass cylinder

Description	Volume ml	Graduations ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
LLG-uni*TOPDISPENS*	2 - 10	0.5	0.6	0.2	1	**9.283 806** 1
LLG-uni*TOPDISPENS*	10 - 50	1.0	0.6	0.2	1	**9.283 808**

2 LLG-Bottletop dispenser

2



- Definitely the best choice to provide high precision with consistent delivery. Reliable measuring results with bubble-free dispensing.
- Individually calibrated in accordance with ISO 8655 standards and each unit is supplied with an individual calibration certificate.
- Highest degree of chemical resistance is provided due to the use of high quality materials in contact with dispensed liquids.
- Springless PTFE valve manifold ensures excellent chemical compatibility and leak proof valve functioning reapoducibility.
- Specially designed PTFE piston with silicone O-ring ensures smooth, effortless piston movement.
- Dosing cylinder is protected against breaking by a polypropylene sleeve which prevents any glass splitting in case of any accidental breaking.
- The telescopic extractable intake tube can be adjusted easily and smoothly to the varying heights of the bottles.
- Nozzle cap reduces contact with air and prevents drying. No drips when the tip cover is attached.
- Each dispenser comes with five adaptors (28mm, 32mm, 37mm, 40mm and 45mm) to fit in most of the laboratory reagent bottles. Standard thread: 30mm.

Quick volume settings with the practical sets screw. After loosening the locking screw, desired volume can be set, then locking screw is fixed.

Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
0.3 - 2.5	0.05	0.6	0.2	1	**9.284 180**
0.5 - 5	0.10	0.5	0.1	1	**9.284 181**
1.0 - 10	0.20	0.5	0.1	1	**9.284 182**
2.5 - 30	0.50	0.5	0.1	1	**9.284 183**
5.0 - 60	1.00	0.5	0.1	1	**9.284 184**
10.0 - 100	2.00	0.5	0.1	1	**9.284 185**



1



1 Dispensers, VITLAB® simplex

VITLAB

- quick, easy and precise volume adjustment
- no drips after tube has been capped
- high-quality materials (PTFE, PFA, FEP, borosilicate glass, platinum-iridium) ensure high chemical resistance againinst most acids, solvents and bases
- a positive displacement plunger with a PFA seal minimizes the crystallization of liquids and thus the clogging of the plunger
- easy to dismantle for cleaning, no tools necessary
- completely autoclavable at 121°C
- device can be rotated 360° on bottle
- certificate of conformity according to DIN 12600
- margin of error according to DIN EN ISO 8655-5
- items supplied: 3 polypropylene adapters (see chart), 1 telescopic inlet tube (200 to 350mm), 1 mounting tool, operation manual, quality certificate stating all test values
- with variable volume

Volume ml	Graduations ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Neck thread GL	Adapter	PK	Cat. No.
0.25 - 2.5	0.05	0.6	0.1	32	GL 28, 45, S 40	1	**9.284 030**
0.5 - 5.0	0.10	0.5	0.1	32	GL 28, 45, S 40	1	**9.284 031**
1.0 - 10.0	0.20	0.5	0.1	32	GL 28, 45, S 40	1	**9.284 032**
2.5 - 25.0	0.50	0.5	0.1	45	GL 32, 38, S 40	1	**9.284 033**
5.0 - 50.0	1.00	0.5	0.1	45	GL 32, 38, S 40	1	**9.284 034**
10.0 - 100.0	2.00	0.5	0.1	45	GL 32, 38, S 40	1	**9.284 035**

S 40 = saw tooth thread

2



2 Dispensers, VITLAB® genius

VITLAB

- quick, easy and precise volume adjustment
- patented recirculation valve avoids reagent waste
- no drips after tube has been capped
- easy calibration adjustment
- High-quality materials (PTFE, PFA, FEP, borosilicate glass, platinum-iridium) ensure good chemical resistance to most acids, solvents and bases
- a positive displacement plunger with PFA seal minimizes the crystallization of liquids and therefore the possibility of the plunger jamming
- easy to dismantle for cleaning, no tools necessary
- completely autoclavable at 121°C
- can be rotated 360° on bottle
- certificate of conformity according to DIN 12600
- margin of error according to DIN EN ISO 8655-5
- items supplied: 3 polypropylene adapters (see chart), 1 telescopic inlet tube (200 to 350mm), 1 mounting tool, operation manual, quality certificate stating all test values
- with recirculation valve and media-specific recalibration

Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Neck thread GL	Adapter	PK	Cat. No.
0.25 - 2.5	0.05	0.6	0.1	32	GL 28, 45, S 40	1	**9.284 022**
0.5 - 5	0.1	0.5	0.1	32	GL 28, 45, S 40	1	**9.284 023**
1 - 10	0.2	0.5	0.1	32	GL 28, 45, S 40	1	**9.284 024**
2.5 - 25	0.5	0.5	0.1	45	GL 32, 38, S 40	1	**9.284 025**
5 - 50	1.0	0.5	0.1	45	GL 32, 38, S 40	1	**9.284 026**
10 - 100	2.0	0.5	0.1	45	GL 32, 38, S 40	1	**9.284 027**

S 40 = saw tooth thread

We can supply this
manufacturer's whole product range !

partner of the LLG Lab Logistics Group

VITLAB® Competence in Labware

E & OE.

1 Dispensers, bottle-top, POLYFIX®

Poulten & Graf

For dispensing of all chemicals, where polypropylene is resistant. With vacuum calibrated, glass dispensing barrel. Valve block not detachable for safety reasons.
- conformity-certified
- ergonomically designed plunger handle for comfortable operation
- user-friendly, volume setting with easy movement and rotatable fine adjustment
- PP valve block (GL32) with FIX adapter which aligns the dispenser on the bottle.

Not suitable for solvents.
Supplied with 2 x PP bottle adapters (GL40 and GL45).

1



Description	Volume ml	Graduations ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
with glass piston and clear glass cylinder*	2 - 10	0.5	0.6	0.2	1	**9.283 800**
with glass piston and clear glass cylinder*	10 - 50	1.0	0.6	0.2	1	**9.283 810**
with PTFE-coated piston and clear glass cylinder**	2 - 10	0.5	0.6	0.2	1	**9.283 801**
with PTFE-coated piston and clear glass cylinder**	10 - 50	1.0	0.6	0.2	1	**9.283 802**
with glass piston and amber dosing cylinder***	2 - 10	0.5	0.6	0.2	1	**9.283 803**
with glass piston and amber dosing cylinder***	10 - 50	1.0	0.6	0.2	1	**9.283 804**

* For dosing of aqueous media
**For dosing of weak acids and bases
***For dispensing light sensitive liquids

2 Dispensers, bottle-top, FORTUNA® OPTIFIX® BASIC

Poulten & Graf

For problem-free dispensing of aqueous media and acids as well as solutions subject to crystallization. With solid, PTFE-sleeved dispensing piston, highly polished, 100% corrosion-free, vacuum calibrated, plastic-coated, precision glass cylinder (visible dispensing process). Stopper ring made of fibre-glass reinforced, PTFE. Black-graduated, dispensing cylinder. PTFE valve block (no metal springs to contaminate the dispensed liquid). With colour-coded handle inscriptions.Sizes 2ml to 100ml autoclavable (Please read the autoclaving instructions carefully before proceeding). Sizes 200ml to 500ml in autoclavable version only available on request.

Items supplied: Dispenser without reservoir bottle, PTFE suction and discharge tubes and two PP bottle adapters (GL40 and GL45). Conformity-certified, with precision certificate.

2



Type	Volume ml	Graduations ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
Basic-27	0.4 - 2	0.1	0.6	0.2	1	**9.287 902**
Basic-33	1 - 5	0.1	0.6	0.2	1	**9.287 903**
Basic-38	2 - 10	0.2	0.6	0.2	1	**9.287 904**
Basic-44	6 - 30	0.5	0.6	0.2	1	**9.287 905**
Basic-48	10 - 50	1.0	0.6	0.2	1	**9.287 906**
Basic-51	20 - 100	2.0	0.6	0.2	1	**9.287 907**
Basic-53	40 - 200	5.0	0.6	0.2	1	**9.287 908**
Basic-56*	60 - 300	5.0	0.6	0.2	1	**9.287 909**
Basic-58*	100 - 500	5.0	0.6	0.2	1	**9.287 951**

*not included in ISO 8655/5

3 Dispensers, bottle-top, FORTUNA® OPTIFIX® SOLVENT

Poulten & Graf

For organic solvents and liquid compounds that may swell PTFE. With vacuum calibrated, glass dispensing barrel and precision glass piston. Barrel graduated in black.
Visible dispensing. PTFE valve block (GL32). With colour-coded plunger handles. Sizes 2ml to 100ml autoclavable (Please read the autoclaving instructions carefully before proceeding). Sizes 200ml to 500ml in autoclavable version only available on request.

Items supplied: Dispenser without reservoir bottle, PTFE suction and discharge tubes and two PP bottle adapters (GL40 and GL45). Conformity-certified, with precision certificate.

3



Type	Volume ml	Graduations ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
SOLVENT-27	0.4 - 2	0.1	0.6	0.2	1	**9.287 953**
SOLVENT-33	1 - 5	0.2	0.6	0.2	1	**9.287 954**
SOLVENT-38	2 - 10	0.5	0.6	0.2	1	**9.287 955**
SOLVENT-44	6 - 30	1.0	0.6	0.2	1	**9.287 956**
SOLVENT-48	10 - 50	1.0	0.6	0.2	1	**9.287 957**
SOLVENT-51	20 - 100	2.0	0.6	0.2	1	**9.287 958**
SOLVENT-53	40 - 200	5.0	0.6	0.2	1	**9.287 959**
SOLVENT-56*	60 - 300	5.0	0.6	0.2	1	**9.287 960**
SOLVENT-58*	100 - 500	5.0	0.6	0.2	1	**9.287 961**

* in addition to ISO 8655

1



1 Dispensers, bottle-top, FORTUNA® OPTIFIX® SAFETY

Poulten & Graf

For strong acids (excl. HF) and aggressive chemicals. Visible dispensing process, dispensing piston made of PTFE-sleeved, solid glass, with additional sealing lip at the end of the piston to prevent acid fumes and odours from escaping. No metal springs in the valve block (no contamination of the dispensed liquid). With colour-coded handle inscriptions.
Items supplied: Dispenser without reservoir bottle, 1 discharge tube, incl. 2 PTFE-adapters (GL 40+45), 1 PTFE suction tube.

Type	Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
Safety-27	0.4 - 2	0.1	0.6	0.2	1	**9.287 962**
Safety-33	1 - 5	0.2	0.6	0.2	1	**9.287 963**
Safety-38	2 - 10	0.5	0.6	0.2	1	**9.287 964**
Safety-44	6 - 30	1.0	0.6	0.2	1	**9.287 965**
Safety-48	10 - 50	1.0	0.6	0.2	1	**9.287 966**
Safety-51	20 - 100	2.0	0.6	0.2	1	**9.287 967**

2



2 Dispensers, bottle-top, FORTUNA® OPTIFIX® SAFETY S

Poulten & Graf

Bottle-top dispensers for dispensing strong fuming acids and very aggressive liquids, with safety stopcock and additional safety valve in the ventilation tube, with PTFE-encased dispensing piston with sealing lip, FIX adaptor made of solid PTFE, comes with 2 x PTFE GL40/GL45 adapters and PTFE inlet tube.

Type	Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
Safety S-27	0.4 - 2	0.1	0.6	0.2	1	**6.206 600**
Safety S-33	1 - 5	0.2	0.6	0.2	1	**6.227 942**
Safety S-38	2 - 10	0.5	0.6	0.2	1	**9.287 995**
Safety S-44	6 - 30	1.0	0.6	0.2	1	**9.287 996**
Safety S-48	10 - 50	1.0	0.6	0.2	1	**9.287 997**
Safety S-51	20 - 100	2.0	0.6	0.2	1	**9.287 998**

3



3 Dispensers, bottle-top, FORTUNA UNIVERSAL® OPTIFIX® HF

Poulten & Graf

With solid PTFE dispensing barrel and glass-cored, PTFE coated plunger with seal (prevents acid vapours escaping from the storage bottle).
With colour-coded plunger handles.
Items supplied: Hydrofluoric acid dispenser without reservoir bottle, with PTFE valve block (GL32), PTFE suction and discharge tubes and two PTFE bottle adapters (GL40 and GL45).

Type	Volume ml	Graduations ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
HF-33	1 - 5	0.2	0.6	0.2	1	**9.287 970**
HF-38	2 - 10	0.5	0.6	0.2	1	**9.287 968**
HF-44	6 - 30	1.0	0.6	0.2	1	**9.287 969**
HF-48	10 - 50	1.0	0.6	0.2	1	**6.241 198**

4



4 Bottle-top dispensers Calibrex™ *organo* 525/Calibrex™ *solutae* 530

NEW!

Socorex

Calibrex *organo* 525 models include a ground glass plunger, best suited for organics, non-crystallizing acid and base solutions. Calibrex *solutae* 530 dispensers have a PFA coated plunger preventing plunger and barrel from seizing together. This enables trouble free distribution of salt solutions, weak and strong acids, as well as bases.
- Integrated calibration system
- Choice of adjustment button with each unit
- Autoclavable at 121°C fully assembled
- Two-year warranty

Supplied with 45 mm base thread, 120 mm delivery jet and stopper, 350 mm feed tube, alternative screw-type volume setting button, three bottle neck adapters (32, 38 and 40 mm), QC certificate and operating instructions.

Type	Volume ml	Graduations ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Recycle valve	PK	Cat. No.
Calibrex™ *organo* 525	2.5 - 25	0.5	0.6	0.1	without	1	**9.411 562**
Calibrex™ *organo* 525	5 - 50	1.0	0.6	0.1	without	1	**9.411 563**
Calibrex™ *organo* 525	10 - 100	1.0	0.6	0.1	without	1	**9.411 564**
Calibrex™ *organo* 525	2.5 - 25	0.5	0.6	0.1	with	1	**6.261 218**
Calibrex™ *organo* 525	5 - 50	1.0	0.6	0.1	with	1	**6.261 219**
Calibrex™ *organo* 525	10 - 100	1.0	0.6	0.1	with	1	**6.261 220**
Calibrex™ *solutae* 530	2.5 - 25	0.5	0.6	0.1	without	1	**9.411 565**
Calibrex™ *solutae* 530	5 - 50	1.0	0.6	0.1	without	1	**9.411 566**
Calibrex™ *solutae* 530	10 - 100	1.0	0.6	0.1	without	1	**6.258 446**
Calibrex™ *solutae* 530	2.5 - 25	0.5	0.6	0.1	with	1	**6.261 221**
Calibrex™ *solutae* 530	5 - 50	1.0	0.6	0.1	with	1	**6.261 222**
Calibrex™ *solutae* 530	10 - 100	1.0	0.6	0.1	with	1	**6.261 223**

E & OE.

HIRSCHMANN®

HiClass in the lab – globally!



Titration, dispensing or pipetting,
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1



9.287 831

Dispensers, bottle-top, ceramus® classic

Hirschmann

With ceramic pistons. High precision, bottle-top dispensers adjustable in fixed steps for the reproducible dispensing of liquids. With patented, high-purity, alumino-ceramic pistons and highly polished, DURAN® glass cylinders, guaranteeing continual durability and precision.
- no surface abrasion
- no sticking due to plastic swelling
- no thermal expansion problems

Ratchet adjustment mechanism prevents accidental adjustment of the set volume. When not in use the pistons can be locked and the delivery tubes capped to prevent loss of reagent. The glass cylinders are encased in plastic for added safety and have a window for viewing the contents. Autoclavable up to max. 121°C/2 bar.

- inlet and outlet valves are easily replaced
- fully supported delivery jet prevents 'side fling' of reagent
- screw-fixed, inlet suction tube
- High-grade materials (ECTFE, DURAN® glass, FEP) are used throughout.

Supplied with: complete with thread A 32 mm, 3 thread adapters (A 28, A 45, S 40), 1 screw-coupled suction tube, 1 discharge tube unit, one spanner for valve, with individual serial number and Single Calibration Report.

Volume ml	Graduations ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
0.2 - 1	0.05	0.6	0.2	1	**9.287 831** 1
0.4 - 2	0.05	0.6	0.2	1	**9.287 832**
1 - 5	0.10	0.6	0.2	1	**9.287 833**
2 - 10	0.25	0.6	0.2	1	**9.287 834**
5 - 30	0.50	0.6	0.2	1	**9.287 835**
10 - 60	1.00	0.6	0.2	1	**9.287 836**

2



9.287 802

Dispensers, bottle-top, ceramus®

Hirschmann

New dispenser technology from Hirschmann laboratory apparatus, with ceramic pistons. ceramus® are a high-precision, bottle-top dispenser range for almost all liquids.
- Environmentally-friendly, reagent-saving, recirculation valves
- Tough, ceramic pistons
- Simple, self-locking volume selection
- When not in use, pistons can be locked and delivery tubes capped to prevent loss of reagent.
- Fixed interval graduations give excellent reproducibility
- 45mm screw neck and adapters supplied allow use with a variety of reservoir bottles
- Smooth-action piston minimises operator fatigue during serial dispensing
- High-grade construction materials provide long operational life
- autoclavable at 121°C

Supplied with: ceramus® complete with thread adapters A 45mm, 3 thread adapters (A 32, S 40 and A 38), 1 screw-coupled suction tube, 1 discharge tube unit complete, 1 spanner for valve, with individual serial number and single calibration report.

Type	Volume ml	Graduations ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
Variable	0.2 - 1.0	0.05	0.6	0.2	1	**9.287 800**
Variable	0.4 - 2.0	0.05	0.6	0.2	1	**9.287 801**
Variable	1.0 - 5.0	0.1	0.6	0.2	1	**9.287 802** 2
Variable	2.0 - 10.0	0.25	0.6	0.2	1	**9.287 803**
Variable	5.0 - 30.0	0.5	0.6	0.2	1	**9.287 804**
Variable	10.0 - 60.0	1.0	0.6	0.2	1	**9.287 805**
Fixed	1.0	-	0.6	0.2	1	**9.287 806**
Fixed	2.0	-	0.6	0.2	1	**9.287 807**
Fixed	5.0	-	0.6	0.2	1	**9.287 808**
Fixed	10.0	-	0.6	0.2	1	**9.287 809**
Fixed	25.0	-	0.6	0.2	1	**9.287 815**
Fixed	50.0	-	0.6	0.2	1	**9.287 816**

E & OE.

Accessories for Hirschmann Dispenser ceramus® and opus®, Digital-Bürette solarus® and Titriergerät akku drive®

Hirschmann

Product	LLG code	suitable for opus®	ceramus®	solarus®	ceramus® classic up to 10 ml	ceramus® classic 30 + 60 ml
System platform	9.287 880	x				
Bottle support suitable for all bottles up to diam. approx. 75-120mm	9.287 820	x	x	x		x
Data power cable 2m	6.265 215	x				
Data power cable 5m	6.265 216	x				
Connecting cable USB	9.287 758	x		x		
Connecting cable RS 232	9.287 756	x		x		
Foot-switch for starting the dosing operation	9.287 856	x				
Hand-key for starting the dosing operation	9.287 855	x				
Mouse for extremely sensitive titration	9.287 844	x				
Touch screen foil	6.265 217	x				
Light protection window for light sensitive media	7.940 234	x		x		
Spanner for valve	9.287 753	x	x	x	x	x
Round filter set with one-sided connection (5 pcs.)	9.283 965	x	x	x		
Discharge tube unit, flexible, spiral-shaped, FEP, 1.5m	6.206 625	x	x	x		
Discharge tube unit, flexible, spiral-shaped, FEP, 3m	9.287 755	x	x	x		
Discharge tube unit with Luer-Lock-connection, FEP/PFA	6.265 218					x
Discharge tube unit	7.200 408	x	x	x		
Titration discharge pointed, completely guided tube	9.287 754	opus® titration		x		
Thread adapter, from A 45 to A 32, PP	9.287 783	x	x	x		
Thread adapter, from A 45 to A 38, PP	9.287 784	x	x	x		
Thread adapter, from A 45 to S 40, PP	9.287 785	x	x	x		
Thread adapter, from A 45 to A 32, ETFE	9.287 786	x	x	x		
Thread adapter, from A 45 to A 38, ETFE	9.287 787	x	x	x		
Thread adapter, from A 45 to S 40, ETFE	9.287 788	x	x	x		
Discharge valve, glass valve seat/glass valve ball, spring from Hastelloy	9.287 750	x	x	x		x
Suction valve, glass valve seat/glass valve ball, spring from Hastelloy	9.287 751	x	x	x		x
Recirculation valve, glass valve seat/glass valve ball, spring from Hastelloy	9.287 752	x	x	x		
Suction tube FEP with screw 310mm	9.287 851	x	x	x		x
Suction tube FEP with screw 400mm	9.287 852	x	x	x		x
Screw coupled suction tube FEP 310mm	6.056 430				x	
Screw coupled suction tube FEP 400mm	6.239 205				x	
Suction tube FEP with screw 2m	6.241 551	x	x	x		x
Suction tube FEP with screw 5m	6.265 219	x	x	x		x
Recirculation tube, 2m	6.241 552	x	x	x		x
Recirculation tube, 5m	6.265 220	x	x	x		x

1

Bottle holder for bottle-top dispenser ceramus® and digital burette solarus®

Suitable for all bottles up to diam. approx. 75mm to 120mm. *Hirschmann*

Description	PK	Cat. No.
Bottle holder	1	**9.287 820**



We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

HIRSCHMANN®



1 Bottle-top dispensers, seripettor®/seripettor® pro

The economy dispensers for routine dispensing *BRAND*

The seripettor® and seripettor® pro are innovative bottle-top dispensers with a special design. A lifting spring provides automatic filling. When the piston seal is worn out, the entire dispensing unit can be exchanged by the user rapidly and easily, without tools. Eliminating expensive repairs!

- low-cost replaceable dispensing cartridge with wiping seal. One spare dispensing cartridge included.
- semi-automatic dispensing. The spring loaded piston refills the cylinder after dispensing.
- volume setting. Toothed setting track allows quick and precise adjustment of desired volume.
- disassembles without tools. All parts can be replaced quickly. The innovative design of seripettor®/seripettor® pro makes cleaning and maintenance easy
- fits most bottles

seripettor®
For dispensing alkaline, buffer and vitamin solutions, as well as culture media, e.g. agar nutrient medium, up to 60°C.

seripettor® pro
Broader scope of application compared to the seripettor®; for dispensing many acidic, alkaline and saline solutions, and solvents such as essential oils.

Items supplied
Discharge tube, filling tube, spare dispensing cartridge and adapters, PP (GL45/32 and GL45/S40).

Type	Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
seripettor®	0.2 - 2	0.04	1.2	0.2	1	**9.284 849**
seripettor®	1 - 10	0.2	1.2	0.2	1	**9.284 850**
seripettor®	2.5 - 25	0.5	1.2	0.2	1	**9.284 851**
seripettor® pro	0.2 - 2	0.04	1.2	0.2	1	**9.284 854**
seripettor® pro	1 - 10	0.2	1.2	0.2	1	**9.284 852**
seripettor® pro	2.5 - 25	0.5	1.2	0.2	1	**9.284 853**

End test values relate to the nominal values (= max. volume) printed on the dispenser when the temperature (20°C) of the device, environment and distilled water is uniform, and when operated smoothly.

We can supply this
manufacturer's whole product range !
partner of the LLG Lab Logistics Group
BRAND

E & OE.

1 Bottle-top dispensers Dispensette® S

NEW!

BRAND



The Dispensette® S bottle-top dispenser combines the proven Dispensette® technology with new innovative features making liquid dosing easy and secure.
- New discharge tube, with and without recirculation valve
- New valve system - tight sealing without additional sealing rings
- Fast venting through improved aerodynamics
- Minimal force needed to operate - especially with high-volume devices
- Secure volume fixing with analog slide
- Rotatable screw cap closure - does not interfere with dosing
- New 1 ml dispenser - available as digital and analog version
- Autoclavable (121°C)
- Easy to calibrate and adjust in order to comply with ISO 9001 and GLP guidelines
- Easy to disassemble for cleaning
- Removable filling and exhaust valve with safety bulb (closes when discharge tube is not mounted)
- To allow the bottle label to face the user, the valve block can be rotated by 360°
- Telescope filling tube easily adjusts to different bottle sizes
- DE-M marking

Analog:
Analog volume display, quickly adjustable dosing volume, securely fixed. Simple calibration adjustment with supplied tool.
Fix:
Fixed-volume for standard applications. Simple calibration adjustment with supplied tool.
Digital:
Especially easy to read digital display. The dispensing volume can be set accurately and reproducibly. Easy Calibration technique for adjustment in seconds without tools. Automatic display if factory settings are changed.

Included items:
Bottletop dispensers Dispensette® S, DE-M marked and supplied with performance certificate, telescope filling tube, recirculation valve (optional), mounting tool and adapters made of PP.

2 Bottle-top dispenser Dispensette® Analog S

NEW!

BRAND



Red color code. Wide range of applications, ideal for dispensing aggressive reagents, e.g. concentrated bases and acids such as H_3PO_4, H_2SO_4 (except as HCl, HNO_3 and HF), saline solutions and a variety of organic solvents.

Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Recycle valve	PK	Cat. No.
0.1 - 1	0.02	0.6	0.2	without	1	**9.284 380**
0.1 - 1	0.02	0.6	0.2	with	1	**9.284 381**
0.2 - 2	0.05	0.5	0.1	without	1	**9.284 410**
0.2 - 2	0.05	0.5	0.1	with	1	**9.284 411**
0.5 - 5	0.10	0.5	0.1	without	1	**9.284 414**
0.5 - 5	0.10	0.5	0.1	with	1	**9.284 415**
1 - 10	0.20	0.5	0.1	without	1	**9.284 420**
1 - 10	0.20	0.5	0.1	with	1	**9.284 421**
2.5 - 25	0.50	0.5	0.1	without	1	**9.284 424**
2.5 - 25	0.50	0.5	0.1	with	1	**9.284 425**
5 - 50	1.00	0.5	0.1	without	1	**9.284 430**
5 - 50	1.00	0.5	0.1	with	1	**9.284 431**
10 - 100	1.00	0.5	0.1	without	1	**9.284 434**
10 - 100	1.00	0.5	0.1	with	1	**9.284 435**

3 Bottle-top dispenser Dispensette® S Fix

NEW!

BRAND



Red color code (applications see Dispensette® S Analog).
Further fixed volumes are available on request

Volume ml	Graduations ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Recycle valve	PK	Cat. No.
1	-	0.6	0.2	without	1	**9.284 440**
1	-	0.6	0.2	with	1	**9.284 441**
2	-	0.5	0.1	without	1	**9.284 444**
2	-	0.5	0.1	with	1	**9.284 445**
5	-	0.5	0.1	without	1	**9.284 450**
5	-	0.5	0.1	with	1	**9.284 451**
10	-	0.5	0.1	without	1	**9.284 454**
10	-	0.5	0.1	with	1	**9.284 455**



1 Bottle-top dispenser Dispensette® Digital S

NEW!

BRAND

Red color code (applications see Dispensette® S Analog).
Especially easy to read digital display.

Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Recycle valve	PK	Cat. No.
0.1 - 1	0.005	0.5	0.1	without	1	**9.284 382**
0.1 - 1	0.005	0.5	0.1	with	1	**9.284 383**
0.2 - 2	0.01	0.5	0.1	without	1	**9.284 460**
0.2 - 2	0.01	0.5	0.1	with	1	**9.284 461**
0.5 - 5	0.02	0.5	0.1	without	1	**9.284 464**
0.5 - 5	0.02	0.5	0.1	with	1	**9.284 465**
1 - 10	0.05	0.5	0.1	without	1	**9.284 470**
1 - 10	0.05	0.5	0.1	with	1	**9.284 471**
2.5 - 25	0.10	0.5	0.1	without	1	**9.284 474**
2.5 - 25	0.10	0.5	0.1	with	1	**9.284 475**
5 - 50	0.20	0.5	0.1	without	1	**9.284 480**
5 - 50	0.20	0.5	0.1	with	1	**9.284 481**



2 Bottle-top dispenser Dispensette® Organic Analog S

NEW!

BRAND

Yellow color code. Ideal for dispensing organic solvents, e.g., chlorinated and fluorinated hydrocarbons such as trichlorotrifluoroethane and methylene chloride, or concentrated acids such as HCl and HNO_3 (not HF) as well as trifluoroacetic acid (TFA), tetrahydrofuran (THF) and peroxides.

Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Recycle valve	PK	Cat. No.
0.5 - 5	0.1	0.5	0.1	without	1	**9.284 078**
0.5 - 5	0.1	0.5	0.1	with	1	**9.284 082**
1 - 10	0.2	0.5	0.1	without	1	**9.284 079**
1 - 10	0.2	0.5	0.1	with	1	**9.284 083**
2.5 - 25	0.5	0.5	0.1	without	1	**9.284 080**
2.5 - 25	0.5	0.5	0.1	with	1	**9.284 084**
5 - 50	1.0	0.5	0.1	without	1	**9.284 081**
5 - 50	1.0	0.5	0.1	with	1	**9.284 085**
10 - 100	1.0	0.5	0.1	without	1	**9.284 086**
10 - 100	1.0	0.5	0.1	with	1	**9.284 087**



3 Bottle-top dispenser Dispensette® Organic Fix S

NEW!

BRAND

Color code yellow (applications see Dispensette® S Organic Analog).
Further fixed volumes are available on request.

Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Recycle valve	PK	Cat. No.
5	-	0.5	0.1	without	1	**9.284 088**
5	-	0.5	0.1	with	1	**9.284 089**
10	-	0.5	0.1	without	1	**9.284 092**
10	-	0.5	0.1	with	1	**9.284 093**



4 Bottle-top dispenser Dispensette® Organic Digital S

NEW!

BRAND

Yellow color code (applications see Dispensette® S Organic Analog).
Especially easy to read digital display

Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Recycle valve	PK	Cat. No.
0.5 - 5	0.02	0.5	0.1	without	1	**9.284 070**
0.5 - 5	0.02	0.5	0.1	with	1	**9.284 074**
1 - 10	0.05	0.5	0.1	without	1	**9.284 071**
1 - 10	0.05	0.5	0.1	with	1	**9.284 075**
2.5 - 25	0.1	0.5	0.1	without	1	**9.284 072**
2.5 - 25	0.1	0.5	0.1	with	1	**9.284 076**
5 - 50	0.2	0.5	0.1	without	1	**9.284 073**
5 - 50	0.2	0.5	0.1	with	1	**9.284 077**

E & OE.

1 Bottle-top dispenser Dispensette® S Trace Analysis Analog

NEW!

BRAND

Dispensette® S Trace Analysis is ideal for precise volume dosing of high purity media for trace analysis. Can be used as hydrofluoric acid dispenser with Pt/Ir valve.

Included items: Bottle-top dispenser Dispensette® S TA, DE-M marked and supplied with performance certificate, telescope filling tube, recirculation valve (optional), mounting tool and bottle adapters GL 28/S 28 (ETFE), GL 32 (ETFE) and S40 (PTFE), operating manual.



Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Valve spring	Recycle valve	PK	Cat. No.
1 - 10	0.2	0.5	0.1	Pt / Ir	without	1	**4.007 914**
1 - 10	0.2	0.5	0.1	Pt / Ir	with	1	**4.007 915**
1 - 10	0.2	0.5	0.1	Tantalum	without	1	**4.007 916**
1 - 10	0.2	0.5	0.1	Tantalum	with	1	**4.007 917**

2 Dispenser/bottle-top flasks, amber soda-lime glass

BRAND

Amber soda-lime glass.With PP screw cap and LDPE pouring ring. Reservoir bottles. Space-saving, square design, except 2500ml reservoir which is cylindrical.



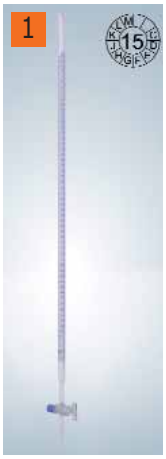
Capacity ml	Neck thread GL	Width mm	Height mm	PK	Cat. No.
100	32	50	125	1	**9.284 541**
250	32	65	160	1	**9.284 542**
500	32	80	195	1	**9.284 543**
1000	45	95	230	1	**9.284 544**
2500*	45	140	300	1	**9.284 545**

* cylindrical design

More bottles - please see page 60

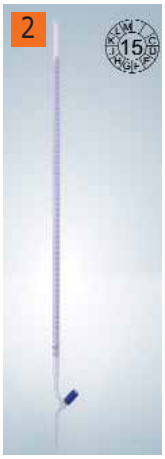


1



9.270 163

2



9.270 166

Burettes, with straight stopcock, DURAN®, class AS

Hirschmann

Schellbach line for easier reading, conformity certified, with dated batch identification, high-contrast blue graduations, main point ring graduation at major subdivisions, EX (TD) calibrated, acc. to DIN EN ISO 385. Scale length approx. 500mm.
For those products batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.de. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Capacity	Grad.	Tolerance	Stopcock with	PK	Cat. No.	
ml	ml	± ml				
10	0.02	0.02	Glass key	1	**9.270 161**	
25	0.05	0.03	Glass key	1	**9.270 162**	
50	0.1	0.05	Glass key	1	**9.270 163**	1
10	0.02	0.02	PTFE spindle	1	**9.270 164**	
25	0.05	0.03	PTFE spindle	1	**9.270 165**	
50	0.1	0.05	PTFE spindle	1	**9.270 166**	2
10	0.02	0.02	PTFE key	1	**9.270 167**	
25	0.05	0.03	PTFE key	1	**9.270 168**	
50	0.1	0.05	PTFE key	1	**9.270 169**	

3



3 Burettes, with straight stopcock, borosilicate glass 3.3, Class AS

BRAND

BLAUBRAND®. DIN EN ISO 385. DE-M marking. Calibrated to deliver (TD, Ex).
Schellbach stripe. Length approx. 800mm.
Ring graduations at major subdivisions. Marks and inscriptions in high contrast blue enamel.
With batch number and one batch certificate per pack included. Also available with individual works, USP or DAkkS (former DKD) calibration certificate, please enquire.
The batch certificate is also available to download from the manufacturer's website.

Capacity	Grad.	Tolerance	Stopcock with	PK	Cat. No.
ml	ml	± ml			
10	0.02	0.02	PTFE spindle	1	**9.270 115**
25	0.05	0.03	PTFE spindle	1	**9.270 116**
50	0.1	0.05	PTFE spindle	1	**9.270 117**
10	0.02	0.02	Glass key	1	**9.270 118**
25	0.05	0.03	Glass key	1	**9.270 119**
50	0.1	0.05	Glass key	1	**9.270 120**

4



4 Burettes, with straight stopcock, borosilicate glass 3.3, class AS

Isolab

With class AS, conformity certified, with batch identification, blue graduations, DIN EN 385.
PTFE spindle.

Capacity	Grad.	Tolerance	Description	PK	Cat. No.
ml	ml	± ml			
10	0.02	0.020	with Schellbach line	1	**4.008 311**
25	0.05	0.030	with Schellbach line	1	**9.270 100**
50	0.10	0.050	with Schellbach line	1	**9.270 101**
10	0.02	0.020	without Schellbach line	1	**9.270 102**
25	0.05	0.030	without Schellbach line	1	**9.270 103**
50	0.10	0.050	without Schellbach line	1	**9.270 104**



1 Burette with straight standard ground stopcock, DURAN®, class AS

DURAN Group

The original DURAN® burettes are manufactured from chemically highly resistant borosilicate glass 3.3. Thanks to the precise scale, they are ideal for titration.
Calibration is based on the released volume ("Ex") at a + 20°C reference temperature. This means the fluid quantity released can be taken exactly from the scale, as the liquid adhesion to the glass is taken into account in the calibration. Volume content tolerances conform to DIN and ISO accuracy limits. From now on the approved DURAN® burettes are also available with PTFE keys. Unlike the glass keys, the PTFE keys need not be greased, which makes work in the laboratory easier.

- Available in three sizes, the right burette for each application
- Proven DURAN® properties
- With Schellbach stripe and main graduations as circular divisions
- Conforms to ISO 385
- Autoclavable
- Corresponds to USP/EP and JP guidelines

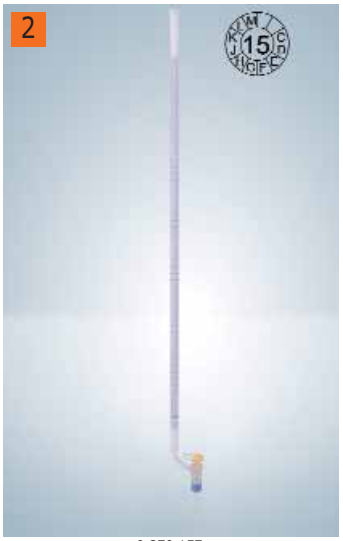


Capacity	Grad.	Tolerance	Stopcock with	Height	PK	Cat. No.
ml	ml	± ml		mm		
10	0.02	0.02	Glass key	750	1	**7.022 042**
25	0.05	0.03	Glass key	750	1	**7.022 043**
50	0.1	0.05	Glass key	750	1	**7.022 044**
100	0.2	0.1	Glass key	750	1	**9.270 925**
10	0.02	0.02	PTFE key	750	1	**9.270 921**
25	0.05	0.03	PTFE key	750	1	**9.270 922**
50	0.1	0.05	PTFE key	750	1	**9.270 923**
100	0.2	0.1	PTFE key	750	1	**9.270 924**

Burettes, with lateral stopcock, DURAN®, class AS

Hirschmann

With Schellbach stripe. EX (TD) calibrated. With dated batch identification. Conformity certified. High-contrast blue graduation for easier reading. Main point ring graduation, lateral stopcock with glass key or with PTFE-Spindle, DIN EN ISO 385. Scale length 500mm. For those products, batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.



9.270 157

Capacity	Grad.	Tolerance	Stopcock with	PK	Cat. No.
ml	ml	± ml			
10	0.02	0.02	Glass key	1	**9.270 155**
25	0.05	0.03	Glass key	1	**9.270 156**
50	0.1	0.05	Glass key	1	**9.270 157** 2
10	0.02	0.02	PTFE spindle	1	**9.270 158**
25	0.05	0.03	PTFE spindle	1	**9.270 159**
50	0.1	0.05	PTFE spindle	1	**9.270 160**

3 Burettes, with lateral stopcock, borosilicate glass 3.3, Class AS

BRAND

BLAUBRAND®. DIN EN ISO 385. Conformity certified. With batch number. Graduations and inscriptions in highly contrasting blue enamel. With Schellbach stripe. Length approx. 800mm. Calibrated to deliver (EX).
All BLAUBRAND® burettes are delivered with batch number and one batch certificate included per manufacturer's pack. Also available with individual works, USP or DAkkS (former DKD) calibration certificate, please enquire.
The batch certificate is also available to download from the manufacturer's website.



Capacity	Grad.	Tolerance	Stopcock with	PK	Cat. No.
ml	ml	± ml			
10	0,02	0,02	PTFE spindle	1	**9.270 144**
25	0,05	0,03	PTFE spindle	1	**9.270 147**
50	0,1	0,05	PTFE spindle	1	**9.270 148**
10	0,02	0,02	Glass key	1	**9.270 121**
25	0,05	0,03	Glass key	1	**9.270 122**
50	0,1	0,05	Glass key	1	**9.270 125**



1 Micro burettes with straight stopcock, Bang pattern, borosilicate glass 3.3, Class AS

NEW!

BLAUBRAND®, class AS, DE-M marking. Boro 3.3. DIN EN ISO 385. Calibrated to deliver (TD, EX). *BRAND*
Schellbach stripe. Available with needle valve stopcock with PTFE spindle (PTFE key in intermediate stopcock) or STJ glass stopcock (glass key in intermediate stopcock). All BLAUBRAND® burettes are delivered with batch number and one batch certificate included per manufacturer's pack. Also available with individual works, USP or DAkkS (former DKD) calibration certificate, please enquire.
The batch certificate is also available to download from the manufacturer's website.

Capacity	Grad.	Tolerance	Stopcock with	PK	Cat. No.
ml	ml	± ml			
2	0.01	0.01	PTFE spindle	1	**7.018 361**
5	0.01	0.01	PTFE spindle	1	**7.018 362**
10	0.02	0.02	PTFE spindle	1	**7.018 363**
2	0.01	0.01	Glass key	1	**7.018 358**
5	0.01	0.01	Glass key	1	**7.018 359**
10	0.02	0.02	Glass key	1	**7.018 360**



2 Micro burettes, Bang pattern, with lateral stopcock, borosilicate glass 3.3, Class AS

NEW!

BLAUBRAND®, class AS, DE-M marking. Boro 3.3. DIN EN ISO 385. Calibrated to deliver (TD, EX). *BRAND*
Schellbach stripe. Available with needle valve stopcock with PTFE spindle (PTFE key in intermediate stopcock) or STJ glass stopcock (glass key in intermediate stopcock). Stand included.
All BLAUBRAND® burettes are delivered with batch number and one batch certificate included per manufacturer's pack. Also available with individual works, USP or DAkkS (former DKD) calibration certificate, please enquire.
The batch certificate is also available to download from the manufacturer's website.

Capacity	Grad.	Tolerance	Stopcock with	PK	Cat. No.
ml	ml	± ml			
2	0.01	0.01	PTFE spindle	1	**9.271 235**
5	0.01	0.01	PTFE spindle	1	**9.271 237**
10	0.02	0.02	PTFE spindle	1	**7.018 365**
2	0.01	0.01	Glass key	1	**9.271 225**
5	0.01	0.01	Glass key	1	**9.271 227**
10	0.02	0.02	Glass key	1	**7.018 364**



4.008 314



4.008 316

Automatic burettes, schilling pattern, borosilicate glass 3.3/PE-LD

Isolab

- Described as automatic burettes with fast titration and practical usage.
- Especially suitable for field analysis where there is a risk of breaking.
- The entire system consists of a burette tubing with automatic zeroing system together with a valve stopcock, a reservoir bottle and a bottle stand.
- Rapid filling by squeezing the bottle and fast titration by valve stopcock
- Inscriptions and graduations are printed either with blue enamel or with white enamel which is specially designed for glass use.
- Clear burettes are manufactured with schellbach stripe.
- Amber burettes are manufactured without schellbach stripe.
- 10ml burette has a polyethylene reservoir bottle of 500ml volume whereas 25 and 50ml burettes are used with bottles of 1000ml volume.

Capacity	Grad.	Tolerance	Description	PK	Cat. No.	
ml	ml	± ml				
10	0,05	0,030	clear glass, schellbach, blue graduated	1	**4.008 314**	3
25	0,10	0,050	clear glass, schellbach, blue graduated	1	**6.241 904**	
50	0,10	0,050	clear glass, schellbach, blue graduated	1	**4.008 315**	
10	0,05	0,030	amber, without schellbach, white graduated	1	**4.008 316**	4
25	0,10	0,050	amber, without schellbach, white graduated	1	**4.008 317**	
50	0,10	0,050	amber, without schellbach, white graduated	1	**4.008 318**	

Automatic burettes acc. Dr. Schilling pattern, blue graduation, DURAN®

Fast flow burette with 500ml plastic reservoir bottle (up to 10ml) or 1000ml (up to 15ml). *Hirschmann*
Schellbach stripe and graduation in high contrast blue enamel, scale length approx. 330mm.

Capacity ml	Grad. ml	Tolerance ± ml	Bottle size ml	Scale length approx. mm	PK	Cat. No.
5	0.05	0.03	500	330	1	**6.070 009**
10	0.05	0.045	500	330	1	**7.510 426**
15	0.1	0.045	1000	330	1	**6.223 256**
25	0.1	0.075	1000	330	1	**7.510 427**
50	0.1	0.075	1000	550	1	**6.070 072** 1

1



6.070 072

2 Automatic burettes, glass, Schilling pattern, borosilicate glass 3.3/PE-LD, class B

NEW!

SILBERBRAND. Tolerances to class B, DIN EN ISO 385. Borosilicate glass 3.3 burette. *BRAND*
PVC filling tube and silicone outlet tubing. PE-LD reservoir bottle with PE-HD base.
Brass/PP micrometer screw. Graduations and inscriptions are in highly contrasting black enamel.
With Schellbach stripes. Squeezing of bottle allows rapid filling. Fine titration is easy using the micrometer screw.
Coarse titration is achieved by removal of the micrometer screw and using the push button. Calibrated to deliver (EX).

Capacity ml	Grad. ml	Tolerance ± ml	Capacity ml	Height mm	PK	Cat. No.
10*	0.05	0.05	500	530	1	**9.271 053**
15*	0.1	0.08	500	510	1	**9.271 055**
25*	0.1	0.08	1000	620	1	**9.271 056**
50*	0.1	0.1	1000	830	1	**9.271 058**
25* **	0.1	0.10	100	650	1	**7.981 360**
50**	0.1	0.1	1000	900	1	**6.239 724**

* Narrower divisions
**amber, borosilicate glass 5.4

2



3 Automatic burettes, Schilling pattern, borosilicate glass 3.3, PE-LD, class B

Made of borosilicate glass 3.3. Class B. Conformity with DIN ISO 384. With Schellbach stripes (blue/white) and easily readable, black scaling. Calibrated to deliver, EX. *VITLAB*
Automatic zeroing. The burette stopcock is made of high quality plastic. Its PTFE key turns easily and allows fine titration. Special protection against breakage if the apparatus gets knocked over: A small bumper has been attached to the upper end of the upright measuring tube. This feature reduces the chance of breakage.
Material: burette of borosilicate glass 3.3, PP filling tube, PMP/PTFE burette stopcock, PE-LD reservoir bottle.

Amber borosilicate burette made of glass 3.3. Class B, for light sensitive substances. Conformity with DIN ISO 384. With easily readable black scaling. Calibrated to deliver EX. Automatic zeroing. The stopcock of the burette is made of high quality plastic. Its PTFE key turns easily and allows fine titration. A small bumper has been attached to the upper end of the upright measuring tube. This feature reduces the chance of breakage.
Materials: burette of borosilicate glass 3.3, PP filling tube, PMP/PTFE burette stopcock, PE-LD reservoir bottle.

3



Burette capacity ml	Grad. ml	Tolerance ± ml	Bottle capacity ml	Height mm	Burette	PK	Cat. No.
25	0.05	0.05	1000	900	with plastic coating	1	**9.271 082**
50	0.10	0.10	1000	900	with plastic coating	1	**9.271 084**
25	0.05	0.05	1000	900	without plastic coating	1	**9.271 085**
50	0.10	0.10	1000	900	without plastic coating	1	**9.271 086**
25	0.05	0.05	1000	900	amber glass	1	**9.271 087**
50	0.10	0.10	1000	900	amber glass	1	**9.271 088**

1



4.008 312

2



6.238 473

Automatic burettes, borosilicate glass 3.3, class AS

Isolab

- Manufactured from pre-vacuum calibrated borosilicate glass. They meet the highest quality standards according to DIN EN ISO 385 and DIN 12700.
- Permanent quality control through all steps eliminates possible deviations from nominal values.
- Calibrated to deliver (Ex) and the tolerances are according to DIN/ISO Class "AS" standards.
- Conformity ("H") certified, with a batch number printed on the body. Batch certificate can be downloaded from the suppliers website.
- Supplied with an automatic zeroing system, VALVE stopcock and also an intermediate PTFE stopcock to recirculate the remaining liquid.
- Clear burettes are manufactured with schellbach stripe.
- Inscriptions and graduations are printed with special blue enamel. For amber burettes, white enamel is used to maximise visibility and durability.

Glass bottle - Please order separately.

Capacity	Graduations	Tolerance	Glass	Description	Graduations	PK	Cat. No.	
ml	ml	± ml						
10	0.02	0.020	clear	schellbach	blue graduated	1	**4.008 312**	1
25	0.05	0.030	clear	schellbach	blue graduated	1	**6.241 216**	
50	0.10	0.050	clear	schellbach	blue graduated	1	**6.237 627**	
10	0.02	0.020	amber	without schellbach	white graduated	1	**6.238 473**	2
25	0.05	0.030	amber	without schellbach	white graduated	1	**6.242 463**	
50	0.10	0.050	amber	without schellbach	white graduated	1	**6.241 116**	

3



9.270 785

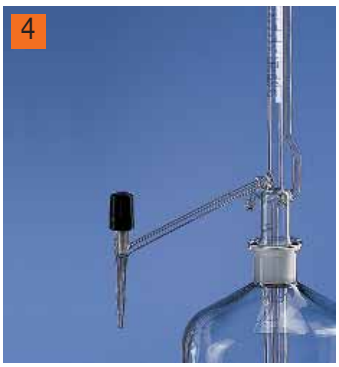
Automatic burettes acc. Pellet, without intermediate stopcock, class AS, DURAN®

Hirschmann

Lateral PTFE-spindle without intermediate stopcock. Main point ring graduation.Schellbach stripe. With dated batch identification. Conformity certified. Graduation in high-contrast blue enamel, acc. to DIN EN ISO 385. Incl. 2L clear glass bottle. Scale length approx. 500mm.
For those products, batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Capacity	Grad.	Tolerance	PK	Cat. No.	
ml	ml	± ml			
10	0.02	0.02	1	**6.079 718**	
25	0.05	0.03	1	**7.630 409**	
50	0.1	0.05	1	**9.270 785**	3

4



4 Automatic burettes, Pellet pattern, borosilicate glass 3.3, Class AS, without stopcock

NEW!

BRAND

BLAUBRAND®, class AS, DE-M marking. Boro 3.3. DIN EN ISO 385. Calibrated to deliver (TD, EX). Schellbach stripe. With needle-valve stopcock with PTFE spindle. Automatic zeroing. Total height approx. 1 m incl. 2000 ml bottle (soda-lime glass). Incl. one batch certificate. Also available with individual works, USP or DAkkS (former DKD) calibration certificate, please enquire. The batch certificate is also available to download from the manufacturer's website.

Capacity	Grad.	Tolerance	Description	PK	Cat. No.
ml	ml	± ml			
10	0.02	0.02	with bottle	1	**7.018 337**
25	0.05	0.03	with bottle	1	**7.018 338**
50	0.1	0.05	with bottle	1	**7.018 339**
10	0.02	0.02	without bottle	1	**7.055 412**
25	0.05	0.03	without bottle	1	**7.076 593**
50	0.1	0.05	without bottle	1	**7.082 062**

5



6.079 156

Automatic burettes acc. Pellet, with stopcock, class AS, DURAN®

Hirschmann

Lateral glass stopcock and intermediate stopcock. Scale length approx. 500mm. Main point ring graduation. Schellbach stripe. With dated batch identification. Conformity certified. Graduation in high-contrast blue enamel, acc. to DIN EN ISO 385. Incl. 2 l clear glass bottle.
For those products, batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available.

Capacity	Grad.	Tolerance	PK	Cat. No.	
ml	ml	± ml			
10	0.02	0.02	1	**6.079 157**	
25	0.05	0.03	1	**6.056 580**	
50	0.1	0.05	1	**6.079 156**	5

E & OE.

Automatic burettes acc, Pellet, with PTFE-spindle and intermediate stopcock, class AS, DURAN®

Lateral PTFE-spindle and intermediate stopcock. Scale length approx. 500mm. Main point ring graduation. Schellbach stripe. With dated batch identification. Conformity certified. Graduation in high-contrast blue enamel, acc. to DIN EN ISO 385. Incl. 2 l clear glass bottle. For those products, batch calibration reports, which are free of charge, can be generated and printed on www.hirschmannlab.com. Additional single calibration reports or DAkkS certificates (former DKD calibration reports) are available. *Hirschmann*

Capacity	Grad.	Tolerance	PK	Cat. No.
ml	ml	± ml		
10	0.02	0.02	1	**6.228 424**
25	0.05	0.03	1	**6.228 425**
50	0.1	0.05	1	**9.270 780** 1

1



9.270 780

2 Automatic burettes, Pellet pattern, borosilicate glass 3.3, Class AS, with stopcock

BLAUBRAND®. Class AS, to DIN EN ISO 385. Boro 3.3. With intermediate stopcock. *BRAND*
DE-M marking. With batch number. Graduations and inscriptions in highly contrasting blue enamel. With Schellbach stripes. Intermediate stopcock allows residual reagent in the burette after titration to be recycled into the reservoir. Automatic zero point setting. Calibrated to deliver (EX). Choice of models, either with needle-valve stopcock with PTFE spindle (intermediate stopcock with PTFE-key) or with NS glass stopcock (intermediate stopcock with glass key).

Complete with 2 litre, soda-lime glass reservoir (160mm dia. x 200mm height, with 29/32 ground glass neck). Overall height with bottle approx. 1m. All BLAUBRAND® burettes are delivered with batch number and one batch certificate included per pack. Also available with individual works, USP or DAkkS (former DKD) calibration certificate, please enquire. The batch certificate is also available to download from the manufacturer's website.

Capacity	Grad.	Tolerance	Stopcock	PK	Cat. No.
ml	ml	± ml			
10	0.02	0.02	PTFE	1	**9.270 764**
25	0.05	0.03	PTFE	1	**9.270 767**
50	0.1	0.05	PTFE	1	**9.270 768**
10	0.02	0.02	Glass	1	**9.270 734**
25	0.05	0.03	Glass	1	**9.270 737**
50	0.1	0.05	Glass	1	**9.270 738**

2



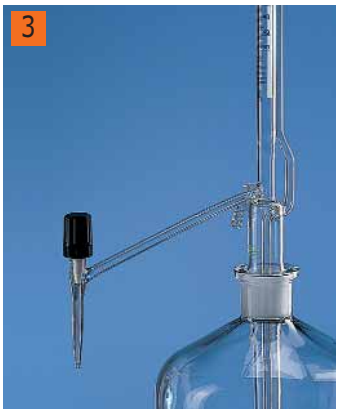
3 Automatic burettes, Pellet pattern, borosilicate glass 3.3, class B, without stopcock

NEW!

SILBERBRAND, class B. Boro 3.3. DIN EN ISO 385. Calibrated to deliver (TD, EX). Schellbach stripe. With needle-valve stopcock with PTFE spindle. Automatic zeroing. Total height approx. 1 m incl. 2000 ml bottle (soda-lime glass). *BRAND*

Capacity	Grad.	Tolerance	Description	PK	Cat. No.
ml	ml	± ml			
10	0.02	0.03	with bottle	1	**7.018 326**
25	0.05	0.05	with bottle	1	**7.018 327**
50	0.1	0.08	with bottle	1	**7.018 328**
10	0.02	0.03	without bottle	1	**7.300 388**
25	0.05	0.05	without bottle	1	**7.077 524**
50	0.1	0.08	without bottle	1	**7.076 570**

3





1 Automatic burettes, Pellet pattern, borosilicate glass 5.4 amber, class B, with stopcock

NEW!

Amber borosilicate glass type 5.4.SILBERBRAND. With intermediate stopcock. *BRAND*
25ml: Class B, Tolerance to DIN EN ISO 385.
50ml: Class B, to DIN EN ISO 385.
Automatic zero point setting. Graduations and inscriptions in white enamel. Intermediate stopcock for evacuation of remaining liquid. Calibrated to deliver (EX). Choice of models, either with PTFE or glass key dispensing and intermediate stopcocks. With 2-litre soda-lime glass reservoir (160mm dia. x 200mm height, with 29/32 ground glass neck) as indicated. Overall height with bottle approx. 1m.

Capacity ml	Grad. ml	Tolerance ± ml	Keys	Description	PK	Cat. No.
25*	0.1	0.08	PTFE	with bottle	1	**9.270 540**
50	0.1	0.1	PTFE	with bottle	1	**9.270 542**
25*	0.1	0.08	PTFE	without bottle	1	**7.200 776**
50	0.1	0.1	PTFE	without bottle	1	**7.200 775**
25*	0.1	0.08	Glass	with bottle	1	**9.270 536**
50	0.1	0.1	Glass	with bottle	1	**9.270 538**
25*	0.1	0.08	Glass	without bottle	1	**6.201 498**
50	0.1	0.1	Glass	without bottle	1	**6.201 499**

* Narrower divisions.



2 Automatic burettes, Pellet pattern, borosilicate glass 5.4 amber, class B, without stopcock

NEW!

SILBERBRAND, amber glass. Borosilicate glass 5.4. *BRAND*
25 ml: Error limits according to class B, DIN EN ISO 385.
50 ml: DIN EN ISO 385, class B.
Calibrated to deliver (TD, EX). Available with titration stopcock with PTFE key or glass key.
Total height 25 ml approx. 0.7 m, total height 50 ml approx. 1 m incl. 2000 ml bottle (soda-lime glass) as indicated.

Capacity ml	Grad. ml	Tolerance ± ml	Keys	Description	PK	Cat. No.
25*	0.1	0.08	PTFE	with bottle	1	**7.079 511**
50	0.1	0.10	PTFE	with bottle	1	**6.072 800**
25*	0.1	0.08	PTFE	without bottle	1	**7.300 390**
50	0.1	0.10	PTFE	without bottle	1	**7.300 389**
25*	0.1	0.08	Glass	with bottle	1	**4.000 027**
50	0.1	0.10	Glass	with bottle	1	**6.203 367**
25*	0.1	0.08	Glass	without bottle	1	**7.055 909**
50	0.1	0.10	Glass	without bottle	1	**7.082 063**

* Narrower divisions.



6.237 628

3 Burette bottles, borosilicate glass 3.3

Burette bottle for automatic burettes is made from heat resistant glass.
Each bottle has a NS 29/32 neck grinding that fits to burette.

Capacity ml	Diam. mm	Height mm	Colour	PK	Cat. No.
1000	110	200	clear	1	**9.270 905**
1000	110	200	brown	1	**9.270 915**
2000	160	200	clear	1	**6.237 628** 3
2000	160	200	brown	1	**6.238 474**



4 Spare reservoir bottles, glass

Boro 3.3. Available in clear glass or amber glassor soda-lime glass. *BRAND*
Volume: 2000ml, diameter: 160mm, height: 200mm.

Material	Capacity ml	Diam. mm	Height mm	Colour	PK	Cat. No.
Boro 3.3	2000	160	200	clear	1	**6.018 346**
Boro 3.3	2000	160	200	amber	1	**6.018 347**
Soda-lime glass	2000	160	200	clear	1	**7.059 541**
Soda-lime glass	2000	160	200	amber	1	**7.400 768**

E & OE.

1 Orsat blowball

Natural rubber. Translucent. *Deutsch & Neumann*

Type	PK	Cat. No.
Orsat blowball	1	**9.115 510**



2 Hand bellows

Single spray. Without net. *Deutsch & Neumann*
Size 3.

Type	PK	Cat. No.
Hand bellows	1	**9.270 995**



3 Hand bellows

Burette bellows for automatic burettes is made out of best quality natural rubber. *Isolab*

Type	PK	Cat. No.
Burette bellow	1	**6.237 629**



4 Hand bellows

Double spray. With net. *Deutsch & Neumann*
Size 5.

Type	PK	Cat. No.
Hand bellows	1	**9.270 990**





1



2



1 2 Digital Burettes, VITLAB® continuous

VITLAB

The pulse-free, dispensing operation of the Continuous burettes makes titration safer at high-level precision. The Continuous series can be used for titration agents up to a concentration of 1 Mol/l. The patented dual pristons pump provides permanent and pulse-free the liquid requested. Refills are not necessary. The Continuous burette series undercuts the margins of error defined by DIN EN ISO 8655-3 especially in partial volumes. All operation controls and the digital display have an ergonomic and functional design and are arranged clearly.

- Pulse-free dispensing technique for continuous and quick titration
- patented recirculation valve avoids reagent waste
- Clear and precise display of titrated volume
- Battery-operated, easily replaceable micro-batteries (1.5V)
- Dispensing range from 0.010ml to 999.9ml
- Dispensing volume per hand wheel revolution: 2.5ml (Continuous E), 5.0ml (Continuous RS)
- Can be calibrated
- Device can be rotated on the bottle 360°
- Telescopic inlet tube extendible from 200 to 350mm
- Adapters for drying tube and filter
- Certificate of conformity according to DIN 12600

Accuracy <±0.2%, Coefficient of variation <±0.1%

Supplied with: Burette continuous, 3 PP adapter (GL 32, GL 38, S 40), 1 teleskopic suction tube, 1 teleskopic discharge tube, 2 micro batteries 1.5 V (LR 03/AAA), manual, quality certificate.

Type	Capacity ml	Neck thread GL	Capacity/U ml	PK	Cat. No.
E	2.5	45	2.5	1	**9.284 020**
RS	5.0	45	5.0	1	**9.284 021**

3



9.287 779

Digital burettes, solarus®

Hirschmann

A titration unit with a reagent recirculation system for manual titration directly from the reagent bottle. Power supplied by a solar cell.

Available in three volumes (10 ml, 20 ml and 50 ml).

Advanced energy concept, precision results - sets standards as the world's first digital burette with integrated solar cell. The power supply for the electronics and display is derived exclusively from an integrated solar cell. Batteries can be completely dispensed with. Easily replaceable valves, individual calibration with "Quick-Cal" and permanent storage of the manufacturer's calibration facilitate rapid and flexible adaptation. The vivid digital display prevents meniscus reading errors and is always clearly legible, regardless of the viewing angle. The handwheels with soft touch surface are ergonomically optimised for particularly precise control.

- Power supplied by a solar cell
- Free rotation
- Media recirculating system for simple and rapid venting without reagent loss
- Handwheels with soft touch surface
- Clearly legible display, regardless of the viewing angle
- A light protection window for the valve block is also included in the scope of delivery
- Individual calibration of user-specified adaptations with "Quick-Cal"
- Serial bidirectional interface (RS 232 and USB)

Supplied with: solarus® with A 45 mm thread, 3 thread adapters (A 32, A 38 and S 40), discharge tube, 1 suction tube with retainer screw, 1 spanner for valve, brown light protection window, with individual serial number and single calibration report.

Description	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
Capacity 10 ml	0.3	0.1	1	**9.287 779** 3
Capacity 20 ml	0.2	0.1	1	**9.287 780**
Capacity 50 ml	0.2	0.1	1	**9.287 781**
Interface cable			1	**9.287 756**

Accessories and spare parts, Solarus®

Hirschmann

Description	PK	Cat. No.
Discharge unit titration with fine tip	1	**9.287 881**
Discharge tube unit, flexible, spiral shaped, inner dia. 1.5mm	1	**6.206 625**
Discharge unit titration, variable, complete with tube holder, approx. 400 mm, FEP	1	**9.287 882**
Adapter with A 45 filler	1	**9.287 883**
Thread adapter, silicone, A 45 compliant with NS 29/32 ground adapter	1	**9.287 884**

1 Bottle top burette Titrette®



BRAND

Titrette® - The next generation digital burette!
With the Titrette® bottle-top burette, you can titrate quickly and reliably with highest precision, even in close quarters, with no mains supply needed - in the lab, in production, or in the field!

- High accuracy
- precise titration within the error limits of Class A for glass burettes
- Smooth-running operation
- for sensitive, drop-wise titration
- Compact design
- light and stable
- Easy Handling
- no switching between "fill" and "titrate"
- Simple maintenance
- cleaning and parts replacement right in the lab
- Titrette® SH to determinate the acid content of milk and liquid dairy according to Soxhlet-Henkel (4°SH = 1ml)

Smooth operation
The large, easy-grip hand wheels are conveniently easy to turn. With the optimized gear ratio, you can fill the device quickly and titrate drop-wise with great sensitivity.

Class? Like Class A!
The Titrette® bottle-top burette has an innovative new measuring system which matches the Class A accuracy of glass burettes and, if needed, can offer the precision of 3 decimal places below 20ml. This is an important feature for users who need to work within the Class A error limits as with glass burettes according to DIN EN ISO 385 (e.g., pharmaceutical work):

Lightweight and compact!
All components only move within the housing, saving room on top. The compact design and the light-weight ensure good stability. The titrating tube can be adjusted horizontally and vertically. This provides flexibility when positioning the instrument, e.g., when using a magnetic stirrer or different bottle sizes.

Items supplied: Titrette® bottle-top burette, DE-M marking, performance certificate, telescoping filling tube (170 to 330 mm), recirculation tube, 2 x 1.5V batteries (AAA/UM4/LR03), 3 x PP bottle adapters (GL45/32, GL 45/S40 and GL32/NS 29/32), 2 coloured light shield inspection windows, operating manual.

Volume ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Interface	PK	Cat. No.
°SH (25)	0,07	0,025	without	1	**4.007 918**
10	0,10	0,05	without	1	**6.259 209**
25	0,07	0,025	without	1	**9.271 332**
50	0,06	0,02	without	1	**9.271 333**
10	0,10	0,05	incl.	1	**9.271 338**
25	0,07	0,025	incl.	1	**9.271 334**
50	0,06	0,02	incl.	1	**9.271 335**

Accessories for Titrette®

NEW!

BRAND

Description	PK	Cat. No.
Valve head for Titrette® 10ml	1	**9.284 161**
Valve head for Titrette® 25ml	1	**4.000 395**
Valve head for Titrette® 50ml	1	**4.000 396**
Telescopic filling tubes 170 to 330mm	1	**9.284 503**
Telescopic filling tubes 250 to 480mm	1	**9.284 504**
Inspection windows, 2 x transparent and 2 x brown	1	**4.000 394**
Dosing cylinder with valve block for Titrette® 10ml	1	**9.284 162**
Dosing cylinder with valve block for Titrette® 25ml	1	**6.261 478**
Dosing cylinder with valve block for Titrette® 50ml	1	**6.261 803**
Titrating cannula Titrette® 10ml with screw cap and integrated discharge/recirculation valve	1	**9.284 163**
Titrating cannula Titrette® 25/50ml with screw cap and integrated discharge/recirculation valve	1	**6.261 119**
Filling valve	1	**9.284 482**

Digital-burette, opus®

A titration unit with a reagent recirculation system for motor-powered titration directly from the reagent bottle. Available in three volumes (10 ml, 20 ml and 50 ml). *Hirschmann*

Drop by drop towards precise analysis results - combines accuracy with time-saving and user-friendliness. Electronic control of titration enables the achievement of reproducible results and precisely defined dynamics each time. Time-saving rapid titration with subsequent fine titration enhances accuracy and efficiency. The titration impulse triggered by the motor enables the achievement of a droplet break-up with output volumes from 10 µl to 99.999 ml and delivers resolutions up to the third decimal place. The titration procedure is configured on the intuitive TFT touchscreen. The user is guided through menu functions which are easily legible and comprehensible. Nine different titration procedures with their complete settings can be saved in the method memory and reactivated at any time if required.

Overview of details
- Electronic control and dispensing of volumes
- A light protection window for the valve block is also included in the scope of delivery
- Titration impulse triggered by the motor enables the achievement of a droplet break u p from 10 µl for precision determination
- Media recirculating system for simple and rapid venting without reagent loss
- Free rotation
- TFT touchscreen with user-friendly menu
- Method memory for nine different titration procedures with storage o f all settings
- USB and RS232 interface for PC connection
- Integration in automated procedures possible
- Power supply 100-240V, with EU, UK, US plug

Supplied with: opus® titration complete with thread 45 mm, 3 adapters (A 32, A 38 and S 40), 1 screw coupled suction tube, 1 titration discharge unit and 1 power supply, 1 brown light protection window, touch screen module "titration", Data Power Cable 0.75 m, instruction manual, single calibration report.

Description	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	PK	Cat. No.
Volume 10 ml	0.6	0.2	1	**9.287 875** 1
Volume 20 ml	0.6	0.2	1	**9.287 870**
Volume 50 ml	0.6	0.2	1	**9.287 871**

1



9.287 875

E & OE.

1 Motor-driven piston burette Titronic® 300

NEW!

SI Analytics

Motor-driven piston burette with 20 or 50ml dosing unit. For manual titrations and highly precise dosing tasks. The TITRONIC® 300 can be completely controlled from a PC via the USB- or RS-232-interface. Up to 16 burettes can be connected to one another via the RS232 interface according to the daisy chain principle.

Supplied with:
T 300/20 M1: Basic unit without magnetic stirrer with ready to use assembled 20 ml dosing unit TZ 3130 with hoses, fittings and titration tip, controller TZ 3880, titration clamp Z 305, stand rod TZ 1748 and power supply 100-240 V
T 300/50 M1: as T 300/20 M1, only with ready to use assembled 50 ml dosing unit TZ 3160
T 300/20 M2: as T 300/20 M1, additionally with magnetic stirrer TM 50
T 300/50 M2: as T 300/20 M2, only with ready to use assembled 50 ml dosing unit TZ 3160

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Specifications

Interfaces:	1 x USB A and 1 x USB B 2 RS-232-C
Stirrer connection:	TM 50 power supply directly through piston burette
Keyboard connection:	The unit is operated using the keys on the device itself, the controller TZ 3880 and optional PC-keyboard (USB)
Display:	graphics-capable TFT display
Volume indicator:	000.005 to 9999.999 ml
Display resolution:	0.005
Dosing speed:	max. 100ml/min (with 50 ml unit)
Fill time:	30secs. to 99secs. adjustable (time depends on cylinder volume)
Dosing units:	20ml or 50ml dosing unit, interchangeable
Burette resolution:	8000
Dispensing accuracy:	0.15% system measurement deviation, 0.05% accidental measurement deviation determined in accordance with EN ISO 8665, Part 3
Supply requirements:	230V, 50/60Hz
Conformity:	ISO 8665, Part 6
CE mark:	EMC: 2004/108/EG; safety EG- Directive 2006/95

Type	Burette attachment ml	PK	Cat. No.
T 300/20 M1	20	1	**9.863 180**
T 300/50 M1	50	1	**9.863 181**
T 300/20 M2	20	1	**9.863 182**
T 300/50 M2	50	1	**9.863 183**

Accessories please see page 945.

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

SI Analytics

1 Motor-driven piston burette TITRONIC® 500

Motor-driven piston burette with intelligent exchangeable doing units with automatic recognition of unit size and reagent data. *SI Analytics*
Besides manual titration and highly precise dosing tasks the TITRONIC® 500 can also be used for the preparation of solutions by entering the weights. The connection of an analytical balance allows the easy automatisation of the solution preparation. The TITRONIC® 500 can completely controlled from a PC via the USB- or RS-232-interface. Up to 16 burettes can be connected to one another via the RS232 interface according to the daisy chain principle.

T 500: TITRONIC® 500 basic unit without magnetic stirrer, with stand rod TZ 1510, titration clamp Z 305, controller TZ 3880, power supply 100-240.V

T 500-M1: TITRONIC® 500 basic unit with magnetic stirrer TM 235, with stand rod TZ 1510, titration clamp Z 305, controller TZ 3880, power supply 100-240V

T 500-M2/20: TITRONIC® 500 basic unit with magnetic stirrer TM 235 and exchangeable unit WA 20, with stand rod TZ 1510, titration clamp Z 305, controller TZ 3880, power supply 100-240V

Technical specification

Interfaces:	3x USB (2x USB A and 1x USB B), 2x RS-232-C
Stirrer connection:	TM 235 or alternative paddle stirrer
Keyboard:	The unit is operated using the keys on the device itself., the controller TZ 3880 and optional PC-keyboard (USB)
Display:	graphics-capable 3.5" TFT display
Volume display:	00.00 to 999.9ml
Display resolution:	0.001ml (depending on exchangeable unit)
Dosing speed:	max. 100ml/min (with 50ml unit)
Filling speed:	min. 20 to 999 sec adjustable (time according to the cylinder volume)
Exchangeable units:	5, 10, 20ml or 50ml exchangeable units with reagent recognition
Burette resolution:	10000
Dosing accuracy:	systematic error 0.15%, random error 0.05% in compliance with EN ISO 8655-6
Netzanschluss:	100-240V; 50/60Hz
Conformity:	ISO 8655, part 6
CE-mark:	EMC: 2004/108/EG; safety EG- Directive 2006/95

Type	Description	PK	Cat. No.
T 500	Basic unit	1	**9.863 210**
T 500-M1	With magnetic stirrer	1	**9.863 211**
T 500-M2/20	With magnetic stirrer and 20ml exchangeable unit	1	**9.863 212**

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Accessories - please see page 946.

E & OE.

1 Automatic Titrators TitroLine® 5000

NEW!

SI Analytics

Very compact new titrator for simple routine titrations. Thanks to the standard methods the creating of methods is no longer required. Just load the method and press the start button. GLP compliant results with titration curve can be documented on a connected printer or USB-memory stick.

- Following titration modes are possible:
- Titrations to pH, mV and µA endpoint (2 EP)
- Titrations to one equivalence point (pH und mV) with dynamic or linear titration addition
- Manual titrations with the controller
- Dosing tasks
- Number of methods: 5

Typical applications for the TitroLine® 5000 are:
- Salt content in foodstuffs (cheese, soy sauce, ketchup)
- Total acidity in wine and beverages
- Nitrogen according to Kjeldahl
- Chloride in drinking water and other samples
- Alkalinity (p + m-value)
- FOS/TAC

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Supplied with:
TL 5000/20 M1: Basic unit without electrode, with ready to use assembled 20 ml dosing unit TZ 3130 with hoses, fittings and titration tip, controller TZ 3880, titration clamp Z 305, stand rod TZ 1748 magnetic stirrer TM 50 and power supply 100-240 V
TL 5000/50 M1: as TL 5000/20 M1, only with ready to use assembled 50 ml dosing unit TZ 3160
TL 5000/20 M2: as TL 5000/20 M1, additionally with pH combination electrode and buffer set
TL 5000/50 M2: as TL 5000/20 M2, only with ready to use assembled 50 ml dosing unit TZ 3160
TL 5000/20 M3: as TL 5000/20 M1 additionally with Ag electrode and electrode cable

Specifications

Measuring input electrode	pH/mV-input with DIN or BNC socket
Measuring input Pt 1000:	Temperature sensor connection for resistance probes Pt 1000 (socket: 2 x 4 mm)
Interfaces:	1 x USB A und 1 x USB-B 2 x RS-232-C
Stirrer connection:	TM 50 power supply directly through piston burette
Keyboard:	The unit is operated using the keys on the device itself, the controller TZ 3880 and optional PC-keyboard (USB)
Display:	graphics-capable TFT display
Dosing units:	20 ml or 50 ml dosing unit, interchangeable
Burette resolution:	8000
Dosing accuracy:	systematic error 0.15 %, random error 0.05 % in compliance with EN ISO 8655-6
Supply requirements:	230V, 50/60Hz
Conformity:	ISO 8655, part 6
CE-mark:	EMC: 2004/108/EG; safety EG- Directive 2006/95

Type	PK	Cat. No.
TL 5000/20 M1	1	**9.863 184**
TL 5000/50 M1	1	**9.863 185**
TL 5000/20 M2	1	**9.863 186**
TL 5000/50 M2	1	**9.863 187**
TL 5000/50 M3	1	**9.863 191**

Accessories for Titronic® 300 and TitroLine® 5000

NEW!

SI Analytics

Type	Description	PK	Cat. No.
TM 50	Magnetic stirrer	1	**9.863 188**
TZ 3835	USB keyboard	1	**9.863 159**
TZ 3830	USB-HUB	1	**9.863 189**
TZ3803	Reagent bottle brown, 1 Litre	1	**9.863 190**

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1 Automatic Titrators, TitroLine® 6000/TitroLine® 7000

SI Analytics

Compact new titrators with intelligent exchangeable units with automatic recognition of unit size and reagent data. Thanks to the modern USB- and additional RS232 interfaces, connection of printer, balance and further accessories are possible at the same time. The brilliant, very high-contrast TFT-display allows the easy parameterisation and tracking of the titration curve.

Supplied with:

TL 6000/7000-M1/10: basic unit with magnetic stirrer TM 235 and 10ml exchangeable unit WA 10, incl. amber glass bottle for titration reagent, GL 45 and S 40-bottle adapter, tubes, drip off tube and titration tip.

TL 6000/7000-M1/20: basic unit with magnetic stirrer TM 235 and 20ml exchangeable unit WA 20, incl. amber glass bottle for titration reagent, GL 45 and S 40-bottle adapter, tubes, drip off tube and titration tip.

TL 6000/7000-M1/50: basic unit with magnetic stirrer TM 235 and 50ml exchangeable unit WA 50, incl. amber glass bottle for titration reagent, GL 45 and S 40-bottle adapter, tubes, drip off tube and titration tip.

TL 6000/7000-M2/20: basic unit with magnetic stirrer TM 235 and 20ml exchangeable unit WA 20, incl. amber glass bottle for titration reagent, GL 45 and S 40-bottle adapter, tubes, drip off tube and titration tip. With pH-combination electrode IL-pHT-A120MF-DIN-N and buffer set.

Technical specification

Measuring input pH/mV:	pH/mV-input with DIN or BNC socket, **TitroLine® 7000 additionally with ID function for automatic detection of electrode**
Measuring input Dead Stop:	µA-input for double platinum electrode (socket 2 x 4mm), pole voltage adjustable
Temperature:	for resistance probes Pt 1000 (socket: 2 x 4mm)
Interfaces:	3x USB (2x USB-A und 1x USB-B), 2x RS-232-C
Stirrer connection:	TM 235 or alternative paddle stirrer
Keyboard:	The unit is operated using the keys on the device itself., the controller TZ 3880 and optional PC-keyboard (USB)
Display:	graphics-capable 3.5" TFT display
Exchangeable units:	5, 10, 20ml or 50ml exchangeable units with reagent recognition
Burette resolution:	10000
Dosing accuracy:	systematic error 0.15%, random error 0.05% in compliance with EN ISO 8655-6
Supply requirements:	100-240V; 50/60Hz
Conformity:	ISO 8655, part 6
CE-mark:	EMC: 2004/108/EG; safety EG- Directive 2006/95

Type	Description	PK	Cat. No.
TL 6000-M1/10	With 10ml exchangeable unit	1	**9.863 150**
TL 6000-M1/20	With 20ml exchangeable unit	1	**9.863 151**
TL 6000-M1/50	With 50ml exchangeable unit	1	**9.863 152**
TL 6000-M2/20	With 20ml exchangeable unit and pH Electrode	1	**9.863 153**
TL 7000-M1/10	With 10ml exchangeable unit	1	**9.863 160**
TL 7000-M1/20	With 20ml exchangeable unit	1	**9.863 161**
TL 7000-M1/50	With 50ml exchangeable unit	1	**9.863 162**
TL 7000-M2/20	With 20ml exchangeable unit and pH Electrode	1	**9.863 163**

Accessories for TITRONIC® 500, TitroLine® 6000 and TitroLine® 7000

SI Analytics

Type	Description	PK	Cat. No.
TM 235	Magnetic stirrer	1	**9.863 154**
WA 05	5ml exchangeable unit, complete	1	**9.863 155**
WA 10	10ml exchangeable unit, complete	1	**9.863 156**
WA 20	20ml exchangeable unit, complete	1	**9.863 157**
WA 50	50ml exchangeable unit, complete	1	**9.863 158**
TZ 3835	USB keyboard	1	**9.863 159**

E & OE.

KF Titrators TitroLine 7500® KF/TitroLine 7500® KF trace

SI Analytics

You can´t go wrong with the new TitroLine® KF titrators from SI-Analytics. The TitroLine® 7500 KF is the volumetric generalist for a wide range of use and the TitroLine® 7500 KF trace is the specialist for low water contents. Both new titrators are to be characterized by following features:

- Fast, easy and precise
- With standard methods for different applications (titer determination, blank value...)
- High visible full color display, that can be easily viewed from a distance and extreme angles
- Storage of results via USB port (PDF and CSV -format)
- with online curve
- With intelligent interchangeable modules (only TitroLine® 7500 KF)

Applications TitroLine 7500® KF: KF volumetry, dead-stop-titrations (SO_2, bromine number)
Applications TitroLine 7500® KF trace: KF coulometry, bromine number

Volumetric KF-Titrators supplied with:
TL 7500 KF 05: titrator unit, interchangeable module WA 05, TM 235 KF titration stand with integrated stirrer and pump, titration vessel TZ 1770, micro-dual platinum electrode KF 1100 and starter kit, power supply 100-240 V
TL 7500 KF 10: titrator unit, interchangeable module WA 10, TM 235 KF titration stand with integrated stirrer and pump, titration vessel TZ 1770, micro-dual platinum electrode KF 1100 and starter kit, power supply 100-240 V
TL 7500 KF 20: titrator unit, interchangeable module WA 20, TM 235 KF titration stand with integrated stirrer and pump, titration vessel TZ 1770, micro-dual platinum electrode KF 1100 and starter kit, power supply 100-240 V

Coulometric KF-titrators supplied with:
TL 7500 KF trace M1: titrator unit, generator electrode TZ 1752 without diaphragm, magnetic stirrer TM 235, titration vessel TZ 1751, micro-dual platinum electrode KF 1150
TL 7500 KF trace M2: titrator unit, generator electrode TZ 1752 without diaphragm, TM 235 KF titration stand with integrated stirrer and pump, titration vessel TZ 1754, micro-dual platinum electrode KF 1150
TL 7500 KF trace M3: titrator unit, generator electrode TZ 1753 with diaphragm, magnetic stirrer TM 235, titration vessel TZ 1751, microdual platinum electrode KF 1150
TL 7500 KF trace M4: titrator unit, generator electrode TZ 1753 with diaphragm, TM 235 KF titration stand with integrated stirrer and pump, titration vessel TZ 1754, micro-dual platinum electrode KF 1150

Specifications

Measuring range TitroLine 7500® KF:	10ppm - 100%
Dosing accuracy:	<0.15%
Measuring range TitroLine 7500® KF trace:	1ppm - 5% (10µg to 100mg)
Accuracy:	0.3% at 1mg water
Number of user methods:	50
Printer:	HP PCL, Seiko DPU S 445, PDF
Interface:	2 x USB-A, 1 x USB-B, 2 x RS232
PC Software:	TitriSoft 3.1

Type	PK	Cat. No.	
TL 7500 KF 05	1	**9.863 170**	
TL 7500 KF 10	1	**6.255 582**	1
TL 7500 KF 20	1	**9.863 171**	
TL 7500 KF trace M1	1	**9.863 172**	2
TL 7500 KF trace M2	1	**9.863 173**	
TL 7500 KF trace M3	1	**9.863 174**	
TL 7500 KF trace M4	1	**9.863 175**	

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6.255 582

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9.863 172

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1 Titrators TitroLine 7750®

NEW!

SI Analytics

Titroline® 7750 is the all-rounder for both potentiometric titration and volumetric KF titration. The TitroLine® 7750 combines the features of the potentiometric titrator TitroLine® 7000 and the volumetric Karl Fischer titrator TitroLine® 7500.

The new TitroLine® 7750 is characterized as follows:
- Highly visible full color display, that can be easily viewed from a distance and extreme angles
- With new interchangeable modules which all relevant reagent and unit data can be stored
- Thanks to the 2 x USB-host, 1 x USB-PC and 2 x RS232 ports, very communicable. Connect for example, USB keyboard, USB printer, barcode reader, USB flash drives, balances, PC und further SI Analytics devices such as piston burettes and sample changers
- Storage of results via USB port (PDF and CSV -format) including method transfer
- With standard methods for potentiometric and KF titration

Supplied with:
TL 7750: Basic unit without magnetic stirrer, with stand rod TZ 1510, titration clamp Z 305, keyboard TZ 3835 and power supply 100-240 V
TL 7750-M1: as TL 7750, additionally with magnetic stirrer TM 235
TL 7750-TitriSoft: as TL 7750-M1, additionally with TitriSoft 3.0 (TZ 3071)
TL 7750 KF 05: Titrator unit, exchange unit WA 05, TM 235 KF titration stand with integrated stirrer and pump, titration vessel TZ 1770, micro double platinum electrode KF 1100 and starter kit, power supply 100-240 V
TL 7750 KF 10: as TL 7750 KF 05, only with exchange unit WA 10
TL 7750 KF 20: as TL 7750 KF 05, only with exchange unit WA 20

Type	PK	Cat. No.
TL 7750	1	**9.863 176**
TL 7750-M1	1	**6.258 235**
TL 7750-TitriSoft	1	**9.863 177**
TL7750 KF 05	1	**9.863 178**
TL7750 KF 10	1	**7.981 381**
TL7750 KF 20	1	**9.863 179**

2



2 Titrators TitroLine® 7800

NEW!

SI Analytics

The TitroLine® 7800 is the new all-rounder for potentiometric titration with an additional digital measuring input. That enable for example the connection and use of pH and conductivity sensors at the same time. An additional external conductometer is not required anymore. The TitroLine® 7800 can also be used as volumetric KF titrator.

The TitroLine® 7800 is to be characterized by following features:
- High visible full color display, that can be easily viewed from a distance and extreme angles
- With intelligent interchangeable modules and storage of all relevant reagent data
- Includes two USB-A, one USB-B, two RS-232 and one LAN port for expansion and connection of devices such as keyboard, printer, barcode reader, memory sticks, balances, PC an further SI Analytics devices
- Storage of results via USB port (PDF and CSV -format) including method transfer
- With one analogue and one digital measuring input. The digital input allows the connection of digital (IDS) pH and conductivity sensors.
- With standard methods for potentiometric and KF titration

Supplied with: Basic unit with or without magnetic stirrer, with stand rod TZ 1510, titration clamp Z 305, keyboard TZ 3835 and power supply 100-240 V

Type	PK	Cat. No.
TL 7800 (without magnetic stirrer)	1	**9.863 168**
TL 7800-M1 (with magnetic stirrer)	1	**9.863 169**

3



3 Drum pump Pump-it®

Bürkle

For rapid and clean emptying from cans, drums and small barrels up to 60L.
- Precise dosing, without dripping
- for liquids up to a viscosity of 1500 cPs at 20°C
- Pump connection suitable for 64mm dia. (BSI) container threads
- stepless length adjustment of immersion tube
- Threaded adapters for most commercially-sold containers available
- Not suitable for HCl

Material	Immersion depth mm	Flow rate L / min.	PK	Cat. No.
PP/FKM	1000	8	1	**9.001 110**

E & OE.

1 Adapter set for Pump-it® drum pump

Bürkle

Consisting of:
- 2" Coarse thread, Mauser L ring, green
- 2" coarse thread, Leer/Tri-Sure®, brown
- 2" Fine thread steel drum, blue
- DIN 60, Mauser-barrel, black
- DIN 51, black (image in centre)



Type	PK	Cat. No.
Adapter set for Pump-it can pump	1	**9.001 111**

2 Hand pumps Otal

Bürkle

For jerry cans and ballons up to 60l capacity. Universal bungs for container openings of 30 to 70mm diameter.
PP: weak acids, caustic solutions and detergents
PVDF: chlorine bleaching, not for strongly oxidizing acids and caustic solutions
Stainless steel: solvents and liquids of VbF Hazard Class AIII (not easily flammable)



Material	Diam. mm	Flow rate L / min.	Immersion depth mm	PK	Cat. No.
PP*	10	4	450	1	**9.001 210**
PP	12	14	700	1	**9.001 112**
PP	15	20	700	1	**9.001 115**
PP	18	26	700	1	**9.001 118**
PVDF	16	20	700	1	**9.001 135**
Stainless steel tubing	18	26	900	1	**9.001 137**
PP / PVC dispensing tube	12	12	700	1	**9.001 138**

*Miniature pump for container openings 20 to 36mm.

3 Foot pumps Otal

Bürkle

For jerry cans and ballons up to 120l capacity. Universal bungs for container openings of 30 to 70mm diameter.
PP: weak acids, caustic solutions and detergents
PVDF: chlorine bleaching, not for strongly oxidizing acids and caustic solutions
Stainless steel: solvents and liquids of VbF Hazard Class AIII (not easily flammable)



Material	Diam. mm	Flow rate L / min.	Immersion depth mm	PK	Cat. No.
PP	15	20	700	1	**9.001 015**
PP	18	26	700	1	**9.001 018**
PP	22	30	900	1	**9.001 022**
PVDF	16	20	700	1	**9.001 130**
Stainless steel tubing	18	26	900	1	**9.001 132**
PP / PVC dispensing tube	12	12	700	1	**9.001 133**

4 Siphons

Bürkle

Transparent with stopcock. Simple to use, suitable for occasional dispensing of non-aggressive liquids from a higher drum to a lower vessel, following the siphoning principle.



Material	Immersion depth mm	Diam. mm	Flow rate L / min.	PK	Cat. No.
LDPE/PVC	1000	15	9	1	**9.001 355**

5 Barrel pumps, stainless steel

Bürkle

Stainless steel V2A and PTFE.
For safe dispensing of liquids with a low flash point. Electrostatic charge can be dissipated through accessories antistatic set and drum screwthread connection. Not suitable for acetone.



Immersion depth mm	Diam. mm	Description	PK	Cat. No.
570	32	rigid dispensing tube	1	**9.001 340**
910	32	rigid dispensing tube	1	**9.001 341**
570	32	flexible tubing with stopcock	1	**9.001 362**
910	32	flexible tubing with stopcock	1	**9.001 363**
360	32	Removable discharge tube	1	**6.083 463**
360	32	flexible tubing with stopcock	1	**6.802 513**

Barrel pumps, screw joints

Barrel screw joints for stainless steel drum pumps. *Bürkle*
Constructed in nickel-plated brass. For containers with R2", internal steel barrel thread.

Description	PK	Cat. No.	
Barrel screw joint 2"	1	**9.001 345**	1
Barrel screw joint, gas-tight 2", hermetic sealing	1	**6.090 497**	2

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9.001 345

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6.090 497

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3 4 Barrel pumps, PP

Bürkle
- For decanting acids, caustic solutions and aggressive detergents
- Excellent recovery of residual liquid in the barrel provided by base-sitting, non-return valve and steplessly adjustable immersion tube
- For barrels and tanks from 60 to 1000l.

Type A: With rigid, angled, dispensing nozzle.
Type B: With flexible, PVC dispensing hose and stopcock.

Immersion tube dia.: 32mm
Max. pump capacity: up to approx. 12 L/min.

Type	Immersion depth mm	Length mm	PK	Cat. No.
A	500	600	1	**9.001 356**
B	500	600	1	**9.001 366**
A	650	740	1	**9.001 357**
B	650	740	1	**9.001 367**
A	800	900	1	**9.001 358**
B	800	900	1	**9.001 368**
A	1000	1090	1	**9.001 359**
B	1000	1090	1	**9.001 369**
A	1250	1340	1	**9.001 364**
B	1250	1340	1	**9.001 370**
A	1500	1590	1	**9.001 365**
B	1500	1590	1	**9.001 371**

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5 Barrel pump, PTFE

NEW!

Bürkle
For ultrapure and aggressive liquids.
Made from solid, pure white PTFE, giving an excellent chemical resistance to all media (with the exception of elemental fluorine). With shut-off valve to reliably prevent the escape of harmful or hazardous liquids and unwanted drips.
Electrostatic charge can be dissipated through the accessory antistatic set and drum screwthread connection.

Tube diam. mm	Immersion depth mm	Flowrate ml / pass	Description	PK	Cat. No.
32.0	600	270	with discharge tube	1	**9.001 260**
32.0	950	400	with discharge tube	1	**6.801 515**
32.0	600	270	with discharge hose	1	**7.639 613**
32.0	950	400	with discharge hose	1	**6.255 584**

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9.001 335

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9.001 336

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9.001 337

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9.001 338

Screwthread connections for PP and PTFE drum pumps

Bürkle

Type	Material	PK	Cat. No.	
R2", internal steel barrel thread	PP	1	**9.001 335**	6
Drum stoppers for 40 to 70 mm	PVC	1	**9.001 336**	7
Mauser 2", internal coarse screwthread	PP	1	**9.001 337**	8
Tri-Sure®, internal coarse screwthread	PP	1	**9.001 338**	9
Drum screwthread connection 2", counternut	PP	1	**9.001 347**	

E & OE.

2 Mini solvent pump

NEW!

Bürkle

The self-closing discharge (with auto-stop function) of the Mini solvent pump ensures absolutely precise filling with no dripping at all. Dosing is even easy in very small containers such as test tubes, which present no problems. A hose can optionally be fastened onto the discharge spout (internal Ø 6 mm), thus making it possible to fill the container from a greater distance.

The Mini solvent pump is especially compact and very well balanced, which makes it possible to fill without tipping, even from very small containers.

Thanks to its sturdy design and high-quality materials, the Mini solvent pump consistently ensures neat and reliable filling throughout its long service life, easily and conveniently.

- Ideal for 1-5 l containers
- Connecting thread GL 45
- Parts in contact with medium made of PTFE and stainless steel (1.4301, 1.4404)
- PTFE hose (6 x 8 mm) 0.4 m
- Including grounding cable 2 m
- Adapters available as accessories for S 40, GL 38 and GL 32

Description	Flow rate l / min.	PK	Cat. No.
Mini solvent pump, GL 45	1.8	1	**9.001 351** 1
Adapter, PTFE for S 40		1	**9.001 352**
Adapter, ETFE for GL 38		1	**9.001 353**
Adapter, ETFE for GL 32		1	**9.001 354**

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9.001 351

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3 4 Solvent pump hand operated

Bürkle

- For contamination-free, dispensing of organic solvents and flavouring agents.
- Suitable for all commercially available, stainless steel drums up to 60L with R2" fine thread necks, hand pump for tinplate canisters incl. adapter for pull-out spouts (immersion depth 600mm - fully adjustable).
- Gas-tight pump can be completely shut-off using two ball valves.
- Medium-contacting parts are made of stainless steel with PTFE-seals.
- Supplied with gas tight, R2" steel barrel internal thread connection.
- Electrostatic charge can be dissipated through the accessory antistatic set (please order separately).

Description	Immersion depth mm	PK	Cat. No.
Hand pump	600	1	**9.001 349**
Hand pump for tinplate canisters	600	1	**6.237 176**

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5 Solvent pump foot operated

Bürkle

- for barrels up to 220L (fully adjustable)
- for dispensing ultrapure solvents
- solvent-wetted materials: Stainless steel and PTFE
- rigid angled tube or flexible tubing with stainless steel/PTFE stopcock
- electrostatic charge can be dissipated through the accessory antistatic set (please order separately)
- supplied with gas tight, R2" steel barrel internal thread connection

Description	Immersion depth mm	Flow rate L / min.	PK	Cat. No.
Foot pump with rigid angled tube	950	30	1	**9.001 134**
Foot pump with flexible tubing	950	30	1	**6.236 800**

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6 Anti-static set

Bürkle

When dispensing combustible/explosive liquids pump, both dispensing and filling drum involved in the process must be sufficiently earthed, in order to prevent ignition or explosion through electrostatic discharges. Antistatic set, includes three colour-coded connecting cables with clamps, supplied complete in plastic case.

Type	PK	Cat. No.
Antistatic set	1	**9.001 346**

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1 2 3 Barrel pumps AccuOne and EnergyOne

Bürkle

Bürkle barrel pumps AccuOne and EnergyOne with the unique hybrid system ensure fast, flexible and convenient filling, whenever and wherever you want. The pumps are equipped with two different power supply systems:
AccuOne, driven by a high-performance rechargeable battery or EnergyOne, with a power cable for direct connection to mains electricity. Innovative new feature: The power supply units are interchangeable! The rechargeable battery or the power supply unit are fitted with a clip lock and are removable. They can be exchanged quickly and easily. Thus AccuOne can also be operated with the power supply cable unit and EnergyOne can be operated with the rechargeable battery. With a replacement rechargeable battery as an accessory, you never have to wait for charging. The drive can also be disconnected quickly and easily from the pump station with a clip lock. This makes it possible to use one drive for filling at several stationary pump stations. AccuOne and EnergyOne are designed for applications in which even very small amounts of liquid can be added to small containers with narrow openings. The TouchPanel is sealed against dust, dirt and water. By a foil Keyboard it can be used to regulate the flow rate continuously and precisely from 0.4l/min to 12 l/min. In addition to the discharge tube, a flexible discharge hose (1.2m) with nozzle (PVC, PP, V2A, FKM) is available as an option. The light and powerful pumps are made of high-quality materials, PP, PVDF and Hastelloy C, to ensure outstanding chemical resistance. This also makes them suitable for dispensing acids and bases. Please make note of detailed information related to chemical resistance!

AccuOne

Maximum pumping capacity	12l/min.
Weight	750g
Discharge connection	¾"
Rechargeable battery capacity	up to 600l
Battery type	Li-Ion
Voltage	14.4V
Electrical charge	1.5Ah
Parts in contact with media:	
Shaft	Hastelloy C
Pump station	PP
Seals	PTFE

EnergyOne

Maximum pumping capacity	12l/min.
Weight	580g
Discharge connection	¾"

Power supply via 230 V power supply unit, international plug adapter included with delivery.

Parts in contact with media:	
Shaft	Hastelloy C
Pump station	PP
Seals	PTFE

Description	PK	Cat. No.
AccuOne with rechargeable battery, rigid discharge tube and charger, immersion pipe length 500mm	1	**9.001 420**
AccuOne with rechargeable battery, rigid discharge tube and charger, immersion pipe length 700mm	1	**9.001 421**
AccuOne with rechargeable battery, rigid discharge tube and charger, immersion pipe length 1000mm	1	**9.001 422**
EnergyOne with power supply unit and rigid discharge tube, immersion pipe length 500mm	1	**9.001 423**
EnergyOne with power supply unit and rigid discharge tube, immersion pipe length 700mm	1	**9.001 424**
EnergyOne with power supply unit and rigid discharge tube, immersion pipe length 1000mm	1	**9.001 425**

4



4 Accessories for AccuOne and EnergyOne

NEW!

Bürkle

Description	PK	Cat. No.
Rechargeable battery without charger	1	**9.001 426**
Charger	1	**9.001 427**
Power supply unit incl. connector	1	**9.001 428**
Drive without rechargeable battery, power supply unit and pump station	1	**9.001 429**
Discharge tube	1	**9.001 430**
Discharge hose 1.2m with nozzle	1	**9.001 431**
Pump station with immersion pipe length 500mm	1	**9.001 432**
Pump station with immersion pipe length 700mm	1	**9.001 433**
Pump station with immersion pipe length 1000mm	1	**9.001 434**
Barrel screw connection, PP for R2" steel barrel internal thread	1	**9.001 335**
Drum screwthread connection 2", counternut	1	**9.001 347**
Barrel plug, PVC for openings from 40 to 70mm diameter	1	**9.001 336**
Barrel screw connection, PP for Mauser 2", coarse internal thread	1	**9.001 337**
Barrel screw connection, PP for Tri-Sure®, coarse internal thread	1	**9.001 338**

E & OE.

1 Drum pumps GLP 25

Grün-Pumpen

GLP 25 is your ideal helper for clean and safe liquid transfer from small containers and drums up to 220litres. Various media such as undiluted acids and bases, dies, emulsions, dispersions and low-viscosity liquids can be measured out without any problems. Wetted materials are PP, stainless steel and Viton®. The pump is therefore additionally media resistant against aggressive liquids. Driveshaft made from stainless steel. Delivery rates from 1 to 20 l/min adjustable. Pump Set supplied with: motor, pump unit, PP, ¾" dia. inlet tubing (length 500, 700 or 1000mm), PP discharge tubing, 250mm long and adapter for drum necks of 40 to 58mm.

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Description	Length mm	PK	Cat. No.
Pump set	500	1	**9.001 410**
Pump set	700	1	**9.001 411**
Pump set	1000	1	**9.001 412**

2 3 Accessories for drum pumps GLP 25

Grün-Pumpen

Description	PK	Cat. No.
Motor for all pump units	1	**9.001 400**
Pump unit with inlet tubing length 500mm, incl. discharge tube	1	**9.001 401**
Pump unit with inlet tubing length 700mm, incl. discharge tube	1	**9.001 402**
Pump unit with inlet tubing length 1000mm, incl. discharge tube	1	**9.001 403**
Discharge tube PP, length 25cm	1	**9.001 404**
Adapter PP, diam. 65 to 70mm	1	**9.001 405**
Nozzle PP, reinforced PVC outlet tubing 1.5m, DN19	1	**9.001 406**

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4 Drum pumps, mains-powered

Lutz Pumpen GmbH

Lightweight and powerful pump for transferring small amounts of aqueous liquids up to 300 mPas from cans and drums with infinitely variable speed controller.
- Motor 230V, 200W (IP 24)
- Seal less pump tube
- Suitable accessory flow meter required
- Pump with tubing connection

Two options:
- Polypropylene version for acids and alkalis
- Stainless steel version for low-viscosity lubricants

Available as a set (9.880 310-9.880 315) with 1.5m PVC tubing, nozzle in polypropylene, wall bracket

4



Type	Material	Immersion depth mm	Flow rate l / min.	Immersion tube diam. mm	Delivery head mWS	PK	Cat. No.
Pump	PP	500	75	32	7.0	1	**9.880 300**
Pump	PP	700	75	32	7.0	1	**9.880 301**
Pump	PP	1000	75	32	7.0	1	**9.880 302**
Pump	stainless steel	500	68	28	6.5	1	**9.880 303**
Pump	stainless steel	700	68	28	6.5	1	**9.880 304**
Pump	stainless steel	1000	68	28	6.5	1	**9.880 305**
Pump set	PP	500	75	32	7.0	1	**9.880 310**
Pump set	PP	700	75	32	7.0	1	**9.880 311**
Pump set	PP	1000	75	32	7.0	1	**9.880 312**
Pump set	stainless steel	500	68	28	6.5	1	**9.880 313**
Pump set	stainless steel	700	68	28	6.5	1	**9.880 314**
Pump set	stainless steel	1000	68	28	6.5	1	**9.880 315**

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9.880 360

Horizontal centrifugal pumps, magnetically coupled

Lutz Pumpen GmbH

These new magnetic drive pumps are designed for pumping acids, bases, mixtures of acids and bases, solvents, photochemicals into alkali stripping baths, galvanic baths, as well as radioactive, sterile, expensive or highly corrosive liquids. The pumps are sealless. The impeller is driven by the magnetic force of the outer magnets, therefore no mechanical seal is required. As the pump housing is hermetically sealed no leaks can occur. The use of high performance, permanent magnets, ensures high transmission forces even at elevated temperatures.
- viscosity up to 20 mPas
- pump complete with flanged-to motor

Magnetic drive pump 15 Watt: Motor 230V, material PP (fibre-glass reinforced), stainless steel (shaft), Viton® (O-ring), tubing connection 14mm
Magnetic drive pump 29 Watt: Motor 230V, material PP (fibre-glass reinforced), ceramics (shaft), Rulon (guide bearing), Viton® (O-ring), suction/discharge G ¾" OT (BSP)

2



9.880 361

Description	Flow rate L / min.	Delivery head mWS	PK	Cat. No.
15 Watt, without thread	12	2.0	1	**9.880 360** 1
29 Watt, with ¾" outer thread	24	3.0	1	**9.880 361** 2

3



3 Laboratory peristaltic pumps, PLP

Dülabo Laborgeräte

Compact laboratory peristaltic pumps with stepless, adjustable flow rate, pump rotor, two compression and four guide rollers. Changing pump tubing is easy, no tools or other aids are required. For 220V 50Hz a.c. supplies.

Type	Flow rate ml/min.	Weight g	PK	Cat. No.
PLP 33	7 - 33	1300	1	**9.700 420**
PLP 66	17 - 66	1300	1	**9.700 421**
PLP 330	66 - 400	1300	1	**9.700 422**
PLP 1000	250 - 1000	1440	1	**9.700 423**

4



4 Peristaltic Multichannel Pump PLP 380

Dülabo Laborgeräte

Flow rates from 0.0002 to 380 ml/min. The speed can be adjusted manually or automatically through optional external control. Easy to operate.
- Accepts various pump heads
- Prime key for fast filling and emptying
- Adjust speed manually or automatically through optional external control
- Memory function, storing the running parameters automatically
- Membrane keypad, easy to operate
- Good performance and low price

Specifications:

Speed:	0.1 to 100rpm, reversible
Speed precision:	0.1rpm
Speed control:	Membrane keypad
Display:	3-digit LED displays current rpm
Communication interface:	RS485
Power supply:	90 bis 260 V_{ac} 50/ 60 Hz
Power consumption:	< 30 W
Operating condition:	0 to 40°C
Relative humidity:	< 80%
Dimensions (L x W x H in mm):	232 x 142 x 149
Drive weight (without Pump Head):	2.3kg
IP rating:	IP 31

Type	Description	Flow rate ml/min.	PK	Cat. No.
PLP 380	Peristaltic pump	0.00025 - 380	1	**9.700 430**

E & OE.

1 Peristaltic Pump PLP 6000



Dülabo Laborgeräte

Easy to operate. DC brushless motor and close loop control integrate circuit.
It features big torque, small vibration, high efficiency and non maintenance.
Flow rates from 4.2 to 6000 ml/min. The speed can be adjusted manually or automatically through optional external control.

- Accepts various pump heads
- Prime key for fast filling and emptying
- Adjust speed manually or automatically through optional external control
- Memory function, storing the running parameters automatically
- High torque grants the use of double channel pump heads
- Easy to operate through start/stop switch and rotary encoded switch for speed control
- Good performance and low price

Specifications

Speed:	60 to 600rpm
Speed precision:	±1%
Resolution:	1rpm
Torque:	>=1.60 Nm
Speed control:	Start/stop switch and rotary encoded switch
Display:	3-digit LED displays current rpm
Communication interface:	RS485
Power supply:	176 to 264 V_{ac} 50/ 60 Hz
Power consumption:	< 200 W
Operating condition:	0 to 40°C
Relative humidity:	< 80%
Dimensions (L x W x H in mm):	285 x 207 x 180
Drive weight (without Pump Head):	5.2kg
IP rating:	IP 31

Type	Description	Flow rate ml/min.	PK	Cat. No.
PLP 6000	Peristaltic pump	4.2 - 6000	1	**9.700 433**

Pump Heads for PLP 380, PLP 2000 and PLP 6000

Dülabo Laborgeräte

Type	Flow rate L / min.	Max. speed rpm	Rollers	Channels	Weight kg	For Type	PK	Cat. No.
PPH 103	2200	600	3	1	0.40	PLP 380, PLP 380 multi, PLP 2200, PLP 6000	1	**9.700 435**
PPH 303	1600	600	3	1	0.35	PLP 380, PLP 380 multi, PLP 2200, PLP 6000	1	**9.700 436**
PPH 5061	48	100	6	1	0.21	PLP 380	1	**9.700 437**
PPH 5062	48	100	6	2	0.27	PLP 380, PLP 380 multi	1	**9.700 438**
PPH 603	6000	600	3	1	0.79	PLP 6000	1	**9.700 442**
PPH 7042	1800	600	4	2	0.82	PLP 6000	1	**9.700 443**

Flow rate PLP 380

Dülabo Laborgeräte

Pump Head	Channels	Flow rate per channel ml/min
PPH 103	1	0.07 - 380
PPH 303	1	1.7 - 150
PPH 5061	1	0.00025 - 48
PPH 5062	2	0.00025 - 48

Flow rate PLP 6000

Dülabo Laborgeräte

Pump Head	Channels	Flow rate per channel ml/min
PPH 103	1	4.2 - 2200
PPH 303	1	100 - 1600
PPH 603	1	200 - 6000
PPH 7042	2	50 - 1800

1



1 Compact peristaltic pumps MS-CA

Flow rate 0.021 to 26ml/min. Simple Click'n'go mini tubing assembly cartridges. *Ismatec*
- 3-stop colour-coded tubing
- fixed-speed motor
- Dimensions MS-CA2 (WxDxH): 88 x 135 x 125mm
- Dimensions MS-CA4 (W x D x H): 88 x 135 x 145mm

Type	Rotation speed rpm	Flow rate ml/min.	Channels	Rollers	PK	Cat. No.
MS-CA 2/620	20	0.028 - 8.5	2	6	1	**9.828 142**
MS-CA 2/660	60	0.083 - 26.0	2	6	1	**9.828 146**
MS-CA 2/640	40	0.6 - 17	2	6	1	**9.828 144**
MS-CA 2/840	40	0.043 - 14	2	8	1	**9.828 154**
MS-CA 2/820	20	0.021 - 7.1	2	8	1	**9.828 152**
MS-CA 2/860	60	0.064 - 21.0	2	8	1	**9.828 156**

2



2 Pumps, peristaltic, Reglo-Analogue

For high precision pumping in the ml-range and below (0.002 to 68ml/min). Simple Click'n'go mini tubing assembly cartridges. With remote control for on/off and speed. *Ismatec*
- speed setting: 2-99%, resolution: 1%
- power consumption 20W
- overload control
- analogue interface
- for 0.13 to 3.17mm tubing i.d.
- 3-stop, colour-coded tubing

Dimensions (WxDxH)
2-channel versions: 100 x 178 x 143 mm
4-channel versions: 100 x 190 x 143 mm

Type	Rotation speed rpm	Flow rate ml/min.	Channels	Rollers	PK	Cat. No.
MS-2/6-160	3.2 - 160	0.005 - 68	2	6	1	**9.828 470**
MS-2/8-160	3.2 - 160	0.004 - 57	2	8	1	**9.828 471**
MS-2/12-160	3.2 - 160	0.003 - 38	2	12	1	**9.828 474**
MS-4/6-100	2,0 - 100	0.003 - 43	4	6	1	**9.828 472**
MS-4/8-100	2,0 - 100	0.003 - 35	4	8	1	**9.828 473**
MS-4/12-100	2,0 - 100	0.002 - 24	4	12	1	**9.828 475**

3



3 Pumps, peristaltic, Reglo-Digital

For high precision pumping in the ml-range and below (0.001 to 68ml/min). *Ismatec*
Simple Click'n'go mini tubing assembly cartridges.
Microprocessor controlled, with RS232 interface and can be calibrated. Programmable flow rates, dispensing volume and pause times. Digital LED display. For: 0.13 to 3.17mm i.d. tubing.

Programmable functions:
- ml/min
- the drive speed (rpm)
- drip-free by rolling back steps
- calibration: ml/min (flow rate); ml (volume)
- power ON/OFF

Dosing by:
- volume ml
- volume/unit time
- metering (0.1 to 999 hours)
- interval metering with preset pause
- selectable number of dispensing

Type	Rotation speed rpm	Flow rate ml/min.	Inputs	Rollers	PK	Cat. No.
MS-2/6-160	1.6 - 160	0.003 - 68	2	6	1	**9.828 480**
MS-2/8-160	1.6 - 160	0.002 - 57	2	8	1	**9.828 481**
MS-2/12-160	1.6 - 160	0.002 - 38	2	12	1	**9.828 484**
MS-4/6-100	1.0 - 100	0.002 - 43	4	6	1	**9.828 482**
MS-4/8-100	1.0 - 100	0.002 - 35	4	8	1	**9.828 483**
MS-4/12-100	1.0 - 100	0.001 - 24	4	12	1	**9.828 485**

E & OE.

Pumps, peristaltic, Ecoline

NEW!

Flow rate 0.003 to 5400 ml/min. Robust and economical. Stainless steel housing.
Easy handling. For all applications in laboratory and industry.

Ismatec

Ecoline VC-280:
Economical, basic, single-channel drive model for flow rates up to 5.4 l/min. with variable speed.

Ecoline VC-360 and VC380:
1-channel tubing pumps, microprocessor controlled. With 2-digit potentiometer, scaled 1 to 99% and analogue interface for Start/Stop, rotation direction, speed control (0 to 5 or 0 to 10V/0 to 20 or 4 to 20mA).

Ecoline VC-drive without pump heads:
- combinable with Easy-Load®, MS/CA 8-6 and MS/CA 4-12 pumpheads

Type	Channels	Rollers	Flow rate ml / min.	To fit tubing mm	PK	Cat. No.	
VC-280 II	1	2	1.7 - 5400	1.6 - 11.1	1	**9.828 513**	
VC-360 II	1	3	0.25 - 1300	0.8 - 6.4	1	**9.828 514**	1
VC-380 II	1	3	1.6 - 5000	1.6 - 11.1	1	**9.828 515**	2
Ecoline VC-drive			0.23 - 5400	-	1	**9.828 516**	
Easy-Load®	1	3	0.23 - 1600	0.8 - 8.0	1	**9.828 391**	
MS/CA 8-6	8	6	0.005 - 150	0.13 - 3.17	1	**9.828 376**	
MS/CA4-12	4	12	0.003 - 83	0.13 - 3.17	1	**9.828 378**	

3 Peristaltic pumps, Reglo ICC

Independent 3-Channel Control Pump

Ismatec

- Increased efficiency
- Control of complex pump applications with only one pump
- Controlled by computer or directly through the control panel on the pump
- Continuous pumping and precise dosing
- Flexible bi-directional flow direction in each channel
- Self-priming
- Especially for viscous or foaming liquids, also when containing particles or live cells
- Contamination-free pumping even under sterile conditions

Specifications:

Flow rate: 0.002 to 35ml/min
Differential Pressure: Max. 1.0 bar (14.5 psi)

Type	PK	Cat. No.
Reglo ICC	1	**9.828 487**

1



9.828 514

2



9.828 515

3



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1 Pumps, peristaltic, multichannel, precision, IPC, IPC-N-IP and IP-N

Ismatec

IP and IP-N series, without dispensing features
- Microprocessor controlled
- very precise pumping

IPC and IPC-N series, with dispensing features
- Microprocessor controlled
- very precise pumping
- with "standby-mode" (prevents draining the tubing line e.g. overnight)
- with dispensing and calibration functions

IPC-N and IP-N series
- 4, 8, 12, 16 or 24 channels
- 8 actively driven stainless steel rollers
- Transparent keyboard and LED-display
- Click´n´go cassettes providing defined and repeatable occlusion conditions.
- different tube sizes can be inserted in each channel.
- 2 Stopper tubes
- Differential pressure: 1.0 bar

Specifications IPC and IPC-N:

Motor type:	d.c. motor
Flow rates:	IPC: 0.4 up to 44 l/min IPC-N: 0.11 up to 11.25 l/min
Speed range:	1 to 100 %, resolution 0.1 % in µl/min to ml/min
Input:	30W
Supply requirements:	230V 50Hz, 115V 60Hz (selectable)
Protection class:	IP 30

Specifications IP and IP-N:

Motor type:	d.c. motor
Flow rates:	IP: 0.4 up to 44 l/min IP-N: 0.11 up to 11.25 l/min
Speed range:	1 to 100 %, resolution 0.1 % IP; rpm, resolution 0.1 l/min IP-N: rpm, resolution 0.03 l/min
Input:	30W
Supply requirements:	230V 50Hz, 115V 60Hz a.c. (selectable)
Protection class:	IP 30

Type	Flow rate ml/min.	Inputs	Dimensions (W x D x H) mm	PK	Cat. No.
IP-4	0.002 - 44	4	175 x 180 x 130	1	**9.828 346**
IP-8	0.002 - 44	8	175 x 220 x 130	1	**9.828 347**
IP-12	0.002 - 44	12	175 x 260 x 130	1	**9.828 348**
IP-16	0.002 - 44	16	175 x 300 x 130	1	**9.828 349**
IP-24	0.002 - 44	24	175 x 380 x 130	1	**9.828 350**
IP-N-4	0.0004 - 11	4	175 x 180 x 130	1	**9.828 356**
IP-N-8	0.0004 - 11	8	175 x 220 x 130	1	**9.828 357**
IP-N-12	0.0004 - 11	12	175 x 260 x 130	1	**9.828 358**
IP-N-16	0.0004 - 11	16	175 x 300 x 130	1	**9.828 360**
IP-N-24	0.0004 - 11	24	175 x 380 x 130	1	**9.828 370**
Foot switch T-51-S	-	-	-	1	**9.828 359**
IPC-4	0.002 - 44	4	175 x 180 x 130	1	**9.828 351**
IPC-8	0.002 - 44	8	175 x 220 x 130	1	**9.828 352**
IPC-12	0.002 - 44	12	175 x 260 x 130	1	**9.828 353**
IPC-16	0.002 - 44	16	175 x 300 x 130	1	**9.828 354**
IPC-24	0.002 - 44	24	175 x 380 x 130	1	**9.828 355**
IPC-N-4	0.0004 - 11	4	175 x 180 x 130	1	**9.828 361**
IPC-N-8	0.0004 - 11	8	175 x 220 x 130	1	**9.828 362**
IPC-N-12	0.0004 - 11	12	175 x 260 x 130	1	**9.828 363**
IPC-N-16	0.0004 - 11	16	175 x 300 x 130	1	**9.828 364**
IPC-N-24	0.0004 - 11	24	175 x 380 x 130	1	**9.828 365**

E & OE.

1 Pump, peristaltic, Flowmaster FMT 300

Offers high flow rates from 37ml/min to 13l/min for industrial applications. *Ismatec*
Protection level IP65, sterile tube insertion without priming. Simple detachable pumphead makes cleaning easy, no tools required. Dispensing in intervals possible.

Specifications

Pumping speed:	5 to 500rpm, accuracy 0.1rpm, waterproof keypad, LED readout
Power consumption:	500W
Power supply:	115/230V 60Hz a.c., switchable
Protection:	IP 65
Dimensions (HxWxD):	220x500x262mm
Weight:	26kg
Flowrate:	37 ml/min - 13l/min
Pumphead:	Comprises a 3-roller pumphead for tubing with a thickness of 3.2 mm

Type	PK	Cat. No.
Flowmaster FMT 300	1	**9.828 541**

Peristaltic pump drives, BVP-Standard/BVP-Process

Can be combined with over 20 pump-heads for flow rates of 0.01 to 3700ml/min (depending on pump-head). *Ismatec*
For the continuous pumping of liquids and suspensions with up to 60 % solids content according to capacity or time.
Analogue interface for Start/Stop, rotation direction, autostart. LED display on BVP Process.
Stainless steel housing, dust-tight and water-proof. Dimensions (W X D x H): 155 x 220 x 260mm (without pump-head).
Power supply: 230V/50Hz, 115V/60Hz

Specifications: BVP Standard
- speed 2.4 to 240 rpm
- speed setting: 1-99.9%, resolution 0.1%
- protection rating: IP30
- weight: 5.7kg

Specifications: BVP Process
- speed 1 to 240 rpm
- speed setting: rpm, resolution: 0.1 rpm
- protection rating: IP65
- weight: 6.9kg

Type	Flow rate ml / min.	PK	Cat. No.
BVP-Standard	0.003 - 3700	1	**9.828 366** 2
BVP-Process	0.001 - 3700	1	**9.828 512** 3

1



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9.828 366

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9.828 512

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1 Peristaltic pump drives, MCP standard/MCP process

Ismatec

Can be combined with over 20 pumpheads for flow rates of 0.01 to 3700ml/min (depending on pump-head).
Combined peristaltic pump and precise dispenser. Microprocessor controlled, with precise controlled rotation speed and metering unit for 1 to 24 pump channels. The speed (1rpm to 240rpm) is adjustable to 0.1rpm, key-pad with LED-display, programmable. Different dosing modes supply very exact and reproducible results. With RS232 interface, tubing valve operation, dosing handle and foot switch. Can be used for sterile dosing up to 135°C (with adequate tubing). Dimensions (WxDxH): 155mm x 220mm x 260 mm (without pumphead).

Programmable functions:
- ml/min
- drive speed
- drop-free (roller reverse step)
- calibration ml/min in ml (volume)
- drive unit on/off

Dosing:
- volume ml
- volume/time unit
- dosing time (0.1 to 999 h)

Additonal functions MCP process:
- progammable sequences
- dust-tight and water-proof

Specifications	**MCP-Process**
Motor type:	d.c. motor
Speed:	1 to 240rpm
Speed setting:	rpm, resolution 0.1rpm
Flow rate setting:	ml/min, ml/min, l/min
Power consumption:	100W
Power supply:	100 to 230V, 50 to 60Hz a.c.
Protection rating:	IP65
Weight:	6.9kg (without pumphead)
	MCP-Standard
Motor type:	d.c. motor
Speed:	1 to 240rpm
Speed setting:	rpm, resolution 0.1rpm
Flow rate setting:	ml/min, ml/min, l/min
Power consumption:	100W
Power supply:	230V 50Hz; 115V, 60Hz a.c. selectable
Protection rating:	IP30
Weight:	6.4kg (without pumphead)

Type	PK	Cat. No.
MCP-Process	1	**9.828 510**
MCP-Standard	1	**9.828 367**

2



2 Single-channel-pumpheads for peristaltic pumps BVP-Standard (-Process) and MCP-Standard (-Process) drive units

Ismatec

Pumphead type	Inputs	Flow rate ml / min.	Rollers	PK	Cat. No.
7518-10 Easy-Load®*	1	0.07 - 1100	3	1	**9.828 391**
Easy-Load removable plate	-	-		1	**9.828 530**
PTFE tubing pumphead*	1	0.07 - 45	6	1	**9.828 395**

* Removable plate 9.828 530 is required for operation.

E & OE.

1 Single-channel pumpheads for BVP-Standard (-Process) and MCP-Standard (-Process) peristaltic pump drive units

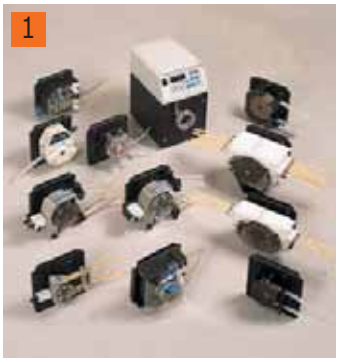
For tubing with max. wall thickness: 1.6mm

Ismatec

Pumphead type	Flow rate ml / min.	Inputs	Rollers	PK	Cat. No.
360	0.072 - 530	1	3	1	**9.828 371**
380	0.44 - 2800	1	3	1	**9.828 372**
380 AD**	0.41 - 3600	1	3	1	**9.828 373**
Pro 280	0.49 - 3700	1	2	1	**9.828 520**
Pro 380	0.45 - 3400	1	3	1	**9.828 521**
Pro 281*	3.6 - 3100	1	2	1	**9.828 394**
Pro 381*	3.3 - 2900	1	3	1	**9.828 396**

* Tubing wall thickness 2.4 mm
**Pump head for tubing wall thickness of 1.6 to 2.4 mm

1



2 Multichannel pumpheads for BVP-Standard/Process and MCP-Standard/Process drive units

Ismatec

Pumphead type	Flow rate ml / min.	Inputs	Rollers	PK	Cat. No.
SB removable plate	-	-	6	1	**9.828 533**
SB-3V*	0.09 - 530	3	6	1	**9.828 216**
SB-2V*	1.1 - 1100	2	6	1	**9.828 215**

* Removable plate 9.828 533 is required for operation.

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3 4 Multichannel pumpheads for BVP-Standard/Process and MCP-Standard/Process drive units

Ismatec

Pumphead type	Flow rate ml / min.	Inputs	Rollers	PK	Cat. No.
CA4	0.002 - 230	4	8	1	**9.828 379**
CA8	0.002 - 230	8	8	1	**9.828 380**
CA12	0.002 - 230	12	8	1	**9.828 381**
MS/CA8-6*	0.002 - 100	8	6	1	**9.828 375**
MS/CA4-12**	0.001 - 57	4	12	1	**9.828 377**
MS/CA8 cartridge block	0.002 - 100	8	6	1	**9.828 376**
MS/CA4-12 cartridge block	0.001 - 57	4	12	1	**9.828 378**

*extendible to 24 channels
**extendible to 16 channels

3



4



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6.258 629

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6.256 566

Peristaltic pump rotarus® standard and volume

NEW!

Hirschmann

Peristaltic pumps for continuous delivery in speed ranges from 0.2 to 100 revolutions per minute (rotarus® standard 50/50i) and 5 to 500 revolutions per minute (rotarus® Volume 100/100i).

rotarus® standard 50 is the powerful basic model in the peristaltic pump series. The cost-effective, precise delivery pump for small delivery volumes and high viscosities is ideal for flexible applications, thanks to the use of diverse pump heads and hoses. The control panel on the housing enables simple and rapid configuration of the most important parameters, and the speed can be programmed directly on the unit. Performance class with 50 Watt ensures exact delivery in speed ranges from 0.2 to 100 revolutions per minute.

rotarus® volume 100 is a comfortable, rapid dispensing pump for high flow rates with control options for velocity, flow rate, dispensing duration and total volume. Variable cycles and graduated pump speeds can be controlled reliably and precisely. Performance class with 100 Watt ensures rapid delivery in speed ranges from 5 to 500 revolutions per minute. RFID technology is used in the rotarus® volume to automatically detect the pump head and hose. The model also has automatic blockage detection and hose rupture monitoring as well as a method memory. In addition, rotarus® volume is equipped with an external control unit with touchscreen.

Overview of details:

- Housings with a white powder coating (rotarus® 50/100; protection class IP54) or inox stainless steel design (rotarus® 50i/100i, protection class IP65).
- Pump head connection technology for rapid handling.
- For pump drive a choice of two different motors with 50 or 100 watt is available to suit the application, flow rate and fluid.
- Changeable pump heads, single and multichannel design.
- Rapid tool-free changing of pump heads.
- Control panel located directly on pump housing.
- Calibratable.
- Operation with 24 V DC.
- USB and RS232 interface for PC link using interface (available as accessory).
- Pump heads from other manufacturers can be fitted without difficulty using an adapter.
- Comprehensive accessory range.

Supplied with:

- rotarus® standard 50/50i, external power supply unit, junction cable for EU, UK, US.
- rotarus® volume 100/100i, external power supply unit, junction cable for EU, UK, US, control unit.

Type	PK	Cat. No.	
standard 50	1	**6.258 629**	1
standard 50i	1	**6.258 630**	
volume 100	1	**6.257 247**	
volume 100i	1	**6.256 566**	2

Rotarus® pump heads

NEW!

Hirschmann

Type	Description	Channels	Rollers	PK	Cat. No.
PK 10-16	Single channel pump head for tube with WT 1.6mm	1	3	1	**9.880 380**
PK 10-24	Single channel pump head for tube with WT 2.4mm	1	3	1	**9.880 381**
MKF 4-8	4 Channel pump head for stopper tubes	4	8	1	**9.880 382**
MKF 8-4	8 Channel pump head for stopper tubes	8	4	1	**9.880 383**
MKF 12-8	12 Channel pump head for stopper tubes	12	8	1	**9.880 384**

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6.266 993

4



6.266 994

Laboratory syringe pump SP1090 with controller

NEW!

Dülabo Laborgeräte

SP1090:

- Single-channel micro syringe pump with two flow directions
- Controller is separated from the drive
- For standard syringes from 5 ul - 60 ml
- Flow rates of 0.138 ml/min - 52.94 ml/min
- Speed of 7.94 um/min - 79.4 mm/min
- 100 - 240 VAC or 12 VDC

TJS:

- Operated via a keypad and rotary encoder
- Easy syringe selection using an included syringe list or custom syringe input
- Amount, flow rate or feed rate can be displayed
- LCD display, 128 x 64
- RS485 interface
- 100 - 240 VAC or 12 VDC

Description	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.	
Syringe pump 1090	100 x 245 x 95	1.3	1	**6.266 993**	3
Controller TJS	108 x 170 x 65	0.5	1	**6.266 994**	4

E & OE.

Syringe pumps Legato®

NEW!

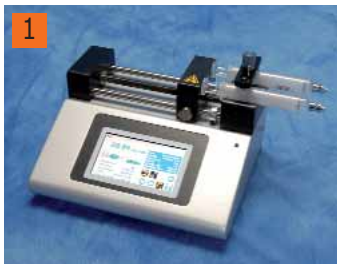
Harvard Bioscience

The Legato® series syringe pumps provide the smoothest most accurate flow available. These innovative syringe pumps, offer unparalleled ease of use through the high resolution touch screen user interface. The intuitive touch screen enables the user to quickly create configurations and recall them for ease of use.
All of the pump operating parameters are presented to the user on an easy to view run screen.
Single syringe, single remote syringe, dual syringe and multirack configurations are available along with the infuse only or infuse/withdraw/continuous operation (model dependent).
- Single and dual syringe infuse, infuse withdraw & continuous models
- Holds syringe sizes from 0.5ul to 140 ml (Model dependent)
- High resolution, chemically resistant colour touch screen display
- Flow rates down to the picoliter/min (Model dependent)
- Built in syringe selection table
- Programmable interface without the need for a PC (Model dependent)
- USB/RS-232/TTL Interfaces for external control (RS232 available on Legato® 200 Series Only)
- Rugged construction with cold rolled steel chassis
- Integrated spill dam

Applications: Electrospinning, Flow Cytometry, Microfluidics, Mass Spec, Drug Discovery, Organic Synthesis, Nanofluidics, Stereotaxic Injections

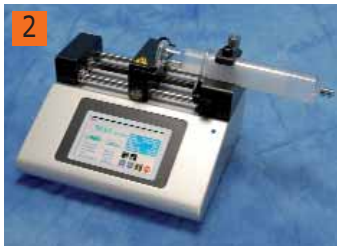
Legato® 100 Single Syringe Infusion Pump
Accommodates 1 syringe from 0.5µl to 60ml. Entry level pump in the Legato® series. This pump is ideal for applications where a single syringe is used. It allows a wide flow range from 1.26pl/min up to 88.28ml/min.
Legato® 101 Dual Syringe Nanoliter Pump
Accommodates 2 syringes from 0.5µl to 10ml. This infusion only pump is ideal for surface plasma resonance, organic synthesis and other applications where dual syringes are required with small volumes under 10ml. The Minimum flow rate 1.26pl/min for a 0.5µl syringe up to 25.99ml/min.
Legato® 110 Single Syringe Infusion/Withdraw Pump
Accommodates 1 syringe from 0.5µl to 60ml. The Legato® 110 is based on the Legato® 100. It offers infuse/withdraw flow control and programmability for up to two multi-step programs of 50 steps each. This pump is ideal for more complex multi-step dosing and has multi-mode operation including infusion only, withdrawal only, infusion and withdrawal and withdrawal/infusion modes. It allows a wide flow range from 1.26pl/min up to 88.28ml/min.
Legato® 200 Dual Syringe Infusion Pump
Accommodates 1 syringe from 0.5µl to 140ml. This unit supports infuse only. User definable flow rates with selectable target volumes or time values to control the total infusion volume. It allows a wide flow range from 3.06pl/min up to 105ml/min.
Legato® 210 Dual Syringe Infuse/Withdraw Pump
Accommodates 2 syringes from 0.5µl to 140ml. This unit supports infuse only, withdraw only, infuse/withdraw, withdraw/infuse and continuous mode. User defined flow rates with selectable target volumes. It allows a wide flow range from 3.06pl/min up to 105ml/min.

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6.267 707

2



6.267 708

Description	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
Legato® 100	226 x 191 x 150	2.7	1	**6.267 706**
Legato® 101	226 x 191 x 150	2.7	1	**6.267 707** 1
Legato® 110	226 x 191 x 150	2.7	1	**6.267 708** 2
Legato® 200	889 x 254 x 279	5.0	1	**6.267 701**
Legato® 210	889 x 254 x 279	5.0	1	**6.267 702**

Multi-Rack for syringe pumps Legato® 200 and Legato® 210

NEW!

Harvard Bioscience

Modular syringe racks can be purchased to create a multichannel syringe pump. These racks will work with the Legato® 200 or Legato® 210 only. All of them could be for infuse only as well.

Small Syringe Multi-Rack: The small syringe multi-rack will accommodate up to six 30ml to 60ml syringes or up to ten 0.5µl to 20ml syringes. For Infuse/Withdraw applications.
Large Syringe Multi-Rack: The large syringe multi-rack will accommodate up to four 60ml to 140ml plastic syringes. For Infuse/Withdraw applications.
Microliter Syringe Multi-Rack: The microliter syringe multi-rack will accommodate up to four 0.5µl to 10ml syringes. For Infuse/Withdraw applications.

3



6.267 704

Description	PK	Cat. No.
Small Syringe Multi-Rack	1	**6.267 703**
Large Syringe Multi-Rack	1	**6.267 704** 3
Microliter Syringe Multi-Rack	1	**6.267 705**

Disposable syringes - please see page 1358.

1 Diaphragm liquid pumps LIQUIPORT®

KNF

The LIQUIPORT® diaphragm liquid pumps of the NF 100/1.100_.18 S series reliably pump neutral and aggressive liquids. A knob with LED makes it easy to vary the pumping capacity. These pumps work quietly and with low vibrations.
- acid, alkali, solvent resistant
- self-priming
- dry running
- maintenance-free
- splashproof (IP65 level)
- flow rate manually adjustable, LED display
- standby mode
- maximum pressure limitation
- quiet pumping, low vibrations.

Pump head material:
KT = PP
TT = PVDF
Membrane: PTFE coated
Valves: FFPM


1

Specifications

Suction head:	3 mWS
Pressure head:	10 mWS
Ambient temp.:	+5 to +40°C
Liquid temp.:	+5 to +80°C
Supply requirements:	100-230V, 50/60Hz

Type	Flow rate l / min.	Int. diam. mm	Rating W	Weight kg	Width mm	Length mm	Height mm	PK	Cat. No.
NF 100 KT.18 S	0.2 to 1.3	8	12	1.0	99	130	177	1	**9.880 597**
NF 100 TT.18 S	0.2 to 1.3	8	12	1.0	99	130	177	1	**9.880 598**
NF 300 KT.18 S	0.5 to 3.0	12	24	1.5	104	160	190	1	**9.880 599**
NF 300 TT.18 S	0.5 to 3.0	12	24	1.5	104	160	190	1	**9.880 600**

Further designs available on request.

We can supply this
manufacturer's
whole
product range !

partner of the
LLG
Lab Logistics Group

KNF
LAB

E & OE.

1 Chemically-resistant Diaphragm Dosing Pumps SIMDOS®

NEW!

1



KNF

The chemically-resistant diaphragm pumps SIMDOS 02 and SIMDOS 10 are the ideal solution to transfer liquids accurately and reliably. With a repeatability of ±1%, this is true for small volumes, too. The pump head of SIMDOS 02 and SIMDOS 10 is available in PP, PVDF and PTFE. The valve material is FFKM, the diaphragm is PTFE covered.

The advantages of SIMDOS 02 and SIMDOS 10:
- Simple and intuitive operation, easy calibration
- Adaptable to fluid characteristics
- Self priming and dry-running safe
- Analog and impulse control (RC)
- Splashproof IP65
- Small footprint

Control versions:

S - Version
- Manual operation

RC - Version:
- Start/Stop through logic control (TTL)
- Reset/Prime through logic control (TTL)
- Output signal fault alarm
- Cable for external control included
- RS 232 port available on request

Specifications	**SIMDOS 02/SIMDOS 10**
Max. pressure:	6bar
Power supply:	100 - 240V/50 - 60Hz
Allowed ambient temperature:	+5 to +40°C
Allowed liquid temperature:	+5 to +80°C
Maximum viscosity:	150cSt
Repeatability:	±1%
Power consumption:	10W/24W
Protection class:	IP65
Dimensions:	140 x 87 x 130mm/150 x 93 x 144mm
Weight:	0.9kg
Hydraulic connection	
SIMDOS 02:	UNF 1/4"-28
SIMDOS 10:	Tubing 4mm ID/6mm OD

Type	Head	Control	Flow rate	Dosing volume	Max. suction height	PK	Cat. No.
FEM 1.02 KT.18 S	PP	S-Version (manual)	30µl - 20ml/min	30µl - 999 ml	2m	1	**9.880 565**
FEM 1.02 TT.18 S	PVDF	S-Version (manual)	30µl - 20ml/min	30µl - 999 ml	2m	1	**9.880 567**
FEM 1.02 FT.18 S	PTFE	S-Version (manual)	30µl - 20ml/min	30µl - 999 ml	2m	1	**9.880 569**
FEM 1.02 KT.18 RC	PP	RC-Version (man./extern)	30µl - 20ml/min	30µl - 999 ml	2m	1	**9.880 566**
FEM 1.02 TT.18 RC	PVDF	RC-Version (man./extern)	30µl - 20ml/min	30µl - 999 ml	2m	1	**9.880 568**
FEM 1.02 FT.18 RC	PTFE	RC-Version (man./extern)	30µl - 20ml/min	30µl - 999ml	2m	1	**9.880 570**
FEM 1.10 KT.18 S2	PP	S-Version (manual)	1ml - 100ml/min	1 - 999ml	3m	1	**6.268 391**
FEM 1.10 TT.18 S2	PVDF	S-Version (manual)	1ml - 100ml/min	1 -999ml	3m	1	**6.268 393**
FEM 1.10 FT.18 S2	PTFE	S-Version (manual)	1ml - 100ml/min	1 - 999ml	3m	1	**6.268 389**
FEM 1.10 KT.18 RC2	PP	RC-Version (man./extern)	1ml - 100ml/min	1 - 999ml	3m	1	**6.268 392**
FEM 1.10 FT.18 RC2	PTFE	RC-Version (man./extern)	1ml - 100ml/min	1 - 999ml	3m	1	**6.268 390**

The pump is also available with an RS 232 port on request (RCP).

2 Double diaphragm pumps, oil-free

2



Lutz Pumpen GmbH

Oil-free, air-operated, double diaphragm pumps are an ideal solution for handling viscous, corrosive, abrasive and flammable liquids. The pumps are available in Polypropylene (PP), PVDF and Nylon. The diaphragms, balls and valve seats are available in Geolast® and PTFE. Solids up to 1.6mm diameter can be pumped.

Specifications

Flow rate:	16L/min
Suction lift dry:	6m
Operating pressure:	min. 1.4 bar/max. 6.8 bar
Temperature max:	66°C
Suction/ Discharge:	¼" BSP female

Description	Material	Membrane	PK	Cat. No.
For liquids based on water, lubricant, mineral oil	PP	Geolast®	1	**9.880 350**
For corrosive liquids, inorganic alkalis and acids	PP	PTFE	1	**9.880 351**
For concentrated alkalis and acids with higher temperature	PVDF	PTFE	1	**9.880 352**
For solvents, paints, fuel	Nylon	PTFE	1	**9.880 353**

1

Gear pump drives, MCP-Z-Standard, MCP-Z-Process

NEW!

Ismatec



9.828 308

Flow rate 1 to 7241 ml/min (depending on pump-head). 2 drive units can be combined with 20 interchangeable magnetically-coupled pumpheads. Flow rates of 1 to 7241ml/min. are attainable with pulse-free flow. Up to 5.6 bar differential pressure and 21 bar system pressure.

MCP-Z-Standard
Microprocessor controlled. Digital display of rotation speed, flow rate, dispensing volume or dispensing time.
4 programme memory and 6 programmable pumping or dispensing functions with calibration mode.
Flow rates stored for 20 pumpheads. With RS232 and analogue interfaces.

MCP-Z-Process
Industrial process-adapted drive, dust and watertight, washdown (IP 65) capability through completely sealed stainless steel housing. PC programmed processes can be stored in the pump memory and operated without PC. Other specifications are as MCP-Z-Standard.

Specifications:MCP-Z Standard
- speed: 60-6000 min^{-1}
- speed setting: 1-99.9%, resolution 0.1%
- power supply: 230 V/50 Hz - 115 V/60 Hz
- weight: 6.4 kg (without pump head)
- protection rating: IP 30

2



9.828 309

Specifications: MCP-Z Process
- speed: 60-6000 min^{-1}
- speed setting: min^{-1}. resolution: 0.1 min^{-1}
- power supply: 100-230V/50-60Hz
- weight: 6.9 kg (without pump head)
- protection rating: IP 65

Type	PK	Cat. No.	
MCP-Z-Standard	1	**9.828 308**	1
MCP-Z-Process	1	**9.828 309**	2
Spare magnet for MCP-Z-Standard	1	**9.828 344**	
Spare magnet for MCP-Z-Process	1	**9.828 345**	

Please order two tubing connectors separately.
Tubing connectors - see Gear pump heads.

3

3 Gear pump drive BVP-Z

NEW!

Ismatec



Flow rates of 1 to 7241ml/min. Motor speed: 60 to 6000 rpm, adjustable in 0.1% steps.
Up to 5.2 bar differential pressure and 21 bar system pressure,
Rotation speed adjustable via 2 or 3-digit, mechanical push-button potentiometer, with analogue interface and double overload protection. With magnet.
- Weight 5.7kg
- 155 x 220 x 260mm
- Supply requirements: 230V 50Hz, 150W

Type	PK	Cat. No.
BVP-Z	1	**9.828 307**
Spare magnet for BVP-Z	1	**9.828 344**

Please order two tubing connectors separately.
Tubing connectors - see Gear pump heads.

E & OE.

1 Pumps, liquid, ceramic piston, MCP-CPF Process

1



Ismatec

Flow-rate from 0.025 to 2300 ml/min (depending of the pump head).
Operate on a valveless rotating piston principle with liquid pathway materials made of sapphire-hard, chemically inert ceramic (99.7 % Al_2O_3). Ideal for chemically aggressive and viscous or crystallizing materials. Differential pressure up to 6.9 bar.
Industrial process-adapted drive, dust- and water-tight, with washdown (IP 65) capability due to completely sealed stainless steel housing. PC-programmed routines can be stored in the pump memory and run without needing a PC.

Specifications

Motor:	d.c. motor
Rotation speed:	10.0 to 1800 rpm.
Speed resolution:	1rpm, 0.1 rpm selectable.
Flowrate setting:	µl/min, ml/min, l/min
Power rating:	100 W
Overall (WxDxH):	155 x 220 x 260 mm (without pumphead)
Safety protection:	IP 65
Weight:	6.9kg (without pumphead)
Supply requirements:	100 to 230V a.c. 50/ 60 Hz

Type	Flow rate ml / min.	Width mm	Depth mm	Height mm	PK	Cat. No.
MCP-CPF process	0.025 - 2300	155	220	260	1	**9.828 511**
Reglo-CPF*	0.08 - 180	100	175	135	1	**9.828 368**

2 Gyro flask pumpheads for MCP-CPF-Process

2



Ismatec

Type	Pump head	Working vol. µl	Flow rate ml / min.	To fit tubing mm	PK	Cat. No.
RH00SKY-LF	steel SS316	2.5 - 25	0.025 - 45	i.d. 1.5	1	**9.828 423**
RH00CKC-LF	ceramic	2.5 - 25	0.025 - 45	i.d. 1.5	1	**9.828 422**
RH0CKC	ceramic	5 - 50	0.050 - 90	o.d. 6.4	1	**9.828 420**
RH1CKC	ceramic	10 - 100	0.10 - 180	o.d. 6.4	1	**9.828 421**

Alternative Gyro flask pumpheads RH... and QP... available on request !

3 Gyro flask pumpheads for MCP-CPF Process pump drive

3



Ismatec

Type	Pump head	Working vol. µl	Flow rate ml / min.	To fit tubing mm	PK	Cat. No.
QP.QO.SSY	Steel SS316	3.2 - 80	0.04 - 144	6.4	1	**9.828 430**
QP.Q2.CSC	Ceramic	28.8 - 720	0.29 - 1300	9.5	1	**9.828 432**
QP.Q3.CKC	Ceramic	51.2 - 1280	0.51 - 2300	12.7	1	**9.828 433**
QP.Q1.CSC.W*	Ceramic	12.8 - 320	0.13 - 576	9.5	1	**9.828 434**
QP.Q2.CSC.W*	Ceramic	28.8 - 720	0.29 - 1300	9.5	1	**9.828 435**
QP.Q1.CSC-WT**	Ceramic	12.8 - 320	0.13 - 576	9.5	1	**9.828 424**
QP.Q2.CSC-WT**	Ceramic	28.8 - 720	0.29 - 1300	9.5	1	**9.828 425**

Alternative pumpheads are available - details on request !
*W - with rinsing inlet
**WT - with rinsing and thermostatic control inlet



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1 Water jet pump, PP

This pump will work on pressures up to 10 kg/cm². With built-in, non-return valve to eliminate back flow. Useful for vacuum removal of spilt chemicals, as well as for filter work. Easily dismantled for cleaning. *Kartell*

Description	PK	Cat. No.
Water jet vacuum pump	1	**9.303 031**
Tubing connectors	1	**9.303 032**



2 Water jet pumps, PP

With constant ultimate vacuum, high suction flow rate and very low water consumption. *BRAND*
Can be connected to mains water system in a number of different ways using the adapter supplied and reducing adapters that are available as accessories. For continuous use at temperatures up to 80°C max. High chemical resistance as the media being pumped only comes into contact with PP, FKM and PTFE. Integral non-return valve increases safety.

Comprises:
Water jet pump, including:
Mains water connections: R ¾" sleeve nut, R ½" reducing adapter and flexible tubing connection (nozzle) with external diameter from 10mm to 12mm.
Vacuum connection: Detachable nozzle with external diameter from 6mm to 9mm and GL 14 screw cap.
Performance characteristics at 3.5 bar water supply pressure at 12°C

Water consumption:	190L/hr.
Ultimate vacuum:	16 mbar
Flow rate at atmospheric pressure:	400L/hr. free air

Type	PK	Cat. No.
Reducing adapter R 3/8" for water jet filter pump	1	**7.020 037**
Reducing adapter M 22x1 for water jet filter pump (thread for screen tap)	1	**7.020 038**
Water jet pump	1	**9.303 125**



3 Water jet pump, Nickel-plated

Nickel-plated brass, non-return valve, adapter for rapid action hose.

Description	PK	Cat. No.
Water jet pump	1	**9.303 000**
Rapid action hose for water jet pump	1	**9.303 001**



E & OE.

1 Pumps, vacuum/pressure, diaphragm



For general vacuum and pumping applications. *KNF*

These diaphragm pumps are single- and double-head, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination. The pumps are offered in various materials. Supply requirements: 230V 50Hz.

Pump head/Material in contact with the pumped media
KN = PP/EPDM
KT = PP/PTFE-coated
AN = Aluminium/CR
FT = PTFE/PTFE-coated

Type	Flow rate l / min.	Ultimate vacuum mbar (abs).	Max. pressure bar	Accessory codes type (see table)	PK	Cat. No.
N 86 KN.18*	6	100	2.4	1+2+6+13	1	**9.880 510**
N 86 KT.18*	5.5	160	2.4	1+2+6+13	1	**9.880 680**
N 811 KN.18*	11.5	240	2	1+2+6+13	1	**9.880 685**
N 022 AN.18*	15	100	4	2+4+14+10	1	**9.880 530**
N 816.3KN.18*	16	15	0.5	1	1	**9.880 543**
N 820 FT.18**	20	100	1		1	**9.880 670**
N 820 AN.18**	22	100	1		1	**9.880 687**
N 820.3 AN.18**	22	8	1		1	**9.880 688**
N 026.3 AN.18*	22	20	-	9	1	**9.880 538**
N 816.1.2KN.18*	30	100	0.5		1	**9.880 544**
N 026.1.2 AN.18*	39	100	2	3+5+8+9	1	**9.880 537**
N 035 AN.18*	30	100	4		1	**9.880 539**
N 035.1.2 AN.18*	55	100	4		1	**9.880 547**
N 035.3 AN.18*	30	13	-		1	**9.880 554**
N 035 AN.18**	30	100	4	3+12+7+11	1	**9.880 540**
N 035.1.2 AN.18**	55	100	4	3+12+7+11	1	**9.880 541**
N 035.3 AN.18**	30	13	-		1	**9.880 553**

* IP20 protection system.
** IP44 protection system.

Accessories for standard diaphragm pumps

KNF

Type	Description	PK	Cat. No.
1	silencer	1	**9.880 515**
2	vacuum filter	1	**9.880 519**
3	vacuum filter / silencer	1	**9.880 548**
4	pressure relief valve, 4 bar	1	**9.880 641**
5	pressure relief valve, 2 bar	1	**9.880 664**
6	fine adjustment heads with pressure gauge	1	**9.880 532**
7	fine adjustment heads with pressure gauge	1	**9.880 545**
8	fine adjustment heads with pressure gauge	1	**9.880 533**
9	fine adjustment heads with pressure gauge	1	**9.880 534**
10	fine adjustment heads with pressure gauge	1	**9.880 536**
11	fine adjustment heads with pressure gauge	1	**9.880 546**
12	Overpressure valve ¼'', 4 bar	1	**9.880 642**
13	fine adjustment heads with pressure gauge	1	**9.880 531**
14	fine adjustment heads with pressure gauge	1	**9.880 535**

2 Diaphragm vacuum pumps LABOPORT®



PTFE diaphragm pumps for evacuating and pumping corrosive gases and vapours. *KNF*
Maintenance and oil free. Pumpheads and valves are made of chemically resistant materials. Freely moving, stress resistance-optimised, structured diaphragm achieves maximum vacuum performance from even the smallest dimensions. A sealed PTFE coating on the diaphragm and a special sealing zone on the outer rim of the diaphragm make these pumps exceptionally gas-tight. High vapour and condensate compatibility is afforded by a new valve system. Compact, space-saving design. Built-in foldaway handle.
Supply requirements: 230V, 50Hz.

Type	Flow rate L / min.	Ultimate vacuum mbar (abs).	Width mm	Length mm	Height mm	PK	Cat. No.
N 810.3 FT.18	10	8	140	281	187	1	**9.880 612**
N 820.3 FT.18	20	8	177	312	220	1	**9.880 613**
N 840.3 FT.18	34	8	189	341	239	1	**9.880 614**
N 842.3 FT.18	34	2	167	341	223	1	**9.880 675**
N 840.1.2 FT.18	60	90	160	341	226	1	**9.880 660**

1



1 Diaphragm vacuum pumps LABOPORT®-SD, chemically-resistant

KNF

With self-drying system for vacuum drying. Oil-free, positive displacement pumps for neutral, highly aggressive or corrosive gases and vapours. Unadulterated, pumped gas/vapour output. Constant vacuum. More environment-friendly and cost-effective than water jet pumps.

The new self-drying system enables condensate to be blown out of the pumphead at high speed during the evacuation process. The vacuum in the vessel being pumped remains constant. The drying cycle can be synchronised in three different ways according to individual process requirements. With drying the pump achieves a better vacuum and can evacuate more quickly than pumps without drying systems.

Pump components that come into contact with media
Pump head: PTFE
Diaphragm: PTFE
Valves: FFPM

Supplied as follows: Chemistry laboratory vacuum pumps are complete instruments that are ready for connection with mains switch, mains cable (supply requirements: 230V/50Hz, other voltages and frequencies available on request) and fully automatic self-drying system. Easy connection to vacuum desiccator cabinets.

Type	Flow rate L / min.	Ultimate vacuum mbar (abs).	Width mm	Length mm	Height mm	PK	Cat. No.
N 820.3 FT.40.18	20	10	177	312	220	1	**9.880 615**
N 840.3 FT.40.18	34	10	189	341	239	1	**9.880 616**
N 842.3 FT.40.18	34	4	189	341	242	1	**9.880 617**

2



9.880 930

3



9.880 080

Diaphragm pumps, Aluminum PTFE design, ME 1, MD 1

VACUUBRAND

The diaphragm pumps ME 1 offer a compact and high performance solution. With their easy-to-use functionality, they are a perfect partner for both single and multiple filtrations.
One-stage diaphragm pumps are an excellent solution for continuous, oil-free pumping of gases and vapors for modest vacuum requirements. In contrast to water-jet pumps, they do not consume water and therefore do not produce any contaminated waste water in daily use.
Vacuum filtration is frequently used for sample preparation in chemistry, microbiology, waste water control and analysis. Typical applications for the ME 1 are aqueous filtrations. The PTFE diaphragm and valves are rugged and provide high chemical resistance. If aluminum has the required specific resistance, also solvent-containing samples can be filtrated.

Type	Connector	Number of steps	Flow rate (50/60Hz) L / min.	Ultimate vacuum mbar	Weight kg	Dimensions (W x D x H) mm	PK	Cat. No.
ME 1	CEE	1	11.67 / 14.17	100	5.0	247 x 121 x 145	1	**9.880 930** 2
ME 1	CH	1	11.67 / 14.17	100	5.0	247 x 121 x 145	1	**9.880 931**
ME 1	UK	1	11.67 / 14.17	100	5.0	247 x 121 x 145	1	**9.880 932**
MD 1	CEE	3	20 / 23.33	1.5	6.5	303 x 143 x 163	1	**9.880 080** 3

4



4 Accessories for ME 1, ME 1C and MZ 1C

NEW!

VACUUBRAND

Vacuum regulator valve for ME 1, ME 1C and MZ 1C with manual vacuum control using air bleed. The manometer can be mounted and pivoted in several orientations for optimal visibility. High chemical compatibility (especially with the vacuum regulator valve for ME 1C)

Description	PK	Cat. No.
Vacuum regulator valve for ME 1	1	**9.880 938**
Vacuum regulator valve for ME 1C and MZ 1C	1	**9.880 939**
Vacuum tubing, rubber, DN 6*	1	**9.881 930**
Vacuum tubing, rubber, DN 8*	1	**9.881 931**

*Supplied per metre

Diaphragm pumps Chemistry design, ME 1C, MZ 1C, MD 1C

VACUUBRAND

The diaphragm pumps ME 1C offer a compact and high performance solution. With their easy-to-use functionality, they are perfect partner for both single and multiple filtrations.
One-stage diaphragm pumps are an excellent solution for continuous, oil-free pumping of gases and vapors for modest vacuum requirements. In contrast to water-jet pumps, they do not consume water and therefore do not produce any contaminated waste water in daily use.
Vacuum filtration is frequently used for sample preparation in chemistry, microbiology, waste water control and analysis. In the chemistry diaphragm pumps („C") all major parts in contact with pumped media are made of chemically resistant fluoroplastics. The ME 1C is also often used for solid phase extraction (SPE).
An optional manual regulator valve with dial gauge enables variable fine adjustment of the pumping speed and the ultimate vacuum.

1



9 880 934

2



9.880 083

Type	Connector	Flow rate (50/60Hz) L / min.	Ultimate vacuum without / with gas ballast mbar	Weight kg	Dimensions (W x D x H) mm	PK	Cat. No.
ME 1C	CEE	11.67 / 14.17	100	5.0	247 x 121 x 145	1	**9.880 934** 1
ME 1C	CH	11.67 / 14.17	100	5.0	247 x 121 x 145	1	**9.880 935**
ME 1C	UK	11.67 / 14.17	100	5.0	247 x 121 x 145	1	**9.880 936**
MZ 1C	CEE	12.5 / 15	12	6.7	312 x 121 x 170	1	**6.254 394**
MZ 1C	UK	12.5 / 15	12	6.7	312 x 121 x 170	1	**9.880 947**
MZ 1C	CH	12.5 / 15	12	6.7	312 x 121 x 170	1	**9.880 948**
MD 1C	CEE	21.67 / 25	2	6.7	316 x 143 x 223	1	**9.880 083** 2

Diaphragm pumps ATEX-models available on request.

Diaphragm pumps NT Series, Aluminium

VACUUBRAND

- improved performance, increased pumping speed (up to 16m³/h) and better ultimate vacuum extend applications with non-aggressive gases whether used in the laboratory or for industrial processes
- very low leak rate due to enhanced leak-tight tubing connections, resulting in consistent performance characteristics - even after many years operation. Ideal for analytical applications
- long diaphragm and valve lifetimes: made of highly flexible FPM, with fabric-reinforced double diaphragms for improved long term stability
- whisper quiet and ultra low vibration due to compact drive with patented motor drive system. Ideal as a built-in component for sensitive analytical equipment
- easy to clean due to smooth surfaces. A robust solution for numerous applications in industrial environments

3



9.880 890

4



9.880 952

Specifications

Vacuum inlet
10 mm tubing nozzle: ME4NT, ME4RNT, ME8NT, MZ2NT
KF DN16: MZ2DNT, MD4NT, MV2NT
Pressure outlet
Silencer: ME4NT, MZ2NT, MZ2DNT, MD4NT, MV2NT
Twin silencers: ME8NT
Tubing nozzle: ME4RNT

Type	Connector	Number of steps	Flow rate (50/60Hz) L / min.	Ultimate vacuum mbar	Dimensions (W x D x H) mm	PK	Cat. No.
ME 2 NT	CEE	1	33.33 / 36.67	70	243 x 211 x 198	1	**9.880 940**
ME 4 NT	CEE	1	66.67 / 73.33	70	239 x 243 x 198	1	**9.880 883**
ME 4R NT	CEE	1	63.33 / 70	100/4	239 x 243 x 290	1	**9.880 884**
ME 8 NT	CEE	1	121.67 / 135	70	239 x 325 x 198	1	**9.880 885**
ME 8 NT	CH	1	121.67 / 135	70	239 x 325 x 198	1	**9.880 886**
ME 16 NT	CEE	1	273.30 / 306.67	70	554 x 260 x 359	1	**9.880 952** 4
ME 16 NT	UK	1	273.30 / 306.67	70	554 x 260 x 359	1	**9.880 953**
MZ 2 NT	CEE	2	36.67 / 40	7	239 x 243 x 198	1	**9.880 887**
MZ 2 NT	CH	2	36.67 / 40	7	239 x 243 x 198	1	**9.880 888**
MZ 2D NT	CEE	2	38.33 / 41.67	4	242 x 243 x 198	1	**9.880 889**
MD 12 NT	CEE	3	201 / 221	2	554 x 260 x 359	1	**9.880 949**
MD 12 NT	UK	3	201 / 221	2	554 x 260 x 359	1	**9.880 950**
MD 12 NT	CH	3	201 / 221	2	554 x 260 x 359	1	**9.880 951**
MD 4 NT	CEE	3	63.30 / 71.67	1	239 x 325 x 198	1	**9.880 890** 3
MD 4 NT	CH	3	63.30 / 71.67	1	239 x 325 x 198	1	**9.880 891**
MV 2 NT	CEE	4	36.67 / 40	0.5	239 x 325 x 198	1	**9.880 892**
MV 2 NT	CH	4	36.67 / 40	0.5	239 x 325 x 198	1	**9.880 893**
MV 10 NT	CEE	4	173.30 / 193.30	0.5	554 x 260 x 359	1	**9.880 954**

1



1 Diaphragm vacuum pumps -NT Series, Chemistry design

VACUUBRAND

- improved performance, increased pumping speed and lower ultimate vacuum extend applications in both the laboratory and in industrial applications
- long-life diaphragm with PTFE sandwich construction and unstressed diaphragm support
- easy service/exchange of diaphragm or valves due to novel integrated valve head assembly. Easy dismantling, cleaning and reassembly without requiring readjustment
- whisper quiet and ultra low vibration due to compact drive with patented motor control system. Ideal as a built-in component for sensitive equipment in both the laboratory and in industry
- superior vapour tolerance due to integral tubing connections and gas ballast valve for continuous purge (at ME 16C NT, MZ 2C NT, MD 4C/12C NT and MV 10C NT).
- easy to clean due to smooth exterior surfaces

Specifications

Vacuum inlet: 10mm tubing nozzle
Pressure outlet: 10mm tubing nozzle

Type	Connector	Number of steps	Flow rate (50/60Hz) L / min.	Ultimate vacuum mbar (abs).	Dimensions (W x D x H) mm	PK	Cat. No.
ME 2C NT	CEE	1	35 / 40	70	243 x 211 x 198	1	**9.880 943**
ME 4C NT	CEE	1	65 / 73.30	70	243 x 255 x 198	1	**9.880 894**
ME 4C NT	CH	1	65 / 73.30	70	243 x 255 x 198	1	**9.880 895**
ME 8C NT	CEE	1	118 / 130	70	243 x 325 x 198	1	**9.880 896**
ME 8C NT	CH	1	118 / 130	70	243 x 325 x 198	1	**9.880 897**
ME 16C NT	UK	1	271 / 307	70	533 x 260 x 359	1	**9.880 956**
ME 16C NT	CEE	1	271 / 307	70	533 x 260 x 359	1	**9.880 955**
MZ 2C NT	CEE	2	33.30 / 38.30	7*	243 x 243 x 198	1	**9.880 898**
MZ 2C NT	CH	2	33.30 / 38.30	7*	243 x 243 x 198	1	**9.880 899**
MD 4C NT	CEE	3	56.70 / 63.30	1,5**	243 x 325 x 198	1	**9.880 900**
MD 4C NT	CH	3	56.70 / 63.30	1,5**	243 x 325 x 198	1	**9.880 901**
MD 4CRL NT	Power cord	3	56.70 / 63.30	1,5***	243 x 325 x 198	1	**9.880 926**
MD 12C NT	CEE	3	185 / 205	2	533 x 260 x 359	1	**9.880 957**
MD 12C NT	UK	3	185 / 205	2	533 x 260 x 359	1	**9.880 958**
MD 12C NT	CH	3	185 / 205	2	533 x 260 x 359	1	**9.880 959**
MV 10C NT	CEE	4	158.30 / 178.30	0,9	533 x 260 x 359	1	**9.880 960**

Ultimate vacuum with gas ballast: *12 mbar, **3 mbar, ***diaphragm pump with reduced leakage rate

2



9.880 645

Variable speed vacuum system SC 920/SC 950 with remote control

NEW!

KNF

Freeing up space in the lab: this vacuum pump system can be placed above or below the lab bench and controlled remotely with the hand terminal. The new vacuum pump system SC 920/SC 950 now supports remote control from a portable handset, thus ensuring maximum flexibility in the laboratory. Short process times and high accuracy, and automatic boiling point detection are the outstanding features of this new product.The intuitive user guidance on the handset ensures ease of operation; the process parameters can be entered over a touch screen and a rotary knob.

Simply touch the various menus to enter:
- parameters, such as the setpoint
- pressure or suction capacity of the system
- units of measurement
- operating language
- operating modes

Specifications **SC 920/SC 950**

Control: over hand terminal and Windows®-based software
Mains connection: 100-240V 50/60Hz
Power consumption: max. 135W
Hose connections, pneumatic: 10mm i.d.
Hose connections for coolants: 8mm i.d.
Current consumption: max. 1.7A
Weight: 15kg/14.5kg
Dimensions (H x W x D): 423 x 366 x 294mm/487 x 246 x 313mm

3



6.266 708

Type	Description	Flow rate L / min.	Ultimate vacuum mbar (abs).	PK	Cat. No.
SC 920	Vacuum pump system	20	2	1	**9.880 645** 2
SC 950	Vacuum pump system	50	2	1	**6.266 708** 3

With overload protection and mains fuse

E & OE.

VARIO® Chemistry Pumping Units

VACUUBRAND

VARIO® Chemistry Pumping Units offer all the advantages of modern control technology and provide excellent possibilities for solvent recovery. They attain an ultimate vacuum down to 0.6mbar. They are exceptionally quiet in operation and entirely oil-free. Inside the pump, vapours and gases only come into contact with fluoroplastics of optimum chemical resistance.
VARIO® Chemistry Pumping Units provide vacuum control by adaptation of motor speed. This has clear advantages compared to even the best of two-point control systems. The vacuum is continuously adjusted to actual process requirements, irrespective of apparatus size and vapour volume. Process times are typically shortened by 30%. Solvent recovery next to 100% is supported through continuous evaporation.
All VARIO® Chemistry Pumping Units include a chemistry diaphragm vacuum pump and an integrated vacuum controller with display and vacuum sensor.
The new PC 3001 VARIO^{pro} version builds on the worldwide popular PC 3001 VARIO unit, boosting the pumping speed and thereby extending its range to larger applications.

1



9.881 337

Type	Connector	Flow rate (50/60Hz) L / min.	Ultimate vacuum without / with gas ballast mbar	Weight kg	Dimensions (W x D x H) mm	PK	Cat. No.
PC 3001 VARIO^{pro}	CEE	33.3	2 / 4	7.7	306 x 300 x 400	1	**9.881 337** 1
PC 3002 VARIO	CEE	46.67	7 / 12	17.4	243 x 419 x 444	1	**9.881 338**
PC 3003 VARIO	CEE	46.97	0.6 / 2	20.6	243 x 419 x 444	1	**9.881 346**
PC 3004 VARIO	CEE	76.67	1.5 / 3	20.6	243 x 419 x 444	1	**9.881 339**
PC 3010 NT VARIO	CEE	193.33	0.6 / 1.2	29.7	616 x 387 x 420	1	**9.881 322**
PC 3012 NT VARIO	CEE	215	1.5 / 3	29.7	616 x 387 x 420	1	**9.881 320**
PC 3010 NT VARIO	CH	143.00	0.6 / 9	35.8	616 x 387 x 420	1	**9.881 323**
PC 3012 NT VARIO	CH	215	1.5 / 3	29.7	616 x 387 x 420	1	**9.881 321**
PC 3001 VARIO^{pro}	CH	33.3	2 / 4	7.7	306 x 300 x 400	1	**9.881 336**
PC 3002 VARIO	CH	46.67	7 / 12	17.9	258 x 422 x 516	1	**9.881 335**
PC 3003 VARIO	CH	46.67	0.6 / 2	20.5	258 x 422 x 516	1	**9.881 334**
PC 3004 VARIO	CH	76.67	1.5 / 3	20.5	258 x 422 x 516	1	**9.881 333**
PC 3016 NT VARIO	CEE	321.67	70 / 100	29.7	616 x 387 x 420	1	**9.881 329**

VARIO Chemistry Pumping Unit PC 3001 VARIO^{pro} with condenser Peltronic®

NEW!

VACUUBRAND

This VARIO^{pro} chemistry pumping unit provides vacuum control by precise and continuous adaptation of the diaphragm pump's motor speed. The compact size and low weight of the pumping unit offer great convenience in the lab. The pump's variable motor speed responds to demand, reducing energy waste and mechanical wear, ensuring unrivalled service life for the diaphragms. The PC 3001 is based on MD 1C chemistry diaphragm pump; The emission conderser Peltronic® at outlet of the pump is highly efficient with a very compact design. It provides near-100% recovery of solvents without any external coolants.

Items supplied:
VARIO® chemistry pumping unit PC 3001 VARIO^{pro} completely mounted with conderser Peltronic® , ready for use, with manual. Without mains cable, please order separately.

Exhaust Vapour Condenser Peltronic
- Fully automatic electronic control of cooling surface temperature and fan

2



9.881 330

Specifications

Cooling power at 21°C:	50W
Ambient temperature range:	10 to 40°C
Preset cooling temperature:	10°C
Materials in contact with media:	PP, PFA, ETFE/ECTFE, borosilicate glass
Mains supply:	100 - 230V 50/60Hz
Dimensions (WxDxH):	175 x 179 x 392mm

Description	Connector	Flow rate (50/60Hz) L / min.	Ultimate vacuum mbar	Weight kg	Dimensions (W x D x H) mm	PK	Cat. No.
PC 3001 VARIO^{pro} with conderser Peltronic®	-	33.33	2	10.0	400 x 300 x 400	1	**9.881 330** 2
Exhaust Vapour Condenser Peltronic	-	-	-	4.3	-	1	**9.880 852**
Power cable	CEE	-	-		-	1	**6.901 984**
Power cable	CH	-	-		-	1	**9.882 240**

1 Modular vacuum system KNF LABOPORT®

KNF

All LABOPORT® pumps can be fitted with separators, high-performance condensers and vacuum controllers to create customised systems. If a larger diaphragm pump is used for two different processes simultaneously for economic reasons, then a second vacuum controller is required. The control unit always switches the pump off when the desired vacuum has been achieved, even if two receivers are used. This reduces the noise level and increases operational life. Supply requirements: 230V /50Hz.

Module/configuration:

1. Baseplate.
The separator and all other modules are mounted together with the pump on the baseplate to form the LABOPORT® vacuum system

2. Separator.
Additional, implosion-proof NR 800 module can be integrated on the inlet or outlet side.
Solvent droplets contained in the vapour at the outlet are separated to prevent them from being released into the surrounding air. On the inlet side the separator traps any particles contained in the system.

3. High-performance condenser.
For efficient condensation of solvents contained in the vapour. Connected to the pump at the outlet enabling controlled solvent recovery, saving valuable resources and protecting the environment.

4./5. Vacuum controller.
For precise and accurate attainment of the required vacuum after the set point has been entered. A highly accurate, piezo-ceramic measuring cell monitors the process and is resistant to all aggressive media.

Type	Flow rate L / min.	Ultimate vacuum mbar (abs).	Pump Model	Module no.	PK	Cat. No.
LABOPORT® SR 810	10	8	N 810.3 FT.18	1A 2 2	1	**9.880 621**
LABOPORT® SH 810	10	8	N 810.3 FT.18	1A 2 3	1	**9.880 622**
LABOPORT® SC 810	10	8	N 810.3 FT.18	1A 2 3 4	1	**9.880 623**
LABOPORT® SCC 810	10	8	N 810.3 FT.18	1A 2 3 4 5	1	**9.880 624**
LABOPORT® SR 820	20	8	N 820.3 FT.18	1A 2 2	1	**9.880 625**
LABOPORT® SH 820	20	8	N 820.3 FT.18	1A 2 3	1	**9.880 626**
LABOPORT® SC 820	20	8	N 820.3 FT.18	1A 2 3 4	1	**9.880 627**
LABOPORT® SCC 820	20	8	N 820.3 FT.18	1A 2 3 4 5	1	**9.880 628**
LABOPORT® SR 840	34	8	N 840.3 FT.18	1 2 2	1	**9.880 629**
LABOPORT® SH 840	34	8	N 840.3 FT.18	1 2 3	1	**9.880 631**
LABOPORT® SC 840	34	8	N 840.3 FT.18	1 2 3 4	1	**9.880 632**
LABOPORT® SC 842	34	2	N 842.3 FT.18	1 2 3 4	1	**9.880 639**
LABOPORT® SCC 840	34	8	N 840.3 FT.18	1 2 3 4 5	1	**9.880 633**
LABOPORT® SCC 842	34	2	N 842.3 FT.18	1 2 3 4 5	1	**9.880 640**

Accessory modules for vacuum pump systems LABOPORT®

KNF

Modules for LABOPORT® system vacuum pumps.
See details outlined below for the relevant descriptions.

Module no.	Type	PK	Cat. No.
1A	Baseplate NP 810/820	1	**9.880 643**
1	Baseplate NP 840	1	**9.880 634**
3	High-performance condenser	1	**9.880 636**
4	Vacuum controller (First controller)	1	**9.880 637**
5	Vacuum controller (Second controller)	1	**9.880 638**



E & OE.

1 Vacuum system LABOXACT®, chemical-resistant

KNF

Rotary evaporation processes can be reliably monitored using the LABOXACT® vacuum system. A closed system arrangement enables gentle distillation and high recovery rates, even with low-boiling solvents.



Advantages:
- gentle distillation, due to closed system
- stepless, fine-adjustment valve for precise vacuum regulation
- careful control of evaporation
- very economical
- environmentally friendly

Items supplied:
LABOXACT® vacuum systems are ready-to-use. With chemically resistant membrane vacuum pump, separator, condenser, fine-adjustment valve, digital vacuum meter, safety vent valve, switch and cable. Supply requirements: 230V 50Hz (other voltages and frequencies are available on request).

Type	Flow rate L / min.	Ultimate vacuum mbar (abs).	PK	Cat. No.
SEM 810	10	8	1	**9.880 549**
SEM 820	20	8	1	**9.880 550**
SEM 840	34	8	1	**9.880 551**
SEM 842	34	2	1	**9.880 552**

2 LABOBASE® multi-user vacuum systems, chemical-resistant

KNF

Comprises a central base station with vacuum controller which provides a vacuum to multiple laboratory work stations or outlets. Outlets may either be controlled with a separate vacuum controller plus solenoid valve (even as a mobile unit) or with a manual valve as an unregulated outlet. LABOBASE® can be retrofitted into existing laboratories or integrated into new constructions. This multi-user, vacuum system saves precious lab bench space.

Pump units or base stations are connection ready; complete with chemical-resistant, diaphragm vacuum pump and appropriate fittings (see table) on a single base stand, power cable (mains connection 230V 50Hz, other voltages and frequencies on request).

Integral components
diaphragm vacuum pump with base stand, separator, condenser and vacuum controller with integrated gas ballast valve (.40)

Description	Flow rate l / min.	Ultimate vacuum mbar (abs).	PK	Cat. No.
Base unit LABOBASE® SBC 840.40	34	10	1	**9.050 715**
Base unit LABOBASE® SBC 860.40	60	4	1	**9.050 717**
Mobile control unit for regulated outlet			1	**9.050 721**
Vacuum supply point manually controlled for fume hoods chemical resistant			1	**9.050 722**
Vacuum supply point manually controlled, chemical resistant			1	**9.050 723**



1



9.880 921

Chemistry Vacuum Systems NT

NEW!

VACUUBRAND

Compact design, ready to use, no set-up required. Constructed in highly chemical resistant materials. Quiet operation.
- 100% oil-free pumping of gases
- gas ballast as standard for working with condensable vapours
- good ultimate vacuum even with gas ballast
- high vapour tolerance for water and solvents
- long service life, low maintenance

Features:
2AK: Inlet and outlet separator
AK + EK: Inlet separator, exhaust vapour condenser
PC 510 NT(two-stage)/610 NT(three-stage) : with AK + EK; 1 electronically controlled vacuum port
PC 511 NT(two-stage)/611 NT(three-stage) : with AK + EK; 1 electronically controlled and 1 manually controlled vacuum port
PC 520 NT(two-stage) /620 NT(three-stage) : with AK + EK; 2 electronically controlled vacuum ports

Characteristics and applications:

2



9.880 912

Without vacuum control:
MZ 2C NT +2AK:
e.g. filtration, distillation without condensation at the outlet
MZ 2C NT +AK+EK:
Well-proven unit for a wide range of applications for the single-user, e.g. gel drying, vacuum for gels that were previously dried using water-jet pumps, e.g. sequence gels, SDS-PAGE up to 10%. For low-boiling-point solvents.
MD 1C +AK+EK:
Space-saving single-user configuration with 2 mbar ultimate vacuum. For high-boiling-point solvents.
MD 4C NT + AK+EK:
Larger or multi-user applications (e.g. several gel dryers) in a local-area vacuum network (VACUU·LAN®). 1.5/3 mbar ultimate vacuum. For high-boiling-point solvents and/or gradient gels, SDS-PAGE >10%.
MV 10C NT +EK:
Four-stage diaphragm pump with exhaust vapour condenser. 0.9mbar ultimate vacuum. For particularly high demands regarding low ultimate vacuum and pumping speed in chemistry laboratories, pilot plant or small production units.

With vacuum controller:
PC 510 NT/511 NT:
Well-proven units for a wide range of processes in chemistry laboratories, e.g. all "classical" low-boiling-point solvents. 7/12mbar ultimate vacuum.
The PC 511 NT has an additional, manually controlled, vacuum port.
PC 610 NT /611 NT:
Well-proven units for vacuum generation and control up to 1.5/3mbar ultimate vacuum, including high-boiling-point solvents.
The PC 611NT has an additional, manually controlled, vacuum port.
PC 520 NT/620 NT:
Synchro chemistry pumping units with two, independent, vacuum controllers for running two separate processes. PC 520 with 7/12mbar ultimate vacuum, PC 620 NT with 1.5/3mbar ultimate vacuum.

Type	Connector	Flow rate (50/60Hz) L / min.	Ultimate vacuum without / with gas ballast mbar (abs.)	Dimensions (W x D x H) mm	PK	Cat. No.	
MZ 2C NT +2AK	CEE	33.30 / 38.30	7 / 12	243 x 319 x 309	1	**9.880 832**	
MZ 2C NT +AK+EK	CEE	33.30 / 38.30	7 / 12	242 x 326 x 402	1	**6.234 067**	
MZ 2C NT +AK SYNCHRO +EK	CEE	33.30 / 38.30	7 / 12	243 x 326 x 402	1	**9.880 921**	1
MD 4C NT +AK+EK	CEE	56.60 / 63.30	1.5 / 3	243 x 326 x 402	1	**9.880 837**	
MD 1C +AK+EK	CEE	21.70 / 25	2 / 4	239 x 316 x 405	1	**9.880 828**	
PC 510 NT	CEE	33.30 / 38.30	7 / 12	243 x 419 x 444	1	**9.880 910**	
PC 511 NT	CEE	33.30 / 38.30	7 / 12	243 x 435 x 444	1	**9.880 912**	2
PC 520 NT	CEE	33.30 / 38.30	7 / 12	361 x 435 x 444	1	**9.880 914**	
PC 610 NT	CEE	56.60 / 63.30	1.5 / 3	243 x 419 x 444	1	**9.880 916**	
PC 611 NT	CEE	56.60 / 63.30	1.5 / 3	243 x 435 x 444	1	**9.880 918**	
PC 620 NT	CEE	56.60 / 63.30	1.5 / 3	361 x 435 x 444	1	**9.880 919**	
MZ 2C NT +2AK	CH	33.30 / 38.30	7 / 12	242 x 319 x 309	1	**9.880 844**	
PC 510 NT	CH	33.30 / 38.30	7 / 12	243 x 419 x 444	1	**9.880 911**	
PC 511 NT	CH	33.30 / 38.30	7 / 12	243 x 435 x 444	1	**9.880 913**	
PC 520 NT	CH	33.30 / 38.30	7 / 12	361 x 435 x 444	1	**9.880 915**	
PC 610 NT	CH	56.60 / 63.30	1.5 / 3	243 x 419 x 444	1	**9.880 917**	
PC 620 NT	CH	56.60 / 63.30	1.5 / 3	361 x 435 x 444	1	**9.880 920**	
MZ 2C NT +AK SYNCHRO +EK	CH	33.30 / 38.30	7 / 12	248 x 326 x 402	1	**9.880 922**	
MZ 2C NT +AK+EK	CH	33.30 / 38.30	7 / 12	242 x 326 x 402	1	**9.880 923**	
MD 4C NT +AK+EK	CH	56.60 / 63.30	1.5 / 3	242 x 326 x 402	1	**9.880 924**	
MD 1C +AK+EK	CH	21.70 / 178	2 / 4	239 x 316 x 405	1	**9.880 925**	
MV 10C NT +EK	CEE	158 / 178	0.9 / 1.5	528 x 387 x 395	1	**9.880 976**	
MD 12C NT +AK+EK	CEE	185 / 205	2 / 4	616 x 387 x 395	1	**9.880 968**	
MD 12C NT +AK+EK	CH	185 / 205	2 / 4	616 x 387 x 395	1	**9.880 969**	
MD 12C NT +AK+EK	UK	185 / 205	2 / 4	616 x 387 x 395	1	**9.880 970**	

E & OE.

1 Pumps, vacuum/pressure, diaphragm, for gel dryers

NEW!

Highly efficient and oil-free. Inlet separator and exhaust condenser supplied

VACUUBRAND

- quiet running
- continuous, totally oil-free pumping of gases
- components in contact with gases are manufactured in chemical-resistant materials
- with gas ballast for reducing condensates
- Optimum service life, easy to exchange diaphragm and valves
- compact design with small footprint
- close to 100% solvent recovery
- easy to maintain
- supply requirements: 230V 50/60Hz

MZ 2C NT +AK+EK:	Ultimate pressure 7/12mbar.
Simple use (Gel dryer)	Vacuum for gels, which were previously evacuated using water jet pumps, e.g. sequencing gels, SDS-PAGE up to 10%.
MD 4C NT +AK+EK:	Ultimate pressure 1.5/3mbar.
Multiple use (several gel dryers) with VACUU·LAN® local vacuum network	For high-boiling point solvents at low temperatures and/or gradient gels, SDS-PAGE >10 %.
MD 1C +AK+EK:	Ultimate pressure 2mbar.
Simple use (Gel dryer)	Space-saving and compact solution, for high-boiling point solvents.

Type	Flow rate (50/60Hz) L / min.	Ultimate vacuum mbar	PK	Cat. No.
MD 1C +AK+EK	21.67 / 25	2	1	**9.880 828**
MZ 2C NT +AK+EK	33.33 / 38.33	7 / 12	1	**6.234 067**
MD 4C NT +AK+EK	56.67 / 63.33	1.5 / 3	1	**9.880 837**

1



Rotary evaporators please see page 615.



1



1 Rotary vane pumps

VACUUBRAND

Vacuubrand rotary vane pumps encompass one and two stage pumps with throughputs from 2 to 16m³/h.
Typical rotary vane pump applications include, use as a backing pump for turbomolecular pumps but also serve in diverse chemical laboratory applications.

Features and important characteristics: high water vapour tolerance, vacuum tight pumping mechanism when switched off, high performance gas ballast mechanisms. These increase the overall performance potential of these pumps, the service life of mechanical parts, increase oil-change intervals and reduce maintenance overheads.

Type	Flow rate (50/60Hz) L / min.	Ultimate vacuum (abs.) mbar	Weight kg	Dimensions (W x D x H) mm	PK	Cat. No.
RE 2.5	38.33 / 46.67	0.3	10.2	316 x 125 x 190	1	**9.880 120**
RE 6	95 / 133.33	0.1	15.4	370 x 142 x 207	1	**9.880 121**
RE 9	148.33 / 170	0.1	21.4	460 x 152 x 232	1	**9.880 101**
RE 16	276.67 / 318.33	0.1	25.2	505 x 152 x 232	1	**9.880 102**
RZ 2.5	38.33 / 46.67	0.002	11.4	316 x 125 x 190	1	**9.880 123**
RZ 6	95 / 133.33	0.002	16.4	370 x 142 x 207	1	**9.880 124**
RZ 9	148.33 / 170	0.002	24.2	460 x 152 x 232	1	**9.880 125**
RZ 16	276.67 / 318.33	0.002	29.0	545 x 152 x 232	1	**9.880 104**

2



2 Chemistry Hybrid Pump RC 6

VACUUBRAND

The Chemistry Hybrid Pump RC 6 has been designed to minimise the adverse effects of condensable and corrosive vapours. Its main components are a two-stage rotary-vane pump and a two-stage chemistry diaphragm for optimited corrosion resistance. The diaphragm pump continuously evacuates the oil reservoir of the rotary-vane pump in order to keep the partial pressures of solvent vapours, oxygen and corrosive gases at a low level and/or below their condensation point. The RC 6 is a low-maintenance pump for freeze-drying and other applications requiring an ultimate vacuum in the 10^{-3} mbar range.

Items supplied: Pump with on/off switch, overload circuit breaker and 2m cable with plug, centering and clamping ring for inlet, particulate filter and operating instructions. Oil supplied in separate bottle.

Specifications

Pumping speed 50/60 Hz:	98.33/115 l/min
Ultimate vacuum (partial) without gas ballast:	0.0004 mbar
Ultimate vacuum (total) without gas ballast:	0.002 mbar
Ultimate vacuum (total) with gas ballast:	0.01 mbar
Oil capacity (B-Oil):	min. 0.34 l; max. 0.53 l
Inlet connection:	Small flange NW 16
Outlet connection:	Hose nozzle NW 8-10mm
Motor rating:	0.37kW
Nominal speed 50/60Hz:	1500/1800rpm
Dimensions (L x W x H):	510 x 305 x 230mm
Weight:	24.2kg
Protection class:	IP 40

Type	PK	Cat. No.
RC 6 with plug CEE	1	**9.882 235**
RC 6 with plug CH	1	**9.882 236**

3



3 Chemistry pumping units

VACUUBRAND

Vacuubrand chemistry vacuum systems and chemistry pumping units for fine to high vacuum ranges. Complete chemical vacuum systems and chemical pump stands offer the advantages of practical, connection-ready units.
- compact structure, little space requirement and a high degree of mobility
- the great convenience of proven pump stand configuration
- good ultimate vacuum even with gas ballast and smooth running
- high tolerance to water and solvent vapours due to efficient gas ballast

Type	Pump Model	Flow rate (50/60Hz) L / min.	Ultimate vacuum (abs.) mbar	Dimensions (W x D x H) mm	PK	Cat. No.
PC 3 with RZ 2.5	RZ 2.5	38.33 / 46.67	0.002	342 x 448 x 608	1	**9.881 368**
PC 3 with RZ 6	RZ 6	95 / 113.33	0.002	370 x 448 x 608	1	**9.881 369**
PC 3 with RZ 9	RZ 9	148.33 / 170	0.002	460 x 486 x 608	1	**9.881 370**
PC 3 with RZ 16	RZ 16	276.67 / 318.33	0.002	545 x 486 x 608	1	**9.881 371**

E & OE.

1 Chemistry Vacuum Pumping Unit PC 8/RC 6

VACUUBRAND

The Chemistry Vacuum Pumping Unit PC 8/RC 6 incorporates the Chemistry Hybrid Pump RC 6 (Cat. No. 9.882 235). It achieves an ultimate vacuum in the 0.0004 mbar range and is used for demanding vacuum applications such as freeze drying, drying chambers, concentrators, etc. The RC 6 combines the vacuum performance of an oil-sealed rotary-vane pump and, to a large extent, the good corrosion resistance of a chemistry diaphragm pump.

Items supplied:
Pumping unit completely mounted, with Chemistry Hybrid Pump RC6, insulated exhaust vapour condenser,condensate catchpot on pumping unit console, on/off switch, cable with plug and instructions for use.

Specifications

Pumping speed 50/60 Hz:	98.33/115 l/min
Ultimate vacuum (partial) without gas ballast:	0.0004 mbar
Ultimate vacuum (total) without gas ballast:	0.002 mbar
Ultimate vacuum (total) with gas ballast:	0.01 mbar
Oil capacity (B-Oil):	min. 0.34 l max. 0.53 l
Inlet connection:	Small flange NW 16
Outlet connection:	Hose nozzle NW 8-10mm
Cooling water connection:	2 x hose nozzle NW 6/8
Motor rating:	0.37kW
Nominal speed 50/60Hz:	1500/1800rpm
Dimensions (L x W x H):	507 x 377 x 429mm
Weight:	31.2kg
Protection class:	IP 40

Type	PK	Cat. No.
PC 8 / RC 6 with plug CEE	1	**9.882 239**
Plug CH	1	**9.882 240**

1





1



1 Vacuum pump trolley, CP1 - CP2

Vacuum pump trolley with two condensate traps that can be operated alternately or together. The pump trolley consists of an aluminium frame mounted on lockable castors with a lower PE-shelf for a vacuum pump and a PE-top shelf which accommodates two cold traps. The condensate traps can each hold approx. 150ml. Spherical ground joints are sealed with FEP covered O-rings. Supplied without pump. The standard assembly is designed for use with LN_2 as coolant. When using CO_2 and acetone please order 2 x CO_2 grid (Cat. No. 9.032 081).

KGW

Type	PK	Cat. No.
With pressure gauge	1	**9.881 380**
Without pressure gauge	1	**9.881 381**

Note: Price does not include vacuum pump.

2



2 Oil for rotary vane pumps

Oil for rotary vane pumps B: Standard pump oil. High viscosity, low vapour pressure, good chemical resistance.
Oil for rotary vane pumps K 8: For acid vapours. Strongly hygroscopic, with limited capacity for water vapour. Pump must be factory-adjusted to accept this oil.
Perfluorpolyether oil: Synthetic Oil. Certified for pumping pure oxygen.

VACUUBRAND

Type	Capacity L	PK	Cat. No.
Oil for rotary vane pumps B	1.00	1	**9.881 921**
Oil for rotary vane pumps B	5.00	1	**9.881 922**
Oil for rotary vane pumps K 8	1.00	1	**9.881 911**
Oil for rotary vane pumps K 8	5.00	1	**9.881 915**
Perfluorpolyether oil 2	0.50	1	**9.882 924**
Perfluorpolyether oil 1	0.30	1	**9.882 925**

3



3 Small flange fittings

Small flanges. Stainless steel. With male or female conical ground joints and DN flange as outlined below.

VACUUBRAND

Type	NS	PK	Cat. No.
Male ground joint - DN 10	14 / 23	1	**9.882 504**
Male ground joint - DN 10	19 / 38	1	**9.882 501**
Male ground joint, DN 25	19 / 38	1	**9.882 502**
Male ground joint - DN 25	29 / 32	1	**9.882 503**
Male ground joint - DN 40	29 / 32	1	**9.882 505**
Male ground joint - DN 40	45 / 40	1	**9.882 507**
Female ground joint - DN 10	14 / 35	1	**9.882 510**
Female ground joint DN 10	19 / 38	1	**9.882 511**
Female ground joint - DN 25	19 / 38	1	**9.882 512**
Female ground joint - DN 25	29 / 32	1	**9.882 513**
Female ground joint - DN 40	29 / 32	1	**9.882 514**
Female ground joint - DN 40	45 / 40	1	**9.882 515**

4



4 Vacuum fittings, clamping rings for type KF small flange

VACUUBRAND

Type	Size	PK	Cat. No.
Aluminium	DN 10/16	1	**9.882 401**
Aluminium	DN 20/25	1	**9.882 402**
Aluminium	DN 32/40	1	**9.882 403**
Aluminium	DN 50	1	**9.882 404**
Stainless steel	DN 10/16	1	**9.882 411**
Stainless steel	DN 20/25	1	**9.882 412**
Stainless steel	DN 32/40	1	**9.882 413**
Stainless steel	DN 50	1	**9.882 414**

5



5 Vacuum fittings, centring rings

Stainless steel/FPM (e.g. Viton®). For Type KF small flange.

VACUUBRAND

Size	PK	Cat. No.
DN 10	1	**9.882 415**
DN 16	1	**9.882 419**
DN 20	1	**9.882 416**
DN 25	1	**9.882 420**
DN 32	1	**9.882 417**
DN 40	1	**9.882 421**
DN 50	1	**9.882 418**

1 Vacuum fittings, external centering rings

Plastic 'PBT'. For Type KF small flange. *VACUUBRAND*

Type	Size	PK	Cat. No.
NBR	DN 10/16	1	**9.882 441**
NBR	DN 20/25	1	**9.882 442**
NBR	DN 32/40	1	**9.882 443**
NBR	DN 50	1	**9.882 444**
FPM	DN 10/16	1	**9.882 451**
FPM	DN 20/25	1	**9.882 452**
FPM	DN 32/40	1	**9.882 453**
FPM	DN 50	1	**9.882 454**

1



2 Vacuum fittings, nozzles

Flanged tubing nozzles, aluminium. For Type KF small flange. *VACUUBRAND*

Size	For tubing Ø mm	PK	Cat. No.
DN 10	6	1	**9.882 492**
DN 16	6	1	**9.882 497**
DN 16	10	1	**9.882 498**
DN 25	8	1	**9.882 494**
DN 25	10	1	**9.882 493**
DN 25	12	1	**9.882 491**
DN 25	15	1	**9.882 495**
DN 40	8	1	**9.882 499**
DN 40	10	1	**9.882 490**
DN 40	15	1	**9.882 496**

2



Further vacuum tubing - please see page 140.

3 Local vacuum network VACUU LAN®

NEW!

The VACUU LAN® local vacuum network allows multiple work stations to be connected to a single vacuum pump. This is useful for almost any conventional vacuum application in a chemical laboratory VACUU LAN® can be directly incorporated into new laboratory installations or retro-fitted. All assemblies have integral check (1-way) valves. A practical and economical solution for multiple vacuum users in a single laboratory. *VACUUBRAND*

3



Type	Connection	PK	Cat. No.
Manual control module VCL 01	A1	1	**9.882 830**
Shut-off/control module VCL 02	A1	1	**9.882 832**
Manual control module VCL 01	A5	1	**9.882 822**
Auto-regulating module VCL- B 10	A1	1	**9.882 818**
Auto-regulating module VCL- B 10	A5	1	**9.882 820**
Auto-regulating module VCL- B 11	A5	1	**9.882 821**
Manual flow control module VCL AR	A5	1	**6.236 108**
Module for hoods VCL A	A5	1	**6.266 569**
Shut off module VCL K	A5	1	**6.266 570**
Shut off module VCL K	A1	1	**6.900 722**

Detailed brochures are available on request!





1 Cold traps, borosilicate 3.3, one-piece

Borosilicate 3.3 glass, one-piece, with GL 45 neck and cap closure, GL 14 threaded side connections with caps and plastic tubing adapters.

Capacity ml	PK	Cat. No.
250	1	**9.305 349**



2 Condensation traps, borosilicate 3.3, two-piece

Borosilicate 3.3 glass, comprising bottle with ground glass cone neck fitting a separate inlet/outlet head with choice of tubing or ground joint connections.

Capacity ml	Cone NS	Socket NS	Connection	PK	Cat. No.
100	29	29	Tubing connections	1	**9.305 350**
250	45	45	Tubing connections	1	**9.305 351**
100	29	29	Cone / socket NS 29	1	**9.305 352**
250	45	45	Cone / socket NS 29	1	**9.305 353**

Cold traps with Dewar flask, borosilicate glass 3.3

KGW

Cold traps with Dewar flasks are made from 3.3 DIN/ISO 3585 borosilicate glass to hold LN_2 for vacuum applications. The flasks are vacuum insulated and silver-plated. They are encased in metal sheet, blue coated for protection and have a plastic ring collar, into which the cold trap is inserted. Thus no additional support is needed for the cold trap.
The Dewar flask has got a theoretical coolant capacity of 1.0L or 2.0L respectively.
The cold trap has got a theoretical condensate capacity of 150ml or 250ml respectively.

Items supplied: Cold trap, Dewar-flask, plastic ring.

Dewar type 12C/18C: see no. 9.032.024/9.032.030
Versions Cold trap joints:
S29 = spherical joints
GL18 = glass screwthead with PTFE olive 10mm
O 29 = spherical joints S29 with O-ring seal

The standard assembly is designed for use with LN_2 as coolant. When using CO_2 and acetone please order CO_2 grid separately (Dewar Type 12 C Cat. No. 9.032 081 and Dewar Type 18 C Cat. No. 9.032 082).

Type	Condensate capacity ml	Coolant capacity ml	Dewar type	Cold trap joints	PK	Cat. No.
KF 29-K	150	1000	12 C	S 29	1	**9.032 065** 3
KF 29-OK	150	1000	12 C	O 29	1	**9.032 066** 5
KF 29-GL	150	1000	12 C	GL 18	1	**9.032 067** 4
KFL 29-K	250	2000	18 C	S 29	1	**9.032 068**
KFL 29-OK	250	2000	18 C	O 29	1	**9.032 069**
KFL 29-GL	250	2000	18 C	GL 18	1	**9.032 070**
KF 29-K-A	150	1000	12 C	S 29	1	**9.032 071**
KF 29-OK-A	150	1000	12 C	O 29	1	**9.032 072**
KF 29-GL-A	150	1000	12 C	GL 18	1	**9.032 073** 6
KFL 29-K-A	250	2000	18 C	S 29	1	**9.032 074**
KFL 29-OK-A	250	2000	18 C	O 29	1	**9.032 075**
KFL 29-GL-A	250	2000	18 C	GL 18	1	**9.032 076**



9.032 065



9.032 067



9.032 066



9.032 073

Dewar vessels please see page 716.

1 Cold traps, SKF H, stainless steel

VACUUBRAND

Cold traps protect both the vacuum system and the pump. They extend maintenance intervals and improve the overall performance of the vacuum installation.
- sturdy, easy-to-clean design
- easy to disassemble
- double-wall design without separate insulating vacuum for good conductance
- long operating time with one filling
- easy condensate drain and cleaning without disassembling

Type	Connection	Dimensions (W x D x H) mm	PK	Cat. No.
SKF H 25	KF DN 25	166 x 140 x 303	1	**9.882 855**
SKF H 40	KF DN 40	166 x 140 x 319	1	**9.882 856**

1



2 Cold traps with Dewar flask, stainless steel

NEW!

KGW

Cold traps are used in conjunction with vacuum pumps to collect condensation produced from humidity or solvents and these cold traps can be used for many different tasks. The most common application is collecting condensation produced from humidity or solvents from rotating discs, vacuum pumps or high vacuum systems that use oil diffusion or turbo-molecular pumps. In this case a common coolant such as liquid nitrogen (LN2) or dry-ice (CO_2) with acetone is normally used. Simple cold traps, which are also known as cold finger condensers, are used in conjunction with vacuum pumps and the condensation is forced out of the humidity or solvents used in the chemical applications. The cold trap is used to protect the vacuum pump in this case and the speciality of this type of construction is that the user does not need to use a stand to hold the cold trap. The cold trap has a rim, which is hung inside the Dewar-flask's support ring. The cold trap can be changed very quickly without any problems arising.

2



Type	Condensate capacity ml	Coolant capacity ml	Cold trap joints	PK	Cat. No.
KF 54V-K16-Z-DSS2000-CO2	200	1200	DSS2000	1	**6.262 187**
KF 54V-K16-Z-DSS2000	200	1200	DSS2000	1	**6.264 963**

Spare parts cold traps with Dewar flask, stainless steel

NEW!

KGW

Description	PK	Cat. No.
Dewar jar type DSS 2000, 2000 ml, from stainless steel	1	**6.236 479**
Cooling trap type S 54V-K16-Z	1	**6.265 693** 3
Rest ring for DSS 2000 with CO2 grid	1	**6.265 694** 4

3



6.265 693

4



6.265 694

Woulff bottles, DURAN®

Erlenmeyer pattern (5000ml is bottle-shaped), with reinforced walls, for work under vacuum and plastic coating to act as a splinter and implosion protection. A glass insert is fitted with removable PP tubing connections, vent valve head and analogue pressure gauge with 2 scale ranges (1000 to 0mbar, 760mm to 0mm Hg).

Capacity ml	Diam. mm	Form	PK	Cat. No.
500	110	Erlenmeyer pattern	1	**9.305 340** 5
1000	140	Erlenmeyer pattern	1	**9.305 341**
2000	170	Erlenmeyer pattern	1	**9.305 342**
5000	185	bottle-shaped	1	**9.305 343**
10000	240	bottle-shaped	1	**9.305 344**
15000	255	bottle-shaped	1	**9.305 345**
20000	290	bottle-shaped	1	**9.305 346**

5



9.305 340

6 Woulff bottles, DURAN®

DURAN Group

DIN 12480. With 3 NS standard ground joints. Without base tubulature. Vacuum resistant. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable.

Capacity L	Diam. mm	Neck NS	PK	Cat. No.
0.50	87	19/26	1	**9.305 319**
1.00	113	24/29	1	**9.305 324**
2.00	135	29/32	1	**9.305 329**
5.00	185	34/35	1	**9.305 336**

6



1



1 LLG-Vacuum measuring instrument DVR 2

Versatile vacuum gauge for vacuum measurement between atmospheric pressure and 1 mbar.
With integral, alumina ceramic, pressure transducer providing excellent corrosion resistance and long-term stability.

DKD initial delivery calibration (Cat. No. 7.059 540) please order separately.

Specifications

Measuring range:	1080 to 1mbar (hPa), 810 to 1 Torr
Measurement principle:	Capacitive; gas type-independent absolute pressure measurement
Measuring accuracy:	< 1mbar (0.75 Torr) ±1 digit
Power supply/battery:	9V Lithium battery/1.2 Ah Ultralife U9VL
Dimensions (WxDxH):	115 x 115 x 66mm
Weight:	0.40kg

Type	PK	Cat. No.
DVR 2	1	**9.882 209**

2



2 Vacuum measuring instrument DCP 3000 with VSK 3000

NEW!

VACUUBRAND

The DCP 3000 is an outstanding vacuum gauge for rough and fine vacuum (1080 to 0.1mbar). A large illuminated display shows the measuring values of all sensors by a simple turn of a button. The VSK 3000 capacitive vacuum gauge head measures independent of gas type, is very corrosion resistant and has an outstanding measuring accuracy and long term stability. Simultaneous connection of up to four of these pressure transducers allows flexible measuring on the spot. The communication of the DCP 3000 and the external components proceeds via the VACUU·BUS® digital bus system. This system is characterized by fully automatic configuration, unified plug connections and cable lengths of up to 30m. Supply requirements: 100-230V 50/60Hz CEE/CH/UK/US/AUS.

Items supplied: Vacuum gauge, ready to use with 1 vacuum gauge head VSK 3000 with measuring cable, wall-mounted power supply and manual
- external sensor on-the-spot measuring, flexible and upgradeable up to four sensors
- external capacitive alumina-ceramic vacuum gauge head with excellent chemical resistance
- outstanding measuring accuracy and long term stability
- splash-proof pressure transducer for tough operation conditions
- datalogger with 32000 measurement reading recording capacity

Specifications

Measurement range:	1080 to 0.1mbar (hPa), 810 to 0.1 Torr
Measuring principle:	Capacitive; gas type independent, absolute pressure measurement
Measurement accuracy:	< ±1 mbar (Torr) ±1 digit
Vacuum connection:	Small flange KF DN 16, PTFE-tubing conn. 10/8mm, hose nozzle DN 6/10mm
Power supply:	100-230 V/50-60 Hz/CEE/CH/UK/US/AUS
Dimensions (L x W x H):	138 x 124 x 114mm
Weight of display unit:	0.44kg

Type	PK	Cat. No.
DCP 3000 with VSK 3000	1	**9.882 206**
DAkkS-calibration	1	**7.059 540**
DAkkS-recalibration	1	**7.088 492**



1 Vacuum measuring instrument DCP 3000 with Pirani sensor VSP 3000

1



VACUUBRAND

The Pirani-type vacuum sensor VSP 3000 offers an outstanding corrosion resistance and mechanical robustness for fine vacuum measurements. It is primarily designed for applications in chemistry and process engineering.
The vacuum gauge DCP 3000 is now also available with this new Pirani sensor VSP 3000 for an increased measuring range down to the 10^{-3} mbar range. Up to eight external gauge heads (four of ceramic diaphragm-type VSK 3000 and four VSP 3000) can be connected simultaneously to the DCP 3000 vacuum gauge for easy measurements at multiple points. Communication between the DCP 3000 and the external components is provided by the especially developed bus control system VACUU·BUS®. It is self-configuring, easy to use due to standardized plug connectors and allows cable extensions up to 30m. The large illuminated display, controlled by a simple jog wheel, displays the readings from each gauge head.

Performance features
- brand new rugged vacuum sensor VSP 3000 made of plastics and ceramics with high chemical resistance
- wide measurement range from atmospheric pressure to fine vacuum (10^{-3} mbar) due to Pirani measurement system (thermal conductivity)
- upto 8 gauge heads VSP 3000 (Atm. to 10^{-3} mbar), VSK 3000 (Atm. to 0.1mbar) can be connected (4 of each)
- rugged, splash-water proof vacuum sensor, also for rough operating conditions
- with vacuum controller CVC 3000, VSP 3000 and vacuum solenoid valves of type VV-B vacuum control from atm. to 10^{-3} mbar is achieved

Specifications:

Upper measuring limit mbar/hPa/torr:	1 x 10^3/7.5 x 10^2
Lower measuring limit mbar/hPa/torr:	1 x 10^{-3}/1 x 10^{-3}
Measurement principle	Thermal conductivity acc. to Pirani
Measurement uncertainty	±15% of indicated value in the range 0.01-10mbar/hPa/torr
Vaccum connection	Small flange KF DN 16 and hose nozzle DN 6/10mm
Control connections:	1 socket for supply/Vario pump 2 expandable sockets for external sensors/valves
Rated mains voltage	100-240V 50/60 Hz a.c. 1ph.
Dimensions (desktop unit, L x W x H):	138 x 124 x 114mm
Weight (without mains adapter):	0.44kg

Description	PK	Cat. No.
Vacuum gauge Set DCP 3000 + VSP 3000	1	**9.882 207**

2 Automatic Vacuum Controller CVC 3000

2



VACUUBRAND

Extremely versatile vacuum controller for the laboratory.

No configuration required. Just connect and the CVC 3000 will identify all apparatus with VACUU·BUS® VACUUBRAND pumps, vacuum valves, cooling water valves, external sensors, etc. Intuitive menu guidance via graphics display with analogue and digital vacuum readout. Demand-related control of process vacuum, cooling water and venting. Integral sensor made of highly resistant, alumina ceramic provides reliable absolute-pressure measurement. Boiling-point monitoring facility for evaporations*. No more searching for data or data input. Preset for many common vacuum applications, e.g. vacuum ovens, filtration.

Specifications:

Measuring range:	1080 to 0.1mbar (810 to 0.1 Torr)
Vacuum control range:	1060 to <0.1mbar (795 to 1 Torr) (depending on vacuum pump)
Uncertainty of measurement:	< ±1mbar (0.75 Torr) (after calibration)
Temperature coefficient:	< ±0.07mbar/K (< ±0.05 Torr/K)
Control interface:	Digital VACUU·BUS®
Control connections:	1 socket for supply/Vario pump 2 expandable sockets for external sensors/valves
Supply requirements (mains adapter):	100-240V 50/60Hz a.c. 1ph.
Dimensions (desktop unit, L x W x H):	138 x 124 x 115mm
Weight (without mains adapter):	0.44kg

Description	PK	Cat. No.
CVC 3000	1	**9.882 861**
Package CVC 3000 + VACUU·BUS® VV-B 6C valve	1	**9.882 860**

* in conjunction with VACUUBRAND Vario NT pumps

Vacuum Controller CVC 3000 detect

NEW!

VACUUBRAND

The CVC 3000 detect compact vacuum controller complete with integral vacuum valve and sensor is ready to use either as a bench top or stand mounted unit. The CVC 3000 detect is a compact two-point vacuum regulator, with integrated ceramic vacuum sensor and ventilation valve. The "detect" function provides the ability to find the boiling pressure automatically and thus greatly facilitates the work of solvent evaporation. With integrated non-return valve and chemistry vacuum valve, it forms a highly compact and easy-to-install unit for vacuum regulation. Used in conjunction with existing vacuum pumps or networks, process efficiency is significantly increased through the "detect" electronic vacuum control, the solvent recovery is increased and the environment better protected. The programmable CVC 3000 detect is available for both bench top and stand mounting operation.

Supplied with:
Vacuum Controller CVC 3000 detect with vacuum valve, ventilation valve, back-pressure valve, power supply and bench top holder or stand mounting.

Specifications

Vacuum control range:	1080 to 0.1mbar (810 to 0.1torr)
Accuracy:	< ±1mbar/hPa/torr/±1 digit (after adjustment, constant temperature)
Temperature coefficient:	< ±0.07mbar/K (< ±0.05torr/K)
Control interface:	Digital VACUU·BUS®
Venting valve, connection:	Hose nozzle DN 6/10mm Integrated, hose nozzle DN 4-5mm
Power supply:	100 - 230V, 50/60Hz CEE/CH/UK/US/AUS/CN

Type	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.	
CVC 3000 detect bench top unit	162 x 181 x 174	1.5	1	**6.260 488**	1
CVC 3000 detect stand unit	162 x 138 x 144	1.0	1	**9.882 859**	2

1



6.260 488

2



9.882 859

3



3 Accessories for Automatic Vacuum Controller CVC 3000 and DCP 3000

NEW!

VACUUBRAND

For	Description	PK	Cat. No.
CVC 3000	Solenoid inline valve VV-B 6C	1	**9.882 851**
CVC 3000	External sensor VSK 3000	1	**9.882 850**
CVC 3000	Cooling water valve VKW-B	1	**9.882 852**
CVC 3000	Air admittance valve VBM-B	1	**9.882 849**
CVC 3000	Extension cable for VACUU·BUS®, 2m	1	**9.882 853**
CVC 3000	Y-adapter for VACUU·BUS®	1	**9.882 854**
CVC 3000	Liquid level sensor for VACUUBRAND 500ml catchpot	1	**9.882 848**
DCP 3000	cable RS 232 C, 9-pole, Sub-D	1	**9.882 867**
DCP 3000	External sensor VSP 3000	1	**6.238 192**
CVC 3000, DCP 3000	Remote Control VACUU·CONTROL® with web based, graphical user interface (WLAN)	1	**6.266 571**
CVC 3000, DCP 3000	Remote Control VACUU·CONTROL® with web based, graphical user interface (LAN)	1	**6.266 572**

E & OE.

Controller package Pirani

NEW!

Controller package fine vacuum with CVC 3000 and VSP 3000 for KF DN 16 or 25 *VACUUBRAND*

The packages enable convenient vacuum control in the fine vacuum range down to 10^{-3} mbar and consist of a CVC 3000 vacuum controller, a VSP 3000 external Pirani vacuum sensor, a VV-B 15C in-line solenoid valve and all necessary small flange components. VACUUBRAND offers two packages, one with small flanges KF DN 16, suitable, e.g., for the VACUUBRAND RE/RZ 2.5 to RE/RZ 6 rotary vane pumps or RC 6 Chemistry-HYBRID pump; or select the small flange KF DN 25 version suitable for our RE/RZ 9 to RE/RZ 16 rotary vane pumps.

Specifications:

Vacuum sensor	VSP 3000
Upper measuring limit	1000/750 mbar/torr
Lower measuring limit	1 x 10^{-3}/1 x 10^{-3} mbar/torr
Measurement principle	Thermal conductivity (Pirani), chemically resistant plastics/ceramics
Measurement uncertainty	±15% of indicated value in the range 0.01-10 mbar/hPa/torr
Venting valve, connection	No
Ambient temperature range (operation)	10 - 40°C
Ambient temperature range (storage)	-10 - 60°C
Max. media temp. for continuous operation/short times	40 - 80°C
Interface	RS 232C
Weight	0.44kg

Description	PK	Cat. No.	
Controller package fine vacuum with CVC 3000 and VSP 3000 for KF DN 16	1	**6.251 423**	1
Controller package fine vacuum with CVC 3000 and VSP 3000 for KF DN 25	1	**6.251 424**	2

1



6.251 423

2



6.251 424



1 Desiccators, borosilicate glass 3.3, with plastic knob and porcelain plate

Desiccator made of borosilicate glass 3.3, clear glass, with plastic lid, without vacuum connector. *Bohemia (Simax)*

DN	Ext. diam. mm	Plate diam. mm	PK	Cat. No.
100	151.0	90	1	**9.042 810**
150	210.0	140	1	**9.042 811**
200	269.0	190	1	**6.230 515**
250	329.0	240	1	**9.042 812**
300	392.0	290	1	**6.225 773**



2 Desiccators, DURAN®, knob lid

DURAN®. Clear glass, without vacuum, with knob lid. DIN 13130. *DURAN Group*

DN	Height mm	PK	Cat. No.
100	187	1	**9.042 019**
150	252	1	**9.042 031**
200	309	1	**9.042 038**
250	357	1	**9.042 043**
300	433	1	**9.042 047**



3 LLG-Vacuum-Desiccators, soda-lime glass, with lid, stopcock and porcelain plate

Desiccator made of soda-lime glass, vacuum-tight, the stopcock has an outer diameter of about 9 mm.

Ext. diam. mm	Plate diam. mm	Height mm	PK	Cat. No.
215	140	224	1	**9.042 740**
262	190	239	1	**9.042 741**
293	235	278	1	**9.042 742**
380	280	414	1	**9.042 743**



4 Vacuum-Desiccators with tubes, borosilicate glass 3.3, stopcock SJ 24/29 and porcelain plate

Desiccators borosilicate glass 3.3, vacuum-tight. The stopcock has an outer diameter of approx. 9mm. *Bohemia (Simax)*

DN	Ext. diam. mm	Plate diam. mm	PK	Cat. No.
100	151.0	90	1	**9.042 815**
150	210.0	140	1	**6.226 934**
200	269.0	190	1	**6.226 935**
250	329.0	240	1	**6.226 936**
300	392.0	290	1	**6.227 443**

1 Desiccators, DURAN®, vacuum, with stopcock

DURAN®. Clear glass. With Novus stopcock assembly in lid. Vacuum-tight. DIN 13130. *DURAN Group*

DN	Height mm	Tube socket NS	PK	Cat. No.
100	174	24/29	1	**9.042 119**
150	239	24/29	1	**9.042 131**
200	296	24/29	1	**9.042 138**
250	344	24/29	1	**9.042 143**
300	420	24/29	1	**9.042 147**



Vacuum-Desiccators, DURAN®, complete

DURAN® vacuum desiccator "ready to use". *DURAN Group*

Type NOVUS
DURAN® Vacuum desiccator with plane flange and porcelain plate, with NOVUS standard ground joint (NS 24/29), junction tube in the lid and stopcock.

Type MOBILEX
DURAN ® Vacuum Desiccator with flat flange, no outlet, DURAN ® desiccator lid with threaded outlet type Mobilex GL 32, porcelain desiccator plate, silicone sealing ring with bonded PTFE face, DURAN ® stopcock with PTFE spindle, PBT screw cap with pierced aperture GL 32.

Type	DN	Height mm	Tube socket	PK	Cat. No.
NOVUS	150	239	NS 24/29	1	**9.042 132** 2
NOVUS	200	296	NS 24/29	1	**9.042 139**
NOVUS	250	344	NS 24/29	1	**9.042 144**
NOVUS	300	420	NS 24/29	1	**9.042 148**
MOBILEX	150	239	GL 32	1	**9.042 232** 3
MOBILEX	200	296	GL 32	1	**9.042 239**
MOBILEX	250	344	GL 32	1	**9.042 244**
MOBILEX	300	420	GL 32	1	**9.042 248**



9.042 132



9.042 232

4 Desiccator lids with knob, DURAN®

DURAN®. Clear glass. Knob lid. Fits all desiccator bases with the corresponding flat flange. Vacuum-tight. DIN 13130. *DURAN Group*

DN	Height mm	ID diam. Flange mm	OD diam. Flange mm	PK	Cat. No.
100	75	119	153 ± 2	1	**9.042 319**
150	98	172	215 ± 2	1	**9.042 331**
200	107	224	270 ± 2	1	**9.042 338**
250	122	274	320 ± 2	1	**9.042 343**
300	150	332	380 ± 2	1	**9.042 347**

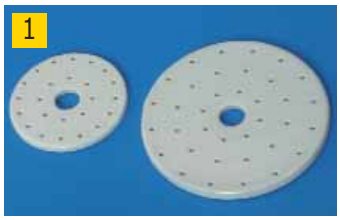


5 Desiccator lids, NOVUS type, DURAN®

DURAN®. Clear glass. Tube top, for NOVUS stopcock assembly. Without stopcock. Vacuum-tight. DIN 13130. *DURAN Group*

DN	Height mm	NS	ID diam. Flange mm	OD diam. Flange mm	PK	Cat. No.
100	62	24 / 29	119	153 ± 2	1	**9.042 419**
150	85	24 / 29	172	215 ± 2	1	**9.042 431**
200	94	24 / 29	224	270 ± 2	1	**9.042 438**
250	109	24 / 29	274	320 ± 2	1	**9.042 443**
300	137	24 / 29	332	380 ± 2	1	**9.042 447**





1 LLG-Plate for desiccator, porcelain

Perforated. Without feet. To DIN 12911. 20mm diameter central hole and 5mm diameter outer holes.

Diam. mm	For DN	PK	Cat. No.
90	100	1	**9.042 801**
140	150	1	**9.042 802**
190	200	1	**9.042 803**
235	250	1	**9.042 804**
280	300	1	**9.042 805**

Desiccator stopcock, borosilicate glass 3.3

With PTFE spindle. For NOVUS-type desiccators. *Lenz*
Cone: NS 24/29, bore: NW 2.5mm,, hose connection: outer dia. 8mm.

Description	Length mm	NS	PK	Cat. No.
for side tubulation	108	24/29	1	**9.042 500** 2
for lid tubulation	124	24/29	1	**9.042 505** 3



9.042 500



9.042 505

Stopcocks for desiccators, DURAN®

NEW!

DURAN® stopcocks with PTFE spindle. Outer diameter: 8mm *DURAN Group*

Description	Length mm	For Tube socket	For Type	PK	Cat. No.
For lateral connection	85	NS 24/29	NOVUS	1	**6.901 259** 4
For lid connection	85	NS 24/29	NOVUS	1	**7.200 573** 5
For thread connection	160	GL 32	MOBILEX	1	**9.042 507** 6



6.901 259



7.200 573



9.042 507



7 Desiccators, vacuum, O- ring seals

Soft rubber. These O-ring seals make glass lubrication unnecessary.
Suitable for desiccators, Witt jars etc.

For DN mm	PK	Cat. No.
100	1	**9.042 710**
150	1	**9.042 715**
200	1	**9.042 720**
250	1	**9.042 725**
300	1	**9.042 730**

E & OE.

1 LLG-Vacuum desiccators, polycarbonate, round form, "Heavy Duty"

Cost effective alternative to glass desiccators. Highly transparent, lightweight, shatterproof, made of polycarbonate.
Silicon O-ring and specially designed 'locking clip' allows use without grease and ensures an airtight seal. Flange lock holds the bottom and the lid together during non-vacuum conditions. Three-way stopcock provides great convenience for consistent vacuum draw, vacuum release or gas exchange e.g. inert gas. Maximum vacuum of 1.3mbar (1.3 x 10^{-4} MPa) for more than 72 hours. Wide base provides superior stability.
Also available in brown with UV-blocking effect for light sensitive samples.
G Models will be delivered with a vacuum gauge.

Included in delivery: Drying agent tray, perforated sample tray, O-ring and flange locker.

Type	Ext. diam. mm	Height mm	Capacity litres	PK	Cat. No.
VDR-20 Vacuum Desiccator	242	279	6	1	**9.042 751**
VDR-20G Vacuum Desiccator with gauge	242	354	6	1	**9.042 753**
VDR-25 Vacuum Desiccator	308	325	10	1	**9.042 755**
VDR-25G Vacuum Desiccator with gauge	308	400	10	1	**9.042 757**
VDR-30 Vacuum Desiccator	385	399	20	1	**9.042 759**
VDR-30G Vacuum Desiccator with gauge	385	475	20	1	**9.042 761**

1



Accessories for LLG-Vacuum desiccators VDR Series

NEW!

Description	PK	Cat. No.
Drying Agent Tray for VDR-20 Series	1	**9.042 771**
Drying Agent Tray for VDR-25 Series	1	**9.042 772**
Drying Agent Tray for VDR-30 Series	1	**9.042 773**
Perforated Sample Tray for VDR-20 Series	1	**9.042 776**
Perforated Sample Tray for VDR-25 Series	1	**9.042 777**
Perforated Sample Tray for VDR-30 Series	1	**9.042 778**
Lock ring for VDR-20 series	1	**9.042 781**
Lock ring for VDR-25 series	1	**9.042 782**
Lock ring for VDR-30 series	1	**6.260 351**
Vacuum gauge for VDR series	1	**9.042 783**
Vacuum seal for VDR-20 series	1	**9.042 785**
Vacuum seal for VDR-25 series	1	**9.042 786**
Vacuum seal for VDR-30 series	1	**6.260 350**
Stopcock for VDR series	1	**6.260 353**

2 LLG-Desiccant drying agents, silica gel, self-indicating

NEW!

With orange indicator colour. Grain size 1 to 3.15mm or 2 to 5mm. This self-indicating drying agent (white silica gel) is free from any heavy metals and therefore environmentally compatible. The gel is naturally orange when active and at a 6 weight-% saturation level. As the gel adsorbs moisture, the colour changes into white. The total adsorption capacity is approximately 23 in weight-% at 40% RH. The range of application is identical with that of white silica gel. The colour change, however, represents a great advantage since it allows monitoring of the saturation level. The gel can be regenerated when heated at a temperature of maximum 120°C until it turns to its original orange colour.

2



Granulation	Package contents	PK	Cat. No.
1 to 3,15mm	Tin, 1kg	1	**6.267 160**
1 to 3,15mm	Tin, 3 kg	1	**6.267 161**
1 to 3,15mm	Carton box, 8 kg	1	**6.267 162**
1 to 3,15mm	Tin, 25 kg	1	**6.267 163**
2 to 5mm	Tin, 1kg	1	**9.042 543**
2 to 5mm	Tin, 3 kg	1	**9.042 544**
2 to 5mm	Carton box, 8 kg	1	**9.042 545**

1



1 2 Portable Desiccator DURAPorter™, PC

Heathrow Scientific

Ideal for transporting biological and clinical samples, as well as instruments and products that you want to keep clean and dry under testing environmental conditions.
Are light weight and easy to carry; they are ideal for moving samples that must be protected from humidity, dust and other environmental influence. The clarity of the DURAPorter™ enables the user to visibly check sample integrity, so that it can be opened using the right precautions.

- Polycarbonate construction are available in three colours for use/owner identification
- Silicone water-tight seal and three lid clasps provide secure closure
- Carry handle folds neatly into body space allowing the units to be stacked
- Lid opens a full 180°, allowing total access to contents and making it easier to clean
- Will accommodate 13 and 16 mm tubes in a 72-place one rack®, or similar sized/brand of rack
- Use the separators provided to create your own compartment sizes, or use empty to transport larger products and equipment
- Autoclavable
- Dimensions (WxDxH): 380 x 160 x 196 mm

Matching rack (e.g. Cat. No. 9193 997, 9193 998) please order separately. Further colours available on request.

2



Type	Colour	For tubes diam. mm	Array	Dimensions (l x w x h) mm	Material	PK	Cat. No.
DURAPorter™	Clear with blue handles			380 x 196 x 160	PC	1	**9.194 005**
DURAPorter™	Yellow with yellow handles			380 x 196 x 160	PC	1	**9.194 006**
DURAPorter™	Red with red handles			380 x 196 x 160	PC	1	**9.194 007**
one rack®	Blue	13 (5 - 10 ml)	72	104 x 202 x 59	POM	1	**6.266 916**
one rack®	Blue	16 (5 - 10 ml)	72	127 x 250 x 70	POM	1	**6.266 917**
one rack®	Blue	20 (10 - 18 ml)	40	100 x 252 x 83	POM	1	**6.266 918**
one rack®	Blue	25 (10 - 18 ml)	40	120 x 300 x 92	POM	1	**6.266 919**
one rack®	Blue	30 (15 - 50 ml)	24	110 x 282 x 85	POM	1	**6.266 920**

3



3 Desiccators, plastic, vacuum, PC/PP

Kartell

Crystal clear, PC dome lid. PP. Lower section and desiccant tray. Venting stopper with non-return valve in lid. Polychlorbutadiene rubber (CK) O-ring seal between lid and base which is compressed when vacuum is applied. Lightweight and easy to use.

Nominal diam. mm	Diam. mm	Height mm	PK	Cat. No.
150	170	195	1	**9.042 615**
200	235	240	1	**9.042 620**
250	285	300	1	**9.042 625**

4



4 Spare O-Rings

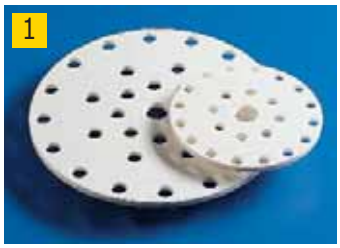
Neoprene rubber. *Kartell*

Diam. mm	PK	Cat. No.
150	1	**9.042 681**
200	1	**9.042 682**
250	1	**9.042 683**

1 Desiccator plates, PP

PP. For use at room temperature. Not suitable for use with hot crucibles. *Kartell*

Diam. mm	PK	Cat. No.
141	1	**9.042 674**
189	1	**9.042 675**
238	1	**9.042 676**



2 Accessory venting stopper for desiccators, PC

PC. With non-return valve. *BRAND*

Type	PK	Cat. No.
Desiccators	1	**9.042 684**



3 Desiccators, Type 5309, 5310, PC, blue

Transparent PC bell and blue PP lower part. Will not break or implode under vacuum provided that the operating instructions are obeyed. Lower part is resistant to diluted acids, alkalis and other common desiccants. Vacuum connection at lower part. TFE stopcock is suitable for vacuum tubing 6.4mm i.d. For air tight sealing it is sufficient to grease sealing surface a little. No additional sealing ring is necessary. The additional rim at the bell prevents grease stains on lab benches. *Thermo Scientific*

External diameter: 330mm
Internal diameter: 246mm

Type	Description	PK	Cat. No.
5309	Desiccator, without stopcock	1	**7.048 801**
5310	Desiccator, with stopcock (not autoclavable)	1	**7.048 802**



4 Desiccator, Type 5311, PC

Transparent, lightweight, unbreakable, for vacuum or non-vacuum use. With stopcock. Large, stable base. No danger of implosion. Capable of maintaining 0.95bar negative pressure over a 24 hour period. With silicone O-ring, no lubrication required. Suitable for 230mm diameter desiccator discs or plates. Max. height over plate 195mm. Plate not included. *Thermo Scientific*

External diameter: 280mm
Internal diameter: 251mm

Type	PK	Cat. No.
5311	1	**9.042 690**



5 Desiccator disc, Type 5312, enamel

Light-green, ceramic-metal composite. With numbered quadrants. Autoclavable. Recommended for use with 7.048 801, 7.048 802 and 9.042 690. *Thermo Scientific*

Type	Ext. diam. mm	PK	Cat. No.
5312	230	1	**9.042 573**



Vacuum drying ovens please see page 794.

1



1 LLG-Vacuum desiccator cabinets, polycarbonate, square form, "Heavy Duty"

High-quality and stable construction made of polycarbonate. Highly transparent, lightweight, shatterproof and stackable.
Silicon O-ring and specially designed locking clip' allows use without grease. Three-way stopcock provides great convenience for consistent vacuum draw, vacuum release or gas exchange e.g. inert gas.
Maximum vacuum of 1 Torr (1.3mbar; 1.33 x 10^{-4} MPa) for more than 72 hours, with built-in vacuum gauge.
Also available in brown with UV-blocking effect for light sensitive samples.
Included in delivery: Vacuum gauge, O-ring, drying agent tray, 2 x perforated sample trays (VDC-11 and VDC-21) or 3 x perforated sample trays (VDC-31 and VDC-41).

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Capacity litres	Max. number shelves	PK	Cat. No.
VDC-11	322 x 285 x 271	248 x 254 x 238	11	4	1	**9.042 769**
VDC-21	420 x 392 x 281	346 x 365 x 246	23	4	1	**9.042 767**
VDC-31	420 x 397 x 381	355 x 375 x 345	35	5	1	**9.042 765**
VDC-41	420 x 397 x 491	355 x 374 x 445	45	6	1	**9.042 763**

2



2 Accessories for LLG-Vacuum desiccator cabinets VDC Series

NEW!

Description	PK	Cat. No.
Drying Agent Tray for VDC-41/31/21 Series	1	**9.042 774**
Drying Agent Tray for VDC-11 Series	1	**9.042 775**
Perforated Sample Tray for VDC-41/31/21 Series	1	**9.042 779**
Perforated Sample Tray for VDC-11	1	**9.042 780**
Vacuum gauge for VDC series	1	**9.042 784**
Vacuum seal for VDC-11/11U	1	**9.042 790**
Vacuum seal for VDC-21/21U	1	**9.042 789**
Vacuum seal for VDC-31/31U	1	**9.042 788**
Vacuum seal for VDC-41/41U	1	**9.042 787**
Stopcock for VDC series	1	**6.262 107**

3



3 LLG-Desiccant drying agents, silica gel, self-indicating

NEW!

With orange indicator colour. Grain size 1 to 3.15mm or 2 to 5mm. This self-indicating drying agent (white silica gel) is free from any heavy metals and therefore environmentally compatible. The gel is naturally orange when active and at a 6 weight-% saturation level. As the gel adsorbs moisture, the colour changes into white. The total adsorption capacity is approximately 23 in weight-% at 40% RH. The range of application is identical with that of white silica gel. The colour change, however, represents a great advantage since it allows monitoring of the saturation level. The gel can be regenerated when heated at a temperature of maximum 120°C until it turns to its original orange colour.

Granulation	Package contents	PK	Cat. No.
1 to 3,15mm	Tin, 1kg	1	**6.267 160**
1 to 3,15mm	Tin, 3 kg	1	**6.267 161**
1 to 3,15mm	Carton box, 8 kg	1	**6.267 162**
1 to 3,15mm	Tin, 25 kg	1	**6.267 163**
2 to 5mm	Tin, 1kg	1	**9.042 543**
2 to 5mm	Tin, 3 kg	1	**9.042 544**
2 to 5mm	Carton box, 8 kg	1	**9.042 545**



E & OE.

Desiccators Mini, polycarbonate

SICCO Desiccators are designed for storing or drying humidity sensitive products using silica gel. The tight fitting door protects the contents from contamination from the atmosphere. The controlled environment inside the desiccators are ideal for storing reference materials, retained samples, metallographic specimen, tobacco and DNA-samples. *SICCO*

Desiccators Mini Premium including 2 shelves, hygrometer. Bottom with non-slip rubber feet.

Product advantages:
- One Touch Door with circular seal
- Robust construction
- Transparent, shatterproof cabinet made of polycarbonate
- Superb all-round visibility (except Mini Black, Mini Protect and Mini Antistatik)
- Hinge door with wide opening angle
- Lightweight, transportable
- Stackable
- Desiccant in a handy, resealable container included in delivery
- Total all-over load: 3kg

Applications:
Ideal for small parts, convenient for use.

Desiccators Mini Basic/Premium, polycarbonate

Three versions (one, two or three permanently fixed compartments). *SICCO*

Specifications
Panels: clear
Temperature resistance: from -35°C to +70°C

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.	
Mini 1 Basic	221 x 214 x 183	212 x 180 x 162	6.2	0.9	1	**9.042 646**	1
Mini 2 Basic	221 x 214 x 362	212 x 180 x 162	2 x 6.2	1.8	1	**9.042 647**	3
Mini 3 Basic	221 x 214 x 540	212 x 180 x 162	3 x 6.2	2.7	1	**9.042 648**	4
Mini 1 Premium	221 x 214 x 183	212 x 180 x 162	6.2	0.9	1	**9.042 652**	2
Mini 2 Premium	221 x 214 x 362	212 x 180 x 162	2 x 6.2	1.8	1	**9.042 653**	
Mini 3 Premium	221 x 214 x 540	212 x 180 x 162	3 x 6.2	2.7	1	**9.042 654**	

Premium Versions incl. 2 shelves, hygrometer. Bottom with non-slip rubber feet.

1

9.042 646

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9.042 652

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9.042 647

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9.042 648

Desiccators Mini Black/Mini Protect, polycarbonate

Black or orange, non-transparent polycarbonate panels reduce light incidence and protect against ultraviolet radiation. *SICCO*

Specifications
Panels: black or orange
Temperature resistance: from -35°C to +70°C

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.	
Mini Black Basic	221 x 214 x 183	212 x 180 x 162	6.2	0.9	1	**9.042 655**	5
Mini Protect Basic	221 x 214 x 183	212 x 180 x 162	6.2	0.9	1	**9.042 656**	6
Mini Black Premium	221 x 214 x 183	212 x 180 x 162	6.2	0.9	1	**9.042 659**	7
Mini Protect Premium	221 x 214 x 183	212 x 180 x 162	6.2	0.9	1	**9.042 660**	8

Premium Versions incl. 2 shelves, hygrometer. Bottom with non-slip rubber feet.

5

9.042 655

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9.042 656

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9.042 659

8

9.042 660

9 10 Desiccators Mini Antistatik, polycarbonate

NEW!

Made of conductive black polycarbonate which is capable to discharge electrostatic charging by means of a grounding cable over a connection on the back side. Black panels reduce light incidence and protect against ultraviolet radiation. With connection for grounding cable, Cable not included in delivery. *SICCO*
Shelves of Mini Antistatik Premium are made of conductive PE-HD.

Specifications:
Panels: black
Temperature resistance: from -35°C to +70°C

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Mini Antistatik Basic	221 x 214 x 183	212 x 180 x 162	6.2	0.9	1	**9.042 639**
Mini Antistatik Premium	221 x 214 x 183	212 x 180 x 162	6.2	0.9	1	**9.042 638**
Grounding cable	-	-	-	-	1	**6.253 896**

Premium version incl. 2 shelves, hygrometer. Bottom with non-slip rubber feet.

9


10


1



7.638 923

2



9.042 657

Desiccators Mini Mobil, polycarbonate

With practical handle, one compartment. *SICCO*

Specifications

Panels: clear
Temperature resistance: from -35°C to +70°C
Use: normal pressure

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Mini Mobil Basic	221 x 214 x 183	212 x 180 x 162	6.2	1.0	1	**7.638 923** 1
Mini Mobil Premium	221 x 214 x 183	212 x 180 x 162	6.2	1.0	1	**9.042 657** 2

Premium version incl. 2 shelves, hygrometer. Bottom with non-slip rubber feet.

3



7.629 763

4



9.042 658

Desiccators Mini for Gas Filling, polycarbonate

Two gas filling couplings with self-closing valves and hoses. *SICCO*

Specifications

Panels: clear
Temperature resistance: from -35°C to +70°C
Use: normal pressure

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Mini Inertgas Basic	221 x 214 x 183	212 x 180 x 162	6.2	0.9	1	**7.629 763** 3
Mini Inertgas Premium	221 x 214 x 183	212 x 180 x 162	6.2	0.9	1	**9.042 658** 4

Premium version incl. 2 shelves, hygrometer. Bottom with non-slip rubber feet.

Desiccators Star series

Desiccators are designed for storing or drying humidity-sensitive products, using silica gel. The tight fitting door protects the contents from atmospheric contamination. The controlled environment inside the desiccators are ideal for storing reference materials, library samples, metallographic specimens, tobacco and DNA-samples. *SICCO*

Product advantages:

- Reinforced aluminium frame with acrylic panels (for Star-Vitrum made of Borosilicate glass 3.3)
- Door with magnetic catch and circular rubber seal
- Non-slip rubber feet
- Easy to read electronic digital hygrometer with temperature and humidity display
- Variable height shelves made of acrylic glass (for Star-Vitrum, Star-Big and Star-Auto-Big made of stainless steel)
- Telescopic shelves
- Desiccant tray
- Silica gel included
- Raster and rails made metal-free PA/fiberglass
- Rails with level numbering

5



5 Desiccator Star, PMMA

Includes four transparent acrylic shelves, tray, hygrometer and desiccant, with positions for up to 26 shelves and stackable. *SICCO*

Specifications

Panels: clear
Material: PMMA
Temperature resistance: -20°C to + 70°C
Maximum all-over load per shelf: 10kg
Total all-over load: 30kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star	310 x 375 x 525	260 x 330 x 480	42	7.0	1	**9.042 651**

E & OE.

1 Desiccators Star-Super, PMMA

SICCO

Gas filling Desiccators provide ideal conditions for the safe and secure storing of poisonous chemicals. An inert gas such as nitrogen can be introduced as soon as the door is closed tightly. Unlike the ambient air, the inert gas does not react with the stored substances. Includes four transparent acrylic shelves, positions for up to 26 shelves, hygrometer, tray, desiccant and tubing with quick coupling for gas filling and door lock.



Specifications

Panels:	clear
Material:	PMMA
Temperature resistance:	from -20°C to +70°C
Maximum all-over load per shelf:	10kg
Total all-over load:	30kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star-Super	310 x 375 x 525*	260 x 330 x 480	42	7.1	1	**6.800 667**

* Additional space requirement for coupling, 150mm per side.

2 Desiccator Star-Auto, PMMA

SICCO

With automatic drying that can maintain a constant humidity of between 20% and 30%, Automatic Desiccators are highly suitable for long-term storage. Even frequent opening of the door is compensated for automatically. The ideal solution for storing reference materials, electronics, photo equipment, papers, historical artefacts and much more. With four transparent acrylic shelves and hygrometer with positions for up to 26 shelves and stackable.



Specifications

Panels:	clear
Material:	PMMA
Temperature resistance:	-20°C to +70°C
Maximum all-over load per shelf:	10kg
Total all-over load:	30kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star-Auto	310 x 375 x 525	260 x 330 x 480	42	7.3	1	**6.201 892**

3 Desiccator Star-Protect, PMMA

SICCO

Including four shelves made of acrylic glass, tray, hygrometer and desiccant, usable with up to 26 shelves, stackable, orange acrylic panels reduce light incidence and protect against ultraviolet radiation.



Specifications

Panels:	orange
Material:	PMMA
Temperature resistance:	from -20°C to +70°C
Maximum all-over load per shelf:	10kg
Total all-over load:	30kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star-Protect	310 x 375 x 525	260 x 330 x 480	42	7.0	1	**6.901 030**

4 Desiccator Star-Black, PMMA

NEW!

SICCO

Aluminium frame, panels made of black acrylic glass prevent light incidence and protect against ultraviolet radiation, including four shelves made of acrylic glass, tray, hygrometer and desiccant, usable with up to 26 shelves, stackable.



Specifications

Panels:	black
Material:	PMMA
Temperature resistance:	from -20°C to +70°C
Maximum all-over load per shelf:	10kg
Total all-over load:	30kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star-Black	310 x 375 x 525	260 x 330 x 480	51	7.0	1	**9.042 663**

1



1 Desiccator Star-Horizontal, PMMA

The desiccator can be equipped with up to 13 shelves. Raster and rails made metal-free PA/fiberglass. Rails with level numbering. *SICCO*

Specifications

Panels:	clear
Material:	PMMA
Temperature resistance:	-20°C to +70°C
Maximum all-over load per shelf:	1.5kg
Total all-over load:	30kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star-Horizontal	520 x 375 x 340	480 x 320 x 260	42	7.0	1	**6.800 632**

2



2 Desiccator Star-Auto-Big, PMMA

Including two shelves made of stainless steel, tray and hygrometer, usable with up to 17 shelves, stackable. *SICCO*
- Automatic drying
- Constant low interior humidity between 20% and 30%

Specifications

Panels:	clear
Material:	PMMA
Temperature resistance:	-20°C to +70°C
Maximum all-over load per shelf:	30kg
Total all-over load:	80kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star-Auto-Big	560 x 580 x 560	495 x 540 x 500	140	22.0	1	**9.042 007**

3



3 Desiccator Star-Antistatik-Big, PC

NEW!

Aluminium frame with static dissipative panels made of polycarbonate, including two stainless steel shelves, tray and hygrometer, usable with up to 17 shelves. All materials used can discharge electrostatic charging by means of a grounding cable which can be connected on the back side (connecting thread M6). *SICCO*

Specifications

Panels:	clear
Material:	PC
Temperature resistance:	-20°C to +70°C
Maximum all-over load per shelf:	30kg
Total all-over load:	80kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Capacity litres	Weight kg	PK	Cat. No.
Star-Antistatik-Big	560 x 580 x 560	495 x 540 x 500	156	18.0	1	**9.042 664**

4



4 Desiccator Star-Big, PMMA

Inclusive two removable and adjustable shelves made of stainless steel. The desiccator can be equipped with up to 17 shelves. *SICCO*

Specifications

Panels:	clear
Material:	PMMA
Temperature resistance:	-20°C to +70°C
Maximum all-over load per shelf:	30kg
Total all-over load:	80kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Capacity litres	Weight kg	PK	Cat. No.
Big Star	585 x 560 x 555	502 x 502 x 502	140	18.0	1	**6.300 334**

E & OE.

Desiccators Star-Big Black/Star-Big Protect, PMMA

NEW!

SICCO

Black or orange, non-transparent acrylic glass panels reduce light incidence and protect against ultraviolet radiation.
Including two shelves made of stainless steel, tray and hygrometer, usable with up to 17 shelves.


1

9.042 670


2

9.042 665

Specifications

Panels:	black or orange
Material:	PMMA
Temperature resistance:	from -20°C to +70°C
Maximum all-over load per shelf:	30kg
Total all-over load:	80kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star-Big Black	560 x 580 x 560	495 x 540 x 500	156	18	1	**9.042 670** 1
Star-Big Protect	560 x 580 x 560	495 x 540 x 500	156	18	1	**9.042 665** 2

3 Desiccator Star-Vitrium, borosilicate glass 3.3

SICCO

Panels made of borosilicate glass 3.3, including four shelves made of stainless steel, tray, hygrometer and desiccant, usable with up to 26 shelves, stackable.


3

Specifications

Panels:	clear
Material:	Borosilicate glass 3.3/stainless steel
Temperature resistance:	-70°C to +150°C
Maximum all-over load per shelf:	10kg
Total all-over load:	30kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star-Vitrum	310 x 375 x 525	260 x 330 x 480	42	14.0	1	**9.042 006**

4 Desiccator Star-Vitrium-Big, borosilicate glass 3.3

NEW!

SICCO

Aluminium frame with panels made of borosilicate glass 3.3, including two shelves made of stainless steel, tray and hygrometer, usable with up to 17 shelves.


4

Specifications

Panels:	clear
Material:	Borosilicate glass 3.3/stainless steel
Temperature resistance:	-70°C to +150°C
Maximum all-over load per shelf:	30kg
Total all-over load:	80kg

Type	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star-Vitrum-Big	495 x 540 x 500	560 x 580 x 560	156	22.0	1	**9.042 661**

5 Desiccator Star-Thermo, PMMA/Glass

NEW!

SICCO

Inside the new SICCO Star-Thermo-Desiccators with integrated heating, you can store your samples and products at a constant temperature. Starting at room temperature plus 5°C you can adjust any value up to max. 60°C.The fan on the back side sucks in the air inside the desiccator and blows it over the heating spiral. At the same time, the warmed air flows back into the desiccator. This air circulation provides an even heating of the interior space.
2-pane insulation (inside glass, outside PMMA), including 4 shelves made of PMMA, usable with up to max. 26 shelves.
Integrated heating (850 W) with temperature sensor and air circulation.


5

Specifications

Panels:	clear
Material:	PMMA/glass
Temperature resistance:	-20°C to +70°C
Maximum all-over load per shelf:	2.5kg
Total all-over load:	10kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Star-Thermo	310 x 420 x 630	260 x 330 x 480	42	16.0	1	**9.042 640**

Desiccators Maxi

SICCO Desiccators are designed for storing or drying humidity sensitive products using silica gel. The tight fitting door protects the contents from contamination from the atmosphere. The controlled environment inside the desiccators are ideal for storing reference materials, retained samples, metallographic specimen, tobacco and DNA-samples.

SICCO

- Reinforced aluminium frame with acrylic panels
- Door with magnetic catch and circular rubber seal
- Four casters (two of the casters with brakes)
- Easy to read electronic hygrometer
- Variable height shelves made of stainless steel
- Telescopic shelves
- Desiccant tray

1



9.042 643

2



9.042 644

Desiccators Maxi 1 and Maxi 2, PMMA

Maxi 1: Including four shelves made of stainless steel, tray and hygrometer, usable with up to 34 shelves.

SICCO

Maxi 2: Two chambers, two doors, each chamber usable with up to 17 shelves. Including two shelves per chamber, two trays and two hygrometers.

Specifications	**Maxi 1/Maxi 2**
Panels:	clear
Material:	PMMA, stainless steel
Temperature resistance:	-20°C to +70°C
Maximum all-over load per shelf:	30/80kg
Total all-over load:	160kg

Type	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Weight kg	Volume litres	PK	Cat. No.
Maxi 1	560 x 1150 x 580	495 x 1030 x 540	30.0	280	1	**9.042 643** 1
Maxi 2	560 x 1150 x 580	495 x 500 x 450*	80.0	140	1	**9.042 644** 2

* per chamber

3



3 Desiccators Maxi 1-Vitrum and Maxi 2-Vitrum

NEW!

Maxi 1-Vitrum: Aluminium frame with panels made of borosilicate glass 3.3, including four shelves made of stainless steel, tray and hygrometer, four castors, usable with up to 34 shelves.

SICCO

Maxi 2-Vitrum: Aluminium frame with panels made of borosilicate glass 3.3, two compartments and two doors, including four shelves made of stainless steel, two trays and two hygrometers, four castors, usable with up to 17 shelves per compartment.

Specifications

Panels:	clear
Material:	Borosilicate glass 3.3/stainless steel
Temperature resistance:	-70°C to +150°C
Maximum all-over load per shelf:	30kg
Total all-over load	
Maxi 1-Vitrum:	160kg
Maxi 2-Vitrum:	80kg per chamber

Type	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.
Maxi 1-Vitrum	495 x 540 x 1030	560 x 580 x 1150	311	37.0	1	**9.042 662**
Maxi 2-Vitrum	495 x 540 x 500*	560 x 580 x 1150	156*	42.0	1	**6.253 315**

* per chamber

E & OE.

Desiccators Maxi 1-Black/Protect and Maxi 2-Black/Protect, PMMA

NEW!

Aluminium frame. Black or orange, non-transparent acrylic glass panels reduce light incidence and protect against ultraviolt radiation. *SICCO*

Maxi 1-Black/Maxi 1-Protect: Including four shelves made of stainless steel, tray and hygrometer, four castors, usable with up to 34 shelves.
Maxi 2-Black/Maxi 2-Protect: Two compartments and two doors, including four shelves made of stainless steel, two trays and two hygrometers, four castors, usable with up to 17 shelves per compartment.

Specifications

Panels:	black or orange
Material:	PMMA
Temperature resistance:	-20°C to +70°C
Maximum all-over load per shelf:	30kg
Total all-over load	
Maxi 1-Black/Protect:	160kg
Maxi 2-Black/Protect:	80kg per chamber

Type	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	Volume litres	Weight kg	PK	Cat. No.	
Maxi 1-Black	495 x 540 x 1030	560 x 580 x 1150	311	30.0	1	**9.042 668**	1
Maxi 2-Black	495 x 540 x 500*	560 x 580 x 1150	156*	34.0	1	**9.042 669**	2
Maxi 1-Protect	495 x 540 x 1030	560 x 580 x 1150	311	30.0	1	**9.042 666**	3
Maxi 2-Protect	495 x 450 x 500*	560 x 580 x 1150	156*	34.0	1	**9.042 667**	4

* per chamber



9.042 668



9.042 669



9.042 666



9.042 667

1



1 Laboratory Freeze Dryer ALPHA 1-2 LDplus Package

NEW!

Christ

Small but big in performance in routine applications. Complete, universal package for sample drying in up to 8 flasks, alternatively for handling materials in dishes on up to 3 unheated shelves. With new user-friendly controller "Lyo Display LDplus".

- Graphic LC display with a clear layout showing the most important process data (ice condenser temperature, process time, section time and vacuum).
- Comfortable and self-explaining menu guidance in German, English or French language.
- Vacuum control for optimization and reduction of process time.
- Conversion of product temperature and vacuum according to the vapour pressure curve above ice.
- RS232 communication interface available as an option.

Equipped with 8 rubber valves for flasks and 3 unheated shelves (diameter 200 mm) for drying in dishes.

Required for operation: two-stage rotary vane vacuum pump with a suction capacity of min. 2 m³/h suction capacity, final vacuum approx. 5x10-3 mbar (e.g. type RZ 2.5, manufacturer VACUUBRAND).

Universal applicable accessories for almost all drying applications such as flasks, dishes, ampoules, injection bottles available.

Specifications

Total ice capacity:	2.5kg
Ice condenser temperature:	-55°C
Line voltage:	230V/50Hz
Dimensions (WxDxH):	315 x 460 x 345mm (basic unit)
Weight:	approx. 28kg

Type	PK	Cat. No.
ALPHA 1-2 LDplus Package	1	**9.883 151**
Rotary vane pumps RZ 2.5, 2 steps, 230V/50-60Hz	1	**9.880 123**

2



2 Laboratory Freeze Dryer Alpha 2-4 LDplus Package

NEW!

Christ

Large-capacity laboratory freeze dryer for routine applications in up to 8 flasks, due to low ice condenser temperature most suitable for drying of samples containing organic solvents (e. g. alcohols). With new user-friendly controller "Lyo Display LDplus".

- Graphic LC display with a clear layout showing the most important process data (ice condenser temperature, process time, section time and vacuum).
- Comfortable and self-explaining menu guidance in German, English or French language.
- Vacuum control for optimization and reduction of process time.
- Conversion of product temperature and vacuum according to the vapour pressure curve above ice.
- RS232 communication interface available as an option.

Equipped with stainless steel manifold for up to 8 flasks.

Required for operation: chemically resistant two-stage rotary vane vacuum pump with a suction capacity of min. 5m³/h suction capacity, final vacuum approx. 5x10-3mbar (e.g. type RC 6, manufacturer VACUUBRAND).

Specifications

Total ice capacity:	4kg
Ice condenser temperature:	-85°C
Line voltage:	230V/50Hz
Dimensions WxDxH:	390 x 555 x 415mm (basic unit)
Weight:	approx. 65kg

Type	PK	Cat. No.
ALPHA 2-4 LDplus Package	1	**9.883 152**
Chemistry Hybrid Pump RC 6 230V/50-60Hz, with plug CEE	1	**9.882 235**

E & OE.

1 Laboratory Freeze Dryer BETA 1-8 LDplus Package

NEW!

Christ

Laboratory freeze dryer for routine drying processes of larger sample quantities. This complete package provides a universal system for drying in up to 12 flasks, alternatively in dishes on 5 unheated shelves. With new user-friendly controller "Lyo Display LDplus":
- Graphic LC display with a clear layout showing the most important process data (ice condenser temperature, process time, section time and vacuum).
- Comfortable and self-explaining menu guidance in German, English or French language.
- Vacuum control for optimization and reduction of process time.
- Conversion of product temperature and vacuum according to the vapour pressure curve above ice.
- RS232 communication interface available as an option.

Equipped with 12 rubber valves for flasks and 5 unheated shelves (diameter 265mm) for drying in dishes.

Required for operation: two-stage rotary vane vacuum pump with a suction capacity of min. 5m³/h suction capacity, final vacuum approx. 5x10-3mbar (e.g. type RZ 6, manufacturer VACUUBRAND).

Specifications

Total ice capacity:	8kg
Ice condenser temperature:	-55°C
Line voltage:	230V/50Hz
Dimensions WxDxH:	780 x 545 x 415mm (basic unit)
Weight:	approx. 63kg

Type	PK	Cat. No.
BETA 1-8 LDplus Package	1	**9.883 153**
Rotary vane pump RZ6, 2 steps, 230V/50-60Hz	1	**9.880 124**

1



Vacuum-Concentrators - please see page 1202.

10. Optical instruments and Microscopes

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1



1 Pocket magnifier

NEW!

Isolab

- Suitable for reading small prints with a magnification of 2X.
- 3 LED bulbs with on/off control.
- Ergonomic design
- Protective bag included

Description	PK	Cat. No.
2X magnification	1	**6.267 408**

2



2 Illuminated magnifying lens Lux-50

Orange body colour, with illuminator and plastic lens. Requires 2 x 1.5 V AA batteries for operation (not included).

Mag-nification	Lens diam. mm	PK	Cat. No.
50x	2.5x to 5x	1	**9.151 817**

3



3 Handheld magnifier with illumination

NEW!

Isolab

- Hand held magnifier with magnification of 3X and 5X (depending of the view location)
- Ergonomic handle design
- Aspherical lens provides spherical aberration and distortion free images with edge-to-edge sharpness.
- LED bulb with on/off control.
- Adjustable angle of illumination.

Description	PK	Cat. No.
3X / 5X magnification	1	**6.267 407**

4



9.151 680

Magnifying lens, economic

Eschenbach

With practical additional lens in the handle. Particularly suitable for those who require a low level of magnification. An additional high-magnification lens enables small details to be read. Transparent plastic frame ensures easy orientation on the reading material. With eyelet in the end of the handle for round-the-neck cord which is supplied. The biconvex reading magnifiers offer a large visual field in a medium magnification range. Plano-convex additional lens with 5x magnification in handle.

5



9.151 688

Mag-nification	Lens diam. mm	PK	Cat. No.
3x/7,4 dpt	Ø 65	1	**9.151 680** 4
2,25x/5,1 dpt	Ø 80	1	**9.151 682**
2,25x/5,0 dpt	80 x 40	1	**9.151 688** 5

6



6 Magnifying lens, easyPOCKET

Silver, with illumination: ultra flat SMD-LED.

Eschenbach

Mag-nification	Lens diam. mm	PK	Cat. No.
3x / 8.0dpt	86 x 55 x 6	1	**9.151 147**

7



7 Illuminated pocket magnifiers, mobilux LED

NEW!

Eschenbach

The tried and tested illuminated hand-held magnifiers now feature a new design and improved functions.

- Easy to use: large, easy to operate light switch
- A choice of 2 different colours of light through use of the supplied filter
- The batteries are easy to change
- With handy eyelet on the end of the handle for round-the-neck cord
- Incl. case with strap for attaching to belt

Mag-nification	Dimensions mm	PK	Cat. No.
6x/28,0 dpt	Ø 58	1	**7.970 900**
7x/28,0 dpt	Ø 35	1	**9.151 181**
10x/38,0 dpt	Ø 35	1	**9.151 182**

E & OE.

1 Illuminated magnifier, powerlux

Eschenbach

Very simple to use, the ergonomic design promotes intuitive movement on the reading material. Automatic switch-off function, preserves battery life. Very comfortable to hold in the hand. Consistently bright and glare-free illumination.
- 2 SMD LEDs are positioned opposite each other to provide shadow-free illumination
- Supplied with protective hard foam case.

Colour of light 3000 K available on request.



Mag-nification	Lens diam. mm	Light colour K	PK	Cat. No.
5x / 20.0dpt	dia. 58	8000	1	**9.151 186**

2 Micromagnifier with illumination

Eschenbach

Suitable for inspecting a wide variety of surfaces such as metals, textiles, minerals, varnishes, etc. The wide focusing range enables raised or depressed features (e.g. holes) to be examined in detail.

- Precise focusing with adjustable wheel
- The light can be used when required
- Magnification 30 x, glass lenses



Mag-nification	Description	PK	Cat. No.
30x	with illumination	1	**9.151 594**

3 Precision linen testers, plastic

Eschenbach

- Linen tester with lateral scale
- Black plastic housing
- Scale: lateral scale with mm graduation



Mag-nification	Lens diam. mm	Field of view mm	Height mm	PK	Cat. No.
8x/30dpt	diam. 18	20 x 20	35	1	**6.236 477**

4 Precision linen testers, metal

A. Schweizer

- Brass frame, chrome-plated, silk matt finish
- Silica glass lenses, biconvex



Mag-nification	Lens diam. mm	Field of view mm	PK	Cat. No.
12x / 48dpt	diam. 12.5	10 x 10	1	**9.151 423**
10x / 40dpt	diam. 14.5	15 x 15	1	**9.151 427**
8x / 32dpt	diam. 17.5	20 x 20	1	**9.151 433**
6x / 24dpt	diam. 22.5	25 x 25	1	**9.151 442**
5x / 20dpt	diam. 31.5	30 x 30	1	**9.151 453**

Precision folding magnifiers, plastic

Eschenbach

- Glass fibre reinforced, non-breakable polyamide body
- The body is dustproof when closed
- Glass lenses



9.151 055

Mag-nification	Lens diam. mm	Lens	Description	PK	Cat. No.
3x + 6x = 9x	Ø 23	Achromatic, coated	Distortion-free image	1	**9.151 055**
10x	Ø 23	Aplanatic	Distortion-free image	1	**9.151 155**

1



9.151 051

Precision folding magnifiers, metal

- Matte-chromed brass housing with eye
- Lens surround in black-painted metal

Eschenbach

Mag-nification	Lens	Lens diam. mm	PK	Cat. No.
10x	Achromatic	diam. 15	1	**9.151 040**
20x	Achromatic	diam. 17	1	**9.151 050**
8x	Aplanatic	diam. 21	1	**9.151 051** 1
10x	Aplanatic	diam. 21	1	**9.151 052**
12x	Aplanatic	diam. 15	1	**9.151 053**

2 3



9.151 107 9.151 108

Precision scale magnifiers

- Distortion-free image with pinpoint clarity
- Fine focusing via easy-grip focusing ring
- Supplied with standard scale, measuring range 20mm, 1/10mm graduation, size: diam. 23mm
- Housing made from glass fibre reinforced polyamide
- Supplied in a solid plastic box with space for other scales

Eschenbach

LED lighting unit for precision scale magnifiers.
- Handle holds 2 batteries (not included)

4



9.151 106

Description	Mag-nification	PK	Cat. No.
Magnification	7x / 28,0 dpt	1	**9.151 107** 2
Magnification	10x / 40,0 dpt	1	**9.151 108** 3
Handle with LED illumination for magnifying lenses	--	1	**9.151 106** 4

5



5 Mini Light Box and Mini Magnifier

Mini Light Box saves bench space and can be stored in a drawer. Viewing area is perfect for quick screening of 96-well plates, petri dishes, electrophoresis gels, slides, and transparencies. Powered by two AA batteries (included). Viewing area dimensions (W x D): 127 x 102mm. Overall dimensions (WxDxH): 161mm x 135mm x 44mm.

Heathrow Scientific

Mini Magnifier enlarges objects for easier viewing. To use with Mini Light Box or separately. Swiveling, molded lens. 1.75x magnification. Lens dimensions (W x D): 185mm x 100mm. Stand height: 207mm.

Description	PK	Cat. No.
Mini Magnifier, 1.75x	1	**9.151 509**
Mini Light Box, incl. 2 AA batteries	1	**9.151 510**

6



6 LLG-Table-top magnifier

NEW!

- Multifunctional table-top magnifier with magnification power of 2X and 4X depending of the view location.
- Can be operated with one hand
- 4 LED bulbs with on/off control.
- Magnifying lens position and illumination angle can be individually adjusted via the flexible gooseneck system
- Flicker free illumination without heat development
- Aspherical lens provide spherical aberration and distortion free images with edge-to-edge sharpness.

Description	PK	Cat. No.
2X / 4X magnification	1	**6.267 406**

7



7 Illuminated magnifier

Magnifier lens complete with articulated arm.

Exacta Optech

Lens power:	2 x
Lens dimensions:	190mm x 157mm
Illumination:	2 fluorescent lamps: 9W (230V /50Hz)
Clamp opening:	70mm

Type	PK	Cat. No.
Magnifier lamp	1	**9.170 701**

E & OE.

Illuminated magnifier, RLL 122 T

Waldmann

Strong, shadow-free illumination, using circular 22W fluorescent lamp. Distortion-free, 4 dioptre, glass magnifier (120mm diameter). With an accessory snap-on lens of 8 dioptres, resolving is boosted to 12 dioptres. Smooth, easy adjustment. Spring balanced joints.

Specifications

Supply req.:	230V 50Hz
Fitted with:	1 x fluorescent lamp T-R29 22 W
Shade material:	Plastic
Lamp housing:	Opal white polycarbonate
Colour:	Light grey
Lens diameter:	120mm
Lens magnification, dioptres:	4

1



9.705 078

Type	Description	PK	Cat. No.
RLL 122 T	Illuminated magnifier 4 dioptres	1	**9.705 078**
RLL 122 T	Illuminated magnifier 4 dioptres incl. snap-on lens of 8 dioptres (dia. 31.5mm)	1	**6.204 902**
TK 1/45	Table clamp	1	**9.705 088**

2 Clip-on magnifiers labo-clip

Eschenbach

The labo-clip system can be easily attached to the spectacle frame. The labo-clip leaves both hands free for working. Comfortable working distance even with a high level of magnification.

- Used with distance spectacles to achieve optimum image quality.
- Lenses easily interchangeable.
- Lens sizes: monocular dia. 40mm, binocular 74.5 x 22.5mm
- Lightweight
- Lens clamp made from glass fibre reinforced plastic
- Supplied with protective box

2



Type	Mag-nification	Working Distance mm	Description	PK	Cat. No.
labo-clip	2x/2.5dpt	250	binocular	1	**9.151 175**
labo-clip	2.5x/5.0dpt	180	binocular	1	**9.151 171**

3 Headband magnifiers labo-med

Eschenbach

Both hands are free for working. Comfortable working distance even with a high level of magnification.

- Lenses easily interchangeable
- Lens clamp made from glass fibre reinforced plastic
- The labo-med clip-on magnifiers are only suitable for non-spectacle wearers
- Discreet metal frame, black matt finish
- Supplied with protective box
- labo-med can also be used with monocular lenses which are available as an accessory

3



Type	Mag-nification	Working Distance mm	Description	PK	Cat. No.
labo-med*	2x/2.5dpt	250	binocular	1	**9.151 178**
labo-med	2,5x/5.0dpt	180	binocular	1	**9.151 179**

* Shorter working distance due to integrated convergence supporting prisms.

4 Magnifying spectacles MaxDetail

NEW!

Eschenbach

For demanding detailed work. Both hands are kept free for carrying out intricate work, handicrafts or reading. Comfortable working distance and large visual fi eld; lightweight, contemporary design.

- With improved adjustment of dioptre compensation
- Easily adjustable temples (can be adjusted without warming)
- Large PD range 60-68mm
- Working distance approx. 40cm
- Dioptre compensation: ±3dpt, right/left can be separately adjusted, cylinder correction not possible
- Supplied in hard foam case

4



Type	Mag-nification	Working Distance mm	Weight g	PK	Cat. No.
MaxDetail	2x / ±3dpt	400	49	1	**9.151 177**

1



6.239 879

Educational Microscopes, F11 Series

Motic

- Monocular head, 45º inclined, 360º rotating
- Widefield eyepiece WF10X/18mm
- Quadruple revolving nosepiece
- Achromatic objectives DIN 4X, 10X, 40X S
- Seperate Coarse and fine focusing system with tension adjustment
- Plain stage with sample clips
- 0.65 N.A. condenser built in on stage with iris diaphragm (F1110)
- Focusable 1.25 N.A. Abbe condenser with iris diaphragm (F1115)
- LED illumination 20mA, 3.5V, 70mW with intensity control
- Power supply 220V (CE)
- Dust cover

Type	Description	PK	Cat. No.
F1110 LED	0.65 N.A. condenser built in on stage with iris diaphragm	1	**6.239 879** 1
F1115 LED	Focusable 1.25 N.A. Abbe condenser with iris diaphragm	1	**6.243 414**

2



9.727 032

Educational Microscopes, BA81

Motic

- Monocular (BA81A-MS corded)/Binocular (BA81B-MS w/100X corded) head
- 45° inclined, 360° rotating
- Widefield eyepiece WF10X/18mm
- Reversed quadruple revolving nosepiece
- Achromatic objectives EA 4X, 10X, 40X S
- Achromatic objectives EA 4X, 10X, 40X S and 100x S Oil (BA81B-MS w/100X corded)
- Coaxial coarse and fine focusing system with tension adjustment
- Built in low position coaxial mechanical stage
- Focusable N.A. 1.25 Abbe condenser
- Iris diaphragm with filter holder
- LED illumination 20mA, 3.5V, 70mW with intensity control
- Main supply 220V-240V (CE)
- Dust cover

Type	Description	PK	Cat. No.
BA81A-MS	Monocular	1	**9.727 032** 2
BA81B-MS	Binocular	1	**9.727 033**

3



7.900 085

Binocular Microscopes for Schools/Laboratories, B1-220ASC, B1-223ASC

Motic

- Observation Tube Binocular 45° -/Phototube 30°, 360° rotating
- Widefield eyepieces WF10X/20mm
- Quadruple revolving nosepiece
- Achromatic Super Contrast objectives ASC 4X, 10X, 40X S, 100X S-Oil
- Coaxial coarse and fine focusing system with tension adjustment
- Built in lowposition coaxial mechanical stage
- Focusable 1.25 N.A. Abbe condenser with iris diaphragm and filter holder
- Halogen illumination 12V/20W with intensity control
- Power supply 100V-240V (CE)
- Blue, yellow and green filters, dust cover and immersion oil

Type	PK	Cat. No.
B1-220ASC	1	**9.727 002**
B1-220ASC UK	1	**9.727 003**
B1-223ASC	1	**7.900 085** 3

E & OE.

Advanced Microscope for University and Laboratory use, B3-220ASC, B3-223ASC

1

Motic

- Observation Tube Siedentopf Type, Binocular -/Phototube 30°, F.N. 20
- Widefield eyepieces WF10X/20mm
- Reversed quintuple revolving nosepiece
- Achromatic Super Contrast objectives ASC 4X, 10X, 40X S, 100X S-Oil
- Coaxial coarse and fine focusing system with tension adjustment
- Built in low position coaxial mechanical stage
- Focusable 1.25 N.A. Abbe condenser with iris diaphragm and filter holder
- Koehler illumination halogen 12V/20W with intensity control
- Power supply 100V-240V (CE)
- Blue, yellow and green filters, dust cover and immersion oil

Type	Description	PK	Cat. No.
B3-220ASC	binocular	1	**6.243 410** 1
B3-223ASC	trinocular	1	**7.636 721**



6.243 410

Basic Biological Microscope for Education and Routine, BA210E

NEW!

2

Motic

- Infinity Optics [CCIS®]
- Observation Tube Siedentopf Type, Binocular -/Phototube 30°, F.N. 20
- Interpupillary Distance 55-75mm
- Eyepieces High-Eyepoint N-WF 10x/20mm with dioptre adjustment on both eyepieces
- Reversed quadruple revolving nosepiece
- Objectives CCIS EC Plan 4x, 10x, 40x-S, 100x-S-Oil
- Build in low position coaxial, rackless mechanical stage (right hand control)
- Focusable Abbe condenser N.A. 1.25 with iris diaphragm and slot
- Illumination 6V/30W halogen with intensity control
- Universal power supply 100-240V (CE)
- Ø 45mm blue filter, immersion oil (5ml), power cord, Allen hexagonal key, thumb crew, vinyl dust cover
- interchangeable LED module available

Optional available: Phase-contrast 10x/40x, DF 10x-40x, Polarization

Type	Description	PK	Cat. No.
BA210E	Binocular	1	**6.265 838** 2
BA210E	Trinocular	1	**6.266 907**



6.265 838

Advanced Upright Microscope for Life Science and Laboratories, BA310E

NEW!

3

Motic

- Infinity Optics [CCIS®]
- Observation Tube Siedentopf Type, Binocular -/Phototube 30°, F.N. 20
- Interpupillary Distance 48-75mm
- Eyepieces High-Eyepoint N-WF 10x/20mm with dioptre adjustment on both eyepieces
- Reversed quintuple revolving nosepiece
- Objectives CCIS EC Plan 4x, 10x, 40x-S, 100x-S-Oil
- Built in low position coaxial, rackless mechanical stage (right hand control)
- Focusable Abbe condenser N.A. 0.90/1.25 with iris diaphragm and slot
- Koehler illumination quartz halogen 6V/30W with intensity control
- Universal power supply 100-240V (CE)
- Ø 45mm blue filter, immersion oil (5ml), power cord, Allen hexagonal key, thumb crew, vinyl dust cover
- interchangeable LED module available

Optional available: Phase-contrast 10x/20x/40x/100x for slider or Turret-condensor, DF 10x-40x for slider or Turret-condensor, Polarization

Type	Description	PK	Cat. No.
BA310E	Binocular	1	**6.262 306**
BA310E	Trinocular	1	**7.659 854** 3



7.659 854

1



9.727 050

Clinical & Lab Microscope for advanced applications, BA410E

NEW!

Motic

- Infinity Optics [CCIS®]
- Observation Tube Siedentopf Type, Binocular -/Phototube 30°, F.N. 22
- Interpupillary Distance 48-75mm
- Eyepieces High-Eyepoint N-WF 10x/22mm with diopter adjustment on both eyepieces
- Reversed sextuple nosepiece
- Objectives CCIS EC-H Plan 4x, 10x, 40x-S, 100x-S-Oil
- Low position coaxial, rackless mechanical stage with ceramic insert (right hand control)
- Achromat swing-out condenser N.A. 0.90/0.13 with iris diaphragm
- Koehler illumination quartz halogen 12V/50W or 12V/100W with external lamp house and intensity control
- Auto-off and light-memory function when changing the magnification
- Universal power supply 100-240V (CE)
- Ø 45mm blue filter, immersion oil (5ml), power cord, Allen hexagonal key, vinyl dust cover
- arm rest, spare fuse

Optional available: Phase-contrast (Ph 1.2.3), DF 10x-40x, Polarization, Plan fluar objectives, Epi-fluorescence, Multi-head viewing system

Type	Description	PK	Cat. No.
BA410E	Binocular 50W	1	**9.727 050** 1
BA410E	Binocular 100W	1	**9.727 051**
BA410E	Trinocular 50W	1	**9.727 052**
BA410E	Trinocular 100W	1	**9.727 053**

2



9.727 031

Inverted Routine microscope for live cell, AE2000

Motic

- Infinity Optics [CCIS®]
- Observation Tube Siedentopf Type, Binocular -/Phototube 45°, F.N. 20
- Interpupillary Distance 48mm-75mm
- Eyepieces High-Eyepoint N-WF 10x/20mm provide dioptre adjustment for both eyes
- Side facing quadruple nosepiece
- Objectives CCIS Plan achromat PL 4x, LWD PL 40x
- CCIS Plan Achromat Phase PL Ph10x, LWD PL Ph20x
- Plain stage 200mm x 239mm surface with metal & glass stage inserts
- Condensor ELWD N.A. 0.3 with phase slider (Ph1, BF)
- Illumination 6V/30W halogen with intensity control and sleeping mode
- Universal power supply 100V-240V (CE)
- Ø 45mm blue, green interference and neutral density filters with filter slider, centering telescope, power cord, Allen hexagonal key, vinyl dust cover.
- Interchangeable LED module availabel

Optional: phase-contrast 4x/40x, mechanical stage with well plate holder.

Type	Description	PK	Cat. No.
AE2000	Binocular	1	**9.727 030**
AE2000	Trinocular	1	**9.727 031** 2

3



3 Inverted Microscope for advanced applications AE31E

Motic

- Infinity Optics [CCIS®]
- Observation Tube Siedentopf Type, Binocular -/Phototube 45°, F.N. 22
- Interpupillary Distance 48-75mm
- Eyepieces High-Eyepoint N-WF 10x/22mm with diopter adjustment on both eyepieces
- Side facing quintuple nosepiece
- Objectives CCIS Plan achromat PL 4x,
- CCIS Plan Achromat Phase PL Ph10x, LWD PL Ph20x, LWD PL Ph40x
- Plain stage 200mm x 239mm surface with metal & glass stage inserts
- Condensor ELWD N.A. 0.3 with phase slider (Ph1, BF)
- Illumination Externally mounted lamp house, Koehler 6V/30W Quartz halogen with intensity control
- Universal power supply 100V-240V (CE)
- Ø 45mm blue, green intereference and ground glass filters, centering telescope power cord, Allen hexagonal key, vinyl dust cover
- Interchangeable LED module available

Optional available: mechanical stage with well plate holder, Epi-Fluorescence

Type	Description	PK	Cat. No.
AE31E	Binocular	1	**6.268 477**
AE31E	Trinocular	1	**6.268 478**

E & OE.

1 Advanced Microscope for Industrial & Materials, BA310 MET

NEW!

Motic

The BA310 MET series is the ideal microscope for industrial quality inspection or materials science
Different alternative stand options also allows applications in brightfield or examination of larger samples

BA310 MET Trinocular
- Infinity Optics [CCIS®]
- Observation Tube Trinocular 30° (Light split 100:00/20:80), F.N. 20
- Interpupillary distance 48-75mm
- Widefield high eyepoint eyepieces N-WF10X/20mm with diopter adjustment on both eyepieces and rubber eyecups
- Reversed quintuple revolving nosepiece
- CCIS LM Plan Achromatic objectives 5X, 10X, 20X, 50X
- Coaxial course and fine focusing system
- Mechanical stage 180x140mm, hard coated with built-in low position coaxial stage control
- Epi-illuminator 12V/50W quartz halogen with integrated field and aperture diaphragms and external lamphouse
- Power supply 100-240V (CE)
- Power cord, Allen hexagonal key, vinyl dust cover

1



Type	Description	PK	Cat. No.
BA310 MET	Trinocular	1	**6.264 712**

2 C-Mount camera Adapter to BA & AE series

NEW!

Motic

Description	PK	Cat. No.
adapter C-Mount 0,5x	1	**7.626 193**
adapter C-Mount 0,65x	1	**6.243 486**

2



Compact Zoom Stereo Microscope with LED, SMZ-161 Series

NEW!

Motic

Convincing optical performance combined with compact footprint and robust mechanics makes the SMZ-161 the ideal stereo microscope for teaching environments in High Schools and Universities

SMZ-161-BLED(R2LED)
- Greenough zoom optical system
- Observation Tube Binocular -/Phototube 45°, 360° rotating, F.N. 20
- 100:0 (eyetubes), 0:100 (right eyetube/trinocular tube) optical split
- Widefield eyepieces WF10X/20mm, with rubber eyecups
- Diopter adjustment on both eyepiece tubes
- 6:1 Zoom ratio, WD=110mm
- Objective magnification range: 0.75X-4.5X
- R2LED: Compact incident/transmitted illumination stand
- Coarse focusing system with tension adjustment
- 3W incident and transmitted LED illumination with intensity control
- Main supply 100V-240V (CE)
- Black/White and frosted glass stage plates and dust cover

3



6.266 908

Type	Description	PK	Cat. No.
SMZ-161-BLED (R2LED)	Binocular	1	**6.266 908**
SMZ-161-TLED (R2LED)	Trinocular	1	**7.658 531**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

Motic MORE THAN MICROSCOPY

1



7.671 016

High-performance Greenough Stereo Microscope with LED, SMZ-171 Serie

NEW!

Motic

Versatile Stereo microscope for a wide range of biological and material science applications
- improved optical and mechanical performance
- improved image contrast due to multi-layer lens coating
- improved illumination concept
- ESD compatible set ups available
- various accessories available

- Observation Tube Binocular -/Phototube 45°, 360° rotating, F.N. 23
- 100:0 (eyetubes), 0:100 (left eyetube/trinocular tube) optical split
- Widefield adjustable eyepieces WF10X/23mm
- 6.7:1 Zoom ratio, WD=110mm
- Objective magnification range: 0.75X-5X
- SMZ-171 Pole type stand with large working area and head holder
- Coarse focusing system with tension adjustment
- 3W incident and transmitted LED illumination with independent intensity controls
- Transmitted light with tilting reflector (oblique illumination)
- Option to adapt flexible light guide
- Main supply 100V-240V (CE)
- Black/White and frosted glass stage plates, and dust cover

Type	Description	PK	Cat. No.
SMZ-171-BLED	Binocular	1	**6.264 087**
SMZ-171-TLED	Trinocular	1	**7.671 016** 1

2



2 C-Mount Camera Adapter for SMZ series

NEW!

Motic

Description	PK	Cat. No.
adapter C-Mount 0,5x	1	**7.626 193**
adapter C-Mount 0,65x	1	**6.243 486**

3



6.253 610

Digital CMOS Microscope Cameras MOTICAM for all purpose

NEW!

Motic

Moticam Series: digital microscope cameras for every application
Ergonomic and compact housing. Exceptional color resolution.
Ideal for beginners in digital color microscopy, schools as well as labs.

- Output: USB 2.0 (cable attachable), progressive Scan, TWAIN-interface
- Supplied with two variable diameter eyepiece couplers, focusable macro lens, macrotube, Motic 4-dot calibration slide, Software Motic Images Plus 2.0 for PC (MI) and MAC
- Operation system: Windows XP (and higher) and Mac OSX

Type	Resolution	Sensor format	PK	Cat. No.
MOTICAM 1SP	1.3MP (max. 1280x1024 px)	1/3"CMOS	1	**6.253 609**
MOTICAM 2	2MP (max. 1600x2000 px)	1/3"CMOS	1	**6.253 610** 3
MOTICAM 3	3MP (max. 2048x1536 px)	1/2"CMOS	1	**6.253 611**
MOTICAM 5	5MP (max. 2592x1944 px)	1/2.5"CMOS	1	**6.253 612**
MOTICAM 10	10MP (max. 3664x2748 px)	1/2.5"CMOS	1	**6.253 614**

4



5



4 5 WiFi Digital Microscopy Moticam X

Motic

The Moticam X is the first WiFi Microscope Camera for wireless image transmission. With every Android and iOS hardware (tablet, smartphone), it is now possible to obtain microscopic image results freely and to share with others. This results e.g. for the work in the class composits completely new possibilities.
- Sensor: CMOS
- Resolution: 1.3 MP
- WiFi resolution: 1280 x10124
- Optical calculation: 1/3.2"
- Output: WiFi
- Power supply through USB

Scope of delivery: 2 variable diameter eyepiece adapters, focusable lens 12mm, Macrotube for specimen observation, Motic 4-dot calibration slide, Motic Images Plus 2.0 ML & Mac
Operation system: Windows XP andhigher, Mac OSX; Android 4.0 and higher; iOS5 and higher

Description	PK	Cat. No.
Moticam X	1	**9.727 022**

E & OE.

Motic®

MORE THAN MICROSCOPY



NEW MOTICAM S2 & T2

ALL IT TAKES IS A **TOUCH** OF YOUR FINGER

The new Moticam S2 and T2 tablet cameras, which offer capture of 5.0 MP, will make your microscopy experience unique.

Capture, edit and share your images with our free App MotiConnect

MotiConnect | Motic's free app

Download on the App Store

Google play

www.moticeurope.com

1



1 Digital Microscope Camera Moticam 580

Motic

CMOS-camera, suited for educational purpose and applications in routine laboratories. Pictures can be saved directly on the SD card. Dual-observation by directly connecting the camera on a Monitor or beamer with fast live image transmission.

- Sensor: CMOS
- Live resolution: 800x600 pixels USB (1280x960 extrapolated)
- Still resolution: 5.0 megapixels onto SD card
- Optical calculation: 1/2.5"
- Output: USB 2.0, HDMI 1080P, RCA and SD card slot (includes cables: USB, AV and Mini HDMI)
- Focusable lens: 12mm
- 2 variable diameter eyepiece adapters
- Macro tube for specimen observation
- Motic Images Plus 2.0 for PC and MAC
- Motic 4-dot calibration slide
- Operation system: Windows XP and higher, Mac OS X
- Power supply 100V-240V (CE)
- Remote control

Type	PK	Cat. No.
Moticam 580	1	**6.253 613**

2



3



2 3 Tablet Microscope Cameras MOTICAM S2 & T2

NEW!

Motic

Touch Screen Tablet Solutions with 5MP microscope camera. A new dimension in interactive microscopy for classrooms, lab and industries. The operating system Android and the included Moticonnect T App allows users to capture, view and edit the Live image by one click. Features like measuring calibrating, annotating and generating reports complete the Moticonnect App. The WiFi capability (Hot Spot) enables to share the Live image up to 6 WiFi devices (Tablets, Smartphones, Laptops, Computer etc.) at the same time. The available data can be processed with the Moticonnect App (WiFi enabled devices) or the Motic image plus 2.0 (PC and Mac). Additionally you can share the Live image via HDMI connected to a beamer or monitor.

Moticam S2 7" Tablet Camera
- Sensor: CMOS 1/2.5" 5.0MP
- Live resolution: 1280 x 800 pixels (16:09) & 800 x 600 Pixel (4:3)
- Image capture resolution: 5.0MP (internal memory or SD card)
- Video capture resolution: 720P (HD)
- Output: HDMI 1080P, Live image to other WiFi devices with Android, iOS, PC, Mac and HTML
- Ports: SD card (up to 32 GB), 3.5mm Audio, DC 5V power input, Mini HDMI output
- Lens mount: C-Mount
- Battery: 3.7V/3000mAh rechargeable
- Operation system: Android 4.2
- Scope of delivery: MicroSD 4Gb included, HDMI Cable, Motic Images Plus 2.0 for PC and Mac,
- Motic 4-dot calibration slide,Power supply 100V-240V (CE)

Moticam T2 10" Tablet Camera
- Sensor: CMOS 1/2.5" 5.0MP
- Live resolution: 1280 x 800 pixels (16:09) & 800 x 600 Pixel (4:3)
- Image capture resolution: 5.0MP (internal memory or SD card)
- Video capture resolution: 720P (HD)
- Output: HDMI 1080P, Live image to other WiFi devices with Android, iOS, PC, Mac and HTML
- Ports: SD card (up to 32 GB), 3.5mm Audio, DC 5V power input, Mini HDMI output
- Lens mount: C-Mount
- Battery: 3.7V/3000mAh rechargeable
- Operation system: Android 4.2
- Scope of delivery: MicroSD 4Gb included, HDMI Cable, Motic Images Plus 2.0 for PC and Mac,
- Motic 4-dot calibration slide,Power supply 100V-240V (CE)

Type	PK	Cat. No.
Tablet Moticam S2	1	**6.267 830**
Tablet Moticam T2	1	**6.267 831**

E & OE.

1 Cold light sources

NEW!

Schott Fiber Optics



For sample illumination in microscopy, clinical diagnostics, dental technology, photography or mineralogy. Cold light sources filter out heat-producing, infra-red radiation. Visible light with a high and constant intensity is directed to the specimen via flexible light guides. The specimen is not subjected to heat. Compact, easy to use and maintenance-free. KL 300 LED without fan otherwise with a low-noise fan with air vented at the rear of the casing.

KL 300 LED - compact, save energy and cost-effective
30W halogen equivalent LED with continuous dimming. Convection cooling for silent and vibration-free operation. Max. light intensity: 80lm incl. wide-range power supply with international plug system.
KL 1600 LED - economy
The brightness is equivalent to a 150W halogen cold light source LED with continuous dimming. Max. lighting intensity: 680lm incl. broad range power supply
KL 2500 LCD - professional
Professional cold light source with 24V/250W halogen elipsoid reflector lamp and variable brightness control dial with 5 click-stop positions for reproducible setting. Light remains constant irrespective of power supply fluctuations (±15%). Max. lighting intensity: 1300lm.

Swan neck light guide please order separately.

Light exit angle:	Approx. 70° without focussing attachment, approx. 20° with focussing attachment
Supply requirement	
KL 300 LED, KL 1600 LED:	100-240V, 50/60Hz
KL 2500 LCD:	230V, 50/60Hz, safety class II.

Type	Light colour K	Width mm	Depth mm	Height mm	PK	Cat. No.
KL 300 LED	5600	106	114	61	1	**6.253 748**
KL 1600 LED	5600	114	231	137	1	**9.705 206**
KL 2500 LCD	2000 - 3400	200	265	170	1	**9.705 202**

Cold light source, accessories, KL 300 LED/KL 1600 LED/KL 2500 LCD

Schott Fiber Optics

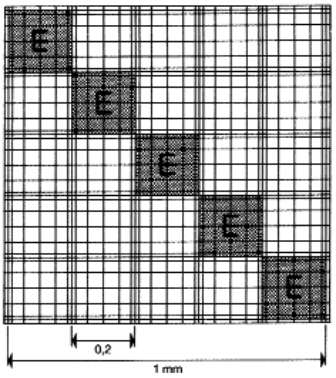
Split ring illuminator, i.d. 58mm: For Leica M1-M7 microscopes. No adaptor required on Zeiss Stemi 1000 and 2000, SV6 and SV11. Required adapter is supplied directly by Zeiss. 6-point ring illuminator, i.d. 58mm and split light illuminator, i.d. 58mm: No adaptor required on Leica GZ6, M8, M10, M12 and MZAPO microscopes.
When using 6-point ring illuminator, i.d. 66mm and split light illuminator, i.d. 66mm Lens adapter I is required.

Description	PK	Cat. No.
Swan-neck, fibre-optic light guide, single, 3.5mm diameter, length 500mm	1	**9.705 221**
Swan-neck, fibre-optic light guide, double, 3.5mm diameter, length 500mm	1	**9.705 220**
Flexible light guide, single, PVC sheathed, 4.5mm diameter, length 600mm	1	**9.705 225**
Flexible light guide, double, PVC sheathed, 4.0 mm dia., length 1000 mm	1	**9.705 226**
6 point ring light, Int. diameter 66mm	1	**9.705 230**
6 point ring light, Int. diameter 58mm	1	**9.705 231**
Focussing attachment and filter set	1	**9.705 170**
Polarisation filter for focussing attachment	1	**9.705 176**
Focussing attachment, without filter, for swan-neck and flexible fibre optic light guides	1	**9.705 175**
Conversion filter for focussing attachment	1	**9.705 177**
Lens adapter I (from 66 mm to 58 mm)	1	**9.705 272**
Split ring light, int. diam. 58 mm	1	**9.705 194**
Split ring light, int. diam. 66 mm	1	**9.705 195**

2 Counting chamber, Improved Neubauer

2

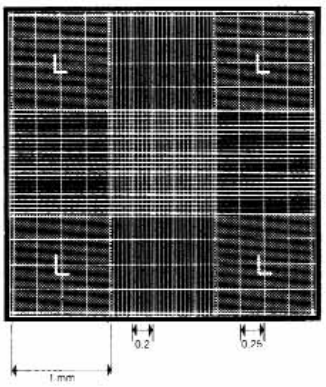
BRAND



With double ruling. Calibratable. Cell depth 0.1mm. Counting grid with 9 large squares each 1 mm². The 4 large squares in the corners for counting leucocytes are each subdivided into 16 squares with a side length of 0.25mm. The large square in the middle is subdivided into 25 squares each with a side length of 0.2mm. Each of these is further subdivided into 16 smaller squares each with a side length of 0.05 mm and an area of 0.0025mm². The 5 group squares marked with an 'E' are used to count thrombocytes and erythrocytes. All group squares have triple boundary lines on each side. CE-marked according to IVD 98/79 EG.

Type	PK	Cat. No.
With snap-on clips	1	**7.020 272**
Without snap-on clips	1	**9.161 078**

1



1 Counting chamber, Improved Neubauer, bright line

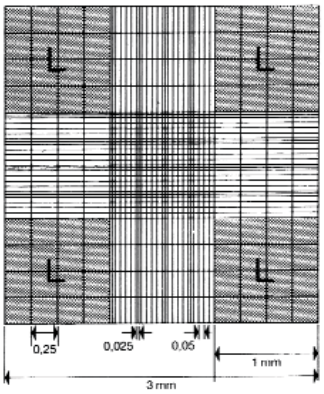
NEW!

BRAND

Bright line. With double ruling. Calibratable. Same counting grid as the Improved Neubauer cell, but with rhodium coated chamber base. Rulings are engraved into the Rhodium layer and appear bright under normal microscope settings. By altering the contrast it is possible to reverse the image under the microscope to make the rulings appear brighter or darker as required. CE-marked according to IVD 98/79 EG.

Description	PK	Cat. No.
With snap-on clips	1	**7.020 272**
Without snap-on clips	1	**9.161 079**

2



2 Counting chamber, Neubauer

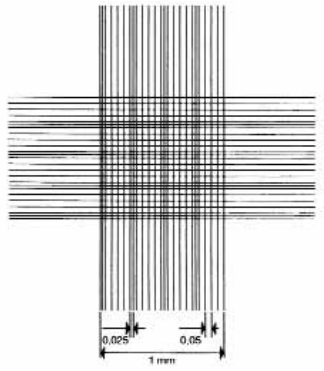
NEW!

BRAND

With double ruling. Without snap-on clips. Calibratable.
Cell depth 0.1mm. Same ruling as Improved Neubauer, but the large square in the centre is divided into 16 squares each with a side length of 0.2mm. Unlike the more modern Improved Neubauer counting chambers, the counting area of each group square is limited by the outermost of the triple border lines. CE-marked according to IVD 98/79 EG.

Type	PK	Cat. No.
With snap-on clips	1	**7.020 278**
Without snap-on clips	1	**9.161 086**

3

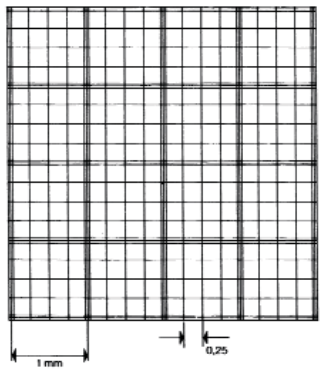


3 Counting chamber, Thoma ruling

Double ruling. Without snap-on clips. Calibratable. Cell depth 0.1mm. Grid is the same as the grid in the centre of large square in the Neubauer chamber. The area of the small square is 0.0025mm². Since the large outer squares are not included, the Thoma system is only used to count thrombocytes and erythrocytes.
CE-marked according to IVD 98/79 EG.

Type	PK	Cat. No.
Counting chamber, Thoma ruling	1	**9.161 080**

4



4 Counting chamber, Fuchs-Rosenthal

With double ruling. Without snap-on clips. Calibratable.
Cell depth 0.2mm. Grid has 16 x large 1 mm² squares. Each square is divided into 16 smaller squares each with a side length of 0.25mm and an area of 0.0625mm². These counting chambers are commonly used to count cells in cerebrospinal fluid. CE-marked according to IVD 98/79 EG.

Type	PK	Cat. No.
Counting chamber, Fuchs-Rosenthal	1	**9.161 098**

For our Life Science product range, please see page 1180.

1 Hand tally counter



Use for counting blood cells, bacterial colonies, drops of liquid, or any repetitive event. Tallies up to 9999. Features a quick-reset knob, lens window for easy reading, and finger ring for a secure grip. Sturdy, chrome-finished, metal housing.
Dimensions: 46mm diameter x 41mm W.

Description	PK	Cat. No.
Hand tally counter	1	**6.237 971**

2 Economy Counters



Mechanical, benchtop counters are ideal for determining the number of cells, counting parts, etc. Use with blood cell labels provided or insert your own. Each key records up to 999 count strokes. A totalising window keeps track of the total number of strokes made on all keys; a bell rings at every 100 total counts reached.

Description	Width mm	Length mm	Depth mm	PK	Cat. No.
6-key Economy Counter	76	250	56	1	**9.521 801**
9-key Economy Counter	76	320	56	1	**9.521 802**

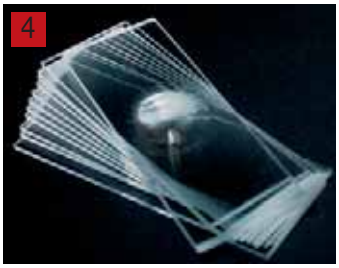
3 Microscope slides



According to ISO 8037/I. Prewashed and polished. Nominal thickness 1mm. *Menzel*
Size 76 x 26mm. Also available with 20mm, frosted, writing patch at one end.

Description	Edge finish	Type	PK	Cat. No.
Extra white	Cut	Without frosted end	50	**9.161 110**
Extra white	Cut	With frosted end	50	**9.161 145**
Extra white	Ground 45°	Without frosted end	50	**9.161 120**
Pure white	Cut	Without frosted end	50	**9.161 130**
Pure white	Ground 45°	Without frosted end	50	**9.161 140**
Pure white	Ground 90°	Without frosted end	50	**9.161 141**

4 Microscope slides with cavities



Dimensions: 76mm x 26mm x 1.2mm to 1.5 mm, with cavities approx. 15mm to 18mm diameter and approx. 0.6 to 0.8 depth. *Menzel*

Number of cavities	Colour	Edge finish	PK	Cat. No.
1	extra white glass	90° ground edges	1	**9.161 151**

5 Superfrost® Plus adhesive microscope slides



Size: 75mm x 25mm x 1.0mm. Ground edges 90°, white SuperFrost marking area. A new application method provides the surface of a slide with a permanent positive charge. *Menzel*
Electrostatic attraction binds fresh frozen tissue sections and cytology preparations. Also available with blue, yellow or green SuperFrost marking area.

Type	Colour	PK	Cat. No.
SuperFrost® Plus	White	72	**9.161 155**



1 Superfrost® slides

According to ISO 8037/I. With colour-coded writing patch as outlined below. Size 76mm x 26mm. Nominal thickness 1.0mm. With cut or ground edges. With approx. 0.013mm thick coating which prevents slides sticking together and being scratched.

Menzel

Edge finish	Colour	PK	Cat. No.
Cut	white	50	**9.161 161**
Cut	blue	50	**9.161 162**
Cut	pink	50	**9.161 163**
Cut	yellow	50	**9.161 164**
Cut	green	50	**9.161 165**
Ground 45°	white	50	**9.161 171**
Ground 45°	blue	50	**9.161 172**
Ground 45°	pink	50	**9.161 173**
Ground 45°	yellow	50	**9.161 174**
Ground 45°	green	50	**9.161 175**



2 LLG-Slide dispenser

Slide dispenser can dispense 91 slides, individually. By turning the knob, one slide is dispensed. Only dry slides should be inserted into the storage magazine. With transparent, removable upper section for easy viewing of remaining slides and clean storage. For microscope slides with dimensions 75 x 25mm and 76 x 26mm.

Type	PK	Cat. No.
Dispenser	1	**9.161 000**

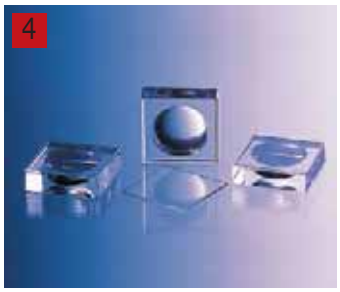


3 Microscope slide or paper strip holder, PS

This slide holder has a sloped groove that accepts up to 10 single or double slides standing on end. Front ledge serves as a place to dry slides. Made of durable polystyrene.

Bel-Art Products

Internal dimensions (W x D x H) mm	PK	Cat. No.
250 x 50 x 30	1	**9.161 208**



4 Staining blocks, moulded glass

With hemispherical cavity, 32mm diameter and 40mm x 40mm glass cover plate.

Number of cavities	Int. bore diam. mm	Colour	PK	Cat. No.
10	32	Clear	1	**9.163 285**
10	32	Black	1	**9.163 286**



5 Square cover slips

Made of clear white glass. Accurate cutting free of flaws and blisters. Further thicknesses are available on request.

Menzel

Width mm	Length mm	Thickness mm	PK	Cat. No.
15	15	0.13-0.16	200	**9.161 015**
18	18	0.13-0.16	200	**9.161 018**
20	20	0.13-0.16	200	**9.161 020**
22	22	0.13-0.16	200	**9.161 022**
24	24	0.13-0.16	200	**9.161 024**
26	21	0.13-0.16	100	**9.161 021**
32	24	0.13-0.16	100	**9.161 032**
40	24	0.13-0.16	100	**9.161 040**
50	24	0.13-0.16	100	**9.161 050**
60	24	0.13-0.16	100	**9.161 060**

1 Prepared Slides

Prepared microscope slides for education and studies.
Sets of 10 slides.

Type	PK	Cat. No.
Fishes, frogs and other ambhibians	1	**9.151 850**
Lizard snakes and birds	1	**9.151 851**
Animal reproduction	1	**9.151 852**
Bacteria simple organisms	1	**9.151 854**
Plant reproduction and propagation	1	**9.151 856**
Structure of vegetable plants	1	**9.151 857**
Cell development and reproduction	1	**9.151 858**
Nanoplankton	1	**9.151 859**
Human body, normal tissues Part 1	1	**9.151 860**
Human body, normal tissues Part 2	1	**9.151 861**
The human body pathological tissues part 1	1	**9.151 862**
The human body pathological tissues Part 2	1	**9.151 863**
Animal and human parasites	1	**9.151 864**
Life in the ground	1	**9.151 866**
Animals and plants damaged by the environment	1	**9.151 868**
Set for teaching science	1	**9.151 869**
Set for teaching biology part 1	1	**9.151 870**
Set for teaching biology part 2	1	**9.151 871**

1



2 LLG-Cover glass forceps, self-locking

NEW!

Stainless steel 4301

Length mm	Form	PK	Cat. No.
105	Straight	1	**9.160 380**
105	Curved	1	**9.160 381**

2



3 LLG-Cover glass forceps, acc. to Kühne, stainless steel

NEW!

Stainless steel 4301

Length mm	Form	PK	Cat. No.
115	curved	1	**9.160 386**
130	curved	1	**9.160 387**
145	curved	1	**9.160 388**
115	straight	1	**9.160 391**
130	straight	1	**9.160 392**
145	straight	1	**9.160 393**

3



4 Microscope slide boxes

PP. For storing or shipping 5 thick or 10 thin slides. Sturdy design. Screw cap with fitting for sealing wire tag. When cap is open the slides protrude approximately 10mm so they can be removed easily. *Kartell*

Int. diam. mm	Height mm	PK	Cat. No.
45	90	1	**9.161 395**

4

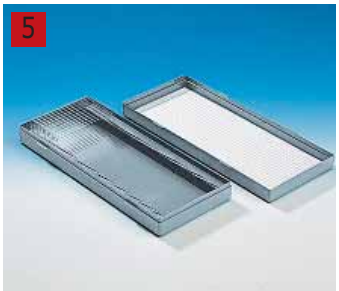


5 Microscope slide boxes

PS. High impact. For 76mm x 26mm slides. Numbered slots in base. Index card in lid. *Kartell*

To hold microscope slides	Width mm	Length mm	Height mm	PK	Cat. No.
25	96	120	35	1	**9.161 380**
50	97	230	35	1	**9.161 381**
100	187	230	35	1	**9.161 382**

5



1



1 Microscope slide folders

Cardbord. Available with, or without, gatefold cover. For 76mm x 26mm slides as outlined below.

To hold microscope slides	Cover type	PK	Cat. No.
20	without	1	**9.161 230**
20	with	1	**9.161 235**

2



2 20- and 30-place Cardboard Slide Trays

NEW!

Features thumb cut for easy slide removal. *Heathrow Scientific*

Cardboard slide trays hold standard slides (76mm x 26mm and 3 x 1"). The horizontal compartments are recessed to protect the specimens when the cover is closed. Features thumb cut for easy slide removal.

To hold microscope slides	Size	Colour	PK	Cat. No.
20	208 x 341 x 9 mm	black	1	**9.161 295**
30	281 x 328 x 10 mm	black	1	**9.161 296**
20	208 x 341 x 9 mm	blue	1	**9.161 297**
20	208 x 341 x 9 mm	green	1	**9.161 298**
20	208 x 341 x 9 mm	red	1	**9.161 302**

3



3 Microscope slide folder, Munich type

Cardboard. For 76mm x 26 mm slides.

To hold microscope slides	PK	Cat. No.
24	1	**9.161 250**

4



4 Slide storage box

Plastic. Hinged lid with locking clips. Holds slides 76mm x 26mm slides as outlined below.

To hold microscope slides	Cover type	PK	Cat. No.
100	with	1	**9.161 211**

5



5 Microscope slide tray without lid

Cardboard. For 76mm x 26mm slides.

To hold microscope slides	PK	Cat. No.
20	1	**9.161 260**

Trays for other sizes of slide are available on request.

6



6 Slide storage box

Dense fibreboard covered with imitation leather. Hinged lid with locking clips. Holds slides 76mm x 26mm slides as outlined below.

To hold microscope slides	Cover type	PK	Cat. No.
100	With	1	**9.161 210**
50	With	1	**9.161 215**

1 Durable microscope slide boxes

NEW!

Heathrow Scientific

Colour-coded for easy identification. Slide boxes are perfect for storage or transportation of standard size slides (76mm x 26mm). With cork lining. Stackable. Each 100 place box is secured with a rust-resistant nickel-plated clasp and hinge pin. The 50 place box is secured by a thumb-latch lock mechanism. Each slot is numbered to correspond to the slide inventory sheet on the inside cover of the box.



To hold microscope slides	Colour	Dimensions (W x D x H) mm	PK	Cat. No.
50	Blue	209 x 86 x 35	1	**9.161 300**
50	Red	209 x 86 x 35	1	**9.161 289**
100	White	208 x 175 x 34	1	**7.079 563**
100	Blue	208 x 175 x 34	1	**9.161 284**
100	Green	208 x 175 x 34	1	**9.161 285**
100	Red	208 x 175 x 34	1	**9.161 286**
100	Black	208 x 175 x 34	1	**9.161 287**
100	Yellow	208 x 175 x 34	1	**9.161 288**

2 20-Place Slide Tray Rack, ABS

Heathrow Scientific

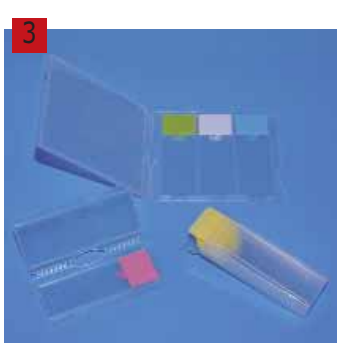
Holds safely five of the 20-place slide trays. Ideal for microbiology, histology, and pathology fields. Matching clasps provide area for identification labels and doubles as a handle. Place rack in refrigerator for those needed cold samples. Includes five ABS clasps. Stackable. Dimensions (L x W x H): 226mm x 340mm x 125mm



Description	PK	Cat. No.
20-Place Slide Tray Rack for 5 Slide trays	1	**9.161 299**

3 LLG-Slide mailers

Manufactured from high density polypropylene, for shipping, storing or staining slides. Flat mailers can hold 1, 2, 3 or 5 standard (up to 76mm x 26mm) slides securely.
- Light weight and flat
- With marking area and "Top" printed on top surface
- With large, easy-to secure snaps.
- Slotted channels inside mailer keep slides safely separated



To hold microscope slides	PK	Cat. No.
1	10	**9.161 291**
2	10	**9.161 292**
3	10	**9.161 293**
5	10	**9.161 294**

4 Slide mailers

For transporting 76mm x 26mm specimen slides, as outlined below.



To hold microscope slides	Cover type	PK	Cat. No.
2	Without	1	**9.161 270**
6	Without	1	**9.161 272**

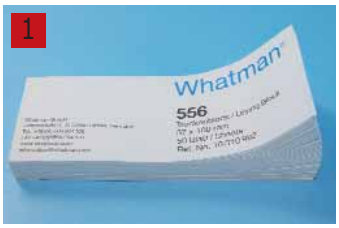
5 Slide Mailers

Heathrow Scientific

Ideal for shipping, storing, or staining slides. These polypropylene containers hold five standard slides (75mm x 25mm and 3 x 1"). Inside wall features slotted channels to keep slides separated and to make removal easier. Close securely to keep slides safe. Dimensions: 43mm x 24mm x 88mm.



Colour	PK	Cat. No.
natural	25	**6.242 062**
red, yellow, blue, purple, orange	25	**9.409 662**



1 Drying pads Grade 556Z

For retaining specimen visibility (50 sheets). *GE Healthcare*

Width mm	Length mm	PK	Cat. No.
37	100	1	**9.069 003**



2 Lens cleaning tissues

Non-abrasive cleaning for delicate optical surfaces. Lint-free fibre paper is ideal for cleaning lens and optics.
5 Booklets with 100 sheets. *Heathrow Scientific*

Width mm	Length mm	PK	Cat. No.
100	150	500	**9.056 899**



3 Lens cleaning tissues, 105 series

For the safe removal of surface moisture and grease from lenses and other optical surfaces. Chemically pure and free from silicones and other additives. *GE Healthcare*

Width mm	Length mm	PK	Cat. No.
100	150	625	**9.056 887**
200	300	100	**9.056 888**

Lens cleaning tissues, MN 13

NEW!

Very thin and soft, nonfluffing tissue paper for cleaning optical glasses and cuvettes. *MACHEREY-NAGEL*

Width mm	Length mm	PK	Cat. No.
120	120	500	**7.400 939**



4 Canada balsam bottle

Goldschmidt pattern. Clear glass. For microscopy examinations.
Ground joint maximises useful life of contents.

Capacity g	PK	Cat. No.
30	1	**6.070 616**
60	1	**6.053 546**



E & OE.

1 2 Precision refractometers, basic model

Simple and precise optical instruments to analyse liquids and their solid contents. Models are equipped with an automatic temperature compensation device (ATC). Supplied with a plastic box and comfortable leather-type case.



1



2

Type	For	Measuring range	Accuracy	PK	Cat. No.
RSM/ATC	Salinity	0 - 100‰	1‰	1	**9.801 249**
RMA/ATC	Wine	0 - 25% Vol 0 - 40% Brix	0,2% Vol 0,2% Brix	1	**9.801 252**
RGA/ATC	Alcohol	0 - 80% Vol	1% Vol	1	**9.801 256**
RCS/ATC	Salinity	0 - 28%	0,2%	1	**9.801 250**
RPC/ATC	Freezing point batteries	-50° - 0°C 1,10 - 1,40	5°C 0,1	1	**9.801 251**
RBO/ATC	Wine	0 - 140° Oe 0 - 25° Babo 0 - 32% Brix	1° Oe 0,2° Babo 0,2% Brix	1	**9.801 254**
RBB/ATC	Wine	0 - 25% Vol 0 - 22° Be' 0 - 40% Brix	0,2% Vol 0,2° Be' 0,2% Brix	1	**9.801 255**
RCZ/ATC		0 - 32% Brix	0,2%	1	**9.801 200**
RBC/ATC		0 - 10% Brix	0,1%	1	**9.801 241**
RLC/ATC		0 - 18% Brix	0,1%	1	**9.801 242**
RFC/ATC		28 - 62% Brix	0,2%	1	**9.801 244**
RPU		0 - 80% Brix	1%	1	**9.801 246**
RMM/ATC	Honey and jam	58 - 90% Brix 38 - 43° Be' 17 - 27 water	0,5% Brix 0,5° Be' 1% water	1	**9.801 247**

Refractometers, hand-held, precision

NEW!

ATAGO

For simple, manual measurement of concentrations and refractive indices of liquids. Hand-held, precision refractometers with focussing eyepiece, soft rubber eyecups (to reduce straylight ingress, also spectacle lenses do not slip off and are not scratched), case and conversion tables. Hand-held refractometers cannot be fitted with a thermostatic controller and so measurements have to be temperature compensated.

Models with extra code M: Basic model
Models with extra code T: with automatic temperature compensation (ATC)
Models with extra code α: with automatic temperature compensation (ATC) and protection class IP65

Type	For	Measuring range	Accuracy	Minimum scale value	PK	Cat. No.
MASTER-α	Sugar	0,0 - 33,0 % Brix	± 0,2 % Brix	0,2 % Brix	1	**6.230 184** 3
MASTER-10α	Sugar	0,0 - 10,0 % Brix	± 0,2 % Brix	0,1 % Brix	1	**9.801 371**
MASTER-S10α	Sodium chloride	0,0 - 10,0 g/100 g	± 0,2 g/100 g	0,1 g/100 g	1	**9.801 372**
MASTER-T	Sugar	0,0 - 33,0% Brix	± 0,2 % Brix	0,2 % Brix	1	**9.801 306**
MASTER-2T	Sugar	28,0 - 62,0% Brix	± 0,2 % Brix	0,2 % Brix	1	**9.801 361**
MASTER-3T	Sugar	58,0 - 90,0 % Brix	± 0,2 % Brix	0,2 % Brix	1	**9.801 364**
MASTER-4T	Sugar	45,0 - 82,0% Brix	± 0,2 % Brix	0,2 % Brix	1	**9.801 351**
MASTER-20T	Sugar	0,0 - 20,0% Brix	± 0,2 % Brix	0,1 % Brix	1	**9.801 301**
MASTER-M	Sugar	0,0 - 33,0% Brix	-	0,2 % Brix	1	**9.801 327**
MASTER-2M	Sugar	28,0 - 62,0% Brix	-	0,2 % Brix	1	**9.801 308**
MASTER-3M	Sugar	58,0 - 90,0% Brix	-	0,2 % Brix	1	**9.801 309**
MASTER-53M	Sugar	0,0 - 53,0% Brix	-	0,5 % Brix	1	**9.801 302**
MASTER-S10M	Sodium chloride	0,0 - 10,0 g/100 g	-	0,1 g/100 g	1	**9.801 370**
MASTER-S/Mill-α	Salinity, Sea water Spec. density	0,0 - 100,0 ‰ 1,000 - 1,070	± 2 ‰ ± 0,001	1 ‰ 0,001	1	**9.801 359**
MASTER-BR	Freezing point coolant*	0 - 70%, 0 ... -50°C	-	5 °C	1	**9.801 348**
MASTER-RI	Refractive index	1,435 - 1,520 nD	-	0,001 nD	1	**9.801 360**
HSR-500	Sugar	0,0 - 90,0% Brix	-	0,2 % Brix	1	**9.801 312** 4
R-5000	Refractive index	1,333 - 1,520 nD	-	0,001 nD	1	**9.801 313**
HHR-2N	Honey	12,0 - 30,0% humidity	-	0,1 %	1	**9.801 333** 5
MASTER-Honey	Honey	12,0 - 30,0% humidity	± 0,2 % Brix	0,2 % Brix	1	**9.801 473**

*for Ethylene glycol and Propylene glycol

3



6.230 184

4



9.801 312

5



9.801 333

Manual hand-held refractometers

Precision instruments for quick daily use. Various scales and functions ensure there is a suitable refractometer for every application area. *A.KRÜSS Optronic*

Type	Measuring range	Accuracy	PK	Cat. No.
HRKFZ1	Anti freeze: 50-0 °C Battery acid: 1.10-1.30 g/cm³	Ethylene-Propylene: 5%, Battery acid: 0.01	1	**7.603 129**
HRN32	0-32% Brix	0.2% Brix	1	**9.801 121** 1
HR181	0-18% Brix	0.1% Brix	1	**9.801 123** 2
HRN82	45-82% Brix	0.2 %Brix	1	**9.801 124**
HR27-100	1000-1070 d2020, 0-100‰ Salinity	0.001 d2020, 1‰ Salinity	1	**9.801 127**
HRH30	12-30% water content in honey	0.1% water	1	**9.801 130**
HRT32	0-32% Brix	0.2% Brix	1	**9.801 142**
HRN20	0-20% Brix	0.2% Brix	1	**9.801 149**
HR900	0-90% Brix	0.2% Brix	1	**9.801 150** 3
HR901	1333-1517 nD	0.0005 nD	1	**9.801 151**

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9.801 121

2



9.801 123

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9.801 150

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4 Digital hand-held refractometer DR101-60

As an entry-level model in digital refractometry, the DR101-60 covers many areas of application where the wide measurement range of the DR201-95 is not required. It offers excellent value for money, in terms of both procurement and operation. Calibration is also with distilled water. The waterproof case allows the DR101-60 to be rinsed under running water. This digital handheld refractometer also has an automatic temperature compensation feature, of course. *A.KRÜSS Optronic*

Specifications	**DR101-60**
Temperature compensation:	10°C - 40°C
Dimensions:	110mm x 62mm x 32mm
Weight:	160g
Power supply:	1.5V DC battery

Type	Measuring range	Accuracy	Graduations	PK	Cat. No.
DR101-60	1.330-1.4419 nD 0.0-60.0% Brix	0.0005 nD 0.1 %Brix	0.0001nD 0.5 %Brix	1	**9.801 117**

5



9.801 375

Digital Hand-held Pocket Refractometer PAL series

NEW!

For measurement of various high concentration samples such as jam, marmalade, jelly, honey, concentrated juice or acidity and salinity. Ingress Protection class IP 65 means that they can be cleaned under running water. Easily calibrated since "zero-setting" (calibration) is achieved using water. Temperature measurement with Automatic Temperature Compensation.

Specifications

Resolution:	Brix 0.1%
Measurement accuracy:	Brix ±0.2%
Ambient operating temperature:	10 to 40°C
Ingress protection class:	IP65 dust- and waterproof
Power supply:	2 x AAA Batteries (incl.)
Dimensions:	55 x 31 x 109mm
Weight:	100g

Type	Measuring range	Temp. range °C	PK	Cat. No.
PAL-1	0.0 - 53.0 Brix	10 - 100	1	**9.801 375** 5
PAL-2	45.0 - 93.0 Brix	10 - 100	1	**9.801 381**
PAL-3	0.0 - 93.0 Brix	10 - 100	1	**9.801 382**
PAL-Alpha	0.0 - 85.0 Brix	10 - 100	1	**9.801 362**
PAL-RI	1.3306 - 1.5284nD	5 - 45	1	**9.801 383**
PAL-BX/RI	0.0 - 93.0 Brix, 1.3306 - 1.5284nD	Brix: 10 - 100, nD: 5 - 45	1	**6.231 591**
PAL-22S	12.0 - 30%	10 - 40	1	**6.232 434**
PAL-UREA	0.0 - 55.0%	10 - 40	1	**6.258 218**
PAL-ACID2	1.0 - 40.0g/l*	10 - 40	1	**9.801 475**
PAL-ACID3	1.0 - 45.0g/l**	10 - 40	1	**9.801 476**
PAL-SALT PROBE***	0.00 - 7.0% (g/100g)	10 - 40	1	**9.801 477**

*Tartaric acid concentration
**Lactic acid concentration
***Conductivity measurement

E & OE.

Digital hand-held refractometers DR201-95/ DR-201-95OE

NEW!

A.KRÜSS Optronic

DR201-95 and DR201-95OE are compact digital hand-held refractometers, which eliminate the problem of reading errors by users. Handling is fast and very easy, distilled water is used for calibration. Thanks to several scales and a broad measuring range, the device is almost always suitable. For wine-growers, a device equipped with a special Oechsle-scale is available. DR301-95 offers 2 additional user-defined scales and can be connected to a computer. Specialties: optional temperature compensation feature and upper and lower tolerance alarm.

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9.801 116

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6.236 921

Specifications

	DR201-95 | DR201-95OE | DR301-95
Temperature measurement:	0-40°C | 0-40°C | 5-40°C
Temperature accuracy:	0.5°C
Temperature compensation:	10-40°C | 10-40°C | 5-40°C
Dimensions:	130x80x40 | 130x80x40 | 180x100x40mm
Weight:	200 | 200 | 500g
Power supply:	1.5V battery | 1.5V battery | 9V battery, AC adapter

Type	Measuring range	Accuracy	Graduations	PK	Cat. No.
DR301-95LT	1.3330-1.5318nD 0-95% Brix	0.00015 nD 0.1 % Brix	0.0001 nD 0.1 % Brix	1	**6.262 637**
DR201-95 OE	0-250° Oechsle 0-95 % Brix	1° Oechsle 0.2 % Brix	1° Oechsle 0.1 % Brix	1	**9.801 116** 1
DR301-95	1.3330-1.5318nD 0-95% Brix	0.00015 nD 0.1 % Brix	0.0001 nD 0.1 % Brix	1	**6.236 921** 2

3 Digital Refractometer HI 96801

3



Hanna

Portable digital Refractometer measures the refractive index to determine the % Brix of sugar in aqueous solutions. Wide range : 0 to 85% Brix , can be used for various applications. Automatic temperature compensation, % Brix and temperature are displayed simultaneously. Quick and precise measurements. Easy Calibration with distilled or deionized water. Supplied with 9V battery and instruction manual.

Specifications

Measuring range:	0 to 85% Brix
Resolution:	0.1% Brix
Measuring accuracy:	±0.2% Brix
Temperature compensation range:	10 to 40°C
Dimensions:	192 x 102 x 67mm
Weight:	300g
Power supply:	9V (9.012 923 Battery)

Type	Measuring range	PK	Cat. No.
HI 96801	0 to 85% Brix	1	**9.801 185**

4 Digital Refractometer for Sodium Chloride Measurement HI 96821

4



Hanna

Portable digital Refractometer to determine Sodium Chloride concentration in aqueous solutions used in Food preparation. NaCL concentration of the solution can be displayed in 4 different ranges g/100g, g/100ml, specific gravity and °Baumé. Automatic temperature compensation, NaCL concentration and temperature are displayed simultaneously. Fast and reliable measurements, a small sample size of some drops is sufficient. Easy calibration with distilled or deionized water. Instrument is supplied with battery.

Specifications

Temperature Compensation:	+10 to +40°C
Dimensions (WxDxH):	192 x 102 x 67mm
Weight:	300g
Power supply:	9 Volt battery

Type	Measuring range	Accuracy	Graduations	PK	Cat. No.
HI 96821	0.0 - 28.0g/100g 0.0 - 34.0g/100ml 1.000 - 1.216sg 0.0 - 26.0°Baume	±0.2g/100g ±0.2g/100ml ±0.002sg ±0.2°Baume	0.1g/100g 0.1g/100ml 0.001sg 0.1°Baume	1	**7.627 062**

1 Digital refractometers

ATAGO

Type PR-32α
Can be used to measure fruit juices, soft drinks, diluted soluble oils, aqueous cleaning solutions, etc.
Type PR-101α
Applications include measuring fruit juices, lemonade, coffee, iluted soluble oils and anti-freeze solutions.
Type PR-201α
It can be used for accurately measuring jams, concetrated fruit juices, coolants and similar products.
Type PR-301α
Especially suited to measuring jellies, liquid cane sugar,etc.
Type PET-109
This model is used for simply determining the concentration of ethyl alcohol, which is used in foods and for cleaning, cooling and other purposes.
Type PR-RI
A new Refractive Index model has been added to the popular long-selling "Palette Series". It is suitable for measuring the refractive indices of liquid samples in pharmaceutical and chemical products. Ambient temperature: 10 to 40°C.

Specifications (all types):

Measurement time:	3 seconds (Type PET-109, Measurement time: 2 seconds)
Sample volume:	0.1ml
Power supply:	9V battery
Dimensions:	170 x 90 x 40mm
Weight:	300g

Type	Measuring range	Graduations	Accuracy	Working Temp. range °C	PK	Cat. No.
PR-32α	0,0 - 32,0 % Brix	0,1 % Brix	0,1 % Brix	5,0 - 40,0	1	**9.801 376**
PR 101α	0,0 - 45,0 % Brix	0,1 % Brix	0,2 % Brix	5,0 - 40,0	1	**9.801 377**
PR-201α	0,0 - 60,0 % Brix	0,1 % Brix	0,1 % Brix	10,0 - 40,0	1	**9.801 378**
PR-301α	45,0 - 90,0 % Brix	0,1 % Brix	0,1 % Brix	10,0 - 40,0	1	**9.801 379**
PET-109	0,0 - 45,0 % (w / w)	0,1 % (w / w)	0,5 % (w / w)	10,0 - 35,0	1	**9.801 344**
PR-RI	1,3306 - 1,4436 nD	-	± 0,0002 nD / 20°C	5,0 - 45,0	1	**9.801 369**

2 Digital bench refractometer, Smart-1

ATAGO

The Smart-1 is an automatic refractometer with an extra-wide measurement range. This model measures low-concentration samples, e.g. soup, medium-concentration samples e.g. sauce or ketchup, and high-concentration (Brix) samples e.g. jam, marmalade or honey within a food factory.
In addition the Smart-1 can be used to control the concentration of a variety of industrial solutions, including water-soluble cutting oil, cleaning solutions and glycol anti-freeze.

Specifications

Measurement range:	0.00 to 95.00% Brix
Readabilty:	0.1% Brix
Measurement accuracy:	±0.05% Brix
Temperature compensation range:	+5.00 to +40.00°C
Interface:	RS232C
Ingress protection class:	IP64 (except a.c. adapter)
Supply requirement:	100-240 V 50/60Hz a.c.
Dimensions and weight:	12 x 27 x 9cm, 2.0kg
a.c. adapter:	10.5 x 17.5 x 4cm, 0.7kg

Type	PK	Cat. No.
SMART-1	1	**9.801 390**

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2



E & OE.

1 Digital Refractometer RX-5000i/RX-5000i-Plus

NEW!

ATAGO

The most accurate refractometer in the world is now even more stylish, smart, and functional. Featuring intuitive touch screen technology, the new RX-i series makes navigation and selection a breeze. The RX-5000i measures with the same accuracy level as the RX-5000alpha ±0.03% Brix and ±0.00004nD. The RX-5000i-Plus measures with the same accuracy level as the RX-5000alpha-Plus ±0.010% Brix and ±0.00002nD. The RX-i series come with newly added functions, such as USB flash drive and self-diagnosis capability. These products come standard with a 2 year warranty. The warranty period can be extended to 3 years if the product is registered with ATAGO. FDA 21 CFR Part 11 Software Included in Standard Delivery

Modes:
- Displays the measurement value once the sample reaches the target temperature
- Measures refractive index and temperature at fixed intervals and displays the estimated measurement value at the target temperature
- The thermo-module can be turned off. Without temperature control, the measurement value is displayed in 4 seconds after the START key is pressed
- Displays the measurement value once a certain level of sample stability is achieved.
- Only on the RX-5000i-Plus: Measuring of Low Brix Liquid Samples (such as teas), obtaining highly repeatable results (0.010% Brix).

Specifications

Measurement range:	0.000 to 100.00% Brix, 1.32422 to 1.58000nD
Resolution	
RX-5000i:	0.01% Brix, 0.00001nD
RX-5000i-Plus:	0.005% Brix, 0.00001nD
Accuracy	
RX-5000i:	0.03% Brix, 0.00004nD
RX-5000i-Plus:	0.010% Brix, 0.00002nD
Working temperature:	5 to 40°C
Output terminals:	USB, RS-232C
Power supply:	100 - 240V, 50/60Hz
Dimensions:	370 x 260 x 140mm
Weight:	6.6kg

Type	PK	Cat. No.
RX-5000i	1	**6.266 906**
RX-5000i-Plus	1	**6.245 034**

2 Digital Refractometer RX-5000/RX-5000Alpha/RX-5000Alpha Plus/RX-9000Alpha

NEW!

ATAGO

The RX-5000, RX-5000 Alpha and RX-5000Alpha Plus are reliable and cost effective instruments with a measurement accuracy of ±0.03% Brix and ±0.00004nD. An excellent alternative to traditional Abbe refractometers and essential to any QC/QA lab. Equipped with 60 programmable user scales and 4 level password protection feature.
RX-5000 is designed to connect to an external circulating waterbath. RX-5000 Alpha and RX-5000Alpha Plus are equipped with a Peltier thermo module. RX-5000Alpha Plus has the highest accuracy of the RX series. All refractometers can be connected with an optional printer.

Specifications

Measurement range:	0.00 to 95.00% Brix, 1.3270 to 1.5800nD
Resolution:	0.01 % Brix, 0.00001nD
Accuracy	
RX-5000/RX-5000Alpha:	0.03% Brix, 0.00004nD
RX-5000Alpha Plus:	0.01% Brix, 0.00002nD
Working temperature:	5 to 60°C
Input voltage:	AC 100-240V, 50/60Hz
Output voltage:	DC, 6A for refractometer, DC 6.5V, 1.5A for printer
Dimensions:	370 x 260 x 140mm
Weight:	6.4kg

Type	PK	Cat. No.
RX-5000	1	**9.801 373**
RX-5000Alpha	1	**9.801 374**
RX-5000Alpha Plus	1	**9.801 386**
RX-9000Alpha	1	**6.227 423**

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1 Digital desk refractometers

A.KRÜSS Optronic

The DR6000 refractometers work with hardly any service and are very quiet, good for long-term work in the lab. Very easy to operate due to an intuitive touch screen.
Optional connections to printer, PC or network provide highest flexibility. High precision through integrated peltier thermostat (T-model). Flow measurement cells enable continuous measuring (F-model). The devices are used wherever a substance in watery solutions has to be measured.
Areas of usage: beverage, chemistry, pharma, food, paper, sewerage, textile, petrochemistry, cosmetics.

Specifications

Interface:	RS-232, USB, Ethernet
Temperature measurement:	5 to 90°C
Temperature resolution:	0.1°C
Temperature measurement accuracy:	0.05°C (0.1°C T-models)
Measurement mode:	Single, interval
Scales:	7 default, custom
Protection class:	IP 65
Power supply:	90-260V, 56/60Hz, 60W

Type	Measuring range	Accuracy	Graduations	PK	Cat. No.
DR6000	1.3200-1.5800 nD 0-95% Brix	0.0001 nD 0.1 % Brix	0.0001 nD 0.1 % Brix	1	**6.239 384**
DR6000-T	1.3200-1.5800 nD 0-95 % Brix	0.0001 nD 0.1 % Brix	0.0001 nD 0.1 % Brix	1	**6.237 965**
DR6000-TF	1.3200-1.5800 nD 0-95 % Brix	0.0001 nD 0.1 % Brix	0.0001 nD 0.1 % Brix	1	**9.801 101**
DR6100-T	1.3200-1.700 nD 0-95% Brix	0.0001 nD 0.1 % Brix	0.0001 nD 0.1 % Brix	1	**6.241 690**
DR6100-TF	1.3200-1.700 nD 0-95% Brix	0.0001 nD 0.1 % Brix	0.0001 nD 0.1 % Brix	1	**6.235 892**
DR6200-T	1.32000-1.58000 nD 0-95 % Brix	0.00002 nD 0.02 % Brix	0.00002 nD 0.01 % Brix	1	**9.801 102**
DR6200-TF	1.32000-1.58000 nD 0-95 % Brix	0.00002 nD 0.02 % Brix	0.00002 nD 0.01 % Brix	1	**9.801 103**
DR6300-T	1.32000-1.70000 nD 0-95 % Brix	0.00002 nD 0.02 % Brix	0.00002 nD 0.01 % Brix	1	**9.801 104**
DR6300-TF	1.32000-1.70000 nD 0-95 % Brix	0.00002 nD 0.02 % Brix	0.00002 nD 0.01 % Brix	1	**9.801 105**

2



2 Abbe Refractometer Model RMT

Exacta Optech

Laboratory refractometer for precisely measuring liquids, solids, semi-liquids and powders. Optical refraction index and Brix scale reading system, with an excellent boundary line brightness and contrast. Prism with large windows, equipped with movable shrouds to keep out light. Focussable eyepiece.

Standard accessories: Calibrating glass prism, thermometer, dust cover, mono-bromonaphtalene standard (bottle), calibrating screw driver, wooden box.

Specifications

Range:	1.300 to 1.700nD 0 to 95% Brix
Precision:	0.001 nD 0.2% Brix
Manual temperature compensation:	0 to 70°C

Type	PK	Cat. No.
RMT	1	**9.801 257**

3



3 Abbe refractometer AR4

A.KRÜSS Optronic

Classic refractometer for solids and liquids. Coloration and clouding scarcely influence the measuring results. Handling is simple and the device can easily be calibrated through calibration plates (included). LED illumination (guarantees extremely long life), digital thermometer, optional flow measurement cell and thermostat connections.
Specialty: adjustable scales, temperature-controlled prisms.

Specifications

Thermometer:	digital -40 to 120°C
Illumination	Scale lighting, LED light (590nm) for measuring prism
Dimensions	140x100x270mm
Weight	4.4kg
Power supply	110V/220V, switchable

Type	Accuracy	Measuring range	Graduations	PK	Cat. No.
AR4	0.0002 nD 0.1 % Brix	1.3000-1.7000nD 0-95 % Brix	0.0005 nD 0.1 % Brix	1	**9.801 110**

E & OE.

1 Abbe Refractometer Model RMI



Exacta Optech

High-precision refractometer suitable for measuring high temperature liquids, solids, semiliquids and powders. Optical refraction index and Brix scale reading system, with an excellent boundary line brightness and contrast due to the low voltage lighting system. Large sized prism (6cm²) with movable shrouds. Focussable eyepiece.

Standard accessories: Calibrating glass prism, thermometer, 6V-5W lamps (2 inc.), dust cover, mono-bromonaphtalene standard (bottle), stabilised mains adapter, calibrating screw driver.

Specifications

Range:	1.300 to 1.700nD
	0 to 95% Brix
Precision:	0.001nD
	0.2% Brix
Manual temperature compensation:	0 to 100°C

Type	PK	Cat. No.
RMI	1	**9.801 258**

2 Abbe refractometers, NAR-1T series/NAR-2T



ATAGO

Type NAR-1T-Liquid
The Abbe Rerfactometer for liquid sample measurement only. It has the Refractive Index Scale and the Brix scale, and it comes with D-line (589nm) light source. Calibration can be achieved using distilled water.

Type NAR-1T Solid
Abbe Refractometer for solid sample measurement (it can also be used to measure liquid samples). It has the Refractive Index Scale and the BRIX scale, and it comes with D-line (589nm) light source.

Type NAR-2T
Designed for use with substances requiring measurement at high temperature.

Type	Measuring range	Graduations	Accuracy	Working Temp. range °C	PK	Cat. No.
NAR-1T Liquid	1,3000 - 1,7000 nD 0,0 - 95,0 % Brix	0,001 nD 0,5 % Brix	±0,0002 nD ±0,1 % Brix	0,0 - 50	1	**6.231 748**
NAR-1T Solid	1,3000 - 1,7000 nD 0,0 - 95,0 % Brix	0,001 nD 0,5 % Brix	±0,0002 nD ±0,1 % Brix	0,0 - 50	1	**6.228 976**
NAR-2T	1,3000 - 1,7000 nD 0,0 - 95,0 % Brix	0,001 nD 0,5 % Brix	±0,0002 nD ±0,1 % Brix	0,0 - 120	1	**9.801 317**

3 Digital Abbe refractometer, DR-A1



ATAGO

Very simple operation, where only the refraction boundary line has to be moved to the measurement cross hairs. The refractometer displays measurements directly (as a refractive index or in Brix (%)) in digits together with temperature. Measurements can be taken easily by anyone using this refractometer without taking an analogue scale reading in advance. Dispersive value can not be measured using this refractometer.

Specifications

Measurement range:	1.3000 - 1.7100nD
	0.0 - 95.0Brix
Resolution:	0.0001nD
	0.1%Brix
Accuracy:	0.0002nD
	0.1%Brix
Temperature range:	0 to 50.0°C
Power supply:	a.c. adapter (100 to 240V 50/60Hz)
Dimensions:	130 x 290 x 310mm
Weight:	6.0kg

Type	PK	Cat. No.
DR-A1	1	**9.801 325**

1



1 Sucrose (Brix) Standards

NEW!

Reagecon

Certified stabilized Sucrose (Brix) Standards.
- Test results are ISO17025 accredited with an uncertainty of measurement of 0.11% for all Brix values
- Nominal Refractive Index values are taken from the ICUMSA published tables
- The Brix value of the standard is verified using a high performance calibrated, temperature controlled refractometer
- Can be used with any brand of Refractometer
- Extended shelf life of 1 year
- Convenient high quality dropper bottle

Brix %	Refractive Index at 20 °C	PK	Cat. No.
0	1.332986	1	**6.264 212**
5	1.340264	1	**6.265 876**
10	1.347824	1	**6.257 923**
15	1.355679	1	**6.263 260**
20	1.363842	1	**6.264 889**
30	1.381149	1	**6.258 368**
40	1.399860	1	**7.660 408**
50	1.420087	1	**6.258 369**
60	1.441928	1	**6.265 875**

2



2 Refractive Index standards

NEW!

Reagecon

Certified standards with values expressed in Refractive Index (R.I) units nD.
- Test results are ISO17025 accredited with an uncertainty of measurement up to ±0.00014 nD units for all Refractive Index values.
- Nominal Refractive Index values are taken from the ICUMSA published tables.
- Extended shelf life of 1 year.
- Can be used with any brand of Refractometer.
- Convenient high quality dropper bottle.

Refractive Index at 20 °C	PK	Cat. No.
1.34325	1	**6.265 877**
1.34782	1	**7.658 877**
1.37233	1	**6.265 878**
1.38115	1	**6.258 375**
1.39032	1	**6.265 879**
1.40978	1	**6.265 142**
1.42009	1	**6.258 376**
1.44193	1	**6.265 880**

We can supply this manufacturer's whole product range ! ATAGO®

partner of the LLG Lab Logistics Group

E & OE.

1 Digital Refractometer/Polarimeter RePo-1

NEW!

ATAGO

A fusion of index of refraction and angle of optical rotation.
Brix can only indicate the overall amount of dissolved solids in a solution. With RePo-1, it is possible to determine if a product has been adulterated by measuring the optical rotation. Announcing an All-in-One, refractometer and polarimeter hybrid unit. As little as 3mL sample, RePo-1 can measure both brix and optical rotation of the sample. With the press of a button, purity, international sugar scale, specific rotation and concentration can be displayed. Users can also set an upper and lower measurement limit. An indicator light alerts the user if a measurement value is within the limits, allowing for optimal efficiency. RePo-1 can be utilized for many uses, including helping to determine the rate of crystallization in honey.

Specifications

Measurement range	
Angle of Rotation:	-5 to +5°
International Sugar Scale:	-130 to +130°Z
Brix (%):	0 to 85%
Temperature:	15 to 40°C
Resolution	
Angle of Rotation:	0.01°
International Sugar Scale:	0.1°Z
Temperature:	0.1%
Brix (%):	0.1°C
Accuracy	
Angle of Rotation:	±0.1° (at 20°C)
International Sugar Scale:	±3°Z (at 20°C)
Brix (%):	±0.2%
Temperature:	±1°C
Working temperature:	5 to 40°C
Wavelength:	589nm
Power supply:	4 x Size AAA alkaline battery
Dimensions:	101×160×38mm
Weight:	325g
Protection class:	IP 64

Type	PK	Cat. No.
RePo-1	1	**6.266 905**

2 Polarimeter Polax-2L

ATAGO

The Polax-2L (manually-operating meter with digital indicator) is widely used in the sugar, pharmaceutical, chemical, perfume and educational industries. It can accurately measure the angle of rotation (or the value in the international standard sugar scale) with easy operation.

Specifications

Measurement range	
Angle of rotation:	-179.95 to +180°
International standard sugar scale:	-130 to +130°Z
Minimum unit displayed	
Angle of rotation:	0.05°
International standard sugar scale:	0.1°Z
Measurement accuracy	
Angle of rotation:	±0.10°
Measurement temperature range:	5 to 40°C
Observation tubes:	1 x 200mm and 1 x 100mm
Power supply:	100-240V, 50/60Hz a.c.
Power consumption:	40 VA
Dimensions:	43 x 22 x 30cm
Weight:	11.5kg

Type	PK	Cat. No.
Polax-2L	1	**9.801 398**

1



2



1 Automatic Economical Polarimeter P3000-Serie

A.KRÜSS Optronic

It measures samples in just 1 second, regardless of the rotation angle, saving much time over measurement with conventional polarimeters. The P3000 is operated fully automatically with an intuitive touchscreen. Measured values can be displayed as optical rolation angles or in the ICUMSA international sugar scale, and can be printed out with the printer interface. The P3000 offers unbeatable value for money for all applications where measurement accuracy to 2 decimal points is sufficient.

Specifications

Measuring method:	Optical rotation, int. sugar scale
Measuring range:	±90° ±259°Z
Measuring units:	Angle [°, °Z]
Resolution:	0.01° 0.01°Z
Accuracy:	±0.01° ±0.01°Z
Reproducibility:	0.01°
Measuring time:	±90° 1 s
Light source:	1 LED with filter
Wavelength:	589nm
Wavelength selection:	1 fixed wavelength
Max. length of tube:	220mm
Sensitivity:	min 0.1 % (OD3)
Calibration:	Automatic (menu-driven)
Display:	LCD 3.5" colour display
Operation:	Touchscreen
Interfaces:	RS-232
Operating voltage:	100-250V, 50/60Hz
Temperature measurement:	0 to 99.9°C
Temperature resolution:	0.1°C
Accuracy of temperature control:	±0.2°C
Temperature reading point:	Tube

Type	PK	Cat. No.
P3000	1	**9.801 190**

2 Polarimeter AP-300

ATAGO

Model AP-300 is generally used in pharmaceutical, perfume, cosmetic, industrial, chemical, and food factories and is the optimal unit for measuring angle of rotation. In addition, the built-in International Sugar Scale is widely used in sugar refineries.
The AP-300 has a manual calibration facility which allows the user to compensate for any differences to standard liquids and measurement values by other standard instruments.

Specifications:

Measurement range	
Angle of Rotation:	-89.99 to 89.99°
International sugar scale:	-130.00 to +130.00
Minimum Indication	
Angle of Rotation:	0.1°
International sugar scale:	0.01°Z
Measurement accuracy	
Angle of Rotation:	±0.01°
International sugar scale:	±0.03°Z
Observation tubes:	1 x 200mm and 1x 100mm
Dimensions:	48.5 x 28.5 x 17.5cm
Weight:	11.5kg

Type	PK	Cat. No.
AP-300	1	**6.227 906**

1



2



E & OE.

1 Polarimeter SAC-i

NEW!

Measurement Scales: Angle of rotation, specific rotation, International Sugar Scale, concentration, purity. *ATAGO*

- Measurement stability in 13 seconds (4 seconds in the high-speed and consecutive measurement mode)
- Resolution of up to 3 decimal places
- Repeatability of ±0.003° Angle of Rotation and ±0.009°Z
- Up to 999 automatic consecutive measurements followed by average value display
- Sleep and timer feature to take measurement later at specified time
- Improved usability due to touch screen technology
- Connectivity to RX Digital Refractometers for automatic purity measurement

Specifications

Measurement range	
Angle of rotation:	-89.999 to +90.000° or -360 to +360°
International standard sugar scale:	-259 to +259°
Resolution	
Angle of rotation:	0.001°
International standard sugar scale:	0.001°Z
Measurement accuracy	
Angle of rotation:	±0.005° (-45 to +45°)
International standard sugar scale:	±0.015°Z (-130 to +130°Z)
Measurement temperature range:	5 to 40°C
Observation tubes:	100mm (5ml), 200mm (10ml)
Power supply:	100-240V, 50/60Hz a.c.
Dimensions:	600 x 365 x 210mm
Weight:	20kg

Type	PK	Cat. No.
SAC-i	1	**9.801 474**

1



2 Hand spectroscopes

Handy and precise. Angle dispersion: C -F 7°. Linear dispersion: 60 mm (direct vision prism of Amici type) *A.KRÜSS Optronic*
Ideal for demonstrations in schools and for:
- Viewing/observation of emission and absorption spectra
- Control of the wavelength spectra of gas emission lamps

Type	Features	PK	Cat. No.
1501	with adjustable split	1	**9.841 501**
1504	with adjustable split and wavelength scale (400 to 750nm)	1	**9.841 504**

2



1 LLG Spectrophotometer uni*SPEC* 2

uni*SPEC* 2 is an inexpensive, basic UV/VIS-spectrophotometer suitable for pharmaceutical, biochemical and clinical lab applications as well as routine measurements such as kinetics, wavelength scans, quantitative analysis, multi-wavelength and DNA/Protein analysis. It is possible to store and save 200 calibration curves. Both lamps can be individually turned on/off to extend the durability. A pre-adjusted lamp design allows a fast and easy lamp replacement. 3 years warranty.
Supplied with: Photometer, manual, 4 glass cells and 2 quartz cells.

Specifications

Optical system:	Single beam, Grating 1200 lines/mm, Silicium photodiode detector
Wavelength range:	190 to 1100nm
Bandwidth:	2nm
Wavelength accuracy:	±0.5nm
Wavelength repeatability:	0.3nm
Wavelength setting:	automatic
Photometric accuracy:	±0.5%T
Photometric repeatability:	0.3%T
Photometric range:	-0.3-3A, 0-200%T, 0-9999C
Stability:	±0.002A/h at 500nm
Stray light:	≤0.1%T
Data output:	USB port
Printer port	parallel port
Display:	128 x 64 Dots LCD
Standard cell holder:	4-position 10 mm cell changer
Lamps:	D2 lamp and W lamp
Dimension (WxDxH):	460 x 360 x 225mm
Weight:	18kg
Power supply:	220V/50Hz or 110V/60Hz
Guarantee:	3 years

1



Type	PK	Cat. No.
uni*SPEC* 2, with EU-plug	1	**6.263 610**
uni*SPEC* 2, with UK-plug	1	**6.263 611**

2 LLG Spectrophotometer uni*SPEC* 4

uniSPEC 4 is a reasonably priced UV/VIS-spectrophotometer suitable for advanced pharmaceutical, biochemical and clinical lab applications as well as quality control and routine measurements such as kinetics, wavelength scans, quantitative analysis, multi-wavelength and DNA/Protein analysis. The software can be updated through the internet (for stand-alone instruments). It is possible to store and save 200 calibration curves. A Real-time clock to help state date and time of results. Both lamps can be individually turned on/off to extend the durability. A pre-adjusted lamp design allows a fast and easy lamp replacement. 3 years warranty.
Supplied with: Photometer, manual, 4 glass cells and 2 quartz cells.

Specifications

Optical System:	single beam, grating 1200 lines/mm, silicium photodiode-detector
Wavelength Range:	190 to 1100nm
Bandwidth:	1.8nm
Wavelength Accuracy:	±0.3nm
Wavelength Repeatability:	0.2nm
Wavelength Setting:	automatic
Photometric Accuracy:	±0.3%T
Photometric Repeatability:	0.2%T
Photometric Range:	-0.3-3A, 0-200%T, 0-9999C
Stability:	±0.002A/h at 500nm
Baseline Flatness:	±0.001A/h
Stray Light:	≤0.05%T at 220nm, 360nm
Data Output:	USB port
Printer Port:	parallel port
Display:	320 x 240 Dots LCD
Standard Cell Holder:	4-position 10mm cell changer
Lamps:	D2 lamp and W lamp
Dimension (WxDxH):	625 x 430 x 206mm
Weight:	28kg
Power supply:	220V/50Hz or 110V/60Hz
Guarantee:	3 years

2



Type	PK	Cat. No.
uni*SPEC* 4 with EU-plug	1	**6.263 620**
uni*SPEC* 4 with UK-plug	1	**6.263 621**

E & OE.

1 Spectrophotometers, 6700 series

NEW!

Jenway

A range of three split-beam instruments:
Type 6700: Visible range scanning (320nm to 1100nm with 4nm spectral band width)
Type 6705: UV/Visible range scanning (190nm to 1100nm with 4nm spectral band width)
Type 6715: UV/Visible range scanning (190nm to 1100nm with 1.5nm spectral band width)

Modes of operation: Photometrics, Kinetics, Quantitation, Multiwavelength analysis and Spectral scanning.

Featuring:
- Fast scanning rate of 1500nm/minute with data collection at 0.1nm intervals
- Up to 20 point calibration for Quantitative analysis
- Multiwavelength mode for DNA/RNA analysis
- Secure Multi-User Operation, full password protection
- Colour (TFT) LCD with Touch-Screen Interface and sealed QWheel™Control
- Full post scan analysis (Peak/Valley pick, Peak Ratios, Area, Zoom, Wavelength table, Derivatives, Smoothing)
- Removable SD/Multi-Media Memory Card, up to 2GB available
- Plug-In Accessory Modules including 6 cell changer, Peltier devices for temperature controlled measurements and sipper systems for high throughput analysis. A full range of cuvette and test tube holders are available.

Pharos PC Software, giving full instrument control and data transfer.

Type	Description	PK	Cat. No.
6700	Spectrophotometer with single cuvette holder	1	**9.775 416**
6705	Spectrophotometer with single cuvette holder	1	**9.775 420**
6715	Spectrophotometer with single cuvette holder	1	**9.775 424**
for all types	Sample chamber with automatic 8-cell	1	**6.253 506**
for all types	Sample chamber with water heated automatic six- cell changer module fitted	1	**6.236 532**
for all types	Sample chamber with sipper Peltier module fitted	1	**6.236 533**
for all types	Sample chamber with Peltier module fitted	1	**7.900 098**
for all types	10 to 100mm adjustable path length cuvette holder	1	**9.775 430**
for all types	Printer, incl. 1 roll paper	1	**9.775 434**
for all types	Sample chamber with sipper module fitted	1	**9.775 435**
for all types	Test tube holder for 10mm square cuvettes, 16mm and 24mm diameter tubes	1	**9.775 436**

1



partner of the LLG Lab Logistics Group

We can supply this manufacturer's whole product range ! JENWAY

1 Spectrophotometer Models 6300 VIS/6305 UV-VIS

Jenway

Models 6300 and 6305 are general purpose visible and UV/Visible range spectrophotometers which are suited to a wide range of applications in education and quality control.

- Simple operation
- Versatile sampling system
- G.L.P. compliant
- Full interfacing capability
- Simple keypad and operating protocols designed to enable reliable operation by unskilled operators
- LCD gives simultaneously readout of wavelength and photometric result
- Error messages, prompts, mode indication and a choice of concentration units are presented in an easily understood format
- Cuvette holder allow 10mm to 100mm cells

Supplied with: Mains lead, pack 100 disposable cuvettes, 10 x 10mm cell holder, PC Application Software on CD-ROM and operating instructions.

Various accessories e.g. sipper pump, cells, cell holders, cuvettes and lamps available on request.

Specifications

Wavelength	
Range:	198 to 1000nm (6305) 320 to 1000nm (6300)
Resolution:	1nm
Accuracy:	±2nm
Bandwidth:	8nm, 6nm over UV range
Transmittance	
Range:	0 to 199.9%
Resolution:	0.1%
Stray light:	<0.5% at 340 & 220nm
Accuracy:	±1%
Absorbance	
Range:	-0.300 to 1.999A
Resolution:	0.001A
Concentration	
Range:	-300 to 1999
Resolution:	0.1/1
Units:	ppm, mg/l, g/l, M, blank %
Outputs:	analogue (0 to 1999mV d.c.) RS232 serial port
Light Source:	Xenon flash lamp module (6305) Tungsten halogen (6300)
Dimensions (WxDxH):	365 x 272 x 160mm
Weight:	6kg
Supply requirements:	230V/50Hz

Type	PK	Cat. No.
6300 VIS	1	**9.775 412**
6305 UV-VIS	1	**9.775 411**

2 Accessories for Spectrophotometer Model 6300/6305

Jenway

Description	PK	Cat. No.
Adjustable path length cuvette holder for 10mm to 100mm cuvettes	1	**9.775 430**

1



2



E & OE.

Spectrophotometer Models 7300 VIS/7305 UV-VIS

Jenway

Models 7300 and 7305 use icon driven software and have an improved navigation system for easy and intuitive usability. These instruments have measurement modes for absorbance, % transmittance and concentration. The 7300 and 7305 are easy to use and are ideal for use in education and general QC laboratories.
- Small footprint
- Autologging capabilities
- Press to read xenon lamp (7305)
- PC software included
- 3 year warranty

Supplied with: Mains lead, pack 100 disposable cuvettes, 10mm x 10mm cell holder, PC Application Software on CD-ROM and operating instructions.

Accessories available include an automatic 8 cell changer, peltier, sipper pump, combined sipper peltier pump, adjustable path length cuvette holders and micro-cuvette holders. Cuvettes and lamps available on request.

Specification

Wavelength	
Range:	320 to 1000nm (7300) 198 to 1000nm (7305)
Resolution:	1nm
Accuracy:	±2nm
Bandwidth:	5nm
Transmittance	
Range:	0 to 199.9%
Resolution:	0.1%
Stray light:	<0.5%T
Accuracy:	±1%
Absorbance	
Range:	-0.300 to 2.500A
Resolution:	0.001A
Concentration:	
Range:	-300 to 9999
Resolution:	Selectable 1/0.1/0.01/0.001
Units:	no units, %, ppm, EBC, SRM, mEq/l, mEq, M, mM, µM, nM, U, U/l, U/ml, g/l, mg/l, µg/l, ng/l, g/dl, mg/dl, µg/dl, mg/ml, µg/ml, ng/ml, µg/µl, ng/µl, mol/l, mmol/l
Outputs:	Analogue (0 to 1999mV d.c.) RS232 serial port optional integrated printer
Light Source:	Tungsten halogen (7300) Xenon lamp (7305)
Dimensions (WxDxH):	275 x 400 x 220mm
Weight:	6kg
Supply requirements:	230V/50Hz

Type	PK	Cat. No.
7300 VIS	1	**9.775 440** 1
7305 UV-VIS	1	**9.775 441**

1



9.775 440

Spectrophotometer Models 7310/7315

Jenway

Models 7310 and 7315 use icon driven software and have an improved navigation system for easy and intuitive usability. These instrument have measurement modes for absorbance, % transmittance, concentration, scanning, kinetics and quantitation. The 7310 and 7315 are easy to use and are ideal for routine testing in clinical, veterinary, pharmaceutical and QC laboratories.

- Small footprint
- Autologging capabilities
- Press to read xenon lamp (7315)
- Result and method storage to USB memory stick
- PC software included
- 3 year warranty

Supplied with: Mains lead, pack 100 disposable cuvettes, 10 x 10mm cell holder, 2GB USB memory stick, interface cable, PC Application Software on CD-ROM and operating instructions.

Accessories available include an automatic 8 cell changer, peltier, sipper pump, combined sipper peltier pump, adjustable path length cuvette holders and micro-cuvette holders. Cuvettes and lamps are available on request.

Specifications

Wavelength	
Range:	320 to 1000nm (7310) 198 to 1000nm (7315)
Resolution:	1nm
Accuracy:	±2nm
Bandwidth:	5nm
Transmittance	
Range:	0 to 199.9%
Resolution:	0.1%
Stray light:	<0.5%T
Accuracy:	±1%
Absorbance:	-0.3 to 2.500
Concentration:	-300 to 9999
Resolution:	Selectable 1, 0.1, 0.01 or 0.001
Calibration:	Blank with a single standard or factor
Quantitation:	-300 to 9999
Resolution:	Selectable 1, 0.1, 0.01 or 0.001
Calibration:	Blank with up to 6 standards
Curve fit algorithms:	Linear regression, interpolation, quadratic, quadratic through zero or linear regression through zero
Kinetics display:	Graphical rate of change, initial and final absorbance/%T and calculated concentration value against standard and factor
Spectrum:	320 to 1000nm (7310) 198 to 1000nm (7315)
Scan Data Internal:	1, 2 or 5nm selectable
Analysis:	Absorbance and wavelength of peaks and troughs
Outputs:	USB, analogue and serial RS232 optional integrated printer
Supply requirements:	230V/50Hz

Type	PK	Cat. No.	
7310	1	**9.775 442**	1
7315	1	**9.775 443**	2

1



9.775 442

2



9.775 443

For our Life Science product range, please see page 1180.

E & OE.

LLG LABWARE

Good quality! Great value!



www.llg-labware.com

Spectrophotometer UviLine

NEW!

SI Analytics

UviLine 8100 and UviLine 9100 for measurements at VIS-range from 320nm to 1100nm
UviLine 9400 for measurements at UV-VIS-range from 190nm to 1100nm
UviLine 8100 with an optical resolution of 6nm, UviLine 9100 and 9400 with an optical resolution of 4nm.

Wide performance range
- measurements of absorbance, transmission and concentration up to 8 standards
- multi-wavelength e.g. for measurements of DNA/RNA or the determination of protein according to Warburg-Christian
- spectra scan with online graphic and various evaluation functions
- kinetics (short and long term measurements)

Easy accessible accessories are available on request:
Quick-lock system requires no tools.
- 10mm cell holder (standard)
- 10mm cell holder (water thermostatable)
- 10mm cell holder (peltier thermostatable from 15 - 40°C)
- cell holder from 10mm up to 100mm
- sipper (incl. flow trough cell)
- automatic 5+1 cell changer

Peltier cell holder, sipper and 5+1 cell changer can be fully controlled from the software.
Modern Interfaces
- USB A interface for the connection of USB-sticks, keyboard or printer. More than 1 device can be conncected at the same time using a USB-hub.
- RS232 and USB-(B)-interfaces for the PC connection.

Accessories are not valid for UviLine 8100, except passive cell holders.

Specifications:

Technigue:	Single beam
Wavelength accuracy:	±1 nm
Wavelength repeatability:	< ±0.5 nm
Photometric range:	-3.3 to 3.3A
Photometric accuracy:	±0.003A (from 0- 0.3 A); 0.5 % from 0.3 to 2.5A
Photometric linearity:	< 1% at 2 A between 340 to 900nm
Stray Light:	< 0.1% at 340 and 400nm
Display:	Back graphic display with 320 x 240 signs
Data storage:	1000 values; for spectra and cinetics appr. 4 MB
Interfaces:	1 x USB master 1 x USB-slave, 1 x RS232-C
Power supply:	100 - 260V, 50/60Hz
Temperature range:	Operating temp. + 10°C to 35°C, Storage: - 25°C to 65°C
Dimensions (W x H x D):	404 x 197 x 314mm
Weight:	3.7kg without power supply

Type	Description	PK	Cat. No.
UviLine 8100	Single beam spectro photometer, 6nm with a measuring range from 320 - 1100nm	1	**9.775 455**
UviLine 9100	Single beam spectro photometer, 4nm with a measuring range from 320 - 1100nm	1	**9.775 450** 1
UviLine 9400	Single beam spectro photometer, 4nm with a measuring range from 190 - 1100nm	1	**9.775 451** 2
SZ 2100	5+1 cell changer, controlled from UviLine	1	**6.251 233**
SZ 2110	Cell holder Single, 10 - 100mm	1	**6.240 323**
SZ 2130	Cell holder Single, 10mm, (included in delivery of all UviLines)	1	**9.775 452**
SZ 2140	Cell holder Single 10mm, water thermostatable	1	**7.628 259**
SZ 2150	Sipper controlled from UviLine	1	**6.242 634**
SZ 2160	Cell holder Single 10mm, Peltier thermostatable	1	**9.775 453**

Extensive accesories on request!

1



9.775 450

2



9.775 451

E & OE.

1 Flame Photometer PFP7

Jenway

- Industrial analysis
- Low temperature
- Incl. Na, K, Ca, Ba und Li filters
- Electronic flame failure detection
- Fine & coarse sensitivity controls
- Operates on propane, butane, natural gas or L.P.G. supplies

Fitted with automatic flame failure detection for user safety, making it ideal for use in clinical, industrial and educational applications.

Supplied with: Fitted with electronic flame fail safe and supplied with Na, K, Li, Ba and Ca filters, connecting hoses and clips, compressor plug, drain trap, fuses and operating/service instructions

Specifications

Ranges:	0 to 199.9ppm
Limits of detection	
Na/K:	< 0.2ppm
Li:	< 0.25ppm
Ca:	< 15ppm
Ba:	< 30ppm
Reproducibility:	< 1%/Coefficient of Variation for 20 consecutive samples using 10ppm Na set to read 50
Linearity:	Better than 2% when concentration of 3ppm Na/K and 5ppm Li are set to read 100
Specificity:	Interference from Na, K and Li equal in concentration to test element will be < 0.5%
Recorder o/p:	Nominal 1.00V for a reading of 100.0
Electrical:	90 - 125V or 190 - 250V 50/60 Hz
Air:	Moisture and oil free 6 l/min at 1 Kg/cm² (14psi)
Fuel:	Propane, Butane, natural gas or L.P.G.
Size:	420 x 360 x 300mm
Weight:	8kg
Supply requirements:	230V, 50Hz

1



Type	PK	Cat. No.
PFP7	1	**9.309 409**

2 Accessories to Flame Photometer PFP7

Jenway

Please Note:
These products will only operate with the correct type of air compressor and gas regulator as specified below.

It is recommended that the filters listed below are factory fitted at the time of ordering - please specify.

2



Description	PK	Cat. No.
Air compressor	1	**9.309 410**
Butane regulator	1	**9.309 411**
Propane regulator	1	**9.309 412**
Natural gas regulator	1	**9.309 413**
Ca filter	1	**9.309 414**
Li filter	1	**9.309 415**
Ba filter	1	**9.309 416**
Water separator (small)	1	**9.309 419**
Water separator (large)	1	**9.309 420**
Dust cover	1	**9.309 421**
Minor spares kit	1	**9.309 423**
Major spares kit	1	**9.309 424**
Industrial standard 1000 ppm K	1	**9.309 425**
Industrial standard 1000 ppm Li	1	**9.309 426**
Industrial standard 3000 ppm Ba	1	**9.309 427**
Industrial standard 1000 ppm Na	1	**9.309 428**
Industrial standard 1000 ppm Ca	1	**9.309 429**

1



9.190 980

DAkkS Deutsche Akkreditierungsstelle D-K-18752-01-00

1 Calibration - Qualification of spectrophotometers with the certified reference materials from Hellma Analytics

Hellma Analytics

To maintain constant good measurement results, a regular review of the accuracy of the spectrophotometer is required. With the use of certified reference materials from Hellma Analytics, you make sure that your equipment qualifications meet the requirements of the pharmacopoeias and fulfill your internal quality requirements, at the same time you reach the international comparability of your measurement results. The certified reference materials (calibration standards) of the DIN EN ISO 17025 accredited Hellma Analytics calibration laboratory are traceable to the primary standards of NIST (National Institute of Standards and Technology) and meet the requirements of the major pharmacopoeias (e.g. EP, DAB, USP).

Your benefits:
- High quality of the measurement results
- International comparability of measurement results
- Meeting the requirements of the major pharmacopoeias (EP, DAB, USP)
- Results traceable to NIST primary standards
- 30 years warranty*on the reference materials

Scope of delivery:
- Certified reference materials (Calibration Standards) in quality storage box
- DAkkS Calibration Certificate (DIN 17025)
- Handling guidelines

Certified reference materials for qualifying spectrophotometer as a complete set

Glass Filters: For testing spectrophotometers. Photometric accuracy and wavelength accuracy in the visible spectral region. *Hellma Analytics*

Liquid Filters: For testing spectrophotometers according to European Pharmacopoeia, wavelength accuracy, photometric accuracy, stray light behaviour, resolution.

Type	Description	Capacity	Material	Wave-length nm	PK	Cat. No.
666-S000	Complete Set Glass Filters	666-F1	Holmium Oxide Glass Filter	279, 361, 453, 536, 638	1	**9.190 973**
		666-F2	Neutral Density Glass Filter NG 11	440; 465; 546,1; 590; 635		
		666-F3	Neutral Density Glass Filter NG 5	440; 465; 546,1; 590; 635		
		666-F4	Neutral Density Glass Filter NG 4	440; 465; 546,1; 590; 635		
		666-F0	Empty Filter Mount			
667.003-UV	Complete Set Liquid Filters	667.100-UV	Potassium Chloride + blank	198, 200 (certified)	1	**9.190 980**
		667.200-UV	Toluene in Hexane + blank	266, 269		
		667.305-UV	Potassium Dichromate in HClO4 + blank	235, 257, 313, 350, 430		
		667-UV5	Holmium Perchlorate in Perchloric Acid	241,15; 287,15; 361,5; 536,3		

Filters also available individually.

Check for stray light

Hellma Analytics

Type	Description	Wave-length nm	PK	Cat. No.
667.100-UV	Calibration set according to European Pharmacopoeia, contains filter UV1, UV12		1	**6.228 184**
667-UV1	Liquid filter UV1, Potassium chloride	198 - 385	1	**9.190 981**
667-UV12	Reference filter UV12, purified water	-	1	**9.190 982**

Check for spectral resolution

Hellma Analytics

Type	Description	Wave-length nm	PK	Cat. No.
667.200-UV	Calibration set according to European Pharmacopoeia, contains filter UV6, UV9		1	**6.240 535**
667-UV6	Liquid filter UV6, Toluene in n-hexane	266, 269	1	**9.190 983**
667-UV9	Reference filter UV9, n-hexane	-	1	**6.231 555**

Check the wavelength accuracy

Hellma Analytics

Type	Description	Wave-length nm	PK	Cat. No.
667-UV5	Liquid filter UV5, Holmium oxide in Perchloric acid	240 - 650	1	**6.227 666**
666-F1	Glass filter F1, Holmium oxide	279 - 638	1	**6.201 067**
666-F7	Glass filter F7, Didymium	329 - 875	1	**7.612 486**

Check for photometric accuracy *Hellma Analytics*

Type	Description	Wave-length nm	PK	Cat. No.
667.305-UV	Calibration set according to European Pharmacopoeia, contains filter UV60, UV600, UV14		1	**7.626 372** 1
667-UV60	Liquid filter UV60, Potassium dichromate 60mg/l	235 - 350	1	**6.240 039**
667-UV600	Liquid filter UV600, Potassium dichromate 600mg/l	430	1	**9.190 984**
667-UV14	Reference filter UV14, Perchloric acid	-	1	**6.240 040**
666-F7	Glass filter F7, Didymium	270 - 340	1	**7.612 486** 2
666-F2	Neutral density glass filter F2, 0.25 absorbance	440 - 635	1	**6.801 867** 3
666-F3	Neutral density glass filter F3, 0.5 absorbance	440 - 635	1	**6.801 332** 4
666-F4	Neutral density glass filter F4, 1.0 absorbance	440 - 635	1	**6.801 868** 5

1


7.626 372

2


7.612 486

3


6.801 867

4


6.801 332

5


6.801 868

Cells for Fluorescence Measurement, UV-Range

Wavelength Range: 200nm - 2500nm
Optical material: Quartz SUPRASIL®

Hellma Analytics

Type	Path length mm	Description	External dimensions (W x D x H) mm	internal width (mm) / aperture (mm x mm/Ø)	Centre height mm	PK	Cat. No.
macro	10 x 10	PTFE lid, 4 window	12,5 x 12,5 x 45	10		1	**9.144 761**
macro	10 x 10	PTFE stopper, 4 window	12,5 x 12,5 x 46	10		1	**9.144 771**
semi-micro	10 x 4	PTFE lid	12,5 x 12,5 x 45	4		1	**9.144 781** 6
semi-micro	10 x 4	PTFE stopper	12,5 x 12,5 x 46	4		1	**9.144 791** 7
semi-micro	10 x 4	screw cap *	12,5 x 12,5 x 56	4		1	**6.222 630**
semi-micro	10 x 4	PTFE stopper **	12,5 x 12,5 x 49,5	4		1	**6.080 511** 8
micro	10 x 2	PTFE stopper	12,5 x 12,5 x 40	2		1	**9.144 759**
micro	10 x 2	PTFE lid	12,5 x 12,5 x 45	2	20.0	1	**6.081 483** 9
micro	10 x 2	PTFE lid	12,5 x 12,5 x 45	2		1	**9.144 801**
ultramicro	3 x 3	PE stopper, 3 window	12,5 x 12,5 x 45	5 x 3	15.0	1	**9.144 391** 10
ultramicro	3 x 3	PE stopper, 3 window	12,5 x 12,5 x 45	5 x 3	8.5	1	**9.144 390**
ultramicro	10 x 2	PE stopper, 3 window	12,5 x 12,5 x 45	5 x 2	15.0	1	**6.051 579**
ultramicro	10 x 2	PE stopper, 3 window	12,5 x 12,5 x 45	5 x 2	8.5	1	**6.510 380**

* with silicone rubber seal and with ISO thread GL 14
**for magnetic stirrers
***Connection Ø 8 mm, length 80 mm spigot

6


9.144 781

7


9.144 791

8


6.080 511

9


6.081 483

10


9.144 391

Cells for Fluorescence Measurement, Vis-Range

Wavelength Range: 320nm - 2500nm
Optical material: Special optical glass

Hellma Analytics

Type	Path length mm	Capacity µl	Description	External dimensions (W x D x H) mm	internal width mm	PK	Cat. No.
macro	10 x 10	3500	PTFE-lid	12,5 x 12,5 x 45	10	1	**9.144 760**
macro	10 x 10	3500	PTFE-stopper	12,5 x 12,5 x 46	10	1	**9.144 770**

Cells for Absorption Measurement, UV- Range

Wavelength Range: 200nm - 2500nm
Optical material: Quartz SUPRASIL®

Hellma Analytics

Type	Path length mm	Capacity µl	Description	External dimensions (W x D x H) mm	internal width (mm) / aperture (mm x mm/Ø)	Centre height mm	PK	Cat. No.
macro	100	35000	PTFE lid	12,5 x 102,5 x 45	9,5		1	**6.088 125**
macro	10	3500	PTFE lid	12,5 x 12,5 x 45	9,5		1	**9.144 210** 1
macro	1	350	Glass-lid	12,5 x 3,5 x 45	9,5		1	**9.144 201**
macro	20	7000	PTFE lid	12,5 x 22,5 x 45	9,5		1	**9.144 220**
macro	2	700	Glass-lid	12,5 x 4,5 x 45	9,5		1	**9.144 202**
macro	40	14000	PTFE lid	12,5 x 42,5 x 45	9,5		1	**9.144 240**
macro	50	17500	PTFE lid	12,5 x 52,5 x 45	9,5		1	**9.144 250**
macro	5	1750	PTFE lid	12,5 x 7,5 x 45	9,5		1	**9.144 205**
macro	10	3500	PTFE stopper	12,5 x 12,5 x 46	9,5		1	**9.144 610** 2
macro	1	350	PTFE stopper	12,5 x 3,5 x 52	9,5		1	**9.144 601**
macro	2	700	PTFE stopper	12,5 x 4,5 x 52	9,5		1	**9.144 602**
macro	50	17500	2 PTFE stopper	12,5 x 52,5 x 46	9,5		1	**9.144 650**
macro	5	1750	PTFE stopper	12,5 x 7,5 x 46	9,5		1	**9.144 605**
macro	10	3500	Screw cap **	12,5 x 12,5 x 56	9,5		1	**6.801 219**
semi-micro	10	1400	PTFE lid	12,5 x 12,5 x 45	4		1	**9.144 460**
semi-micro	50	7000	PTFE lid	12,5 x 52,5 x 45	4		1	**9.144 465**
semi-micro	10	1400	PTFE lid *	12,5 x 12,5 x 45	4		1	**9.144 490**
semi-micro	10	1000	PTFE lid	12,5 x 12,5 x 45	4	15.2	1	**6.250 017**
semi-micro	10	1400	PTFE stopper	12,5 x 12,5 x 46	4		1	**9.144 730**
semi-micro	10	1400	PTFE stopper *	12,5 x 12,5 x 46	4		1	**9.144 372** 3
semi-micro	10	1400	Screw cap **	12,5 x 12,5 x 56	4		1	**6.076 639**
micro	10	700	PTFE lid	12,5 x 12,5 x 45	2		1	**9.144 751**
micro	10	700	PTFE lid *	12,5 x 12,5 x 45	2		1	**9.144 756** 4
micro	10	500	PTFE lid	12,5 x 12,5 x 45	2	15.2	1	**6.084 722**
micro	10	500	PTFE lid *	12,5 x 12,5 x 45	2	15.2	1	**6.076 641**
micro	10	400	PTFE lid	12,5 x 12,5 x 40	2		1	**9.144 758**
micro	10	400	PTFE lid *	12,5 x 12,5 x 40	2		1	**9.144 385**
ultramicro	10	180	PE stopper	12,5 x 12,5 x 45	8 x 2	15.0	1	**9.190 969**
ultramicro	10	180	PE stopper	12,5 x 12,5 x 45	8 x 2	8.5	1	**9.190 966**
ultramicro	10	120	PE stopper	12,5 x 12,5 x 45	5 x 2	15.0	1	**9.190 968**
ultramicro	10	120	PE stopper	12,5 x 12,5 x 45	5 x 2	8.5	1	**9.190 965**
ultramicro	10	70	PE stopper	12,5 x 12,5 x 45	2,5 x 2	15.0	1	**9.190 967**
ultramicro	10	70	PE stopper	12,5 x 12,5 x 45	2,5 x 2	8.5	1	**9.190 964**
ultramicro	10	70	PE stopper	12,5 x 12,5 x 45	Ø 2,5	15.0	1	**9.144 098** 5
ultramicro	10	70	PE stopper	12,5 x 12,5 x 45	Ø 2,5	8.5	1	**9.144 104**

* black side walls and base
**with silicone rubber seal and with ISO thread GL 14
***for magnetic stirring bars

1



9.144 210

2



9.144 610

3



9.144 372

4



9.144 756

5



9.144 098

Cells for Absorption Measurement, NIR- Range

300 Wavelength Range: 200nm - 3500nm
Optical material: Quartz SUPRASIL®

Hellma Analytics

Type	Path length mm	Capacity µl	Description	External dimensions (W x D x H) mm	internal width mm	PK	Cat. No.
macro	10	3500	PTFE-lid	12,5 x 12,5 x 45	9,5	1	**6.086 375**
macro	10	3500	PTFE-stopper	12,5 x 12,5 x 46	9,5	1	**6.052 763**

Cells for Absorption Measurement, Vis-Range

Hellma Analytics

Wavelength Range:
260nm - 2500nm
320 nm - 2500 nm
360 nm - 2500 nm

Optical material:
HOQ 310H **(UV)**
Pecial optical glass **(OS)**
Optical glass **(OG)**

Type	optical material	Path length mm	Capacity µl	Description	External dimensions (W x D x H) mm	internal width mm	PK	Cat. No.
macro	UV	10 (± 0,05)	3500		12,5 x 12,5 x 45	9,5	1	**9.144 301**
macro	OS	1	350	Glass coverslip	12,5 x 3,5 x 45	9,5	1	**9.144 101**
macro	OS	2	700	Glass coverslip	12,5 x 4,5 x 45	9,5	1	**9.144 102**
macro	OS	5	1750	PTFE lid	12,5 x 7,5 x 45	9,5	1	**9.144 105**
macro	OS	10	3500	PTFE lid	12,5 x 12,5 x 45	9,5	1	**9.144 110**
macro	OS	10	3500	PTFE stopper	12,5 x 12,5 x 46	9,5	1	**9.144 510**
macro	OS	20	7000	PTFE lid	12,5 x 22,5 x 45	9,5	1	**9.144 120**
macro	OS	40	14000	PTFE lid	12,5 x 42,5 x 45	9,5	1	**9.144 140**
macro	OS	50	17500	PTFE lid	12,5 x 52,5 x 45	9,5	1	**9.144 150**
macro	OG	10	3500		12,5 x 12,5 x 45	9,5	1	**9.144 300**
macro	OG	20	7000		12,5 x 22,5 x 45	9,5	1	**9.144 302**
macro	OG	40	14000		12,5 x 42,5 x 45	9,5	1	**9.144 340**
macro	OG	50	17500		12,5 x 52,5 x 45	9,5	1	**9.144 350**
semi-micro	UV	10 (± 0,05)	1400		12,5 x 12,5 x 45	4	1	**9.144 361**
semi-micro	OS	10	1400	PTFE lid	12,5 x 12,5 x 45	4	1	**9.144 410**
semi-micro	OS	50	7000	PTFE lid	12,5 x 52,5 x 45	4	1	**9.144 450**
semi-micro	OG	10	1400		12,5 x 12,5 x 45	4	1	**9.144 360**
micro	OS	10	700	PTFE lid	12,5 x 12,5 x 45	2	1	**9.144 750**

* black side walls and base

Cells for Absorption Measurement, Flow-Through Measurement, UV- Range

Wavelength Range: 200nm - 2500nm
Optical material: Quartz SUPRASIL®

Hellma Analytics

Type	Path length mm	Capacity µl	Description	External dimensions (W x D x H) mm	internal width mm	Centre height mm	PK	Cat. No.
semi-micro	10	450	Supply and outlet tubes	12,5 x 12,5 x 45	11 x 4	15.0	1	**6.051 845**
semi-micro	10	450	Supply and outlet tubes	12,5 x 12,5 x 38	11 x 4	8.5	1	**6.059 056**
semi-micro	50	2250	Supply and outlet tubes	12,5 x 52,5 x 45	11 x 4	15.0	1	**6.080 156** 1
semi-micro	50	2250	Supply and outlet tubes	12,5 x 52,5 x 38,5	11 x 4	8.5	1	**6.242 811**
semi-micro	5	195	2 screw terminals *	12,5 x 12,5 x 35	11 x 3,5	15.0	1	**6.059 697**
semi-micro	5	195	2 screw terminals *	12,5 x 12,5 x 35	11 x 3,5	8.5	1	**6.300 696**
semi-micro	10	390	2 screw terminals *	12,5 x 12,5 x 35	11 x 3,5	15.0	1	**9.144 667** 2
semi-micro	10	390	2 screw terminals *	12,5 x 12,5 x 35	11 x 3,5	8.5	1	**9.144 666**
micro	0,1	6	2 screw terminals *	12,5 x 12,5 x 35	17,5 x 3,5		1	**9.144 660**
micro	0,2	12	2 screw terminals *	12,5 x 12,5 x 35	17,5 x 3,5		1	**6.206 587**
micro	0,5	31	2 screw terminals *	12,5 x 12,5 x 35	17,5 x 3,5		1	**9.144 662**
micro	1	62	2 screw terminals *	12,5 x 12,5 x 35	17,5 x 3,5		1	**9.144 664** 3
micro	2	124	2 screw terminals *	12,5 x 12,5 x 35	17,5 x 3,5		1	**9.144 663**

* M 6 x 1 and FEP tubes (outside diameter 1.9mm, inner diameter 1.1mm, length 500mm)

1



6.080 156

2



9.144 667

3



9.144 664

4



6.302 852

5



6.255 204

Cells for light scattering measurements, UV-range

Wavelength: 200nm - 2500nm
Optical material: SUPRASIL®

Hellma Analytics

Type	Capacity µl	Description	External dimensions (H x Ø) mm	Internal dimensions (H x Ø) mm	PK	Cat. No.
scatter measurement	2800	PTFE-stopper	75 x 10	74 x 8	1	**6.302 852** 4
scatter measurement	2800	PTFE-stopper, outer cylinder fire-polished	75 x 10	74 x 8	1	**6.073 106**
scatter measurement	14000	PTFE-stopper	75 x 20	74 x 18	1	**6.255 204** 5



1 LLG-Disposable plastic cells, PS

The new generation of cuvettes with clearly improved, photometric properties. The new optimized shape and narrow wall thickness of the cuvettes provides increased heat transfer resulting in more constant sample temperatures during photometric measurements.

- Cavity sorted
- Glass clear polystyrene (PS)
- Applicable wavelength range 340nm to 900nm
- Very low variation of extinction values
- Excellent optical transmission range
- Path length 10mm
- Overall dimensions 12.5mm x 12.5mm x 45mm
- Styrofoam racks: 100 cuvettes in a styrofoam box with cover

Description	Capacity ml	Path length mm	Material	Operating range nm	PK	Cat. No.
Macro	4.0	10.0	PS	340 to 900	100	**9.406 011**
Semi-micro	1.6	10.0	PS	340 to 900	100	**9.406 012**



2 Cuvette rack

Grey. PP. 16 numbered positions. *BRAND*
Autoclavable (121°C).

Width mm	Length mm	Height mm	PK	Cat. No.
70	210	38	1	**9.145 020**



3 Cuvette rack with attached lid, PP

NEW!

For safe handling and holding up to 12 cuvettes with a 10 mm light path. These racks consist of hinged lids with secure clasps and removable inserts for easy cleaning. The height of the lid is designed to accommodate all spectrophotometer cells - even those with covers or stoppers. *Isolab*

Description	PK	Cat. No.
Cuvette rack with attached lid	1	**6.267 353**

Further cuvettes please see page 1047.



E & OE.

11. Cleanroom, Cleaning and sterilisation

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1



1 Gloves KIMTECH PURE*G3, latex, powder free, sterile

NEW!

Kimberly-Clark

EN 374 LEVEL 2 | EN 374 | EN 420

KIMTECH PURE*Sterile G3 powder free latex gloves offer a highly advanced protection of processes, helping you to reduce the risk of contamination.
- Recommended for ISO Class 3 or higher cleanroom environments
- Natural rubber latex for tactile sensitivity and comfort
- Beaded cuff, for added strength and ease in donning
- Textured palms and fingers
- Powder free-minimising contamination and the drying effects of powder on skin
- Hand specific
- Low protein and low endotoxin levels
- Walleted & pouched in polyethylene for cleanroom use

- This product is classified by EC Council Directive 89/686/EWG. It is tested in accordance with the EN Norms EN 420:2003 **Cat. III Low Chemical resistant.**
- Meets AQL of 1.5
- Manufactured in accordance with Quality System ISO 9001
- Box of 10 x 20 pairs. Individually packed per pair.

Size	Length cm	PK	Cat. No.
6	30	200	**4.652 643**
6,5	30	200	**6.267 248**
7	30	200	**6.267 249**
7,5	30	200	**6.267 250**
8	30	200	**6.267 251**
8,5	30	200	**6.237 698**
9	30	200	**6.267 252**
10	30	200	**6.267 253**

2



2 Gloves, KIMTECH PURE*G3 STERLING*, nitrile, sterile

NEW!

Kimberly-Clark

EN 374 | EN 374

KIMTECH PURE*G3 Sterile STERLING*Nitrile Gloves offer improved performance and comfort and are better for the environment.
- Recommended for ISO Class 3 or higher cleanroom environments
- Meets AQL of 1.5 or better
- Contain no natural rubber latex reducing the potential for TYPE I glove-associated reactions
- Static dissipative in use
- Safe handling of objects due to improved and consistent grip
- Hand specific
- Walleted & pouched in polyethylene for cleanroom use
- Packaged for aseptic donning
- **Cat. III**
- Box of 10 x 30 pairs.Individually packed per pair

Size	Length cm	PK	Cat. No.
6	30	300	**6.264 797**
6,5	30	300	**6.264 798**
7	30	300	**6.264 799**
7,5	30	300	**4.652 645**
8	30	300	**6.265 200**
8,5	30	300	**6.265 201**
9	30	300	**6.265 202**
10	30	300	**6.265 203**

E & OE.

1 Disposable coverall Tyvek® IsoClean, with collar/hood, sterile

NEW!

DuPont de Nemours

DuPont™ Tyvek® IsoClean coverall with collar, model IC 182 B WH CS. Clean-processed and gamma-sterilised. Coverall with collar, available in white in sizes M to XXXL. Front zipper closure. Raglan sleeves with tunnelled elastic wrists. Tunnelled elastics at ankles. Tyvek® garments are composed of flash spun high density polyethylene, providing an ideal balance of protection, durability and comfort. Tyvek® is permeable to both air and water vapour, yet repels water-based liquids and aerosols. It offers an excellent barrier against fine particles and fibres (down to 1 micron in size) and is ultra-low-linting. Silicon non-added. Garments made of Tyvek® IsoClean are used in the biotech, pharmaceutical, medical device manufacturing and electronics industries, as well as in other critical or controlled environments.

- This garment is not CE certified as chemical protective clothing
- Clean laundered and gamma-sterilised
- Suitable for use in cleanroom class ISO 5 and higher
- Sterility assurance level (SAL) of 10-6
- Bound seams: tightly sewn seam is covered with garment fabric to reinforce seam protection and reduce potential for liquid and particle penetration
- Full traceability on all sterilized apparel with certificates of sterility available
- single packed



Size	Description	PK	Cat. No.
M	with collar	1	**9.390 066**
L	with collar	1	**9.390 067**
XL	with collar	1	**9.390 068**
XXL	with collar	1	**9.390 069**
XXXL	with collar	1	**9.390 070**
M	with hood and slip-retardant overshoes	1	**9.390 061**
L	with hood and slip-retardant overshoes	1	**9.390 062**
XL	with hood and slip-retardant overshoes	1	**9.390 063**
XXL	with hood and slip-retardant overshoes	1	**9.390 064**
XXXL	with hood and slip-retardant overshoes	1	**9.390 065**

2 Hood Tyvek® IsoClean, sterile

NEW!

DuPont de Nemours

DuPont™ Tyvek® IsoClean hood with ties, model IC 668 B WH CS. Sterile hood available in white and in one size. Full face opening with loops and ties. Tyvek® garments are composed of flash spun high density polyethylene, providing an ideal balance of protection, durability and comfort. Tyvek® is permeable to both air and water vapour, yet repels water-based liquids and aerosols. It offers an excellent barrier against fine particles and fibres (down to 1 micron in size) and is ultra-low-linting. Silicon non-added. Garments and accessories made of Tyvek® IsoClean are used in the biotech, pharmaceutical, medical device manufacturing and electronics industries, as well as in other critical or controlled environments.

- This accessory is not CE certified as chemical protective clothing
- Clean laundered and gamma-sterilised
- Suitable for use in cleanroom class ISO 5 and higher
- Sterility assurance level (SAL) of 10-6
- Bound seams: tightly sewn seam is covered with garment fabric to reinforce seam protection and reduce potential for liquid and particle penetration
- Full traceability on all sterilized apparel with certificates of sterility available
- Box of 100 p., single packed



Colour	PK	Cat. No.
white	100	**9.390 071**



1



1 Sleeve guard Tyvek® IsoClean, sterile

NEW!

DuPont de Nemours

DuPont™ Tyvek® IsoClean sleeve, model IC 501 B WH OS. Sterile sleeve available in white and in one size. Tunnelled elastication at wrist and upper arm. Tyvek® garments are composed of flash spun high density polyethylene, providing an ideal balance of protection, durability and comfort. Tyvek® is permeable to both air and water vapour, yet repels water-based liquids and aerosols. It offers an excellent barrier against fine particles and fibres (down to 1 micron in size) and is ultra-low-linting. Silicon non-added. Garments and accessories made of Tyvek® IsoClean are used in the biotech, pharmaceutical, medical device manufacturing and electronics industries, as well as in other critical or controlled environments.

- This accessory is not CE certified as chemical protective clothing
- Gamma-sterilised
- Suitable for use in cleanroom class ISO 6 and higher
- Sterility assurance level (SAL) of 10-6
- Bound seams: tightly sewn seam is covered with garment fabric to reinforce seam protection and reduce potential for liquid and particle penetration
- Full traceability on all sterilized apparel with certificates of sterility available

Description	PK	Cat. No.
Sleeve guard Tyvek® IsoClean	100	**9.390 072**

2



2 Disposable Overboot Tyvek® IsoClean, sterile

NEW!

DuPont de Nemours

DuPont™ Tyvek® IsoClean overboot model, IC 458 B WH CS. Sterile overboot in white . Fixation ties. Tunnelled elastics at ankles and gripper slip-retardant full sole.
Tyvek® garments are composed of flash spun high density polyethylene, providing an ideal balance of protection, durability and comfort. Tyvek® is permeable to both air and water vapour, yet repels water-based liquids and aerosols. It offers an excellent barrier against fine particles and fibres (down to 1 micron in size) and is ultra-low-linting. Silicon non-added.
Garments and accessories made of Tyvek® IsoClean are used in the biotech, pharmaceutical, medical device manufacturing and electronics industries, as well as in other critical or controlled environments.

- This accessory is not CE certified as chemical protective clothing
- Clean laundered and gamma-sterilised
- Suitable for use in cleanroom class ISO 5 and higher
- Sterility assurance level (SAL) of 10-6
- Bound seams: tightly sewn seam is covered with garment fabric to reinforce seam protection and reduce potential for liquid and particle penetration
- Full traceability on all sterilized apparel with certificates of sterility available
- Box of 100 p., single packed

Description	Colour	PK	Cat. No.
S	white	100	**9.390 073**
M	white	100	**9.390 074**
XL	white	100	**9.390 075**

3



3 Disposable Overboot Tyvek® IsoClean

NEW!

DuPont de Nemours

DuPont™ Tyvek® IsoClean overboot, model IC 458 B WH OB. Overboot available in white and in sizes M and L. Fixation ties. Tunnelled elastics at ankles and gripper slip-retardant full sole. Tyvek® garments and accessories are composed of flash spun high density polyethylene, providing an ideal balance of protection, durability and comfort. Tyvek® is permeable to both air and water vapour, yet repels water-based liquids and aerosols. It offers an excellent barrier against fine particles and fibres (down to 1 micron in size) and is ultra-low-linting. Silicon non-added. Garments and accessories made of Tyvek® IsoClean are used in the biotech, pharmaceutical, medical device manufacturing, electronics industries and as well in industrial applications.

- This accessory is not CE certified as chemical protective clothing
- Not clean laundered, not sterilised
- Suitable for use in cleanroom class ISO 6 and higher
- Bound seams: tightly sewn seam is covered with garment fabric to reinforce seam protection and reduce potential for liquid and particle penetration
- Box of 100 p.

Description	Colour	PK	Cat. No.
M	white	100	**9.390 076**
L	white	100	**9.390 077**

E & OE.

1 Disposable Overshoes Tyvek® IsoClean

NEW!

DuPont de Nemours



DuPont™ Tyvek® IsoClean overshoe model, IC 451 S WH OB. Overshoe available in white and in sizes M and L. Fixation ties. Elastics at ankles and gripper slip-retardant full sole. Tyvek® garments and accessories are composed of flash spun high density polyethylene, providing an ideal balance of protection, durability and comfort. Tyvek® is permeable to both air and water vapour, yet repels water-based liquids and aerosols. It offers an excellent barrier against fine particles and fibres (down to 1 micron in size) and is ultra-low-linting. Silicon non-added. Garments and accessories made of Tyvek® IsoClean are used in the biotech, pharmaceutical, medical device manufacturing and electronics industries, as well as in industrial applications.

- This accessory is not CE certified as chemical protective clothing
- Not clean laundered, not sterilised
- Suitable for use in cleanroom class ISO 6 and higher
- Box of 100 p.

Description	Colour	PK	Cat. No.
M	white	100	**9.390 078**
L	white	100	**9.390 079**

2 Fine dust adhesive mat Nomad™ 4300

NEW!

3M Deutschland



Ideal for areas with increased demand for air purity . The adhesive layer on the Nomad ™ mat collects when crossing all dust particles from the boots and binds them so that they cannot be spread . It does not have to be cleaned , if necessary the used adhesive layer is removed and a new layer is available. The silicone-free and residue-free mat can easily be fixed on the floor.

- Consists of multiple , adhesive coated , clear polyethylene layers , which are attached on a vinyl backing
- For use in the entrance to sterile rooms (clean room conditions), or requirements of highest hygiene
- 40 layers, numbered
- Removable disposable mat
- Easy to install
- Can be walked and driven on without any problems
- Very good removal and retention of dirt particles

Type	Dimensions mm	Colour	PK	Cat. No.
ADHWS45	450 x 1150	white	6	**7.634 641**
ADHWS60	600 x 1150	white	6	**6.267 066**
ADHBU60	600 x 1150	blue	6	**6.267 065**
ADHWS90	900 x 1150	white	6	**6.267 903**

3 Precision-Swabs

NEW!

Ideal-tek



Precision-swabs are engineered for use in a variety of environments and applications. They are ideal for use with cleaner degreasers, head cleaners, flux removers and other solvents for fast, precision cleaning.

Wrapped foam swabs
- Durable wrapped foam swabs designed for precise applications.
- Good particle entrapment and work well as solvent applicators
- Small tips allow use in very tight tolerance areas
- Wrapped foam delivers superior abrasion resistance for removal of tough contaminants
- Pointed end works especially well as a pick.

Sealed polyester swabs
- Very clean and durable all-purpose swabs
- Featuring either knit or nonwoven fabric heads, these swabs are acid and solvent resistant
- Sealed edges build in high strength with no loose fibers or particulates
- Ideal for tough scrubbing around raised shapes
- Cleanroom process gives the lowest ionic, non-volatile residue and particle contaminants.

Sealed foam swabs
- Economical general purpose swabs
- Best solvent retention
- Excellent particle entrapment
- The open cell structure gives the best solvent holding ability of any style of swab
- Free of adhesives or binders that could contaminate your process
- Fiberless construction does not generate particles.
- Suitable for ISO Class 4 clean rooms and higher

Material Head	Head	Head size	Material shaft	Length mm	PK	Cat. No.
Polyester/Nylon	rounded	4,7 x 5,4	PP	150	125	**4.655 171**
PU-foam	wrapped, pointed	3,7 x 3,7	Nylon	70	125	**6.266 882**
Polyester	rounded	2,4 x 3,0	PP	70	125	**6.266 884**
Polyester	rounded	1,6 x 3,0	PP	70	125	**6.266 885**
Polyester	rounded	1,0 x 3,0	PP	70	125	**6.266 886**
PU-foam	rounded	3,3 x 3,5	PP	70	125	**6.266 887**
PU-foam	pointed	2,7 x 3,3	PP	80	125	**6.266 888**
PU-foam	rounded	2,5 x 3,0	PP	68	125	**6.266 889**

1



1 Cleanroom tissues Sontara® MicroPure

NEW!

Sontara® MicroPure nonwoven styles (woodpulp/polyester) are engineered for cleanroom use and combine absorbency of a natural fibre with the cleanliness and strength of a synthetic fibre in the same fabric. No binders or chemical treatments are used to manufacture them. The high cleanliness and purity are ensured by low extractable level and ion content as well as extremely low particle generation by the material itself. The fabric styles offer high particle and liquid absorbency due to their cellulose content.

Type	Cleanroom Class	Dimensions mm	PK	Cat. No.
Sontara® MicroPure 100	level of cleanliness 100, ISO 5 + 6	305 x 305	150	**9.390 185**
Sontara® MicroPure 100	level of cleanliness 100, ISO 5 + 6	224 x 224	300	**9.390 186**
Sontara® MicroPure AP	level of cleanliness 1000, ISO 6 - 9	305 x 305	150	**9.390 187**
Sontara® MicroPure AP	level of cleanliness 1000, ISO 6 - 9	224 x 224	300	**9.390 188**
Sontara® MicroPure SV	level of cleanliness 1000 - 10.000, ISO 7 -9	305 x 305	250	**9.390 189**
Sontara® MicroPure SV	level of cleanliness 1000 - 10.000, ISO 7 -9	224 x 224	500	**9.390 190**

2



9.413 216

LLG-Dispenser system for moist cloths Wiper Bowl® Safe & Clean

The economical "building block solution" for thorough disinfection and cleaning of sensitive areas in the medical and foodstuff industries. Can be filled with all commercial disinfectant and cleaning agents.
The fine perforated structure of Multitex® moist cloths ensures an even distribution of the surface disinfectant. These moist towels are also ideally suited to the cleaning of grossly soiled surfaces. Easy handling thanks to tear-off perforation. After cleaning the lid can be closed and the tissues stay moistured for more than 30 days ensuring a constant cleaning and disinfection performance.

LLG Dispenser bin Wiper Bowl® Safe & Clean:
Empty. For 1 roll Multitex® DR. Made of plastic, dia. approx. 21cm, resealable and reusable.

LLG-Cleaning tissues Multitex® DR:
Viscose fleece for Wiper Bowl® Safe & Clean dispenser bucket.
White, fine, tear-resistant, absorbent and lint free.
Dimensions: 300mm x 320mm.
1 roll of 90 tissues
Please order separately.

3



9.413 215

Type	PK	Cat. No.
LLG-Dispener bin	1	**9.413 216** 2
LLG-Cleaning tissues Multitex® DR	1	**9.413 215** 3

4



4 HBV Tissues Meliseptol®

Ready to use, alcoholic disinfectant tissues, 14.5cm x 20cm. *B. Braun*

Package contents	PK	Cat. No.
100 cloths, dispenser	100	**9.191 272**
100 cloths, refill pack	100	**6.800 451**

1 Disinfection tissues, Pursept®-A Xpress



BRAND

Pursept®-A Xpress disinfection tissues are useful for rapid disinfection and cleaning of work surfaces and instruments (e.g., liquid handling instruments). It works in only 15 seconds - even before the surface dries. DGHM*tested and RKI**compliant. Skin tolerance dermatologically tested. Aldehyde-free
For RKI compliant use, thoroughly wipe the surface to be disinfected with Pursept®-A Xpress disinfection tissues. Be sure to wipe everything completely. The surface should remain moist during the entire working time.

Dimensions	135 x 225 mm
Contents per cloth (approx.):	1027mg ethanol, 0.56mg N-alkyl aminopropyl glycine; auxiliary agents.
Microbiological power/application concentration:	
Surface disinfection:	
Bacteria and fungi with little organic burden with mechanics to DGHM/VAH:	15secs.
Limited virucidal efficacy* (incl. HIV, HBV, HCV):	15secs.
Effectiveness against TbB:	30secs.
Chemico-physical data of the solution:	
Liquid:	colourless, transparent
Density:	approx. 0.9g/cm³
pH value:	approx. 7.5
Tissues:	FCC-bleached (oxidation bleach), bio-degradable

Package contents	PK	Cat. No.
Dispensing box of 150 tissues	1	**9.413 040**
Refill pack of 150 tissues	1	**9.413 041**

*Tested according to standard DGHM methods of surface disinfection. Latest version:9/1/2001
**As recommended by the Robert-Koch-Institute (RKI), Bundesgesundheitsblatt 01/2004

2 Spray disinfectant Meliseptol®



B. Braun

For targeted spray disinfection of small surfaces and equipment.
- Ready-to-use alcoholic solution
- Effective against bacteria incl. T.B., -B, fungi, lipophilic viruses including Hepatitis-B and HIV, rotaviruses
- Pleasant odour
- Dries thoroughly without residue
- Effective within 5mins.
- 250ml bottle for propellant-free, spray disinfection of hard-to-reach areas. Overhead use also possible.

Use disinfectants safely. Always read the label and product information before use.

Type	Capacity ml	PK	Cat. No.
Hand spray bottle	250	1	**9.191 262**
Hand spray bottle without spray head*	1000	1	**9.191 263**
Spray head for 1L hand spray bottle		1	**9.191 268**
Jerrycan	5000	1	**9.191 265**

*Spray head for 1000ml hand spray bottle - please order separately.

3 Disinfectant foam Meliseptol® foam pure



B. Braun

Foam for rapid disinfection of small surfaces. Good material compatibility even with alcohol-sensitive materials, eg plastic surfaces, medical devices, acrylic glass, examination tables.

Type	Capacity ml	PK	Cat. No.
Foam spray bottle	750	1	**9.191 271**
Canister	5000	1	**9.191 288**

4 Meliseptol® rapid, fast acting spray disinfectant

NEW!



B. Braun

Meliseptol® rapid is a fast acting, ready-to-use disinfectant for medical equipment such as treatment chairs, operating theatre equipment and hospital beds.
Meliseptol® rapid works within 1 min. as a bactericide, tuberculocide, fungicide (incl. mould fungi) and inactivates Hepatitis-B, HIV, rotaviruses, adeno and vaccinia viruses. Free from aldehydes and alkyl amines.

Type	Capacity ml	PK	Cat. No.
Spray bottle	250	1	**9.191 036**
Dosing bottle	250	1	**9.191 037**
Hand spray bottle without spray head*	1000	1	**9.191 038**
Spray head for 1000ml hand spray bottle		1	**9.191 268**
Jerrycan	5000	1	**9.191 040**

*For spray bottle 1000ml - please order spray head separately.

1



1 Spray disinfectant neoform® MED rapid

NEW!

Rapid disinfectant for medical devices, ready-for-use solution. Bactericidal, yeasticidal, tuberculocidal, active against enveloped viruses. Alcoholic spray for disinfection medical devices. VAH listed and registered in the IHO virucidal list.

Type	Capacity ml	PK	Cat. No.
neoform® MED rapid	750	1	**6.253 344**

2



2 Surface disinfectant neoform® MED AF

NEW!

Aldehyde-free disinfectant cleaner for medical devices, liquid concentrate. Bactericidal, yeasticidal, tuberculocidal, active against enveloped viruses. For cleaning and disinfection of medical devices and medical equipment. Application by rub/wipe-method, via rotating brushes or spraying devices. VAH listed and registered in the IHO virucidal list.

Type	Capacity ml	PK	Cat. No.
neoform® MED AF	5000	1	**6.258 229**

3



3 Surface disinfection concentrate, Pursept® AF

BRAND

For alcohol-resistant worktops and equipment surfaces in microbiological and medical laboratories. Cleans and disinfects floors, walls and equipment in one operating cycle.
Effective against bacteria, fungi and viruses, in particular Hep.-B and HIV. Tested and certified in accordance with the guidelines of the DGHM (German Hygiene and Microbiology Society). Particularly gentle on surfaces, kind to skin and has a pleasant, fresh fragrance. Use disinfectants safely. Always read the label and product information before use.

Contents per 100g:	12.5g didecyl dimethyl ammonium chloride < 5% NTA, < 5% non-ionic surfactants, auxiliary agent 1.5g (aminopropyl)-lauryl amine, auxiliary materials
Microbiological power/application concentration Surface disinfection:	
Bacteria and fungi in acc. with DGHM:	0.25% (2.5g/l)/4 hrs. 0.5% (5g/l)/60 min. 1% (10g/l)/30 min. 2%/15 min.
Limited virucidal efficacy* (incl. HIV, HBV, HCV):	1% (10g/l)/15 min.
Inactivating human rotaviruses:	0.25% (2.5g/l)/2 mins.
Concentration for TbB:	2% (20g/l)/60 mins.
Physico-chemical data:	
Liquid:	clear, green
Density:	approx. 1g/ml
pH value (1%):	approx. 10

Type	Capacity Litres	PK	Cat. No.
Bottle	2	1	**9.192 569**
Jerrycan	5	1	**9.192 570**

E & OE.

1 Surface disinfection Pursept®-A Xpress



BRAND

Pursept®-A Xpress is a ready-to-use preparation for rapid disinfection and cleaning of surfaces and instruments (e.g., liquid handling instruments). It works in only 15 secs. - even before the surface dries. DGHM tested and RKI compliant. Dermatologically tested for skin tolerance. Aldehyde-free
For RKI compliant use, apply Pursept®-A Xpress full strength to a disposable cloth. Then thoroughly wipe off the area to be disinfected with the wet cloth. Be sure to wipe everything completely. The surface should remain moist during the entire working time.
Use disinfectants safely. Always read the label and product information before use.

Contents per 100g:	55g ethanol, 0.03g N-alkyl aminopropyl glycine; auxiliary agents.
Microbiological power/application concentration:	
Surface disinfection:	
Bacteria and fungi with little organic burden with mechanics acc. to DGHM/VAH*directives:	15secs.
Limited virucidal efficacy** (incl. HIV, HBV, HCV):	15secs.
Effectiveness against TbB:	30secs.
Physico-chemical data:	
Liquid:	colourless, transparent
Density:	approx. 0.9g/cm³
pH value:	approx. 7.5

Type	Capacity Litres	PK	Cat. No.
Pump spray bottle (without cap)	1	1	**9.192 567**
Jerrycan	5	1	**9.192 568**
Spray cap		1	**9.192 566**

*Tested according to standard DGHM methods of surface disinfection. Latest version: 9/1/2001
**As recommended by the Robert-Koch-Institute (RKI), Bundesgesundheitsblatt 01/2004

2 Molecular BioProducts™ RNase AWAY® Surface Decontaminant

NEW!



Thermo Elect.LED

Eliminates unwanted DNA and RNase from glassware and plasticware without affecting subsequent DNA samples
Degrades DNA more quickly and effectively than autoclaving.

- Suitable for gel boxes, pipettes, benchtops, thermal cyclers, or other apparatus
- Use before performing PCR or working with DNA for a DNA-free work area
- Simply apply the ready-to-use formula to the surface to decontaminate, then wipe dry or rinse clean

Type	Capacity ml	Package	PK	Cat. No.
MBP RNase Away®	475	spraying flask	1	**6.227 799**

3 Molecular BioProducts™ RNase AWAY® and DNA AWAY™ Surface Decontaminant

NEW!



Thermo Elect.LED

Eliminates unwanted DNA and DNase from glassware and plasticware without affecting subsequent DNA samples
Degrades DNA more quickly and effectively than autoclaving.

Type	Capacity ml	Package	PK	Cat. No.
MBP DNA Away®	250	Flask	1	**6.228 401**

4 Instrument disinfectant and cleaner, Helipur®



B. Braun

For use on instruments and laboratory equipment made of metal, glass and ceramics.
- Effective against bacteria incl. T.B.-B, fungi, lipophilic viruses including Hepatitis B and HIV, adeno and vaccinia viruses
- Disinfection and cleaning in one single operation; contaminated instruments are placed directly in the standard solution. No prior or subsequent manual cleaning is necessary.
- DGHM (German Hygiene and Microbiology Society) listed.

Application concentration: 1.5% reaction time 60 min = 15ml in 1L water

Type	Capacity ml	PK	Cat. No.
Carboy	5000	1	**9.191 255**

1



1 Disinfectant for temperature-sensitive materials, Helipur® H plus N

B. Braun

Liquid concentrate for disinfecting flexible endoscopes, anaesthetic accessories, rubber and plastic items.
- Also suitable for disinfecting metal, glass and ceramics
- Effective against bacteria incl. T.B.-B, spores, fungi, lipophilic viruses including Hepatitis-B and HIV, coxsackie, adeno and vaccinia viruses
- Can also be used in ultrasonic baths
- Formaldehyde free
- Material compatability reports are available from leading manufacturers.

Use disinfectants safely. Always read the label and product information before use.

Application concentration: 1.5% reaction time 15mins. = 15ml in 1L water
1.0 % reaction time 60 mins. = 10 ml in 1 L water

Type	Capacity ml	PK	Cat. No.
Dosing bottle	1000	1	**9.191 277**
Jerrycan	5000	1	**9.191 278**

2



2 Instrument disinfection, Mucocit® T

BRAND

A fresh fragranced solution with exceptional cleaning power and disinfection in only 5 minutes due to the Active-Power-PLUS formula. Ideal for sensitive instruments, thanks to a unique material tolerance. Mucocit® T is used for manual instrument cleaning in a soaking or ultrasonic bath. Use disinfectants safely. Always read the label and product information before use.

Contents per 100g:	3.9g didecyl-dimethyl-ammonium chloride, 4.5g alkylpropylendiamine-1.5-bisguanidiniumacetate, 2g bis(-aminopropyl)-laurylamine, 2.8g laurylpropylenediamine, 5-15% non-ionic tenside surfactants, auxiliary agents.
Microbiological power/application concentration:	
DGHM/VAH*bacteria and fungi as well as tuberculocide and myobactericide with high organic stress:	1%/60 min., 2%/30 min., 3%/15 min.
Limited virucidal efficacy** (incl. HIV, HBV, HCV):	1%/5 min.
Inactivation of rotaviruses:	2%/5 min.
Physico-chemical data:	
Liquid:	blue, transparent
Density:	approx. 1g/ml
dpH value (1%, 20°C):	approx. 10.5

Type	Capacity Litres	PK	Cat. No.
Bottle	2	1	**9.192 550**
Jerrycan	5	1	**9.192 551**

*Tested according to standard DGHM methods of surface disinfection. Latest version: 9/1/2001
**As recommended by the Robert-Koch-Institute (RKI), Bundesgesundheitsblatt 01/2004

3



3 Special cleaner, neodisher® LaboClean A 8

Alkaline intensive detergent for the automated cleaning of laboratory glassware and other utensils for laboratories, powder.

Universally applicable, with excellent cleaning performance and dirt carrying ability. Removes blood, serum, food residues, pharmaceuticals, paints, varnishes, gelatine and other organic residues. Free of surfactants.

Type	Capacity kg	PK	Cat. No.
Bottle	1	1	**9.192 404**
Bucket	10	1	**9.192 403**
Bucket	25	1	**9.192 401**

E & OE.

1 Special cleaner, neodisher® LaboClean GK

Mildly alkaline detergent for the automated cleaning of laboratory glassware and other utensils for laboratories, powder.

Especially for the automated cleaning of glassware for cell and tissue cultures, in the field of microbiology and nuclear medicine as well as in isotope laboratories. Removes residues of culture media, residues of cell and tissue cultures, radioactive contamination, organic colour and pigment contamination. Easy to rinse off. Free of surfactants.

Type	Capacity kg	PK	Cat. No.
Bucket	10	1	**9.192 415**

1



2 Special cleaner, neodisher® LaboClean LA

Highly alkaline intensive detergent for the automated cleaning of laboratory glassware and other utensils for laboratories, powder.

With a highly emulsifying, dispersing and defoaming action. Especially suitable for the removal of fat, oil, resins and paraffin.

Type	Capacity kg	PK	Cat. No.
Bucket	3	1	**9.192 418**
Bucket	25	1	**9.192 417**

2



3 Special cleaner, neodisher® MA

Alkaline detergent for the automated reprocessing of thermostable and thermolabile instruments, powder.

Excellent cleaning action and material compatibility. Free of oxidising agents.

Type	Capacity kg	PK	Cat. No.
Bottle	1	1	**9.192 406**
Bucket	10	1	**9.192 405**

3



4 Special cleaner, neodisher® LaboClean UW

Mildly alkaline detergent for the automated cleaning of laboratory glassware and other utensils for laboratories, powder.

Especially suitable for the automated cleaning of laboratory glassware and utensils in water analysis laboratories, in serological institutes and in the phosphates industry, where residues of phosphorous compounds would be adulterate analysis results. Free of phosphates.

Type	Capacity kg	PK	Cat. No.
Bucket	10	1	**9.192 445**

4



5 Special cleaner, neodisher® LaboClean F

Highly alkaline intensive detergent for the automated cleaning of laboratory glassware and other utensils for laboratories, powder.

With excellent cleaning performance. Especially suitable for the removal of resins, organic colourants and residues of felt-tip pens. Good complexing and dispersing action. Free of phosphates and surfactants.

Type	Capacity kg	PK	Cat. No.
Tubs	3	1	**9.192 387**
Bucket	25	1	**9.192 410**

5



1



1 Special cleaner, neodisher® FA

"Classical" alkaline detergent for the automated reprocessing of thermostabile and thermolabile instruments, liquid concentrate.

Excellent cleaning action and material compatibility. Free of surfactants and oxidising agents.

Type	Capacity	PK	Cat. No.
Canister	5 l	1	**9.192 435**
Canister	10 l	1	**9.192 431**
Canister	25 kg	1	**9.192 434**

2



2 Special cleaner neodisher® LaboClean FLA

Alkaline intensive detergent for the automated cleaning of laboratory glassware and other utensils for laboratories, liquid concentrate.

Universally applicable. With excellent cleaning performance. Removes stubborn oily and other organic residues. Free of surfactants, phosphorous compounds and oxidising agents.

Type	Capacity	PK	Cat. No.
Canister	5 l	1	**9.192 446**
Canister	10 l	1	**9.192 447**
Canister	25 kg	1	**9.192 448**

3



3 Special cleaner, neodisher® LaboClean FT

Alkaline detergent for the automated cleaning of laboratory glassware and other utensils for laboratories, liquid concentrate.

Especially suitable for the residue-free cleaning of pharmacy glass bottles, infusion flasks, glassware for cell and tissue culture as well as utensils for microbiology and nuclear medicine. Removes residues of culture media, blood, proteins, radioactive contamination, residues of cell and tissue cultures as well as other organic residues. With oxidation action, free of surfactants.

Type	Capacity kg	PK	Cat. No.
Canister	12	1	**9.192 436**
Canister	25	1	**9.192 437**

4



4 Special cleaner neodisher® N

Acidic neutralising agent and detergent for the automated cleaning of laboratory glassware and other utensils for laboratories, liquid concentrate.

For neutralising carried over alkaline residues as well as for the acidic pre-cleaning resp. cleaning of laboratory glassware. Lime and other acid-soluble residues are removed. Easy to rinse off. Based on phosphoric acid. Free of surfactants.

Type	Capacity	PK	Cat. No.
Bottle	1 l	1	**9.192 422**
Canister	5 l	1	**9.192 421**
Canister	12 kg	1	**9.192 420**
Canister	25 kg	1	**9.192 423**

5



5 Special cleaner neodisher® Z

Acidic neutralsing agent and detergent for the automated cleaning of laboratory glassware and other utensils for laboratories, liquid concentrate.

For neutralising carried over alkaline residues as well as for removing acid-soluble residues in laboratories where residues of phosphates, nitrogen or surfactants would adulterate analysis results and where particular material compability is necessary. Based on organic acids. Free of surfactants and phosphates.

Type	Capacity Litres	PK	Cat. No.
Bottle	1	1	**9.192 426**
Canister	5	1	**9.192 425**
Canister	10	1	**9.192 427**
Canister	20	1	**9.192 428**

E & OE.

1 Special cleaner neodisher® LM 3 for pipettes



Alkaline cleaner for the manual cleaning and pre-cleaning of laboratory glassware as well as for the cleaning of pipettes and viscometers in special washers, liquid concentrate.

Especially suitable for the cleaning of laboratory glassware in water, phosphates and metal laboratories and in laboratories where enzymatic and serological analyses are conducted. Also suitable for automated cleaning. Low foam. Free of phosphates.

Type	Capacity Litres	PK	Cat. No.
Bottle	1	1	**9.192 442**
Canister	10	1	**9.192 441**

2 Special cleaner, neodisher® MediClean forte



Alkaline universal detergent for the automated and manual reprocessing of thermostable and thermolabile instruments, liquid concentrate.

Excellent material compatibility, universally applicable. Residues of dried-on and denaturated blood are reliably removed. Prevents re-deposition of protein residues. Contains alkalis and surfactants.

Capacity	Capacity Litres	PK	Cat. No.
Canister	5	1	**6.228 020**

3 Universal cleaner, Mucasol®



BRAND

High performance, alkaline cleaning concentrate in liquid form for soaking and ultrasonic cleaning baths.
Suitable for use on laboratory equipment and intruments made of glass, porcelain, plastic, rubber and metal. Items are cleaned in ~ 10 - 30mins, without mechanical help. An alternative to chromosulphuric acid mixtures, free from chlorine and caustic alkalines, non-toxic, non-corrosive and is biodegradable. Zinc and non-anodized aluminium items should not be immersed in Mucasol® for long periods as corrosion may occur. Also suitable for wiping down surfaces.

Contents:	>30% phosphates, <5% anionic surfactants, amphoteric surfactants, complexing agents, corrosion inhibitors, auxiliary agents
Application concentration:	
In ultrasonic baths:	0.2% to 2% (1.4ml/l to 14ml/l)
In soaking baths:	0.7% to 3% (5ml/l to 22ml/l)
Physico-chemical data:	
Liquid:	light green, transparent
Density:	approx. 1.4g/ml
pH value (0.7%):	approx. 11.5
pH value (3%):	approx. 11.7

Type	Capacity Litres	PK	Cat. No.
Bottle	2	1	**9.192 501**
Jerrycan	5	1	**9.192 507**

4 Screen cleaner



For cleaning and caring for glass and plastic screens, glass panels, mirrors and lenses of copiers and microfiche readers as well as hoods and plexiglas components. For the easy removal of dirt, grease and nicotine. With antistatic agent. Spray bottle without propellant.

Type	Capacity ml	PK	Cat. No.
Screen cleaner	200	1	**9.190 975**
Refill bottle	1000	1	**9.190 974**

For glass pipettes - please see page 842.

1 2



1 2 Cleaning Office, technical cleaning cloths with alcohol

Moist, non-woven cloths in a re-sealable dispensing pack. For the cleaning of, and caring for, all office equipment. With antistatic and disinfectant action.
Dimensions: 138mm x 190mm
Shelf life: unopened, 30 months without loss of quality

Package contents	PK	Cat. No.
Dispensing pack of 100 tissues	1	**9.190 977**
Refill pack of 100 tissues	1	**9.190 976**

3



3 Dust remover spray DRUCKLUFT 67

Compressed air spray for contact-free removal of dust and dirt in hard-to-reach places using the capillary tube nozzles attached. Safe, clean, oil-free. Acc. to Aerosol policy 75/324/EWG no danger of inflammation or explosion when using as intended. DRUCKLUFT 67 contains pure and dry compressed gas and is very efficient.

Examples of use:
photography, precision electronics, watchmaking, cameras, medical technology, microscopy, research.

Pressure: 4.2 bar (20°C)
Density: 1.00g/cm³ (20°C)

Capacity ml	PK	Cat. No.
200	1	**9.412 800**
400	1	**9.412 801**

4



4 Dust remover spray Druckluft 67 SUPER

Spray for the contact-free removal of dust and dirt from hard-to-reach places. For highest safety also for devices under electric tension. Acc. to Aerosol policy 75/324/EWG no danger of inflammation or explosion even in the presence of ignition sources. DRUCKLUFT 67 SUPER contains pure and efficient compressed gas. Especially suitable for work under electric tension and for ex-use.

Examples of use:
photography, precision electronics, watchmaking, cameras, medical technology, microscopy.

Pressure: 4.6 bar (20°C)
Density: 1.17g/cm³ (20°C)
Gas volume: 400ml can produces 116L gas at 20°C and 1bar.

Capacity ml	PK	Cat. No.
400	1	**9.412 805**

Label solvent - please see page 158.



1 2 LLG-Laboratory and hygienic tissues, 2-ply, 150 wipes

Laboratory and hygienic tissues
- contains 150 white, double-ply tissues, 210mm x 220mm
- highly absorbent and ultra-soft
- for sensitive application areas

Carton of 30 boxes with **150 wipes**

Wall Mount, wire, white-coated with wall mounting material for packaging up to 70mm depth, please order seperately.

Package contents	PK	Cat. No.
Carton of 30 boxes with 150 wipes	30	**9.413 220**
Wall Mount for Laboratory and hygienic tissues	1	**9.405 371**

1



2



3 Precision wipes, KIMTECH SCIENCE*, 1-ply

Tissue wiping cloth for precise, critical cleaning in the electronic, optic and precision mechanics industries, lint-free, highly absorbent and strong, even when wet. 1-ply, white.

Kimberly-Clark

Package contents	Dimensions mm	PK	Cat. No.
Box of 196 wipes	300 x 300	1	**9.413 020**
Box of 280 wipes	110 x 210	1	**9.413 021**

3



4 Laboratory wipes, KIMTECH SCIENCE*, 2-ply

Tissue wiping cloth for professional use in laboratories. Highly absorbent and soft for wiping up small amounts of liquid and for cleaning pipettes and microscope slides. Chemical resistant and chemically neutral. 2-ply, white.

Kimberly-Clark

Package contents	Dimensions mm	PK	Cat. No.
Box of 100 wipes	200 x 210	1	**9.413 017**
Box of 200 wipes	205 x 200	1	**9.413 015**

4



5 6 Cleaning wipes, KIMTECH*Process Wiper, cloths

Blue, super strong, robust, lint-free, PP reusable wiping cloths, ideal for residue-free wet cleaning with cleaning agents and solvents as well as wiping up oil and grease. Folded into quarters, embossed.

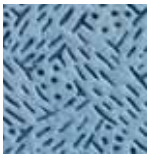
Kimberly-Clark

Package contents	Width mm	Length mm	Colour	PK	Cat. No.
12 bags containing 35 cloths	490	380	blue	12	**9.413 070**

5



6



1



1 Cleaning cloths, KIMTECH* 7505

Soft and gentle, yet strong. White, embossed, sterilisable. Individual cloths. Hydronit*material.

Kimberly-Clark

Package contents	Dimensions mm	PK	Cat. No.
Bag of 50 cloths	320 x 380	1	**9.413 033**

2



3



2 3 4 5 Universal dishwashing

NEW!

Universal cloth:
Made from 80 % viscose and 20 % polyester. The universal cloth has a finely structured surface. It provides a cleaning result without streaks, is nearly lintfree and washable up to 95°C. Please wash in lukewarm water before first use.

Washing up liquid:
HS citro is a dish washing detergent for universal implementation with a fresh fragrance for porcelain, glass, plastic, and metal. Professional recipe with high grease dissolving strength and plant-based skin protecting additives. 1L

Sponge:
For cleaning any kind of incrustration.

Gloves:
Natural rubber. Excellent finger sensitivity, high flexibility. Flock-lined for optimal comfort. Special surface finish provides a firm hold.Good resistance to ketones and many acids. L 305mm.

4



5



Description	Dimensions mm	Colour	PK	Cat. No.
Universal cloth	380 x 380	blue/white	10	**6.266 668**
Universal cloth	380 x 380	red/white	10	**6.266 669**
Universal cloth	380 x 380	green/white	10	**6.266 670**
Universal cloth	380 x 380	yellow/white	10	**6.266 671**
Sponge	150 x 90 x 40	green/yellow	100	**6.266 672**
Sponge	95 x 70 x 45	green/yellow	500	**6.266 673**
Washing up liquid, 1L			1	**6.266 678**
Rinsing brush	220 x 60	blue/white	1	**9.019 110**
Gloves size 6 - 6 1/2		yellow	1	**9.005 201**
Gloves size 7 - 7 1/2		yellow	1	**9.005 202**
Gloves size 8 - 8 1/2		yellow	1	**9.005 203**
Gloves size 9 - 9 1/2		yellow	1	**9.005 204**
Gloves size 10 - 10 1/2		yellow	1	**9.005 205**

6



6 Microfibre cloths WYPALL*

Kimberly-Clark

- Lifts and traps dirt from surfaces for fast and efficient cleaning
- No chemicals required, helps reduce annual cleaning cost
- Absorbs & retains up to 8 times its weight in liquid efficient cleaning
- Can be washed up to 300 times for better cost control
- Available in 4 different colours, enables task segragation and helps to reduce cross contamination
- Green cloth has smooth texture for glass and mirror cleaning

Package contents	Dimensions mm	Colour	PK	Cat. No.
packs of 4 bags containing 6 cloths	400 x 400	Yellow	6	**9.413 081**
packs of 4 bags containing 6 cloths	400 x 400	Blue	6	**9.413 082**
packs of 4 bags containing 6 cloths	400 x 400	Red	6	**9.413 086**
packs of 4 bags containing 6 cloths	400 x 400	Green	6	**9.413 083**

7



7 Wipes Unitex®

NEW!

Made from cellulose and polyester fibers, turquoise.
- Without binders, chemicals or adhesives
- Resistant to solvents and silicone free
- Particularly tear-resistant and lintfree
- Useable dry and wet, high absorption capacity
- Excellent for cleaning and degreasing surface

Package contents	Width mm	Length mm	Weight g / m²	Thickness mm	PK	Cat. No.
pack of 4 x 50 tissues	380	300	68	0.28	4	**6.266 676**

E & OE.

1 Wipes, WYPALL*L 30

AIRFLEX*fabric. Strong and fast absorbing wipes for general purpose use, especially for oil and grease. High tensile strength in wet conditions for rapid cleaning. *Kimberly-Clark*

Package contents	Width mm	Length mm	Colour	PK	Cat. No.
Large roll of 500 tissues	235	380	blue	1	**9.413 054**
Large roll of 500 tissues	330	380	blue	1	**9.413 044**
6 large rolls of 300 tissues	205	380	white	6	**9.413 091**

1



2 LLG- Laboratory tissues, roll, 102 sheets 3-ply

Roll with 102 sheets (220 x 260mm).
- strong when wet
- absorbent
- low lint

Package contents	PK	Cat. No.
roll of 102 tissues	2	**9.413 224**
roll of 102 tissues (advantage pack)	28	**9.413 225**

2



3 Laboratory tissues SCOTT® EXQUISITA, roll , 2-ply

Particularly absorbent, white, 2-ply, perforated, embossed tissue. Dimensions 270 x 230mm. *Kimberly-Clark*

Package contents	PK	Cat. No.
Rolls of 150 tissues	2	**9.413 078**

3



4 Wipes Multitex® Ultra z 70

NEW!

The high-quality viscose fleece with textile characteristics is suitable for wet and dry cleaning thanks to its incredible strength. The cloths are very soft and yet lint-free, they can absorb large amounts of liquid and remain tear-resistant, they are solvent-resistant and they meet food safety requirements. Multitex® cloths can be washed out after cleaning, wrung out, and reused.

Package contents	Width mm	Length mm	Weight g / m²	Thickness mm	PK	Cat. No.
12 bags of 76 tissues	350	300	80	0.36	12	**6.266 674**

4



5 Wipes Multiclean®, 3-ply

NEW!

Multiclean® cloths are always on hand when surfaces must be thoroughly cleaned. Multiclean® plus is high-volume and thus even more absorbent. The appropriate holder, whether as floor stand or for wall mounting are available on request.

Package contents	Width mm	Length mm	Weight g / m²	PK	Cat. No.
2 rolls with 500 tears	220	380	60	2	**7.618 013**
2 rolls with 500 tears	380	380	54	2	**7.618 212**
Roll with 1000 tears	360	360	54	1	**7.671 903**

5



6 Multitex® roll Ultra z 70, white, disposable tissues

NEW!

The high-quality viscose fleece with textile characteristics is suitable for wet and dry cleaning thanks to its incredible strength. The cloths are very soft and yet lint-free, they can absorb large amounts of liquid and remain tear-resistant, they are solvent-resistant and they meet food safety requirements. Multitex® cloths can be washed out after cleaning, wrung out, and reused.

Package contents	Width mm	Length mm	Weight g / m²	Thickness mm	PK	Cat. No.
roll with 500 tears	410	380	80	0.36	1	**6.266 675**

6



1



1 Unitex® roll, turquoise disposable tissues

NEW!

Unitex® cleaning cloth from cellulose and polyester fibers.
- Without binders, chemicals or adhesives
- Resistant to solvents and silicone free
- Particularly tear-resistant and lintfree
- Useable dry and wet, high absorption capacity
- Excellent for cleaning and degreasing surface

Package contents	Width mm	Length mm	Weight g / m²	Thickness mm	PK	Cat. No.
roll with 500 tears	390	325	68	0.28	1	**6.266 677**

2



2 Cleaning wipes, KIMTECH*Process Wiper, roll

Kimberly-Clark

Super strong, robust, reusable lint-free PP wipes. Ideal for residue-free wet cleaning of smooth surfaces with cleaning agents and solvents and for wiping up oil and grease. Perforated large roll, embossed.

Package contents	Width mm	Length mm	Colour	PK	Cat. No.
Large roll of 180 towels	340	380	blue	1	**9.413 065**

3



3 Wipes, Wypall*L 40

Kimberly-Clark

Perforated, blue Airflex*material. Bulky wipes with excellent absorption capacity and wet strength. For cleaning-up large spillages and suitable for most surfaces. Comparable in quality to a 4-ply tissue product.

Package contents	Material	Colour	Width mm	Length mm	PK	Cat. No.
Large roll of 750 tissues	AIRFLEX*	blue	330	380	1	**9.413 046**
Large roll of 750 tissues	cellulose/latex 82 g/m²	white	315	340	1	**9.413 094**
Large roll of 950 tissues	cellulose/latex 57 g/m²	white	315	340	1	**9.413 095**

4



4 Cleaning wipes, WYPALL*X 60, tear-resistant

Kimberly-Clark

Hydroknit*material.
The general purpose, extended use, wipe range. Every Wypall*X cloth absorbs liquid rapidly and is puncture and cut-resistant. Extremely hard-wearing and reliable, with excellent tear resistance, even under wet conditions.
The unique Hydroknit*fabric structure used for Wypall*X ensures that these cloths provide long lasting, economical cleaning and wiping across a range of possible applications.

Package contents	Width mm	Length mm	PK	Cat. No.
Large roll (white) of 750 tissues	380	410	1	**9.413 036**
10 boxes (white) of 126 tissues	230	425	10	**9.413 035**
Individual cloths (folded in Z shape), 12 bags of 76 tissues	365	315	12	**9.413 034**
Centre-feed, Barrel Roll (blue) of 150 tissues, textured	245	420	1	**9.413 019**



Dispensing systems

Wall and floor dispensing units for small and large rolls. *Kimberly-Clark*

For	Width mm	Depth mm	Height mm	Colour	Material	PK	Cat. No.
Wall, for small rolls 260 mm wide	320	150	150	white	plastic	1	**9.413 043** 1
Floor, for large rolls 490 mm wide	515	300	330	blue	Metal	1	**9.413 047** 2

1



9.413 043

2



9.413 047

Floor stand

NEW!

Description	PK	Cat. No.
Floor stand with waste bag holder for rolls up to 42cm width	1	**6.266 990** 3
Wall bracket with waste bag holder for rolls up to 42cm width	1	**6.266 991** 4

3



6.266 990

4



6.266 991

5 AQUARIUS*Dispenser casing for cleaning wipes, Wypall*L 10

Cut down consumption of wiping cloths by up to 40% with the revolutionary Roll Control System from Kimberly-Clark, which is extremely economical to use. The controlled tear-off system prevents waste caused by tearing off overly long strips of paper. A fresh, clean towel is available at any time. The risk of cross contamination is reduced thanks to optimised hygiene. The circular dispenser has no sharp edges or metal parts liable to rust. *Kimberly-Clark*

Wypall*L 10 cleaning wipes - RCS
Soft, absorbent wipes. The roll control system enables you to tear off individual towels. 100% recycled Airflex*Material. Perforated, 1-ply, 6 rolls containing 630 sheets, 18.5cm x 38cm, white.

Dispenser for Roll Control System
Dispenser casing for Roll Control System (RCS), plastic, white. Dimensions (H x W x D): 278 x 276 x 226mm

5



Type	PK	Cat. No.
WYPALL* L 10 cleaning wipes - RCS	6	**9.413 018**
AQUARIUS* Dispenser casing for Roll Control System	1	**6.264 929**

1



1 LLG-Hand towels, 3-ply

NEW!

Bright white, extra absorbent, completely unfolding, matching with most dispenser systems, economic use by high absorbancy and comfortable size. Suitable for LLG-Dispenser for hand towels, Cat No 7.618 375.

Package contents	Width mm	Length mm	PK	Cat. No.
20 Packs with 100 tissues	220	420	20	**6.266 568**

2



2 LLG-Hand towel dispenser

NEW!

White plastic, easy to refill, with window to observe the filling level, suitable for towel up to 245mm width, e.g. Cat. No. 6.266 568.

Height mm	Width mm	Depth mm	PK	Cat. No.
375	280	137	1	**7.618 375**

3



3 Hand towels, KLEENEX® Ultra

NEW!

The new way to get more value for money; tissues made of extremely soft, Airflex*material. So economical, they can be used in any situation. *Kimberly-Clark*

Package contents	Description	Width mm	Length mm	PK	Cat. No.
Clip of 94 tissues	2-ply	215	415	1	**9.413 051**
30 clips of 124 tissues	2-ply	215	315	1	**9.413 077**
Clip of 96 tissues	3-ply	215	315	1	**9.413 057**
Clip of 72 tissues	3-ply	215	415	1	**9.413 050**

4



4 Hand Towels, Scott® Performance

Made of highly absorbent, Airflex*material. These rapidly absorbing hand towels are very effective for drying hands due to high moisture absorbency and good wet strength. 1-ply, 70 % recycled material. *Kimberly-Clark*

Package contents	Colour	PK	Cat. No.
Pack of 180 towels, 215mm x 315mm	White	1	**9.413 048**
Pack of 180 towels, 215mm x 315mm	Blue	1	**9.413 052**

5



5 Towels, Scott® Plus

Airflex*material, ultra-white, 1-ply x 35g/m². *Kimberly-Clark*

Type	Package contents	Width mm	Length mm	PK	Cat. No.
Small - cross-folded	boxes of 180 towels	247	230	20	**9.413 108**

6



6 7 Towels, Scott® Excellent Plus

Airflex*material, ultra-white, 2-ply. SCOTT® Hand Towels are renowned for their reliability, consistent performance and in-use value. Made from AIRFLEX*Highly Absorbent Fabric, they offer an effective and economical solution to your hand drying requirements. The towels are folded and interleaved so that when they are dispensed they provide an individual towel that is ready for use and has been touched only by the user. The system is hygienic and helps to reduce wastage. FSC-certified. *Kimberly-Clark*

7

FSC

Type	Package contents	Width mm	Length mm	PK	Cat. No.
Small - cross-folded	Boxes of 180 towels	247	230	20	**9.413 106**
Medium - cross-folded	Boxes of 110 towels	250	330	20	**9.413 107**

E & OE.

1 LLG-Cellulose tissue, supplied in stacks

- Unbleached or highly bleached
- Pack quantity: 1 x 5kg



Description	Width mm	Length mm	PK	Cat. No.
unbleached	600	400	1	**9.413 210**
highly bleached	600	400	1	**9.413 211**

2 Askina® Brauncel® cellulose absorbent pads

Non-sterile. Size 40mm x 50mm. In rolls of 500. Soft, perforated design, easy to tear off. Extremely absorbent and strong. *B. Braun*



Description	PK	Cat. No.
Cellulose absorbent pads	500	**9.413 101**
Dispenser	1	**9.413 102**

3 Cotton wool roll

- 100 % Cotton *Alan & Co*
- White cotton - non chlorine-bleached
- according to European Pharmacopoeia & Ecotex 100 Certificate
- Width - Max. 25cm, length ±7m

For absorbent cotton roll:
- highly absorbent
- Tenacity of water : appr. 23 ml/g of cotton



Description	PK	Cat. No.
Cotton roll 500g, absorbent	1	**9.413 155**
Cotton roll 500g, non-absorbent	1	**9.413 156**

4 Cotton wool

Meets requirements of German Pharmacopeia.
100% viscose.
Medical cotton wool for home use and general hygiene.



Capacity g	PK	Cat. No.
100	1	**9.413 152**

Surface protector - please see page 178

Brushes, natural bristle

Type	Diam. mm	Length mm	PK	Cat. No.	
Pipette brush	5	480	1	**9.019 010**	1
Pipe cleaner	4	150	100	**9.019 005**	2
Reagent bottle brush with wool tip	10	190	1	**9.019 020**	
Reagent bottle brush with head bundle	10	250	1	**9.019 030**	3
Reagent bottle brush with wool tip	15	280	1	**9.019 035**	4
Reagent bottle brush with wool tip	30	270	1	**9.019 040**	
Erlenmeyer flask and bottle brush with head bundle	50	340	1	**9.019 050**	
Erlenmeyer flask and bottle brush with head bundle	63	470	1	**9.019 060**	
Beaker brush with wooden handle	85	390	1	**9.019 070**	5
Beaker brush with wooden handle	85	430	1	**9.019 080**	
Beaker brush with wooden handle	80	430	1	**9.019 090**	
Beaker brush with extra long wooden handle	80	630	1	**9.019 092**	
Rinsing brush**	60	220	1	**9.019 110**	6
Set*			1	**9.019 002**	
Hinge glasses brush bristled falb, with hinge		440	1	**6.237 788**	
Replacement head for Hinge glasses brush		43	1	**6.266 904**	
Burette brush with 1m long wire handle	30	1000	1	**9.019 100**	

* Set consisting of order numbers 9.019 010, 9.019 020, 9.019 030, 9.019 040, 9.019 050, 9.019 060, 9.019 070, 9.019 080, 9.019 090 and 9.019 092.
**Nylon

1

9.019 010

2

9.019 005

3

9.019 030

4

9.019 035

5

9.019 070

6

9.019 110

7


7 Cleaning brushes, Perlon®

Pack of 10. *Isolab*

Description	Length mm	For	PK	Cat. No.
Brush with swivel head, head 21mm x 44mm x 24mm	330	vessels with NS 29/32 or diam. 24 mm	10	**6.242 423**

8


8 LLG- Cleaning brushes

Excellent tools for washing and cleaning of all type of laboratory bottles, flasks, tubes, condensers, burettes, etc. Brush material is manufactured from highest quality of fibre/perlon for long life cycle. Brush stem is manufactured from corrosion proof twisted steel wire. Brush handle is manufactured from polyproylene and offers extreme easy handling and use of the brush. Unique handle design enables hanging of the brush to a convenient place for easy reach. Spherical sponge top part enables access to every corner of the labware and guarantees perfect cleaning results.

Description	Length mm	For	Figure	PK	Cat. No.
LLG-Cleaning brush 20x125mm	845	burettes and tubings	a	10	**6.267 293**
LLG-Cleaning brush 70x130mm	460	large size bottles	b	10	**6.267 294**
LLG-Cleaning brush 50x110mm	460	medium size bottles	c	10	**6.267 295**
LLG-Cleaning brush 40x110mm	380	small size bottles	d	10	**6.267 296**
LLG-Cleaning brush 25x100mm	295	test tubes	e	10	**6.267 297**
LLG-Cleaning brush 12x80mm	235	narrow test tubes	f	10	**6.267 298**

9


9 Hair brushes, oval

Black goat hair. In metal mounts on round wood handle.

Size	Diam. mm	PK	Cat. No.
0	6	1	**9.172 025**
1	7	1	**9.172 026**
2	8	1	**9.172 027**

E & OE.

1 Hair brushes, broad

Bear bristle. Blunt head. Flat stem.

Width mm	Wall thickness mm	Hair length mm	PK	Cat. No.
12.5	3.9	16	1	**9.172 042**
19.0	3.9	18	1	**9.172 043**
25.4	4.1	22	1	**9.172 044**



2 Red marten-hair brushes

Silver ferrule. Black enamelled round handle.

Size	Hair length mm	PK	Cat. No.
0	8	1	**9.172 050**
1	9	1	**9.172 051**
2	11	1	**9.172 052**
3	13	1	**9.172 053**
4	15	1	**9.172 054**
5	18	1	**9.172 055**
6	19	1	**9.172 056**



3 Brush set, water-colour

Water-colour brushes, round, fine hair blend.
Pack of one each: sizes 2/0, 0, 1, 2, 3 , 4.

Type	PK	Cat. No.
Brush set, water-colour	1	**9.172 060**



4 Brush set, silk painting

Silk painting brush set, comprising of one each - round tip, sizes 1, 4, 8; textured brush size 18.

Type	PK	Cat. No.
Brush set, silk painting	1	**9.172 062**



5 Brush set

Comprising of one each - round sizes 0, 4 and 6, flat sizes 6 and 10.

Type	PK	Cat. No.
Brush set	1	**9.172 063**



6 Brush set

Comprising one each size 3 round and pointed, size 0 flat and pointed and size 1 wide hair brushes.

Type	PK	Cat. No.
Brush set	1	**9.172 061**



7 LLG- Weighing brush, with wooden handle

NEW!

Fine hair weighing brush with pointed tips and wooden handle.
Excellent tool for cleaning of weighing boats, weighing dishes and analytical balances.

Description	PK	Cat. No.
LLG- Weighing brush	1	**6.267 404**



1



1 Balance brush

NEW!

Oval. Size 2/6mm, size 4/9mm and size 6/12mm

Type	Size	Diam. mm	PK	Cat. No.
Brush	2	6	1	**6.266 807**
Brush	4	9	1	**6.074 169**
Brush	6	12	1	**6.266 808**
Brush set*			1	**6.266 825**

*consisting of one brush each size 2/6mm, size 4/9mm and size 6/12mm

2



2 Brush bag

Empty, imitation leather bag, for 8 brushes.

Type	PK	Cat. No.
Brush bag	1	**9.172 064**

3



3 Draining racks, PE-coated wire

PE-coated wire.
Wall or bench mounting.
With drip channel and plastic covered feet.
Dimensions (L x W x H): 420mm x 160mm x 610mm.

Description	PK	Cat. No.
For 60 reagent bottles and 5 flasks	1	**9.003 305**
For 24 reagent bottles and 20 flasks	1	**9.003 320**

4



4 Draining rack, PS

Kartell

Wall mounting, with wide draining trough. Pegs can be inserted as required. Peg holes are sealed at the rear to prevent water leakage penetrating the wall behind.
Supplied with 72 pegs (15mm diameter, 95mm long), 11 small pegs (6mm diameter, 95mm long) drain tubing and fittings for wall mounting.
Dimensions (L x W x H): 450 x 63 x 110 mm

Rods 95 x 15mm Quantity	Rods 95 x 6mm Quantity	Description	PK	Cat. No.
72	11	Draining rack, wallmount possible	1	**9.003 240**
	11	Place supports	11	**9.003 032**
72		Place supports	72	**9.003 033**

5



5 Draining rack LaboPlast®, PVC

Bürkle

Wall mounting. Perforated with holes to take interchangeable pegs as indicated. Supplied complete with wall-mounting screws and dowels, PVC outlet channel and drainage connection.

Rods 60 x 6 mm Quantity	Rods 100 x 10 mm Quantity	Rods 150 x 12 mm Quantity	Width mm	Height mm	PK	Cat. No.
5	26	2	400	400	1	**9.003 374**
10	39	4	500	500	1	**9.003 375**
15	56	6	600	600	1	**9.003 376**

E & OE.

Draining Rack, ABS

Bel-Art Products

Laboratory space is always in high demand. Scienceware® Lab-Aire® II Drying Racks are a practical solution for drying and storing fragile, frequently used labware. Benchtop Dryers lets you place your dryer wherever it will be most convenient and a sturdy base provides excellent balance and support. Wallmount dryers keep labware off the bench and out of the way as it dries. Easily installs on walls or standard pegboard using moulded-in tabs with key hole openings. Hardware not included.

- Rugged ABS plastic will never corrode and easily wipes clean
- Drip/storage trays have scalloped wells to hold long thin labware
- 3 different sizes of pegs can be moved and repositioned to hold a variety of labware including beakers, flasks, bottles, test tubes and cylinders
- With drain

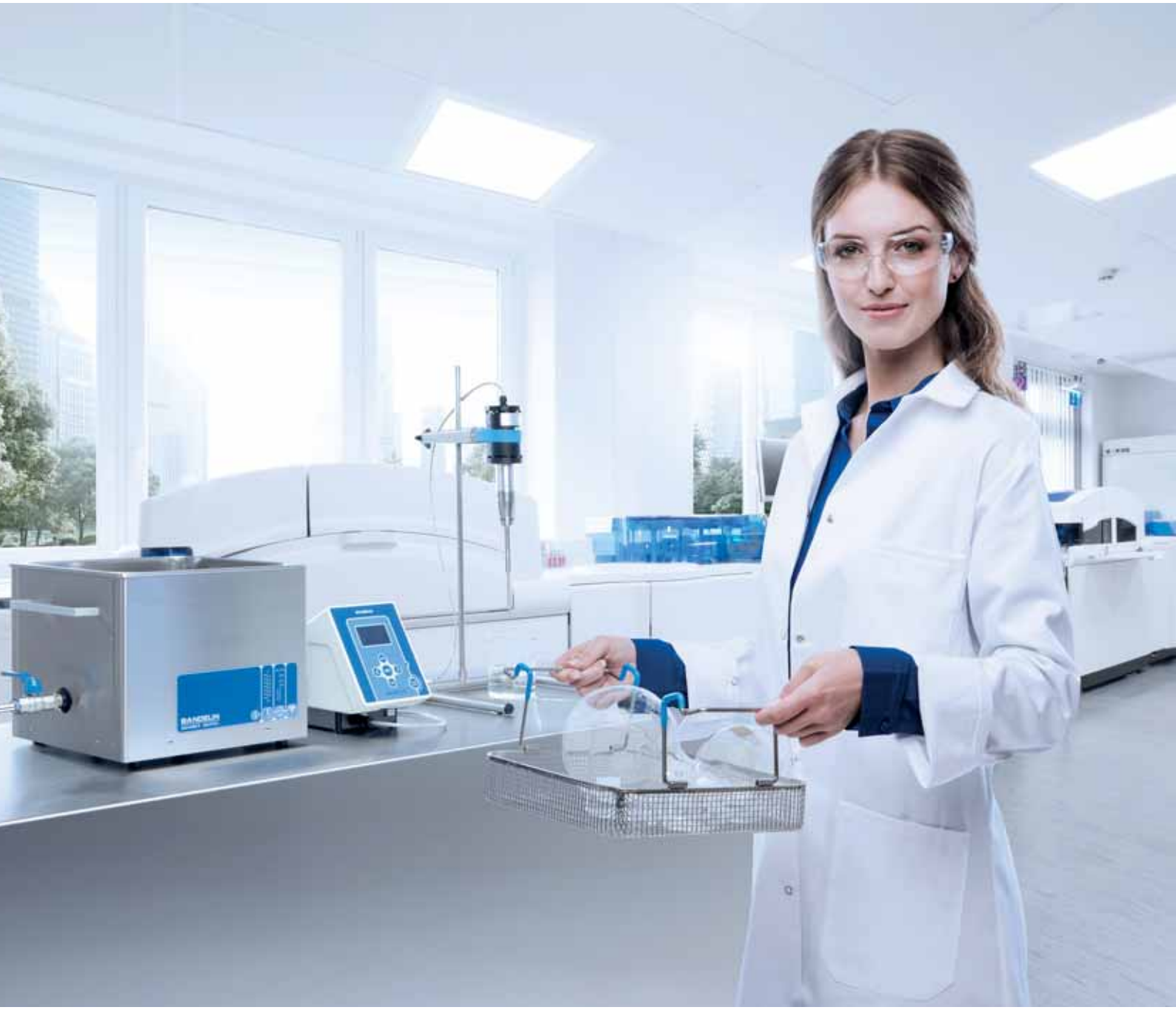
Rods 76 mm Quantity	Rods 310 mm Quantity	Rods 127 mm Quantity	Width mm	Height mm	Depth mm	Description	PK	Cat. No.
6	7	6	375	240	127	Wallmount possible	1	**9.003 301** 1
12	14	12	375	390	178		1	**9.003 302**
18	21	18	375	594	127	Wallmount possible	1	**9.003 303**
12	14	12	375	417	127	Wallmount possible	1	**9.003 304**
18	21	18	375	570	178		1	**9.003 306**



9.003 301



BANDELIN
Ultrasound since1955



SONOREX High-power ultrasonic baths
SONOPULS Ultrasonic homogenizers

- Disinfection and cleaning
- Homogenizing
- Emulsifying
- Degassing
- Preparation of samples

In our laboratory brochure you will find information on our products and a variety of possible applications !

BANDELIN electronic is specialized in the development and manufacturing of ultrasonic devices and is the worldwide only full-service provider of ultrasonic devices and disinfection and cleaning agents, with approvals and certifications according to EN ISO 9001 and 13485 for medical devices.

Benefit from the expertise of the market leader !

NEW

RELAUNCH OF OUR WEBSITE

www.bandelin.com

look for more information about „Ultrasound in the laboratory"

Ultrasonic baths Sonorex

Sonorex Super ultrasonic baths *Bandelin*

These devices work at 35kHz and have PZT transducers for maximum cleaning power. SweepTec for permanent sound field oscillation ensures even and gentle cleaning®. Integrated heating is available. Power information: High ultrasonic peak power and HF-power 230V, 50/60Hz, or 115V. All models are spill-proof with stainless steel tanks (RK 102H hard-chromium plated) and outer cases, drip proof.

Sonorex Digitec ultrasonic baths

Modern digital ultrasonic baths. These devices work at 35kHz and have PZT transducers for maximum cleaning power. SweepTec for permanent sound field oscillation ensures even and gentle cleaning®. Optional with heater 20-80°C, thermostatically adjustable, with LED-display for target value and actual value of temperature. Optical signal in case of excess temperature. 4 sizes are spray-proof with stainless steel tanks and outer cases. All devices are available with infrared interface.

Sonorex Digitplus ultrasonic bath as Sonorex Digitec but power control from 20 to 100%.

Sonorex Technik - welded tanks.

Capacities up to 230L and internal tank length up to 1700mm. Frequency 40kHz. From RM 110 UH upwards 25kHz are possible.

Sonorex ultrasonic pipette cleaner.

Automatic ultrasonic cleaning and rinsing of pipettes or other glassware.

All units are CE marked.

1 Ultrasonic baths, Sonorex Super

1

Bandelin



Cleaning of
- technical glassware like burettes, pipettes, petri dishes and laboratory flasks
- analysis sieves up to 400 mm diameter
- metal parts of all kinds
- electronic components

Cleaning and disinfection of medical instruments
Degassing of liquids to determine concentration
Acceleration of suspending processes
Production of emulsions
Preparation of samples for analysis, e. g. analysis of hair

- Type RK 102 H and above supplied with outlet, 1 to 15 min. timer and continuous operation.
- Type H with heating adjustable from 30 to 80°C, 230V~, or 115V~, 50/60 Hz
- Types RK 106, RK 1028 C and RK 1040 are ideal for sieve cleaning.

Type	Internal dimensions (W x D x H) mm	Capacity L	Ultra-sonic power W	HF peak power W_{eff}	Heating power W	PK	Cat. No.
RK 31	190 x 85 x 60	0.90	160	40		1	**9.877 021**
RK 52	150 x 140 x 100	1.80	240	60		1	**9.877 052**
RK 52 H	150 x 140 x 100	1.80	240	60	140	1	**9.877 051**
RK 100	240 x 140 x 100	3.00	320	80		1	**9.877 100**
RK 100 H	240 x 140 x 100	3.00	320	80	140	1	**9.877 101**
RK 102 H	240 x 140 x 100	3.00	480	120	140	1	**9.877 103**
RK 103 H	240 x 140 x 150	4.00	560	140	200	1	**9.877 114**
RK 106*	240 x 130*	5.60	480	120		1	**9.877 106**
RK 156	500 x 140 x 100	6.00	640	160		1	**9.877 156**
RK 156 BH	500 x 140 x 150	9.00	860	215	600	1	**9.877 155**
RK 255 H	300 x 150 x 150	5.50	640	160	280	1	**9.877 256**
RK 510	300 x 240 x 150	9.70	640	160		1	**9.877 510**
RK 510 H	300 x 240 x 150	9.70	640	160	400	1	**9.877 511**
RK 512 H	300 x 240 x 200	13.00	860	215	400	1	**9.877 512**
RK 514	325 x 300 x 150	13.50	860	215		1	**9.877 540**
RK 514 H	325 x 300 x 150	13.50	860	215	600	1	**9.877 516**
RK 514 BH	325 x 300 x 200	18.70	860	215	600	1	**9.877 515**
RK 1028	500 x 300 x 200	28.00	1200	300		1	**9.877 537**
RK 1028 H	500 x 300 x 200	28.00	1200	300	1300	1	**9.877 529**
RK 1028 C	500 x 300 x 300	45.00	2000	500		1	**9.877 528**
RK 1040*	500 x 195*	39.50	1520	380		1	**9.877 108**
RK 1050	600 x 500 x 200	58.00	2400	600		1	**9.877 551**

* Ø x D



1



1 Ultrasonic baths SONOREX DIGITEC/SONOREX DIGIPLUS

Bandelin

4-step "plug and clean" operation - heater range 20 to 80°C, thermostatically adjustable, with LED display for target and actual temperature values - optical signal in case of overtemperature - timer for countdown and continuous operation -Degas: adjustable pulse sound level for removing unwanted air bubbles, with LCD display indicator - spray-proofed, stainless steel housing, protection class: IP33 - SweepTec® for permanent frequency oscillation - 230V~ 50/60Hz, or 115V~.

DL-Models additionally with power setting 20 to 100%.

Type	Int. tank dims. (W x D x H)	Capacity	Ultra-sonic power	HF peak power	Heating power	PK	Cat. No.
	mm	L	W	W eff	W		
DT 31	190 x 85 x 60	0.9	160	40		1	**9.877 830**
DT 31 H	190 x 85 x 60	0.9	160	40	70	1	**9.877 831**
DT 52	150 x 140 x 100	1.8	240	60		1	**9.877 832**
DT 52 H	150 x 140 x 100	1.8	240	60	140	1	**9.877 833**
DT 100	240 x 140 x 100	3.0	320	80		1	**9.877 834**
DT 100 H	240 x 140 x 100	3.0	320	80	140	1	**9.877 835**
DT 102 H	240 x 140 x 100	3.0	480	120	140	1	**9.877 836**
DT 103 H	240 x 140 x 150	4.0	560	140	200	1	**9.877 837**
DT 156	500 x 140 x 100	6.0	640	160		1	**9.877 838**
DT 255	300 x 150 x 150	5.5	640	160		1	**9.877 839**
DT 255 H	300 x 150 x 150	5.5	640	160	280	1	**9.877 840**
DT 510	300 x 240 x 150	9.7	640	160		1	**9.877 841**
DT 510 H	300 x 240 x 150	9.7	640	160	400	1	**9.877 842**
DT 106	Ø 240, 130 Tief	5.6	480	120		1	**9.877 848**
DT 156 BH	500 x 140 x 150	9.0	860	215	600	1	**9.877 849**
DT 512 H	300 x 240 x 200	13.0	860	215	400	1	**9.877 850**
DT 514	325 x 300 x 150	13.5	860	215		1	**9.877 851**
DT 514 H	325 x 300 x 150	13.5	860	215	600	1	**9.877 852**
DT 514 BH	325 x 300 x 200	18.7	860	215	600	1	**9.877 853**
DT 1028	500 x 300 x 200	28.0	1200	300		1	**9.877 854**
DT 1028 H	500 x 300 x 200	28.0	1200	300	1300	1	**9.877 855**
DT 1028 CH	500 x 300 x 300	45.0	1200	300	1450	1	**9.877 857**
DT 1050 CH	600 x 500 x 300	90.0	2400	600	1950	1	**9.877 860**
DL 102 H	240 x 140 x 100	3.0	480	120	140	1	**9.877 865**
DL 156 BH	500 x 140 x 150	9.0	860	215	600	1	**9.877 866**
DL 255 H	300 x 150 x 150	5.5	640	160	280	1	**9.877 867**
DL 510 H	300 x 240 x 150	9.7	640	160	400	1	**9.877 868**
DL 512 H	300 x 240 x 200	13.0	860	215	400	1	**9.877 869**
DL 514 BH	325 x 300 x 200	18.7	860	215	600	1	**9.877 870**
DL 1028 H	500 x 300 x 200	28.0	1200	300	1300	1	**9.877 871**

Ultrasonic baths Sonorex Digitec DT ... F - Basic equipment

Bandelin

Flat ultrasonic baths with fast degassing and for sample preparation
- Sample preparation in laboratory flasks
- Fast degassing of samples at the push of the button
- Homogenising
- Same power density in all ultrasonic baths
- Reproducibility of results in the different bath sizes
- Uniform sonication of samples irrespective of size and arrangement of the flasks.

Items supplied:
DT 510 F - flask holder GL 510 F and 250ml Tickopur TR 3
DT 1028 F - 2 x flask holder GL 510 F and 250ml Tickopur TR 3.

Spring clamps EK are necessary to fix the laboratory flasks quickly and easily to the flask holder GL.

Type	Int. tank dims. (W x D x H)	Capacity	Ultra-sonic power	HF peak power	PK	Cat. No.	
	mm	L	W	W eff			
DT 510 F	300 x 240 x 65	4.30	560	140	1	**9.877 862**	2
DT 1028 F	500 x 300 x 65	9.50	1280	320	1	**9.877 863**	3

2



9.877 862

3



9.877 863

E & OE.

1 SONOSHAKE Ultrasonic bath with shaking device

Bandelin

Consisting of:
Ultrasonic bath Sonorex Digitec DT 1028 F
- especially for sonification of samples in laboratory flasks and for rapid degassing
- low-profile, ultrasonic bath with stainless steel tank, inner dimensions 500mm x 300mm x 65mm (L x W x D)
- housing made of stainless steel, protected against spray, 535mm x 325mm x 205mm (L x W x H)
- outlet: G½ ball valve
- ultrasonic power 1280W
- HF power 320W
- working frequency 35kHz
- Current consumption 1.4A

Shaking device SA 1028
- analogue setting of time and shaking frequency
- reciprocating motion: settings in 4 steps possible of up to 200/min
- constant amplitude of 20mm independent of loading
- rack easy to remove - easy mounting of the laboratory clamps EK 10-250 (separately to order)
- footprint approx. 410mm x 280mm (L x W)
- Holds 36 x 10ml, 36 x 25ml, 18 x 50ml, 12 x 100ml or 10 x 250ml flasks

- Bench space required for Sonoshake approx. 850mm x 360mm (L x W)

1



The Sonoshake can be used either as an ultrasonic bath for sample preparation, a shaking device SA1028 only, or both combined.

Type	PK	Cat. No.
SONOSHAKE	1	**9.877 864**
SA 1028	1	**9.877 650**

2 Flask Holder for SONOREX DIGITEC DT...F Ultrasonic Baths

Stainless steel. Flask Clips EK required. *Bandelin*

2



Type	For bath type	PK	Cat. No.
GL 510 F*	DT 510 F, DT 1028 F	1	**9.877 579**

* in DT 1028 F fit 2 pieces.

3 Suspension baskets for Sonorex ultrasonic baths

Stainless steel. *Bandelin*

Optimal ultrasonic wave transmission. Items to be cleaned should not be placed on the bottom of the tank.

3



Type	For bath type	Length mm	Height mm	Width mm	PK	Cat. No.
K 08	RK/DT 31 / H	65	170	50	1	**9.877 630**
K 1 C	RK/DT 52 / 52 H	110	120	40	1	**9.877 631**
K 3 C	RK/DT 100 / 100 H / 102 H / 102 H-RC, DL 102 H	110	200	40	1	**9.877 633**
K 3 CL	RK/DT 103 H	110	200	40	1	**9.877 632**
K 6*	RK/DT 106	215	215	50	1	**9.877 634**
K 6 L	RK/DT 156	100	460	50	1	**9.877 636**
K 6 BL	RK/DT 156 BH, DL 156 BH	100	460	50	1	**9.877 637**
K 5 C	RK/DT 255 H / 255 H-RC, DL 255 H	110	260	40	1	**9.877 635**
K 10	RK/DT 510 / 510 H / 510 H-RC, DL 510 H	195	250	50	1	**9.877 697**
K 10 B	RK/DT 512 H, DL512 H	195	250	50	1	**9.877 700**
K 14	RK/DT 514 / H	245	275	50	1	**9.877 694**
K 14 B	RK/DT 514 BH / 514 H-RC, DL 514 BH	245	275	50	1	**9.877 701**
K 28	RK 1028/H / DT 1028 / H, DL 1028 H	245	455	50	1	**9.877 698**
K 28 C	RK/DT 1028 CH	245	455	50	1	**9.877 702**
K 50	RK 1050	450	545	50	1	**9.877 699**
K 50 C	RK/DT 1050 CH	450	545	50	1	**9.877 703**

*round, adjustable.

1



1 Handle adjusters, GV 3 and GV 10, for Sonorex insert baskets

The immersion depth of the baskets can be continuously adjusted using the handle adjuster prevents laboratory flasks from floating, tipping over or becoming flooded. Quick and easy attachment to insert baskets or utensil holders (except GH 1).
1 pair.

Bandelin

Type	For baskets	PK	Cat. No.
GV 3	K 1 C, K 3 C, K 3 CL, K 5 CL, K 6 L, K 6 BL	1	**9.877 720**
GV 10	K 10, K 10 B, K 14, K 14 B, K 28, K 28 C, GH 10, GH 28	1	**9.877 721**

2



2 Flask Clips for Sonorex insert baskets

Stainless steel. Suitable for insert baskets and instrument holders with mesh size up to 12.5mm x 12.5mm and for glass holder GL for DT...F. Essential for the attachment of laboratory flasks.

Bandelin

Type	PK	Cat. No.
EK 10 for insert baskets up to 31 mm dia.	1	**9.877 651**
EK 25 for insert baskets up to 42 mm dia.	1	**9.877 653**
EK 50 for insert baskets up to 52 mm dia.	1	**9.877 655**
EK 100 for insert baskets up to 65 mm dia.	1	**9.877 657**
EK 250 for insert baskets up to 85 mm dia.	1	**9.877 658**

3



3 Lids for Sonorex ultrasonic baths

NEW!

Stainless steel.
For covering bath tanks, as outlined below.

Bandelin

Type	For bath type	PK	Cat. No.
D 08	RK/DT 31 / H	1	**9.877 597**
D 52	RK/DT 52 / 52 H	1	**9.877 601**
D 100	RK/DT 100 H / 102 H /102 H-RC / 103 H, DL 102 H	1	**9.877 603**
D 6	RK/DT 106	1	**9.877 606**
D 156	RK/DT 156 BH, DL 156 BH	1	**9.877 602**
D 255	RK/DT 255 H / 255 H-RC, DL 255 H	1	**9.877 605**
D 510	RK/DT 510 / 510 H / 510 H-RC / 512 H, DL 510 H	1	**9.877 610**
D 514	RK/DT 514 / 514 H / 514 BH / 514 BH-RC, DL 514 BH	1	**9.877 604**
D 1028	RK 1028/H / DT 1028 H, DL 1028 H	1	**9.877 607**
D 1028C	RK/DT 1028 CH	1	**9.877 600**
D 1050 C	RK 1050 CH / DT 1050 CH	1	**9.877 608**

4



4 Positioning lids for Sonorex ultrasonic baths

Stainless steel.
For supporting inset beakers.

Bandelin

Type	For bath type	PK	Cat. No.
DE 08	RK/DT 31 / H	1	**9.877 621**
DE 52	RK/DT 52 / 52H / 52H-RC	1	**9.877 611**
DE 100	RK/DT 100 H / 102 H / 103 H, DL 102 H	1	**9.877 613**
DE 6	RK/DT 106	1	**9.877 616**
DE 156	RK/DT 156 BH / 156 BH-RC, DL 156 BH	1	**9.877 612**
DE 255	RK/DT 255 H / 255 H-RC, DL 255 H	1	**9.877 615**
DE 510	RK/DT 510 / 510 H / 512 H, DL 510 H	1	**9.877 620**
DE 514	RK/DT 514 H / 514 BH / 514 BH-RC, DL 514 BH	1	**9.877 614**
ES 4	RK 1028/H/CH, DT 1028 / H/CH, RK 1050 / DT 1050 CH, DL 1028 H	1	**9.877 617**

5



5 Sonorex insert beakers

For positioning lids and beaker holders.
SD 06, PD 06, EB 05: with retaining ring
SD 05, KB 04, SD 04: with retaining ring, only for DE 08
SD 09: with retaining ring

Bandelin

Type	Material	Capacity ml	Diam. mm	Height mm	PK	Cat. No.
SD 04	Glass	400	76	110	1	**9.877 624**
SD 05	Glass	600	76	150	1	**9.877 645**
SD 06*	Glass	600	84	125	1	**9.877 622**
SD 09	Glass	1000	91	180	1	**9.877 623**
EB 05*	Stainless steel	600	87	120	1	**9.877 626**
KB 04	Plastic	400	76	110	1	**9.877 644**
PD 06*	Plastic	600	86	125	1	**9.877 628**

* with lid.

E & OE.

1 Inset baskets for SONOREX insert beakers

Mesh aperture 1mm x 1mm. *Bandelin*

Type	For	Material	Int. diam. mm	PK	Cat. No.
PD 04	Inset beakers	Plastic	60	1	**9.877 643**
KD 0*	Inset beakers	Stainless steel	75	1	**9.877 642**

*not for SD 04, SD 05 and KB 04

1



2 Insert basket accessories for Sonorex ultrasonic baths

Perforated bottom plastic. *Bandelin*
For cleaning sensitive components.

Type	For bath type	Internal dimensions (W x D x H) mm	PK	Cat. No.
PK 1 C	RK 52 / H, DT 52 / H	90 x 90 x 66	1	**9.877 661**
PK 3 C	RK 103 H, DT 103 H	90 x 187 x 56	1	**9.877 666**
PK 2 C	RK 100 H, RK 102 H / DL 102 H DT 100 / H, DT 102 H / H-RC	115 x 195 x 88	1	**9.877 664**
K 5 P	RK 255 / H, DT 255 / H, DL 255 H	96 x 254 x 130	1	**9.877 667**

2



3 Ultrasonic baths, Sonorex Technik

Modular range - with 6 standard tank capacities in 4 versions (without heating, without ultrasonic on request). For cleaning and rinsing. With integrated ultrasonic generator. *Bandelin*
Frequencies: 25kHz (models up to RM 110) or 40kHz (rest of range). For 220-240V, 50/60Hz (RM 110: 210 UH, 400V, 3ph. 50/60Hz, Cekon plug 16A). With 2mm thick, stainless steel V 4A, 1.457, welded tank. With overflow, drainage outlet and time switch 1 - 15 min. or can be set for continuous operation. With adjustable heating 30 to 80°C.

Type	Int. tank dims. (W x D x H) mm	Capacity L	Ultra-sonic power W	HF peak power W_{eff}	Heating power W	PK	Cat. No.
RM 16 UH	325 x 275 x 200	13	1200	1 x 300	800	1	**9.877 570**
RM 40 UH	480 x 300 x 300	30	2000	1 x 500	1250	1	**9.877 571**
RM 75 UH	580 x 500 x 300	60	4000	1 x 1000	1950	1	**9.877 572**
RM 110 UH	600 x 450 x 450	110	4000	1 x 1000	4800	1	**9.877 573**
RM 180 UH	1000 x 500 x 400	160	2x4000	2 x 1000	7200	1	**9.877 575**
RM 210 UH	750 x 650 x 500	210	2x4000	2 x 1000	7200	1	**9.877 577**

3



4 5 Accessories for Sonorex Technik ultrasonic baths

Stainless steel. Insert baskets and lids for Technik models. Lids protect against evaporation and reduce operating noise.Baskets for hanging in bath tanks as outlined below. *Bandelin*

Type	Description	For bath type	Internal dimensions (W x D x H) mm	PK	Cat. No.
MK 16B	basket	RM 16 UH	275 x 245 x 50	1	**9.877 680**
MK 40B	basket	RM 40 UH	430 x 240 x 50	1	**9.877 681**
MK 75B	basket	RM 75 UH	530 x 445 x 50	1	**9.877 682**
MK 110	basket	RM 110 UH	530 x 410 x 90	1	**9.877 683**
MK 180	basket	RM 180 UH	930 x 460 x 90	1	**9.877 684**
MK 210	basket	RM 210 UH	680 x 610 x 90	1	**9.877 685**
MD 16	Lid	RM 16 UH		1	**9.877 582**
MD 40	Lid	RM 40 UH		1	**9.877 583**
MD 75	Lid	RM 75 UH		1	**9.877 584**
MD 110	Lid	RM 110 UH		1	**9.877 585**
MD 180	Lid	RM 180 UH		1	**9.877 586**
MD 210	Lid	RM 210 UH		1	**9.877 587**

4



5



1



1 Insert tubs for Sonorex ultrasonic baths

NEW!

Unperforated plastic, with cover. For cleaning with aggressive liquids.

Bandelin

Type	For bath type	Internal dimensions (W x D x H) mm	PK	Cat. No.
KW 3	RK/DT 102 H / 102 H-RC / 103 H / 100 / H, DL 102 H	195 x 115 x 88	1	**9.877 800**
KW 5	RK/DT 255 H/-RC, DL 255 H	154 x 96 x 130	1	**9.877 801**
KW 14	RK/DT 514/H	280 x 215 x 145	1	**9.877 802**
KW 14 B	RK/DT 514 BH-/-RC, DL 514 BH	275 x 210 x 195	1	**9.877 803**
KW 28-0	RK 1028/H, DT 1028 H/CH, DL 1028 H	437 x 230 x 155	1	**9.877 804**
KW 50-0	RK 1050	517 x 445 x 184	1	**9.877 806**
KW 50 B-0	RK/DT 1050 CH	520 x 445 x 284	1	**9.877 717**
KW 10-0	RK 510/H, DT 510/H/H-RC, DL 510 H	242 x 182 x 135	1	**6.207 107**

2



2 Ultrasonic sieve-bath Sonorex Super ultrasonic bath RK 106

NEW!

Ultrasonic bath for cleaning of 1 test sieve with 200 mm diameter

Bandelin

- Tank: stainless steel
- Housing: stainless steel drip-proof
- Outlet: ball valve, right side
- Degree of protection: IP 32
- Time switch: 1-15 min and ∞

Type	Description	PK	Cat. No.
RK 106	Ultrasonic bath for 1 test sieve EU-Plug	1	**9.877 106**
RK 106	Ultrasonic bath for 1 test sieve UK-Plug	1	**9.877 105**
RK 106	Ultrasonic bath for 1 test sieve CH-Plug	1	**9.877 107**
D 6	Lid for RK 106	1	**9.877 606**
SH 7	Sieve holder	1	**9.877 784**

3



3 Ultrasonic bath Sonorex Super ultrasonic bath RK 1028 C

NEW!

For 5 test sieves with 200 mm diameter

Bandelin

- Tank: stainless steel
- Housing: stainless steel drip-proof
- Handles: on sides
- Degree of protection: IP 32
- Time switch: 1-15 minutes or continuous operation

Type	Description	PK	Cat. No.
RK 1028 C	Ultrasonic bath for 5 test sieves EU-Plug	1	**9.877 528**
RK 1028 C	Ultrasonic bath for 5 test sieves UK-Plug	1	**9.877 538**
RK 1028 C	Ultrasonic bath for 5 test sieves CH-Plug	1	**9.877 539**
D 1028 C	Lid for RK 1028 C	1	**9.877 600**
SH 28 C	Sieve holder	1	**9.877 746**

4



4 Utensil and test sieve holder for Sonorex ultrasonic baths

Instrument and test sieve holder.

Bandelin

9.877 781: Holder for 1L glass flasks, 105mm diameter. GH 1
9.877 784: Sieve holder SH 7 for test sieve 200mm diameter.
GH 10/28 instrument holders, stainless steel, mesh size 12.5mm x 12.5mm

Type	For bath type	Dimensions (W x D) mm	PK	Cat. No.
GH 1	RK/DT 52, RK/DT 100 / H, RK 103 H, RK/DT 102 H / H-RC, DT 103 H, DL 102 H	129 x 117	1	**9.877 781**
SH 7	RK/DT 106	-	1	**9.877 784**
GH 10	RK/DT 510 / 510 H / H-RC, DL 510 H	260 x 200	1	**9.877 731**
GH 28	RK 1028/H, DT 1028 H/CH, RK 1040	455 x 250	1	**9.877 733**
SH 28 C	RK 1028 C		1	**9.877 746**

Sieves please see page 544.

E & OE.

1 High-power ultrasonic cleaning unit SONOREX SUPER RK 1028 CH and RK 1050 CH

Bandelin

Specifications:

	RK 1028 CH/RK 1050 CH
Inner tank dimensions (WxDxH):	500 x 300 x 300mm/600 x 500 x 300mm
Transducers:	8 PZT-/16-PZT-broad beam transducers
Capacity:	45L/90L
Filling volume for cleaning:	30L/60L
Ultrasonic power:	1200W/2400W
HF power:	$300W_{eff}$/$300W_{eff}$
Heating power:	1450W/1950W
Current consumption:	7.7A/11.1A
Leakage current:	< 0.5mA
Protection rating:	IP 32
Exterior dimensions (WxDxH): (without handles and drain tap)	540 x 340 x 500mm/530 x 540 x 640mm
Weight:	net 23.7kg/37kg gross 27.2kg/67kg

Type	HF peak power W_{eff}	Ultra-sonic power W	PK	Cat. No.
RK 1028 CH	300	1200	1	**9.877 530**
RK 1050 CH	600	2400	1	**9.877 552**

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5 6 Accessories for Sonorex SUPER RK 1028 CH and RK1050 CH

NEW!

Bandelin

Accessories RK 1028 CH:
Insert basket K 28 C, stainless steel, 455mm x 245mm x 50mm, mesh size 5mm x 5mm.
Insert basket stainless steel, int. 470mm x 270mm x 215mm.
Insert tub KW 28-0 plastic, non-perforated, with lid, int. 437mm x 230mm x 155mm.
lid D 1028 C stainless steel.

Accessories RK1050 CH:
Insert basket K 50 C stainless steel, 545mm x 450mm x 50mm, mesh size 5mm x 5mm.
Insert basket stainless steel, int. 540mm x 445mm x 240mm, mesh size 12.5mm x 12.5mm.
Insert bowl KW 50 B-0 for the use of aggressive liquids, plastic, non-perforated, with lid, int. 520mm x 445mm x 284mm.
Lid D 1050 C stainless steel.

For cleaning small parts:
Beaker holder ES 4 stainless steel, for positioning of up to 4 beakers:
SD 06 glass - 600ml
EB 05 stainless steel - 600ml
PD 06 plastic - 600ml
Insert sieve basket
Fits into beakers:
KD 0 stainless steel, diameter 75mm
PD 04 plastic, diameter 60mm

Type	Description	PK	Cat. No.
RK 1028 CH: K 28 C	Insert basket	1	**9.877 702** 2
RK 1028 CH: K 28 CA	Insert basket	1	**9.877 712**
RK 1028 CH: K 28 CV	Insert basket	1	**9.877 713**
RK 1028 CH: KW 28-0	Insert tub	1	**9.877 804**
RK 1028 CH: D 1028 C	Lid	1	**9.877 600**
RK 1028 CH + RK1050 CH: SD 06	Beaker, glass	1	**9.877 622**
RK 1028 CH + RK1050 CH: ES 4	Beaker holder	1	**9.877 617** 3
RK 1028 CH + RK1050 CH: EB 05	Beaker, stainless steel	1	**9.877 626**
RK 1028 CH + RK1050 CH: PD 06	Beaker, plastic	1	**9.877 628**
RK 1028 CH + RK1050 CH: KD 0	Beaker, stainless steel	1	**9.877 642**
RK 1028 CH + RK1050 CH: PD 04	Beaker, plastic	1	**9.877 643**
RK1050 CH: D 1050 C	Lid	1	**9.877 608**
RK1050 CH: K 50 C	Insert basket	1	**9.877 703** 4
RK1050 CH: K 50 CA	Insert basket	1	**9.877 715**
RK1050 CH: K 50 CV	Insert basket	1	**9.877 716**
RK1050 CH: KW 50 B-0	Insert tub	1	**9.877 717**

Caution.
Do not use combustible, acidic cleaning agents or chemicals containing chloride ions like household cleaners. Do not place any items on the tank bottom, neither baskets nor beakers.

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9.877 702

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9.877 703

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E & OE.

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1 Ready-to-operate set BactoSonic® 14.2

Ultrasonic special bath for a gentle removal of biofilms. *Bandelin*

Consisting of:

Unit BS 14:	scientifically proven description of the procedure
Transport containers:	IB 5, PP, 0.52 l - 2 pcs
	IB 6, PP, 0.6 l - 2 pcs
	IB 10, PP, 1.0 - 1 piece
	IB 18, PP, 1.8 l - 1 piece
	IB 20, PP, 2.0 l - 1 piece
Container carriers for transport containers:	BT 5, PC, for 2 pcs IB 5
	BT 6, PC, for 2 pcs IB 6
	BT 10, PC, for 1 piece IB 10
	BT 18, PC, for 1 piece IB 18
Utensil holder for transport containers:	GH 14, stainless steel, for 3 pcs IB 20
Frame for foil test:	FT 14
Contact liquid:	TICKOPUR TR 3 - 250 ml (concentrate)

Type	PK	Cat. No.
BactoSonic® 14.2	1	**9.650 290**

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2 Accessories for BactoSonic® 14.2

Bandelin

Type	For	PK	Cat. No.
BT 5	IB 5	1	**9.650 311**
BT 6	IB 6	1	**9.650 312**
BT 10	IB 10	1	**9.650 313**
BT 18	IB 18	1	**9.650 314**

Transport containers, PP, for BactoSonic® 14.2

Bandelin

Type	Dimensions mm	Capacity L	PK	Cat. No.	
IB 5	145 x 110 x 67	0.5	5	**9.650 291**	3
IB 6	dia. 142 x 68	0.6	5	**9.650 292**	4
IB 10	278 x 115 x 60	1.0	5	**9.650 293**	5
IB 18	208 x 143 x 94	1.8	5	**9.650 294**	6
IB 20	135 x 102 x 282	2.0	5	**9.650 295**	7

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9.650 291

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9.650 292

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9.650 293

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9.650 294

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9.650 295

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

BANDELIN

E & OE.

1 Ready-to-operate set SONOCOOL® 255

Bandelin

Ready-to-use set consisting of:
- ultrasonic device SC 255
- sample holder PH 255-11 for 11 inset beakers SD 01.2
- lid made of glass D 255 G
- inset beakers SD 01.2, glass - without spout, 20 pieces of 100 ml,
- 250 ml TICKOPUR TR 3
(concentrate for producing the contact liquid)

Specifikations

Inner tank dimensions:	280 × 150 × 150 mm (l × w × d)
Tank volume:	5 litres (contact liquid)
Adjustable bath temperature:	15 - 40°C (at 20°C room temperature)
Cooling power:	200 W
Ultrasonic power:	180 W, adjustable in 4 steps
Ultrasonic frequency:	35 kHz, SweepTec®
Countdown operation:	up to 100 h
External dimensions:	360 × 605 × 385 mm (l × w × h)
Housing:	aluminium: coated with flush pulls (grips recessed inside the housing)
Outlet:	front left, concealed
Current consumption:	1.6 A
Mains connection:	230 V~ (±10 %) 50/60 Hz
Weight:	27.5 kg

Type	PK	Cat. No.
SONOCOOL® 255	1	**9.650 300**

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Accessories for ultrasonic device SONOCOOL® 255

NEW!

Bandelin

Type	Description	PK	Cat. No.	
PH 255-11	Sample holder for 11 beakers SD 01.2	1	**9.650 303**	2
SD 01.2	Beakers of 100 ml, glass, without spout, inside dia. 44mm, height 80mm	10	**9.650 304**	
PH 255-1	Sample holder for 1 Box IB 18	1	**9.650 305**	3
IB 18	Implant box IB 18 1.80 liter	5	**9.650 294**	
PH 255-2	Sample holder for 2 beakers SD 06	1	**9.650 306**	4
SD 06	Beakers, glass, 600 ml, Ø 84 mm, 125 mm, with no cover, insert ring	1	**9.877 622**	
DG 255 G	Lid made of glass	1	**9.650 307**	5
SCH 255	Hose connection for connecting a pump	1	**9.650 308**	

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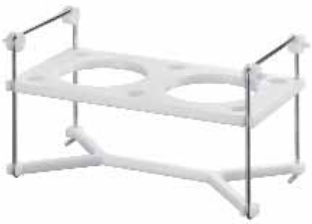
9.650 303

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9.650 307

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9.877 911

Ultrasonic pipette cleaner PR 140 C, Sonorex

Bandelin

Offers ultrasonic cleaning and rinsing in the same container - without chromosulphuric acid - with water soluble cleaning concentrates. For pipettes, burettes and other glass instruments up to 755mm long. 230V~, 50/60Hz or 115V~.

Specifications

Overall height:	1130mm
Area required (W x L):	255mm x 335mm
Ultrasonic output max.:	860W
HF power:	215W$_{eff}$
Time switch:	1 to 15 min. and continuous operation
Effective capacity:	13.9L
Effective cleaning depth:	765mm

Type	Description	PK	Cat. No.
PR 140 C	Complete set, with plastic basket, stainless steel lid, 5 litres of Tickopur R 33 mildly alkaline cleaning concentrate	1	**9.877 911** 1
AR 140 C	3-way valve, metal	1	**9.877 912**
AR 140 CP-1	3-way valve, plastic	1	**9.877 915**
D 140	Stainless steel lid	1	**9.877 914**

2



2 TICKOPUR - STAMMOPUR concentrates for ultrasonic baths

Bandelin

Concentrates for Sonorex ultrasonic cleaning baths. Enhances cavitation, cleans intensively, kind to most materials and free from chloride. For use cold or warned - up.

Tickopur TR 3. Special cleaner, concentrate. Properties: weakly acid pH 3.0 at 1%, dosage 1% to 5%, based on citric acid, without phosphate For: steel, stainless steel, non-ferrous, precious and light metals, glass, ceramics, plastics, rubber. Removes: mineral residues, flash rust, grease, oils, waxes, pigments, drilling, grinding, polishing and lapping residues

Tickopur R 27.*Special cleaner, concentrate. Properties: acid pH 1.9 at 1% solution, dosage 1 to 5%. For: glass, steel, rubber, plastic, precious metals, ceramics. Removes: rust, lime scale, mineral residues, silicate, phosphate, cement, urine scale, etc.

Tickopur R 30. Neutral cleaner, concentrate. Properties: neutral, pH 7% dosage 1% to 5%. For: glass, steel, nonferrous metals, aluminium, rubber, optical components, test sieves. Removes: grease, oils, dust, protein, wax, silicone films, etc.

Tickopur R 33. Universal cleaner, concentrate. Properties: mildly alkaline pH 9.9 at 1%, dosage 1% to 5%. For: glass, metal, ceramics, plastic, rubber
Removes: grease, oils, wax, silicone films, protein, ink residue, etc.

Tickopur RW 77. Special cleaner with ammonia, concentrate. Properties: mildly alkaline, pH 9.9 at 1%, dosage 5% to 10%. For: steel, stainless steel, non-ferrous metals, glass, plastics, optical components. Removes: grease, oils, wax, lubricants, silicone films, grinding, polishing and soldering agents, etc., slightly deoxidising.

Tickopur J 80 U. Deoxidisation with tarnish preventer, ready for use. Properties: acidic, pH 2, for use in glass and plastic beakers only. For: non-ferrous metals, alloys, copper, electron microscope screens. Removes: oxide and sulphide layers, flux, deoxidising.

**Stammopur 24. ***Disinfection and cleaning concentrate. For intensive cleaning and disinfection - VAH-certified-bactericidal, tuberculocidal, yeasticidal virucidal against BVDV, Vaccinia, HBV, HCV, HIV. Effectiveness EXAM - expertise against H5N1. Free from aldehydes, chlorine and phenol. Application 1% to 2%, mildly alkaline, pH 9.4 (1%). With corrosion prevention. Highly compatible with most materials.

Type	Capacity Litres	PK	Cat. No.
TICKOPUR TR 3	1	1	**6.802 927**
TICKOPUR TR 3	2	1	**6.301 466**
TICKOPUR TR 3	5	1	**6.802 537**
TICKOPUR R 27*	1	1	**9.192 761**
TICKOPUR R 27*	2	1	**9.192 762**
TICKOPUR R 27*	5	1	**9.192 765**
TICKOPUR R 30	1	1	**9.192 641**
TICKOPUR R 30	2	1	**9.192 646**
TICKOPUR R 30	5	1	**9.192 642**
TICKOPUR R 33	1	1	**9.192 601**
TICKOPUR R 33	2	1	**9.192 602**
TICKOPUR R 33	5	1	**9.192 605**
TICKOPUR RW 77	1	1	**9.192 611**
TICKOPUR RW 77	2	1	**9.192 612**
TICKOPUR RW 77	5	1	**9.192 615**
TICKOPUR J 80 U	1	1	**9.192 751**
TICKOPUR J 80 U	2	1	**9.192 752**
TICKOPUR J 80 U	5	1	**9.192 755**
STAMMOPUR 24*	2	1	**9.192 711**
STAMMOPUR 24*	5	1	**9.192 712**
STAMMOPUR 24*	25	1	**9.192 714**

* Transport regulations for dangerous goods have to be observed.

Miele
PROFESSIONAL

Greater capacity. Greater purity. Greater flexibility.

Laboratory glassware reprocessing for analytical purposes with the new PG 85 series





The new generation of Miele lab washers excels by offering higher capacity, greater purity and more flexibility:

- Increased capacity through an innovative and highly flexible range of load carriers
- High-power cleaning including spray pressure and spray arm monitoring
- Reduced consumption through application-specific programmes

Tel.: 0800 22 44 644
www.miele-professional.de

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1 Washer-disinfector PG 8583/PG 8593

NEW!

Miele

Professional basic solution for everyday laboratory glass cleaning tasks in industry, environmental and research laboratories.

- Stand-alone unit (with lid), for undercounter appliances
- Integrated 1-2 dosing (depending on the equipment) pumps for liquid chemicals (neutralizing agent/cleaner)
- Exterior panels in stainless steel or white housing
- TouchControl with 14 programs
- 4 water connections for 2x cold, hot and demineralised water
- Powerful circulating pump, Qmax .: 400 l/min

Model PG 8593 with Dry Plus : Integrated hot air drying

Specifications

Dimensions (WxDxH):	600 x 600 x 835 (820 without lid)mm
Power supply:	3N AC/400V/50Hz/9.3kW

Type	Description	PK	Cat. No.
PG 8583	White housing, hot water and distilled water connection, powder dispensing	1	**6.266 426**
PG 8583	White housing, hot water and distilled water connection, liquid dispensing	1	**6.266 427**
PG 8583	Stainless steel housing, hot water and distilled water connection, powder dispensing	1	**6.266 428**
PG 8583	Stainless steel housing, hot water and distilled water connection, liquid dispensing	1	**6.266 429**
PG 8583	Stainless steel housing, hot water connection, distilled water pump, powder dispensing	1	**6.266 430**
PG 8583	Stainless steel housing, hot water connection, distilled water pump, liquid dispensing	1	**6.266 431**
PG 8583	Stainless steel housing, hot water and distilled water connection, powder dispensing, oil application	1	**6.266 432**
PG 8583	Stainless steel housing, hot water and distilled water connection, liquid dispensing, oil application	1	**6.266 433**
PG 8593	Stainless steel housing with DOS module	1	**6.266 434**
PG 8593	Stainless steel housing with conductivity monitoring and DOS module	1	**6.266 435**
PG 8593	Stainless steel housing with DOS module, suitable for oil applications	1	**6.266 436**

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2 Washer-disinfector PG 8535

Miele

Compact high-tech lab washer with freely programmable controls for the reprocessing of glassware in research and production as well as in all analytical and prep areas including microbiology and biotechnology.

Innovative product features

- Network process documentation interface
- Magnetic strip for automatic mobile unit recognition
- Spray arm sensing
- Measures conductivity of wash liquor
- Ultrasound dispenser volume control
- Drying with optimum air circuit and HEPA Class EU 13 filter

- Built-under/freestanding unit without lid
- H 820mm, B 900mm, T 700mm
- Freely programmable Profitronic+ controls
- 2 dishwashing levels (upper and lower baskets)
- 3-phase connection for short programme cycles
- 3 connections for cold, hot and demineralised water
- 2 integrated dispenser pump for process chemicals (alkaline detergent/neutralising agent)
- 2 additional dispenser pumps possible
- Drawer with 2 supply containers, 5L each
- Integrated drying unit
- Batch capacity: 37 narrow-necked glasses or 96 pipettes or 1600 test tubes

Type	Description	PK	Cat. No.
PG 8535	Stainless-steel panelling	1	**9.803 890**
DE-CS7	Stainless-steel lid	1	**6.401 199**
ML/2	Magnetic strip for automatic mobile unit recognition	1	**9.803 766**

Accessories for Mielabor washing and disinfecting machines

NEW!

Miele

Type	Description	PK	Cat. No.
O 188/2	Upper basket, front side open	1	**9.803 775**
AK 12	Insert basket	1	**9.803 729**
E 103/1	Insert for reagent bottles	1	**9.803 717**
E 104/1	Insert for reagent bottles	1	**9.803 730**
E 105/1	Insert for reagent bottles	1	**9.803 731**
A 14	Lid 1/4, for insert AK 12	1	**9.803 721**
E 109	Insert 1/2, for 21beaker up to 250 ml	1	**9.803 727**
E 110	Insert 1/2, for 10 beakers 250 to 600 ml	1	**9.803 728**
E 329	Injector carriage 1/1, with 39 nozzles	1	**9.803 735**
U 874/1	Lower basket, empty	1	**9.803 776**
A 100	Upper basket for modules	1	**6.266 437**
A 101	Upper basket / mounting height 160 ±30mm	1	**6.266 438**
A 102	Upper basket / mounting height 205 ±30 mm	1	**6.266 439**
A 103	Upper basket for lids and accessories	1	**6.266 440**
A 150	Lower basket for modules	1	**6.266 441**
A 151	Lower basket (W x D x H): 529 x 522 x 88mm, mounting height depending on upper basket	1	**6.266 442**
A 802	Flushing nozzle for injector modules	1	**6.266 443**
A 202	Carriage for sieve trays	1	**6.266 444**
A 300	Module for pipettes	1	**6.266 445**
A 304	Module for vials	1	**6.266 446**
A 306	Module for graduated cylinders	1	**6.266 447**
A 200	Carriage for pipettes	1	**6.266 448**
A 300	Module for laboratory glassware 2 x 4 with spring clips for nozzles	1	**6.266 449**
A 300/1	Module for laboratory glassware 2 x 4 with plastic support ID	1	**6.266 450**
A 301	Module for laboratory glassware 3 x 6 with 12 spring clips for nozzles, 6 with plastic support ID	1	**6.266 451**
A 301/1	Module for laboratory glassware 3 x 6 with spring clips for nozzles	1	**6.266 452**
A 301/2	Module for laboratory glassware 3 x 6 with plastic support ID	1	**6.266 453**
A 301/3	Module for laboratory glassware 3 x 6 SD-B injector nozzles for butyrometers	1	**6.266 454**
A 302	Module for laboratory glassware 4 x 8 with plastic support ID	1	**6.266 455**
A 302/1	Module for laboratory glassware 4 x 8 with spring clips for nozzles	1	**6.266 456**
DOS K 85/1	Dosing module for PG 8583/8593 with short suction lance (5-l-container)	1	**6.266 457**
DOS K 85	Dosing module for PG 8583/8593 with long suction lance (10-l-container)	1	**6.266 458**
E 385 TA	as E355 but with connection for hot-air drying	1	**9.803 723**
E 340	Injector carriage 1/2	1	**9.803 724**
E 414 TA	Injector carriage	1	**9.803 732**
E 106/1	Insert 1/2, with 28 small hooks	1	**9.803 734**
E 144	Insert 1/2 for beaker up to 250 ml	1	**9.803 736**
A 11/1	Frame 1/1, 450 x 450 mm	1	**9.803 737**
A 3	Net 1/4, for inserts 1/4 metal frame	1	**9.803 738**
E 355-06	Injector carriage 1/2	1	**9.803 740**
E 139/1	Insert 1/4, as 103 but for tubes	1	**9.803 743**

Note: We can supply products from the entire Miele laboratory range, on request.

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

Miele PROFESSIONAL

CertoClav 12L/18L tabletop autoclave

CertoClav

CertoClav table top autoclaves are the complete autoclaving solution for small laboratories or a flexible addition to the large volume autoclave. Due to their space saving design they can be placed directly on the laboratory bench. Ideal for culture media preparation, sterilisation of equipment and waste, and quality tests, such as the HAST test.

CertoClav Essential: Autoclave for sterilisation at 121°C (15 Min. holding period). Other temperature/time on request (additional cost). Microprocessor controlled with automatic process control and fractioned venting. Available in 12 or 18 litre volume. Printer port for CertoClav receipt printer (Art. No. 9.842 033).

CertoClav Classic: The robust, time-tested laboratory autoclave for more than 50 years. Controlled via a precision valve and a thermostat. Includes timer. Standard model with alternatively 125°C/140°C.; Alternative model with 115°C/121°C.

CertoClav MultiControl 2: Autoclave with freely programmable controller (room temperature to 140°C). Standard programs for sterilisation pre-installed. Controller unit has a printer port for the CertoClav receipt printer (Art. No. 9.842 033). and a USB port for PC connection. Basic version of PC software for data monitoring included (professional license required for advanced programming functions).

CertoClav MultiControl 2 Touch: Like model CertoClav MultiControl 2, but with high-res touch screen. All user tasks are explained with videos on the machine. Virtually no training requirements for new users. Easy compliance with GLP documentation requirements possible via CertoCloud, where all user information and cycle data is safely stored for 10 years and can be accessed from any web browser. 6 month free CertoCloud trial period included with purchase.

CertoClav Connect: Fully automatic laboratory autoclave with 7 inch high-res touch screen and intuitive user interface. Max 140°C sterilisation temperature. All user tasks are explained with videos on the machine. Virtually no training requirements for new users. Easy compliance with GLP documentation requirements possible via CertoCloud, where all user information and cycle data is safely stored for 10 years and can be accessed from any web browser. 6 month free CertoCcloud trial period included with purchase. Integration in laboratory data management systems possible. Construction corresponds to a class N and class S (liquids) autoclave according to EN 13060.

CertoClav CultureMedia: Fully automatic autoclave for the sterile preparation of culture media with integrated 10 liter culture media vessel and stirrer and media sensor. 7 inch high-res touch screen and intuitive user interface (same as CertoClav Connect).

All models:
TUEV certified. CE marked. Stainless steel (Model Essential Aluminium). No water connection required. 1300 Watt (Essential 1900 Watt), 230V, 50-60Hz. Venting procedure: stream process. Actual appearance may deviate from picture. Made in Austria.

Type	Capacity Litres	Diam. mm	Int. height mm	PK	Cat. No.	
Essential	12	24	260	1	**9.842 019**	1
Essential	18	24	400	1	**9.842 027**	
Classic	18	26	350	1	**9.842 028**	2
Classic 115°/121°	18	26	350	1	**9.842 029**	
MultiControl 2	18	26	350	1	**9.842 030**	3
Connect	18	26	350	1	**9.842 031**	4
CultureMedia	18	26	350	1	**9.842 032**	

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9.842 031



1 2 CERTOCLAV-EL 12L/18L tabletop autoclave

CertoClav

The CertoClav EL laboratory autoclave is ready to start after only a few moments thanks to its simple operation. Its versatility and compact construction make the CertoClav -EL laboratory autoclave almost indispensable for research, development and medical applications.

Control and operation
It would be difficult to imagine a workplace without a CertoClav EL after just a few days thanks to its single-button operation and its reliability. The thermostat and the 2-stage control valve ensure that operations and processes are precise. Culture media preparations, quality checks and autoclave processes can be carried out simply and quickly. The precision thermometer and precision pressure gauge with maximum indicator ensures faultless results for all applications. The sterilisations chamber is easy to open and close, simply turn the cover and remove.

For your safety
The CertoClav 4-fold safety system: the overpressure valve, the safety interlock preventing opening under pressure, the safety control valve and the overpressure safety opening enable operation without any hazards.

Including accessories
Stable instrument panel, with 3 feeds and minimum water level indicator

Standards and conformity marks
GS from TÜV Rheinland in accordance with EN 61010 - 1:2001, EN 61010 - 2:040:2005
Expert reports on microbiological and germicidal effectiveness

Operating temperature/pressure:	maximum 3 bar = 43.5 psi Stage 1: 125°C = 1.4 bar/20.3 psi Stage 2: 140°C = 2.7 bar/39.1 psi
*** Special valve:**	Stage 1: 115°C = 0.7 bar/10.1 psi Stage2: 121°C = 1.1 bar/ 15.9 psi
Thermal output:	1900 W
Heater:	integrated in floor/not exposed
Mains connection:	230V ±10 %/50-60Hz
Air evacuation:	free steam flow process
Water connection:	no water connection necessary
Housing:	Aluminium

Type	Capacity Litres	Diam. mm	Int. height mm	PK	Cat. No.
EL 12L GS	12	240	260	1	**9.842 013**
EL 18L GS	18	240	400	1	**9.842 014**

*CertoClav EL 12 and CertoClav EL 18L delivery with valve temperature 125/140°C or 115°/121C. Please regard by your order.

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1 CERTOCLAV MultiControl 12L /18L tabletop autoclaves

CertoClav

Practical, maintenance-free microprocessor-controlled laboratory autoclave with fractionated venting process. Its versatility and compact construction make the CertoClav MC laboratory autoclave almost indispensable for research, development and medical applications.

Control and operation
The MultiControl controller makes autoclaving child's play and saves valuable employee time.
One press of a button ensures rapid sequences using 2 permanent programs (138°C/5 min 125°C/15 min) for sterilisation of preparation culture media. The CertoClav MultiControl automatically monitors the process parameters and reports a successful conclusion. Employees no longer have to observe the process. On top of this, complex sequences and long-term cycles of 6 seconds up to 1 week can be implemented using 7 freely definable programs - ideal for material testing and research. With integrated cycle counter and EEPROM Constant Memory. Including RS 232 interface for data evaluation. The sterilisation chamber is easy to open and close, simply turn the cover and remove.

For your safety
The CertoClav 4-fold safety system: the overpressure valve, the safety interlock preventing opening under pressure, safety control valve and the overpressure safety opening enable operation without any hazards.

Including accessories
Stable instrument panel, with 3 feeds and minimum water level indicator

Standards and conformity marks
GS from TÜV Rheinland in accordance with EN 61010 - 1:2001, EN 61010 - 2:040:2005
Expert reports on microbiological and germicidal effectiveness

Temperature:	programmable from room temp. up to 140°C
Thermal output:	1900 W
Heater:	integrated in floor/not exposed
Mains connection:	230 V ±10 %/50 Hz.
Operating pressure:	max. 3 bar/4.5 psi
Venting:	fractionated venting process
Water connection:	no water connection necessary
Housing:	Aluminium

Type	Capacity Litres	Diam. mm	Int. height mm	PK	Cat. No.
Certoclav MultiControl	12	240	260	1	**9.842 018**
Certoclav MultiControl	18	240	400	1	**9.842 017**

2



2 Accessories for portable autoclave CertoClav

NEW!

Service kit 1: with lid gasket, vavle gasket, gasket for exhaust cock and manometer, steam valve
Service kit 2: with lid gasket, control valve gasket, seals for exhaust cock and pressure gauge, steam valve and safety valve

Description	For	PK	Cat. No.
Printer	MultiControl2 and Essential	1	**9.842 033**
Wire basket with handle, Ø 23 x 17 cm	CertoClav EL, MultiControl, Essential	1	**9.842 025**
Wire basket with handle, Ø 25 x 23 cm	Classic, MultiControl, Connect and CultureMedia	1	**9.842 035**
Media sensor, PT100	only for CertoClav Connect	1	**9.842 037**
Software Professional License	MultiControl 2	1	**9.842 038**
Service-Set 1	CertoClav EL, MultiControl, Essential	1	**9.842 036**
Service-Set 2	Classic, MultiControl 2, Connect, CultureMedia	1	**9.842 020**

Automatic horizontal autoclave Type AH

NEW!

Raypa

This autoclave is microprocessor controlled and monitored with 5 sterilisation programmes of which 4 are fixed and 1 is freely selectable for the AH-21 s2 dry and 10 sterilisation programmes of which 4 are fixed and 6 are freely selectable for the AHS-75 dry .

- Operating temperature range 100°C to 135°C
- On request also available with B Class
- RS 232 interface
- Fully automatic functions
- With water reservoir, pre-vacuum and drying
- Case and lid shrouding are AISI 304 stainless steel
- Sterilisation chamber, lid and sealing system are AISI 304 stainless steel
- Electrical heating with protected heating elements
- Safety pressure valve
- Safety thermostat
- Automatic steam controlled by microprocessor
- Manual valves for emptying the sterilisation chamber and for draining steam
- Equipped with mesh stand on the chamber base and trays
- On request also available with vacuum and drying
- Supply requirements: 230V 16A single phase

1



9.851 888

Type	Capacity Litres	Chamber diam. x depth mm	Rating W	Width mm	Length mm	Height mm	PK	Cat. No.
AH-21 L	21	250 x 430	2000	680	590	425	1	**9.851 898**
AHS-50 DRY	50	400 x 400	3200	630	760	630	1	**6.267 579**
AHS-75 DRY	75	400 x 600	3200	830	760	630	1	**9.851 888** 1

Automatic vertical autoclaves, AES series

NEW!

Raypa

These autoclaves are microprocessor controlled and monitored with 10 sterilisation programmes of which 4 are fixed and 6 are freely selectable.

- Operating temperature range 100°C to 139°C
- On request also available with B Class
- Agar modus (40°C to 80°C)
- RS 232 interface
- Timer
- Programmable auto-start (24h)
- Fully automatic functions
- Case and lid shrouding are AISI 304 stainless steel
- Sterilisation chamber, lid and sealing system are AISI 304 stainless steel
- Electrical heating with protected heating elements in the interior of the chamber
- Safety pressure valve
- Safety thermostat
- Automatic steam controlled by microprocessor
- Manual valves for emptying the sterilisation chamber and for draining steam
- **Supply requirements:**

AES-12 and AES-75: 230 V 16 A single phase
AES-110 and AES-150: 400 V + Neutral (3-phase)

2



9.851 894

Type	Capacity Litres	Chamber diam. x depth mm	Rating W	Width mm	Length mm	Height mm	PK	Cat. No.
AES-12	12	250 x 270	1000	490	500	520	1	**9.851 893**
AES-28	28	300 x 400	2000	510	560	1010	1	**9.851 894** 2
AES-50	50	300 x 700	3200	510	560	1270	1	**6.267 578**
AES-75	75	400 x 600	3200	620	730	1090	1	**9.851 895**
AES-110	110	400 x 850	4500	630	730	1330	1	**9.851 896**
AES-150	150	500 x 750	6000	760	850	1310	1	**9.851 897**

On request also available with vacuum and drying.

3 Thermoprinter for Automatic autoclaves AH/AES series

3

Printer with plain paper reel prints the programme i.d., cycle number, temperature, date and time of each sterilisation. Also prints any errors or warning messages. If everything has proceeded correctly by the end of the sterilisation cycle, the following message is printed: **Sterilisation O.K.**



Type	PK	Cat. No.
Thermoprinter	1	**9.851 871**



1 Accessory baskets for Automatic vertical autoclaves, AES series

Type	For	Diam. mm	Height mm	Baskets per autoclave	PK	Cat. No.
Mesh basket	AE / AES 12	225	215	1	1	**9.851 885**
Mesh basket	AE / AES 28 - 50	280	200	2 / 3	1	**9.851 872**
Mesh basket	AE / AES 75 - 110	380	260	2 / 3	1	**9.851 873**
Mesh basket	AE / AES 150	475	360	2	1	**9.851 875**
Solid basket	AE / AES 12	225	215	1	1	**9.851 886**
Solid basket	AE / AES 28 - 50	280	200	2 / 3	1	**9.851 876**
Solid basket	AE / AES 75 - 110	380	260	2 / 3	1	**9.851 877**
Solid basket	AE / AES 150	475	360	2	1	**9.851 879**

2 Laboratory autoclaves B-line

Tuttnauer

- Extensive features and equipment varieties cover all applications used in research institutes, universities and the pharmaceutical, biotechnological, chemical and food industry. The autoclaves are adapted for
- Sterilization of liquids in combination with different cooling systems
- Sterilization of pipettes and glass
- Sterilization of wrapped/unwrapped instruments
- Sterilization of (biohazard) waste
- Preparation of nutrient media



Features
- EL = horizontal loading
- ELV = vertical loading
- High precision control system for perfect sterilization results
- Password protection for user access control
- Independent temperature and pressure monitoring
- Cycle information recovery in the case of power failure or cycle interruption
- Fail Alert - Indicates cycle failure or interruption
- Door Alert - Indicates the door is unlocked
- RS232 interface
- Pulsative heating-up
- Validation port

Options available
- Fast cooling technology for rapid cooling of liquids
- Fast cooling technology and ventilator to reduce cooling time additionally
- Vacuum pump to evacuate residual air
- Exhaust air filtration
- Lifting device to elevate/to lower heavy sterilzation goods
- Printer to document the performed cycle
- ADMC software allows complete control and monitoring of the autoclave
- Other options on request

Type	Chamber diam. x depth mm	Capacity litres	Dimensions (W x D x H) mm	PK	Cat. No.
2540 ELV-B	250 x 400	23	495 x 335 x 645	1	**9.842 811**
3150 ELV-B	310 x 500	40	580 x 415 x 780	1	**9.842 813**
3170 ELV-B	310 x 700	55	580 x 415 x 960	1	**9.842 814**
3850 ELV-B	380 x 490	62	650 x 500 x 745	1	**9.842 815**
3870 ELV-B	380 x 690	85	650 x 500 x 925	1	**9.842 817**
5050 ELV-B	500 x 500	110	880 x 700 x 780	1	**9.842 819**
5075 ELV-B	500 x 750	160	880 x 700 x 1010	1	**9.842 820**
2540 EL-B	250 x 420	23	510 x 545 x 365	1	**9.842 801**
3150 EL-B	310 x 500	40	600 x 695 x 450	1	**9.842 803**
3850 EL-B	380 x 510	62	660 x 695 x 525	1	**9.842 804**
3870 EL-B	380 x 690	85	660 x 875 x 525	1	**9.842 806**
5050 EL-B	500 x 500	110	880 x 767 x 700	1	**9.842 808**
5075 EL-B	500 x 750	160	880 x 967 x 700	1	**9.842 809**



1 Laboratory autoclaves D-line

Tuttnauer

The new D-line from tuttnauer represents a further stage of the well-known EL and ELV B-line. The features of the laboratory autoclave line are specifically designed for most common laboratory applications and can be used for the sterilzation of liquids, instruments, glass, waste and for the preparation of nutrient media.

Features
- EL = horizontal loading
- ELV = vertical loading
- Stores the last 200 cycles in built-in memory
- Option: second flexible Pt 100 probe
- 30 Identification Codes and Passwords for access level control
- The controller and software comply with the 21 CFR part 11 standard
- Filter replacement notifications based on the number of cycles
- Data archiving via USB interface
- Double sterilization time monitoring
- In/Out test (enables technicians to check each system component separately)
- Sterilization temperature range up 110°C to 136°C
- Optional Disinfection/Isothermal Temperature range from 60°C to 105°C
- Optional Independent Recording for cross-checking cycle measurements
- F_0 software control

Options available
- Fast cooling technology for rapid cooling of liquids
- Fast cooling technology and ventilator to reduce cooling time additionally
- Vacuum pump to evacuate residual air
- Exhaust air filtration
- Lifting device to elevate/to lower heavy sterilzation goods
- Printer to document the performed cycle (Please order separately)
- ADMC software allows complete control and monitoring of the autoclave
- Other options on request



1

Type	Chamber diam. x depth mm	Capacity litres	Dimensions (W x D x H) mm	PK	Cat. No.
2840 ELV-C-G-D	280 x 400	28	540 x 450 x 975	1	**9.842 812**
3850 ELV-C-G-D	380 x 490	72	730 x 550 x 850	1	**9.842 816**
3870 ELV-C-G-D	380 x 690	94	730 x 550 x 1000	1	**9.842 818**
5075 ELV-C-G-D	500 x 750	160	870 x 750 x 1010	1	**9.842 821**
2840 EL-C-G-D	280 x 400	28	530 x 630 x 400	1	**9.842 802**
3850 EL-C-G-D	380 x 490	72	720 x 750 x 530	1	**9.842 805**
3870 EL-C-G-D	380 x 690	94	720 x 940 x 540	1	**9.842 807**
5075 EL-C-G-D	500 x 750	160	855 x 1120 x 805	1	**9.842 810**

2 Benchtop-Autoclave HMT 232N

NEW!

HMC-EUROPE

The HMT 232N is an easy-to-use, semi-automatic autoclave with high rating, reliability and safety.
- For use in non medical laboratories for sterilizing liquids, objects, etc. The chamber consists of easy-to-clean stainless steel.
- Different programs to choose from.
- Temperatures available: 121°C and 134°C, sterilization pressure adjustable from 0.9 to 2.1 bar.
- For sterilization the following settings are available: 4 minutes/15 min/30 min.
- Equipped with digital sterilisation cycler recorder (SD and USB)
- Automatic control by the end of the sterilization process, the entire sterilization process is microprocessor controlled and monitored
- The chamber is filled manually with feedwater from the integrated water tank and the water is returned manually in the chamber.

Safety:
- It features a low water protection, safety and venting valve, pressure switch and over-temperature protection.
- Cover-impact backup
- Each element is equipped with an independent thermal overload switch.
- CE certified



2

Type	Capacity Litres	Chamber diam. x depth mm	Length mm	Width mm	Height mm	Rating kW	PK	Cat. No.
HMT 232N	16	230 x 390	537	501	406	1.5	1	**6.266 840**

1



7.980 101

2



4.655 162

3



4.655 164

Benchtop-Autoclaves HMT FA/-MA and -MB series

NEW!

HMC-EUROPE

Innovative and versatile autoclave, which combines compact and elegant design with high performance, reliability and safety

- Auto dry function: To offer the good dry result
- Microprocessor control system: Fully automatic controls from adding water to sterilisation, to drying.
- Double water level check device: One for water tank, and one for chamber water level check
- Pressure door auto-lock device
- Door close indication: All functions stopped and the door light is on, if the door isn't closed completely.
- Cycle complete indication: Auto-check each working steps condition. The "COMPLETE" indicator will light up, after correct completion of the batch.
- Low water alarm and indication: If there isn't enough water, the "LOW-WATER" indicator will light up, and alarm you.
- Pre-heating program: Pre-heating by dry heater, which not only keeps the chamber temperature in balance, but also offers the perfect dry function.
- Chamber pressure with double protection: The chamber is protected by a pressure switch and steam pressure safety valve.
- Vacuum/Pressure release key: Pushing this key, will cut-off the power supply and exhaust the chamber pressure or release the chamber vacuum, at the same time.
- Safety functions such as door lock, over heat protection, water tank level sensor, chamber water level sensor are equipped as standard
- Power supply: 230V, 50/60Hz
- Inclusive bottom plate

HMT 230FA/HMT 260FA
- Installed 8 programs and special programs for Liquid sterilisation for your selection
- Sterilisation temperature: 105 to 135°C
- HMT 230 FA-R and HMT 260 FA-R are certified according to Medical Device Directive as N-class autoclaves

HMT 230MA/260MA/300MA
- Pre-vacuum function: Offer the excellent sterilisation result.
- Dry-vacuum function: To offer the perfect dry result.
- 24 Installed programs and special programs for Prion sterilisation, Liquid sterilisation, Bowie-Dick test, Pump test programs for your selection.
- Sterilisation temperature: 121 to 134°C
- HMT 230MA-R/HMT 260MA-R/HMT 300MA-R are certified according to Medical Device Directive as S-class autoclaves

HMT 260MB Klasse-B
- Pre-vacuum function: Offer the excellent sterilisation result.
- Dry-vacuum function: To offer the perfect dry result.
- 10 installed programs: 5 sterilisation programs, 1 customized program for your selection, 3 test programs, drying program
- Sterilisation temperature: 105 to 135°C
- HMT 260MB is certified according to Medical Device Directive as B-class autoclaves

Type	Capacity Litres	Chamber diam. x depth mm	Length mm	Width mm	Height mm	Rating kW	PK	Cat. No.	
HMT 230FA	16	230 x 410	594	522	410	1.9	1	**6.237 578**	
HMT 230FA-R*	16	230 x 410	594	522	410	1.9	1	**4.655 158**	
HMT 260FA	24	260 x 450	655	533	442	2.4	1	**7.980 101**	1
HMT 260FA-R*	24	260 x 450	655	533	442	2.4	1	**4.655 159**	
HMT 230 MA	16	230 x 410	594	522	410	1.9	1	**4.655 160**	
HMT 230 MA-R*	16	230 x 410	594	522	410	1.9	1	**4.655 161**	
HMT 260 MA	24	260 x 450	655	533	442	2.4	1	**4.655 162**	2
HMT 260 MA-R*	24	260 x 450	655	533	442	2.4	1	**4.655 163**	
HMT 300 MA	40	300 x 570	900	620	489		1	**4.655 164**	3
HMT 300 MA-R*	40	300 x 570	900	620	489		1	**4.655 165**	
HMT 260MB	24	260 x 450	665	553	440	2.7	1	**4.655 166**	4

*with recorder

4



4.655 166

E & OE.

Steam sterilizers (autoclaves), HG series

HMC-EUROPE

- fully automatic, microprocessor controlled
- 12 standard programmes installed
- timer-controlled, night programme
- overnight sterilization does not heat up the laboratory
- agar programme with thermostatic heating for agar production
- liquids programme with removal temperature of 95°C
- low feed water consumption
- electronic pressure switch, pressure and temperature control
- exhaust reservoir for condensate this prevents fogging and unpleasant odours
- drain valve for easy cleaning of sterilization chamber
- bottom plate for baskets and cans
- air-cooling at the press of a button
- lid-opening and lid-closing by press-button
- mounted on wheels, cleaning is possible even under the autoclave
- safety: electromechanical safety sealing system, relief vent, low water switch, overpressure safety device, overheat protection power supply cut-out, audible and visual error alarms.
- with USB port
- Loadmaster lifting device available on request

1



9.842 412

2



9.842 416

Models with special equipment:
HGS 113/HGS 133: steam generator, automatic water feeding, water cooling
HGD 113/HGD133: steam generator, automatic water feeding, water cooling, vacuum pump

Specifications

Automatic start:	1 minute to 7 days, Night programme
Time of sterilization:	1 to 300mins.
Power supply:	220-240V a.c.
Sealing:	at the push of a button, fully automatic
Boiler material:	SUS304 (rust resistant, stainless steel)

Type	Capacity Litres	Chamber Dimensions (diam. x H) mm	External dimensions (W x D x H) mm	Working Temp. range °C	Pressure bar	Rating W	Weight kg	PK	Cat. No.	
HG 50	50	364 x 482	455 x 691 x 890	105 to 135	2.5	3000	62	1	**9.842 410**	
HG 80	80	364 x 730	455 x 691 x 1030	105 to 135	2.5	3800	73	1	**9.842 411**	
HG 113	108	500 x 552	686 x 870 x 930	105 to 135	2.5	4700	137	1	**9.842 412**	1
HG 133	129	500 x 656	686 x 870 x 1034	105 to 135	2.5	6200	145	1	**9.842 413**	
HGS 113	113	500 x 576	686 x 870 x 930	105 to 135	2.5	6800	153	1	**9.842 414**	
HGS 133	133	500 x 680	686 x 870 x 1034	105 to 135	2.5	7100	161	1	**9.842 415**	
HGD 113	113	500 x 576	686 x 870 x 930	105 to 135	2.5	8400	184	1	**9.842 416**	2
HGD 133	133	500 x 680	686 x 870 x 1034	105 to 135	2.5	8700	192	1	**9.842 417**	

Accessories for HG series steam sterilisers

NEW!

HMC-EUROPE

Description	Dimensions (dia. x H) mm	PK	Cat. No.	
Charging basket A for HG 113/133	470 x 219	1	**6.266 417**	
Charging basket A for HG 113/133, closed bottom	470 x 219	1	**6.259 903**	
Charging basket B for HG 113/133	470 x 269	1	**6.266 418**	
Charging basket B for HG 113/133, closed bottom	470 x 269	1	**6.266 419**	
Charging basket C for HG 113/133	470 x 314	1	**7.980 484**	
Charging basket C for HG 113/133, closed bottom	470 x 314	1	**7.980 485**	
Lifting equipment Loadmaster for HG 113/133		1	**6.266 420**	
Built-in printer HG		1	**6.251 590**	
Flexible temperature sensor		1	**9.842 420**	
Automatic water supply		1	**9.842 421**	
Exhaust air filter for sterilisation		1	**9.842 422**	
Stainless steel sterilising basket	338 x 220	1	**9.842 423**	3
Stainless steel sterilising basket with bottom	338 x 220	1	**9.842 424**	4
Stainless steel sterilising can	330 x 185	1	**9.842 425**	5
Process documentation software, Segosoft®		1	**9.842 426**	

Further acessories for models 113 and 133 available on request.

3



9.842 423

4



9.842 424

5



9.842 425

1



1 Steam sterilizers (autoclaves), HV series

HMC-EUROPE

Sterilizing simply and well.
Single-wall, vertical steam sterilizers, equipped with a newly developed safety lock. Fully automatic, microprocessor controlled. Programmable. Preset programs, simplest available, programmable, parameters (temperature, time, exhaust) variable.
Liquid program according to TRB 402 and EN61010-2 (flex sensor required).
AGAR program warming cycle. Night program: feed in the evening and found sterilized at the next morning. Steam condenser as standard. Mounted on castors. No connection to water/steam supply or disposal necessary. Power supply: 230V, 50/60Hz

Type	Capacity Litres	Internal dimensions (Ø x H) mm	External dimensions (W x D x H) mm	Working Temp. range °C	Rating W	Weight kg	PK	Cat. No.
HV-L25	25	240 x 550	480 x 950 x 460	105 to 126	1500	41	1	**7.980 025**
HV-L50	50	300 x 710	510 x 1040 x 530	105 to 135	2000	57	1	**6.232 481**
HV-L85	85	420 x 615	660 x 1000 x 650	105 to 128	3000	71	1	**9.842 418**
HV-L110	110	420 x 795	660 x 1000 x 650	105 to 123	4000	81	1	**6.254 337**

Accessories for HV series steam sterilisers

HMC-EUROPE

Description	Dimensions (dia. x H) mm	Baskets per autoclave	PK	Cat. No.
Flexible temperature sensor			1	**7.980 024**
Integrated printer			1	**9.842 427**
Air cooling			1	**9.842 428**
Exhaust-air filtration			1	**9.842 429**
Stainless steel sterilising basket for HV-25	225 x 250	2	1	**7.980 027**
Stainless steel sterilising basket with bottom for HV-25	225 x 250	2	1	**9.842 430**
Stainless steel sterilising can for HV-25	210 x 255	2	1	**9.842 431**
Stainless steel sterilising basket for HV-50	280 x 225	3	1	**6.232 482**
Stainless steel sterilising basket with bottom for HV-50	280 x 225	3	1	**9.842 432**
Stainless steel sterilising can for HV-50	270 x 220	3	1	**9.842 433**

Further accessories for Models HV-85 and HV-110 available on request.

2



2 Autoclave deodorant Anabac®

interscience

Laboratories are very concerned about hygiene, cleanliness and comfort in the workplace. Try Anabac® autoclave deodorant balls to improve the working environment in the laboratory. These autoclave deodorant balls bring a discrete scent that speaks of cleanliness.

Type	Description	PK	Cat. No.
Classic	Mint and eucalyptus fragrance	100	**6.228 599**
Poma	Apple fragrance	100	**6.231 161**
Citrus	Lemon fragrance	100	**6.231 720**
Floral	Flower fragrance	100	**7.626 764**
Peach	Peach fragrance	100	**7.626 766**

3



3 Indicator tape for steam, hot air and gas sterilisation

Crepe paper, adhesive. With heat-sensitive dyes. Colour changes according to DIN EN ISO 11140-1. Rolls of 50m.

With	Width mm	Figure	PK	Cat. No.
Steam indicator, lead free	18	a	1	**9.140 787**
Steam indicator, lead free	24	a	1	**9.140 788**
Steam indicator	19	b	1	**9.140 784**
Steam indicator	25	b	1	**9.140 789**
Steam indicator, strongly adhesive, for non-woven fabric	19	c	1	**9.140 790**
Steam indicator, strongly adhesive, for non-woven fabric	25	c	1	**9.140 791**
Ethylene oxide indicator	19	d	1	**9.140 792**
Hot air indicator	19	e	1	**6.240 223**

E & OE.

1 polySteribox® sterilisation containers with permanent filter

NEW!

Ritter GmbH



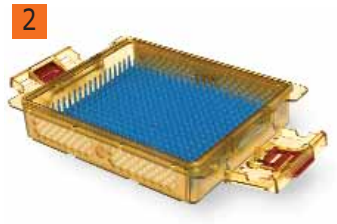
The polySteribox® from Ritter Medical for sterilisation of instruments, storage and transportation of sterile goods is a secure solution in line with the requirements of validated processes in sterile goods provision. The polySteribox® is available in 4 different standardized sizes (SH, M, L and XL) which are suitable for all current sterilisation automats. polySteribox® is produced out of a transparent, dimensionally stable and high temperature resistant (up to 150 degrees celcius) material. It is therefore suitable for autoclave vacuum sterilisation at 121°C or 134°C depending on the sterilisation method recommended by relevant authorities such as the Robert Koch Institute in Germany. In addition the polySteribox® can be used for plasma sterilisation (STEARRAD®) as well as for gas sterilisation (formaldehyde and ethylene oxide) at a maximum of 65°C. Lid and bottom close hermetically and include a built-in bacteria barrier. The patented interlocking system is compatible within all different models and prevents from accidental opening of the box. The boxes are space-saving and easy to stack, therefore they are well suited for storage of sterile goods.

Type	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
polySteribox® SH with permanent filter	177 x 76 x 45	208 x 111 x 54	1	**6.267 058**
polySteribox® M with permanent filter	155 x 123 x 32	184 x 144 x 59	1	**6.267 059**
polySteribox® L with permanent filter	261 x 164 x 65	290 x 183 x 74	1	**6.267 060**
polySteribox® XL with permanent filter	465 x 95 x 55	498 x 118 x 63	1	**6.267 061**

2 Accessories for polySteribox®

NEW!

Ritter GmbH



Description	PK	Cat. No.
Filter set S/SH	1	**9.284 281**
Filter set M	1	**9.284 282**
Filter set L/XL	1	**9.284 283**
Silicone positioning mat for box S, SH	1	**9.284 288**
Silicone positioning mat for box L	1	**9.284 292**
Silicone positioning mat for box M	1	**9.284 293**
Safety seals	1000	**9.284 285**
Sterilisation seal for box SH, M, L, XL	1000	**9.284 287**
Stainer for the Polysteribox L	1	**9.284 294**
Stainer for the Polysteribox XL	1	**6.266 241**

For disposal bags, please see page 243.



12. Environmental-, soil-, water-, food analysis

Contents

Sample preparation 1102

Air sampling and analysis 1102
for standard analysis 1107

Trace analysis 1110

Tubes 1110
Accessories 1117

Sample analysis 1122

Elemental analysis 1122
Photometers 1127
COD 1135
BOD 1141
Turbidity 1145
Extraction 1147
Kjeldahl 1152
Special distillation 1155
Milk analysis 1156

Water purification 1161

Distillation 1161
Pure and ultra-pure water 1164



1 Sampling bags, PVF

NEW!

Saint Gobain

Reusable bags made of 2 ml (50 µm) PVDF fluoropolymer film, Chemware® Gas Bags offer an economical alternative for analysis of noncorrosive gases. Durable, heat-sealed seams ensure leak-proof operation. Available with either a nickel-plated, brass on/off valve that accepts 6.4mm I.D. flexible tubing or with a PTFE/silicone septum in a polypropylene housing for use with a hypodermic needle. Applications include sampling carbon monoxide, sulfur dioxide, hydrogen sulfide, radon and mercaptan. The bags are individually packaged. When used for liquid samples, bags should be supported with a tray. Custom sizes and configurations available on request.

- Flexible
- Will not contaminate sample
- Choice of fitting style: on/off or septum
- For use in gas sampling trains
- Use for gas or liquid sample containment

Capacity L	Connection	Size mm	PK	Cat. No.
0.3	on/off	150 x 150	1	**6.267 492**
1.6	on/off	230 x 230	1	**6.267 493**
3.8	on/off	300 x 300	1	**6.267 494**
8.1	on/off	380 x 380	1	**6.267 495**
20.3	on/off	460 x 460	1	**6.267 496**
37.7	on/off	600 x 600	1	**6.267 497**
0.3	septum	150 x 150	1	**6.267 498**
3.8	septum	230 x 230	1	**6.267 499**
1.6	septum	300 x 300	1	**6.267 600**
8.1	septum	380 x 380	1	**6.267 601**
20.3	septum	460 x 460	1	**6.267 602**
37.7	septum	600 x 600	1	**6.267 603**



2 Sampling bags, FEP

NEW!

Saint Gobain

Made from 5 mil (125 µm) FEP fluoropolymer film, these flexible, sturdy bags are heat sealed on all four sides for complete chemical resistance and leak-proof operation. They are inert to most chemicals and have low permeability which limits sample loss. Available with either a nickel-plated, brass on/off valve that accepts 6.4mm I.D. flexible tubing or with PTFE/silicone septum in polypropylene housing for use with a hypodermic needle. These FEP bags are easy to use. They can be stored for an unlimited period prior to use. Applications include gas sample analysis, extracting air samples from smokestack exhaust systems, monitoring air quality or calibrating instruments in the field. The bags are individually packaged.

- Chemically resistant
- Flexible
- Will not contaminate sample

Capacity L	Connection	Size mm	PK	Cat. No.
1.2	on/off	150 x 250	1	**6.267 484**
0.5	on/off	150 x 150	1	**6.267 485**
4.7	on/off	300 x 300	1	**6.267 486**
50.0	on/off	600 x 900	1	**6.267 487**
0.5	Septum	150 x 150	1	**6.267 488**
1.2	Septum	150 x 250	1	**6.267 489**
4.7	Septum	300 x 300	1	**6.267 490**
50.0	Septum	600 x 900	1	**6.267 491**



3 Air Flow Tester

Dräger

In many fields, such as mining or industry, it is very important to detect even the smallest air flows, in order to quickly and reliably evaluate the possible diffusion of dangerous substances. With the air flow test tubes, the source, direction and speed of the air flow are visible immediately.

Type	PK	Cat. No.
Air Flow Tester (Set with blower ball and 10 flow test tubes)	1	**6.054 581**
Blower Ball	1	**6.200 206**
Flow test tubes	10	**6.076 362**

E & OE.

Gas sampling tubes, DURAN® tubing

1

Made of DURAN® tubing. Available with or without nozzle (with thread GL and septa), with two one-way stopcocks NS14 (with retaining device), connections: capillary tube (outer dia. 8mm, inner dia. 2.7mm), glass olive (outer dia. 8mm), with inscription label *Lenz*

Capacity ml	Length*	External body diam. mm	Type	PK	Cat. No.
150	155	42	Without sampling connections	1	**9.110 215**
350	200	54	Without sampling connections	1	**9.110 220**
500	220	65	Without sampling connections	1	**9.110 225**
1000	260	85	Without sampling connections	1	**9.110 230**
150	155	42	With sampling connections, GL 14	1	**6.243 069**
350	200	54	With sampling connections, GL 14	1	**9.110 236** 1
500	220	65	With sampling connections, GL 14	1	**9.110 237**
1000	260	85	With sampling connections, GL 14	1	**7.623 930**

* Body length (mm)



9.110 236

2 Digital Anemometer

NEW!

Digital Anemometer to measure wind speed and temperature. Useful for the functional check of fume hoods and safety cabinets.

- Wind speed range: 0 to 30 m/s
- Wind temperature range: -10 to 45°C (14 to 113°F)
- Current/MAX/Average wind speed reading
- Wind speed units: m/s, km/h, ft/min, knots, mph
- Temperature display in °C/°F
- LCD backlight display
- Auto/Manual power off
- Battery: 3V CR2032 (included)

2



Type	PK	Cat. No.
Digital Anemometer	1	**6.264 198**

3 Dräger Sampling Tubes

3

Using the Dräger activated charcoal tubes or silica gel tubes, hazardous substances in the air are collected using a suitable medium via adsorption or chemisorption. The sample is then analysed in the laboratory by means of various analytical methods such as gas chromatography (GC), high performance liquid chromatography (HPLC), UV-VIS photometry, or IR spectroscopy. *Dräger*



Description	Type	PK	Cat. No.
Charcoal tubes	BiA	10	**9.620 414**
Charcoal tubes	G	10	**9.620 415**
Charcoal tubes	B/G	10	**9.620 416**
Silica gel tubes	BiA	10	**9.620 417**
Silica gel tubes	G	10	**9.620 418**
Silica gel tubes	B/G	10	**9.620 419**
Isocyanate sampling set incl. analysis		1	**6.070 187**
Diffusion sampler ORSA 5		5	**6.050 155**
Diffusion sampler ORSA 25		25	**6.080 611**



1 Dräger Tubes®

NEW!

Dräger

The Dräger Tubes® measuring system is the safe method for measuring pollutants in the soil, water and air. More than 500 substances can be measured in varying concentrations. The long-established principle of Dräger Tubes® is still the same. A defined volume of gas/air must be pumped through the sampling tube. This can be achieved by using the Accuro® gas pump. On contact with the substance under test the reagent system contained in the tube reacts and displays a colour. The strength of the concentration of the substance is shown by the length of the colour band displayed and can be read directly from the scale. The Dräger-Tubes® sampling system provides accuracy, efficiency, quick and easy handling. Over 250 tubes are available on request for all substances and measuring fields. Further sampling devices, diffusion tubes for long-term measurements as well as sampling systems with activated carbon tubes, ORSA collector and TDS thermodesorption tubes are also available.

Type	Measuring range	PK	Cat. No.
Accuro gas pump		1	**9.620 410**
Gas pump set accuro (incl. bag a. E-Set)		1	**9.620 411**
Acetone 100/b tubes	100 to 12000 ppm	10	**9.620 421**
Alcohol 25/a tubes	25 to 5000 ppm	10	**9.620 423**
Ammonia 2/a tubes	2 to 30 ppm	10	**9.620 404**
Ammonia 5/a tubes	5 to 700 ppm	10	**9.620 405**
Ammonia 5/b tubes	5 to 100 ppm	10	**9.620 424**
Petroleum hydrocarbons 10/a tubes	10 to 300 ppm	10	**9.620 426**
Benzene 0.5/a tubes	0.5 to 10 ppm	10	**9.620 406**
Benzene 0.5/c tubes	0.5 to 10 ppm	5	**9.620 427**
Chlorine 0.2/a tubes	0.2 to 3 ppm	10	**9.620 407**
Formaldehyde 0.2/a tubes	0.2 to 5 ppm	10	**9.620 429**
Carbon dioxide 100/a tubes	100 to 3000 ppm	10	**9.620 408**
Carbon dioxide 5/a	5 to 60 Vol.%	10	**6.050 554**
Carbon monoxide 2/a tubes	2 to 60 ppm	10	**9.620 432**
Carbon monoxide 5/c tubes	8 to 700 ppm	10	**9.620 409**
Nitrous fumes 0.2/a	0.2 to 30 ppm	10	**6.266 890**
Ozone 0.05/b tubes	0.05 to 0.7 ppm	10	**9.620 434**
Perchloroethylene 2/a tubes	2 to 300 ppm	10	**9.620 436**
Phenol 1/b tubes	1 to 20 ppm	10	**9.620 437**
Hydrogen phosphide 0.01/a tubes	0.01 to 1 ppm	10	**9.620 438**
Mercury vapour 0.1/b tubes	0.05 to 2 mg/m³	10	**9.620 439**
Hydrochloric acid 1/a tubes	1 to 10 ppm	10	**9.620 413**
Hydrochloric acid/nitric acid 1/a tubes	1 to 10/15 ppm	10	**9.620 441**
Oxygen 5%/c	5 to 23 Vol.% 10	10	**9.620 448**
Sulphur dioxide 0.5/a tubes	0.5 to 25 ppm	10	**9.620 420**
Hydrogen sulfide 0.2%/a	0.2 to 7 Vol.%	10	**6.088 166**
Hydrogen sulfide 1/d tubes	1 to 200ppm	10	**9.620 443**
Hydrogen sulfide 100/a	100 to 2000 ppm	10	**6.050 553**
Hydrogen sulfide 5/b tubes	5 to 60 ppm	10	**9.620 425**
Toluene 5/b tubes	5 to 300 ppm	10	**9.620 446**
Trichloroethylene 2/a tubes	20 to 250 ppm	10	**9.620 447**
Hydrogen sulfide 1/c	1 to 20ppm	10	**6.052 630**
Hydrogen sulfide 0,5/a	0.5 to 15ppm	10	**6.304 822**
Acetic Acid 5/a	5 to 20ppm	10	**6.900 409**
Carbon disulfide tubes 5/a	5 to 60 ppm	10	**6.259 530**
Cyanide 0.5/a	0.5-100 ppm	10	**9.620 449**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

Dräger

E & OE.

Dräger Aerotest Alpha

1

Dräger

The Dräger Aerotest Alpha allows the quality of breathing air supplied by a compressor or compressed gas cylinder to be determined. Use of the test system performs a reliable check in accordance with the breathing air standard EN 12 021.

Dräger Aerotest Alpha
comprising of 1 pressure reducer, measuring device for 4 tubes, impactor adapter, coupling, barbed nipple, stopwatch, tube opener Dräger TO 7000, bubble test hose, pack of 5 sintered filters, instruction for use, transport case (black)

Dräger Aerotest Alpha, with Dräger Tubes:
Dräger Aerotest Alpha
+ box of 10 Dräger Oil Impactors,
+ box of 10 Dräger-Tubes carbon dioxide (CO_2) 100/a-P,
+ box of 10 Dräger-Tubes carbon monoxide (CO) 5/a-P,
+ box of 10 Dräger-Tubes water vapor (H_2O) 20/a-P



7.629 381

Specifications

Dimensions of carrying case (L x W x H)	350 x 300 x 85 mm
Weight, including contents	approx. 3.0 kg
Max. supply pressure	15 bar
Supply pressure (set on delivery)	3.0 bar
Pressure gauge	0.3 to 15 bar
Connection for compressed air supply	barbed nipple 9 mm
Flow rate	0.2 and 4.0 l/min

Description	PK	Cat. No.
Dräger Aerotest Alpha	1	**6.241 227**
Dräger Aerotest Alpha, with Dräger Tubes	1	**7.629 381** 1
Oil-impactor	10	**6.241 225**
Carbon monoxide 5/a-P	10	**6.801 977**
Carbon dioxide 100/a-P	10	**6.801 978**
Water Vapor 5/a-P	10	**6.087 703**
Water vapour 20/a-p	10	**6.801 979**

Automatic tube pump Dräger X-act® 5000

2

Dräger

The automatic tube pump Dräger X-act® 5000 is the first all-in-one solution designed for measurements with Dräger short-term tubes and for sampling tubes and systems. Ease of operation and a high degree of reliability compliment the measurement and sampling of gases, vapors and aerosols.
- New Pump Concept
- Simplicity of Operation, even with protection gloves
- Automatic Transfer of Measurement Parameters with barcode reader
- Measurement in Technical Gases
- Direct Settings for Sampling
- Simple and intuitive menu structure



9.620 470

Specifications:

Number of strokes	adjustable, 1 to 199 strokes
Stroke volume	100ml
Sample taking	
Flow rate range:	0.1 to 2.0 L/min Resolution 0.1 to 1.0 L/min: 0.1 L/min ±5 % Resolution 1.0 to 2.0 L/min: 0.2 L/min ±5 %
Sampling time:	adjustable, up to 12 hours, depending on flow rate Resolution in steps of 15 minutes (default) or 1 minute
Display:	two parts: segment and matrix
Menu languages	Danish, Dutch, English, Finnish, French, German, Italian, Norwegian, Polish, Spanish, Swedish
Dimensions (H x W x D)	approx.. 175mm x 230mm x 108mm
Weight (without battery pack)	approx. 1.6kg
Temperature during storage:	-20°C to 55°C
Temperature during operation:	5°C to 40°C
Humidity:	0 to 95% r. h., non-condensing
Pressure	700 to 1300 hPa

Description	PK	Cat. No.
Dräger X-act 5000, shoulder strap without power supply	1	**9.620 470** 2
Rechargeable Battery NiMH, T4	1	**9.620 471**
Alkaline Battery Pack, T4 without Batteries (6 batteries required)	1	**9.620 472**
Alkaline Battery Dräger X-act 5000	1	**9.620 473**
Wall-Wart Charger 100 – 240 VAC (worldwide)	1	**9.620 474**
Car Charger 12 / 24 V	1	**9.620 475**

1 Air sampler, Airport MD8 airborne bacteria sampler

NEW!

Sartorius

AirPort MD8 is a new portable air bacteria sampler for the pharmaceutical and food and beverage industries, hospitals, environmental protection and for industrial safety. AirPort MD8 has the following benefits:
- Battery-powered and portable for lab or field use
- Battery status display guarantees constant performance during sampling
- Ergonomic, smooth design, surfaces can be disinfected
- Choice of sampling selection, either by total volume or measurement duration

The device can be calibrated on-site. AirPort MD8 uses the gelatin membrane filter method which guarantees reliable and accurate measurement results.

Specifications:

Volume flow control:	Volume flow can be set to three levels using integral hydrometric manometer: 30 L/min., 40 L/min. and 50 L/min.
Fixed sample volumes:	25, 50, 100, 250, 500, 750 and 1000 litres Sample volume can also be adjusted in 5 litre increments
Battery:	NiMH 16.8 Volt/3800 mAh
Running time with a full battery charge:	approx. 4 hours
Charging time:	approx. 4.5 hours if battery flat
Noise level:	Using gelatin membrane filters, 48 dB(A)
Weight:	2.5 kg
Dimensions (L x W x H):	300 x 135 x 165 mm
Filter size:	80 mm dia., area 38.5 cm²

Type	PK	Cat. No.
AirPort MD8	1	**9.841 605**

2 Air sampler, MD8 airscan airborne bacteria sampler

NEW!

Sartorius

The MD8 airscan airborne bacteria sampler, together with gelatin membrane filters, has been developed for detecting airborne bacteria in conventionally ventilated areas, sterile rooms with, or without, laminar flow systems, air-conditioning systems and isolators. It provides safe, reproducible and quantitative results.
With error display if the filter is blocked or damaged. CE tested.

Applications:
- Collecting viri and phages from the air
- Detecting airborne influenza A virus
- Quantitative detection of atmospheric bacteriophage loads within dairy premises.

Air throughput:	2.0 to 8 mü/hr., can be set in increments of 0.1 mü/hr.
Timer:	1 to 99 mins., can be set in increments of 1 minute
Noise level:	For gelatin membrane filters, max. 62 dB (A)
Filter size:	80 mm Ø, area 38.5 cmý
Weight:	approx. 6.5 kg
Dimensions (L x W x H):	375 x 242 x 228 mm (total length: 407 mm with filter holder fitted)

Type	PK	Cat. No.
Airscan MD8	1	**9.841 601**





E & OE.

1 Laboratory purification plants to determine the biodegradability

Behr

e.g. for the Coupled Units Test in acc. with OECD 303 A, complete.
optional:
- Dentrification step with pump and stirrers
- Oxygen control, consisting of:
Oxygen measuring unit for preliminary sedimentation with a voltage output for switching the air supply on and off behrotest® GWS 200 limit switch. Operating capacity 0 to 200%, corresponds to 0 to 19.9 mg/l
Vessels made of borosilicate glass 3.3

Type	Description	PK	Cat. No.
KA 1	Laboratory purification plant, complete	1	**9.920 600**
KA 1/SR	Laboratory purification plant, complete, with oxygen entry control	1	**9.920 605**
KLD 4	Laboratory purification plant, complete, with dentrification step	1	**9.920 602**
KLD 4/SR	Laboratory purification plant, complete, with dentrification step and oxygen entry control	1	**9.920 606**
KLD 4/N	Like KLD 4, with continual sludge recirculation	1	**9.920 598**
KLD 4N/SR	Like KLD 4/SR, with continual sludge recirculation	1	**9.920 599**



2 Equipment to determine anaerobic digestion

Behr

The complete equipment consists of:
- Tempering bath with thermostat for 6 eudiometer units incl. clamping device for eudiometer tubes
- 6 eudiometer units with laboratory bottles, 500ml, eudiometer tubes with graduation, stopcock and connecting tube and levelling bulb
- Series magnetic stirrer, for use in water bath to stir 6 bottles, each with 500 ml, including separate control unit

Specification

Dims (WxDxH): 850 x 330 x 360 mm
Weight: 16 kg

Type	Description	PK	Cat. No.
FH 6	Tempering bath made of PVC incl. thermostat for 6 eudiometer units	1	**9.843 850**
FH 10	Eudiometer unit.Eudiometer tube, laboratory and levelling bottle	1	**9.843 851**
RM 6	Series magnetic stirrer	1	**9.843 852**



behrotest ® column elution unit for the elution of soil samples

Behr

Column elution unit:
Column elution unit in acc. with the LUA recommendation with 4-channel hose pump with controllable speed. The unit consists of:
- Assembly stand for the system
- Controllable 4-channel hose pump with fixed speed
- Storage vessel, 20 l
- 4 elution columns, internal diameter 6 cm, 32 cm long, with 2 screwed joints (GL 45, with PTFE inserts) for simple filling of the columns
- 4 collection bottles for the column eluate, 2 l, with screwed joint (GL 45) and deaeration
- Supply tube made of TYGON and PVC, with non-return valve in the supply to the column
- PTFE tubes between columns and collection vessels
- Flow rate 0.003 to 35 ml/min
- Range of speed 2 to 100 min^{-1}
- Simultaneous control of all 4 channels

behrotest® silica sand:
for column elution unit, grain size 1 to 2 mm in acc. with DIN V 19736, 1000 g bottle

behrotest® silica wool:
for column elution unit, 100 g bag

Type	Description	PK	Cat. No.
SEB 32 R	Column elution unit B	1	**9.843 741** 3
QS-SEB	Silica sand for column elution unit	1	**9.843 744**
QW-SEB	Fibreglass for column elution unit	1	**9.843 745**
GS 950	Glass column 60mm x 320mm	1	**9.843 925**



9.843 741

1



1 behrotest® waste water mixers

behrotest ® homogenisers *Behr*
With transportable sample vessels
Homogenisers for pre-treatment, splitting and homogenization of heterogeneous water samples in accordance with the quality assurance and quality control standards for wastewater examinations.
The vessels of the homogenizers are protected against damage in the yolk type frame and can be carried easily by the two handles. They can be filled at the sampling location by a flattened inlet connection. Capacities from 2 to 25 l permit extraction and collection of multiple samples. Exact measurement of the sample quantities due to graduation.
Subsequently, the transport rack is just placed on the magnetic stirrer in the laboratory or in the sampling vehicle and the homogeniser is immediately ready for use. The speed of the magnetic stirrer can be adjusted by a controller.
The user can thus comply with the specified cone height in all cases. Oxygen is thus prevented from entering the samples. Dosed extraction of the homogenised sample via PTFE spindle stopcock.
12V, with adapter for mains connection.

Type	Description	PK	Cat. No.
QMR 2	Capacity 2 l	1	**9.920 639**
QMR 5	Capacity 5 l	1	**9.920 640**
QMR 10	Capacity 10 l	1	**9.920 641**
QMR 15	Capacity 15 l	1	**9.920 642**
QMR 20	Capacity 20 l	1	**9.920 643**
QMR 25	Capacity 25 l	1	**9.920 644**

2



2 Distillation unit FBA

Determination of the inorganic total fluoride *Behr*

FBA distillation unit
behrotest® distillation unit to determine inorganically bound total fluoride
In highly contaminated inorganic wastewater with a fluoride ionic concentration greater than 0.2 mg/l determination of the inorganic bound total fluoride takes place after digestion and distillation. The behrotest® distillation unit combines all components required for distillation on a stable laboratory stand. The unit is also suitable for larger analysis series due to the heating control system.
The single components are:
Distillation equipment made of borosilicate glass for acid steam distillation, contact thermometer, heating mantles for distillation flasks and volumetric flasks.

Type	Description	PK	Cat. No.
FBA	Distillation unit for total fluoride	1	**9.843 806**

3



3 Extraction unit EX 1000

Determination of hydrocarbon EX 1000 extraction unit
The PFL sampling bottle is ideal for direct extraction in terms of ISO 9377-2. With its solid glass stopper, in addition it offers a decisive advantage in handling and safety.
The funnel separator facilitates the separation of the organic phase. The individual functional parts of the separator can be easily separated. The user can thus transfer the organic phase quickly and simply in one step to the clean-up column. In addition the individual functional parts are particularly easy to clean.

Type	Description	PK	Cat. No.
EX 1000	Extraction unit	1	**9.843 800**

E & OE.

1 behrotest® compact equipment for elution of solid matters



Percolation equipment to jointly examine the elution behaviour of inorganic and organic substances in solid matters. Including hose pump with 2 channels and 2 different pump tubes for a flow rate of 0.25-12 ml/min. and 0.66-33 ml/min. (Other pump tubes upon request).
Complete equipment, consisting of
- Percolation columns with pre-filters on sturdy stands
- Storage bottle with cap and tube
- Tube
- Eluate lead made of PTFE
- Storage vessel made of glass, cap with ventilation tube

Behr

Type	Description	PK	Cat. No.
KEB 101	Complete equipment, elution of solid matters for one sample w/ GS 101 glass column. Incl. two-channel hose pump and 2 tubes for different flow rates	1	**9.843 931**
KEBE 101	Supplementary equipment, elution of solid matters for one sample w/ GS 101 glass column. Incl. two-channel hose pump and 2 tubes for different flow rates	1	**9.843 932**
GS 101	Glass column, 90 x 500 x 5 mm, thread GL 100	1	**9.843 928**
SRR	Tube set, 4 pump tubes made of Tygon, flow rate of 0.25 - 12 ml/min	1	**9.843 929**
SVV	Tube set, 4 pump tubes made of Tygon, flow rate 0.66 - 33 ml/min	1	**9.843 930**

2 CUS 2 clean-up-station



The behrotest® clean-up column with glass frit corresponds exactly to the provisions of ISO 9377-2.
The practical twin stand provides safe support for two complete clean-up units with dropping funnel, clean-up columns and Kuderna-Danish flasks. Thus, the complete clean-up procedure can be carried out for two samples simultaneously - without delays due to time-consuming equipment or sample manipulation.
Clean-up-Station, supplied as: stand, 2 graduated round, bottom flasks, 100ml, 2 columns with grade 2 frits

Behr

Type	Description	PK	Cat. No.
CUS 2	Clean-up-Station	1	**9.843 801**

3 KOSTA 2 nitrogen station



The two-stage concentration of the organic phase is concluded by reducing the extract down to less than 1 ml under a mild nitrogen flow.
In the behrotest® nitrogen station, a distributor leads the nitrogen flow via two individually adjustable tubes into the Kuderna-Danish flasks. Thus, two samples can be reduced simultaneously in accordance with ISO 9377-2.

Behr

Type	Description	PK	Cat. No.
Kosta 2	Nitrogen station	1	**9.843 802**





1 2 Test Tubes, PFA

NEW!

Saint Gobain

These unbreakable test tubes are excellent for trace metal analysis. They are inert, non-contaminating, and transparent for easy viewing of contents. They withstand temperature extremes. Can be sterilized repeatedly.
- Made from fluoropolymer PFA resin
- Low metal ion content
- Inert

Capacity ml	Int. diam. mm	Ext. diam. mm	Length mm	Description	PK	Cat. No.
5	8	10	120	without cap	1	**6.267 607**
15	14	16	150	without cap	1	**6.267 608**
25	16	19	170	without cap	1	**6.267 609**
50	19	22	220	without cap	1	**6.267 610**
60	19	22	230	without cap	1	**6.267 611**
5	8	10	132	with cap	1	**6.267 612**
10	10	12	152	with cap	1	**6.267 613**
15	14	16	162	with cap	1	**6.267 614**
20	14	16	175	with cap	1	**6.267 615**
25	16	19	185	with cap	1	**6.267 616**
50	19	22	235	with cap	1	**6.267 617**
60	19	22	245	with cap	1	**6.267 618**



3 Sample tubes, PFA

VITLAB

Tube for sample preparation, centrifugation and for use in autosampler racks. With or without individually calibrated ring mark at 10 ml with GL 25 screw cap made from PFA or PE stoppers. Autoclavable.

Capacity ml	Height mm	Diam. mm	Description	PK	Cat. No.
12	110	16	with ring mark and stopper	1	**9.315 344**
12	110	16	without ring mark and stopper	1	**9.315 343**
15	110	22	with ring mark and screw cap	1	**9.315 345**
15	110	22	without ring mark and screw cap	1	**9.315 346**



4 Centrifuge tubes Oak Ridge Typ 3114, FEP

Thermo Scientific

Teflon® FEP with Tefzel® ETFE screw cap. Resistant to all acids, bases and solvents. Autoclavable. Operating temperature range -100 to +150°C. Can be used brim-full in refrigerated centrifuges at up to 50000xg rcf. Leak-proof. Accessory sealing cap assemblies are available for all sizes.

Type	Volume ml	Diam. mm	Height mm	PK	Cat. No.
3114	10	16.0	81.5	1	**9.315 701**
3114	30	25.5	93.7	1	**9.315 702**
3114	50*	28.8	107.7	1	**9.315 703**

* Capacity: 46ml to the brim.

Teflon® and Tefzel® are a registered trademark of DuPont.



5 Watch Glasses, PTFE

NEW!

Saint Gobain

This ultra-shallow, concave dish is ideal for holding, weighing, crystallizing, evaporating and drying small samples of liquids, powders and solids. It can also be used as a convex cover for beakers and Erlenmeyer flasks to limit airborne contaminants, while still allowing gas exchange. All sizes are molded to the same contour for easy stacking. Shatter-proof PTFE material is chemical resistant and easy to clean.
- Inert–chemically resistant
- Smooth and unbreakable
- Use as beaker covers

Diam. mm	PK	Cat. No.
50	1	**6.267 619**
75	1	**6.267 620**
100	1	**6.267 621**
125	1	**6.267 622**
150	1	**6.267 623**

E & OE.

1 Evaporating Dish, PFA

NEW!

Saint Gobain

The PFA Evaporating Dish design promotes evaporation of excess fluids to produce a concentrated solution or solid precipitate. The flat bottom provides good surface contact with a heat source, while the non-stick angled walls direct fluids to the base, which limits condensation on the dish wall. This PFA dish can be used in a wide range of temperatures, from cryogenics to 260°C. The dish is also ideal for holding solid samples or small volumes of liquid. Features a broad spout for easy pouring.
- Chemically inert
- Ideal for trace metal analysis
- Transparent for easy viewing
- Perfect for microwave use
- Smooth, non-stick surface



Capacity ml	Height mm	PK	Cat. No.
100	29.5	1	**6.267 447**

2 Evaporating Dish, PTFE

NEW!

Saint Gobain

This PTFE Evaporating Dish can be used to concentrate a solution or to create solid precipitates. The evaporating dish can also be used as a shallow bath, as a drying dish or as a beaker cover to protect contents from dust and other contaminants. PTFE material is unbreakable, chemically inert, and withstands temperatures up to 288°C. The non-stick surface is stain resistant and easy to clean. Features a broad spout for easy pouring.
- Chemically inert
- Ideal for ultra-pure samples
- Withstands temperatures up to 288°C



Capacity ml	Height mm	PK	Cat. No.
100	37.3	1	**6.267 448**
400	45.2	1	**6.267 449**

3 Petri Dish, PFA

NEW!

Saint Gobain

The non-stick, chemically inert surface of PFA petri dishes is non-contaminating and ideal for high-purity biological applications that range in temperature from -200°C to 260°C.
Each petri dish is shallow, cylindrical and translucent with a flat bottom that allows for easy observation and uniform specimen growth. Ideal for cell culture or drying applications. Stackable one-piece design does not require a separate lid. Can be autoclaved for repeat use.
- Inert surface
- Non-stick
- Non-protein binding
- Transparent
- Uniform flat bottom



Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
20	50	10	1	**6.267 436**
100	100	15	1	**6.267 437**

4 LLG- Beakers, low form, PTFE

NEW!

Manufactured from high quality PTFE with excellent resistance to all chemicals. Manufactured from molded, pure PTFE with a smooth internal finish. Flat base enables a flat contact to the surface for effective heat transfer. PTFE beakers have excellent resistance to chemicals and temperature stability from -200°C to +260°C.



Capacity ml	Diam. mm	Height mm	PK	Cat. No.
50	43	55	1	**6.267 346**
100	54	68	1	**6.267 347**
250	66	97	1	**6.267 348**



1 Beakers, low form, PTFE

With reinforced rim and spout. Ungraduated.
Excellent chemical and temperature resistance.

BRAND

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
5	20	26	1	**9.013 722**
10	24	33	1	**9.013 723**
25	32	47	1	**9.013 724**
50	43	55	1	**9.013 725**
100	54	68	1	**9.013 726**
150	59	75	1	**9.013 727**
250	66	97	1	**9.013 728**
400	80	125	1	**9.013 729**
500	100	125	1	**9.013 731**
1000	105	155	1	**9.013 734**
2000	125	205	1	**9.013 735**



2 Griffin Beakers, PTFE

NEW!

Saint Gobain

Griffin Beakers, PTFE are non-contaminating and completely inert to highly corrosive reagents. They are non-wettable, unbreakable, lightweight, and heat resistant. Easy to clean, these beakers have a broad spout for easy pouring. They can be heated on a hot plate up to 288°C when proper care is exercised. The specially molded bottom allows rapid heat transfer.

- Can be heated to 550°F (288°C) and used in a microwave
- Chemically resistant to acids and bases
- Ultra-pure

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
10	21.8	32.1	1	**6.267 424**
30	32.9	45.0	1	**6.267 425**
50	38.9	52.3	1	**6.267 426**
100	48.3	65.5	1	**6.267 427**
250	65.7	92.3	1	**6.267 428**
400	76.0	107.0	1	**6.267 429**
600	85.0	124.5	1	**6.267 430**
1000	104.7	146.2	1	**6.267 431**



3 Beakers, Griffin, PFA

NEW!

Saint Gobain

Griffin Beakers, PFA have a specially machined bottom designed for rapid, efficient heat transfer. They are transparent for easy viewing and graduated for easy measuring. They feature a non-stick, easy-to-clean surface.

- Can be heated up to 260°C and used in a microwave
- Ideal for ultra-pure applications
- Low metal ion content for trace metal analysis

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
50	42.7	43.3	1	**6.267 432**
125	59.7	60.8	1	**6.267 433**
250	71.6	76.2	1	**6.267 434**
500	88.8	89.7	1	**6.267 435**



4 Griffin beakers, ETFE

Transparent. With easily readable, printed black scale.
Very good chemical resistance and very high thermal stability from -100°C to +150°C.
To preserve markings, cleaning at greater than 60°C is not recommended.

VITLAB

Capacity ml	Grad. ml	Diam. mm	Height mm	PK	Cat. No.
25	5	32	50	1	**9.013 702**
50	10	39	59	1	**9.013 703**
100	20	50	72	1	**9.013 704**
250	50	67	96	1	**9.013 706**
400	50	77	109	1	**9.013 707**
500	100	88	122	1	**9.013 192**
600	100	91	125	1	**9.013 708**
1000	100	105	143	1	**9.013 710**

E & OE.

1 Griffin beakers, PFA



VITLAB

Transparent. With a raised scale. Excellent chemical resistance and very high thermal stability from -200°C to +260°C
Autoclavable at 120°C (2 bar) according to DIN EN 285.
The advantages of PFA
- Specially suitable for use in trace analysis
- Ideal for sensitive and valuable samples
- Long-term maintenance of low-concentration reference materials in PFA containers
- No memory effects
- Practically no carryover, no contamination due to the extremely hydrophobic, anti-adhesive and smooth surfaces
- High thermal stability, from -200°C to +260°C
- Chemical inertness against nearly all chemicals
- Good transparency and dimensional stability
- Easy to clean
- Use of high purity raw materials

Material	Capacity ml	Grad. ml	Diam. mm	Height mm	PK	Cat. No.
PFA	25	5	32	50	1	**9.013 210**
PFA	50	10	39	59	1	**9.013 211**
PFA	100	20	50	72	1	**9.013 212**
PFA	250	50	67	96	1	**9.013 213**
PFA	500	100	88	122	1	**9.013 214**
PFA	1000	100	109	141	1	**9.013 215**

2 Round-bottom flasks, PFA



VITLAB

Transparent, neck with NS 29/32. Can be used as a safety flask with a rotary evaporator.
High thermal stability and chemical resistance.

The advantages of PFA:
- Especially suitable for use in trace analysis
- Long-term maintenance of low-concentration reference materials in PFA containers
- No memory effects
- Practically no carryover, no cross-contamination due to the extremely hydrophobic, anti-adhesive and smooth surfaces
- High thermal stability, from -200°C to +260°C, autoclavable.
- Chemical inertness against nearly all chemicals
- Good transparency and dimensional stability
- Easy to clean
- Use of high purity raw materials

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
100	65	117	1	**9.011 896**
250	88	147	1	**9.011 897**
500	107	177	1	**9.011 898**

3 Erlenmeyer flasks, graduated, PFA

NEW!



Saint Gobain

Erlenmeyer flasks, PFA are chemically inert for ultra-pure applications. The neck of each flask is slightly rounded for pouring and can be plugged with a stopper. The conical shape and neck design allow contents to be mixed or stirred with reduced risk of splashing. The narrow neck also helps limit evaporation and contamination. PFA material has the lowest metal ion content of any fluoropolymer. Ideal for use in titration and for the preparation of microbial cultures.
- Chemically inert for ultra-pure applications
- Graduated
- Transparent for easy viewing
- Non-stick PFA surface-easy to clean
- Can be used in a microwave

Capacity ml	Height mm	Neck diam. mm	PK	Cat. No.
100	97	18	1	**6.267 465**
200	123	23	1	**6.267 466**
300	130	23	1	**6.267 467**



1 Dropper bottle Type 2414, FEP/ETFE

Teflon® FEP bottle with Tefzel® ETFE dropper and cap. Excellent chemical resistance. Autoclavable.

Thermo Scientific

Capacity ml	PK	Cat. No.
30	1	**9.073 300**

Teflon® and Tefzel® are registered trademarks of DuPont.



2 Narrow-mouth bottles with screw thread

PFA. Transparent, with tightly sealing screw closure (saw-tooth thread). High temperature resistance from -200 to +250°C. With PFA screw cap equipped with built-in sealing lip specially developed to enable use as mailing bottles for high-purity chemicals and samples. Autoclavable.

VITLAB

Capacity ml	Thread S	Diam. mm	Height mm	PK	Cat. No.
50	28	37	86	1	**9.073 740**
100	28	45	120	1	**9.102 420**
250	28	61	160	1	**9.102 422**
500	28	76	190	1	**9.102 424**
1000	28	96	240	1	**9.102 426**



3 Narrow-mouth bottles with cap, PFA

NEW!

These unbreakable PFA bottles can be used for storage of virtually all corrosive chemicals, including hydrofluoric, nitric, and perchloric acids. PFA bottles are chemically inert, heat resistant with a non-stick, easy-to clean surface and are ideal for environmental sampling. The inert fluoropolymer cap liner ensures leak-proof sealing. Supplied with PFA caps.

Saint Gobain

- Ultra-pure, the lowest metal ion content of all fluoropolymers
- Unbreakable
- Chemically inert
- Non-stick, easy to clean
- Use for storage in pharmaceutical and semiconductor processing (intermediate stages)

Capacity ml	Height with cap mm	Neck diam. mm	PK	Cat. No.
100	100,8	16.7	1	**6.267 438**
250	133,7	16.5	1	**6.267 439**
500	165,1	17.0	1	**6.267 440**
1000	202,4	25.3	1	**6.267 441**



4 Narrow-mouth bottles Type 1600, FEP with screw cap ETFE

Transparent. Teflon® FEP bottle with leakproof Teflon® ETFE screw cap. Highly resistant to chemicals, corrosion and temperature. Autoclavable - cap should be unscrewed and sat loosely on neck before autoclaving.

Thermo Scientific

Type	Capacity ml	Screw cap diam. mm	PK	Cat. No.
1600	30	20	1	**9.103 011**
1600	60	20	1	**9.103 012**
1600	125	24	1	**9.103 013**
1600	250	24	1	**9.103 014**
1600	500	28	1	**9.103 015**
1600	1000	38	1	**9.103 016**
1600	2000	38-430*	1	**9.103 017**

* with high form thread.

Teflon® and Tefzel® are registered trademarks of DuPont.

E & OE.

1 Wide-mouth bottles with screw thread, PFA

VITLAB

Transparent, with tightly sealing screw closure (saw-tooth thread S and built-in sealing lip). Excellent resistance to temperature (from -200 to +250°C). An extremely smooth wall surface and the outstanding material properties mean that high-purity chemicals can be stored without loss of quality. Autoclavable.



Capacity ml	Thread S	Ext. diam. mm	Height mm	PK	Cat. No.
250	40	61	150	1	**9.073 742**
500	40	76	179	1	**9.073 741**
1000	40	96	217	1	**9.073 743**
2000	40	130	245	1	**9.102 430**

2 Wide-mouth bottles with cap, graduated, PFA

NEW!

Saint Gobain

These PFA graduated bottles have a convenient wide-mouth opening for easy filling and pouring. These unbreakable, chemically inert bottles can be used for storage of virtually all corrosive chemicals. PFA material is heat resistant, non-stick and easy-to-clean. Each includes a PFA cap with an inert fluoropolymer cap liner to ensure leak-proof sealing. Ideal for environmental sampling, or for storage in pharmaceutical and intermediate-stage semiconductor processing applications.

- Wide-mouth for easy filling
- Ultra pure and chemically inert
- Non-stick and easy-to-clean



Capacity ml	Height with cap mm	Neck diam. mm	PK	Cat. No.
20	60,3	16.4	1	**6.267 442**
100	106,5	25.7	1	**6.267 443**
250	136,8	25.7	1	**6.267 444**
500	173,8	33.9	1	**6.267 445**
1000	207,2	36.8	1	**6.267 446**

3 Wash bottles, PFA

NEW!

Saint Gobain

These wash bottles feature a wide-mouth opening for convenience in filling and pouring of all types of liquids. Non-stick and easy to clean, fluoropolymer construction provides superior flex life and mechanical strength. As PFA contains the lowest concentration of trace metal ions of all fluoropolymers, these bottles are ideal for ultra-pure applications and environmental work.

- Wide-mouth for easy filling
- Chemically inert and leak-proof
- Flexible nozzle with 360° swivel; small orifice allows accurate content dispensing
- Transparent and break resistant
- Molded-in graduation marks



Capacity ml	Height with cap mm	Neck diam. mm	PK	Cat. No.
100	159,5	25.5	1	**6.267 480**
250	195,3	25.6	1	**6.267 481**
500	293,7	33.9	1	**6.267 482**
10000	317,5	36.9	1	**6.267 483**

4 Wash bottles Type 2403, FEP, with screw cap, ETFE

Thermo Scientific

Screw cap, jet and feed tube are one-piece moulded from ETFE. Ideal for contamination-free work and suitable for trace element analysis.



Capacity ml	Screw cap diam. mm	PK	Cat. No.
125	24	1	**9.223 231**
250	24	1	**9.223 232**
500	28	1	**9.223 233**
1000	38-430	1	**9.223 234**



1 Measuring cylinders, graduated, PFA

NEW!

Saint Gobain

These graduated cylinders offer all the advantages of non-stick inert fluoropolymers. PFA is temperature resistant from -196°C to 260°C and has the lowest metal ion content. As a result, Chemware® cylinders are excellent for trace metal analysis.
- Easy-to-read graduations
- Smooth pouring, drip-free spout
- Broad base for stability

Capacity ml	Height mm	PK	Cat. No.
10	118.5	1	**6.267 450**
30	165.9	1	**6.267 451**
50	216.7	1	**6.267 452**
100	231.8	1	**6.267 453**
200	281.8	1	**6.267 454**
300	295.3	1	**6.267 455**
500	352.4	1	**6.267 456**
1000	316.7	1	**6.267 457**



2 Volumetric flasks, PFA, class A, with screw cap

VITLAB

Highly transparent.
Ring mark individually calibrated to `In´.
Class A tolerances according to DIN EN ISO 1042.
The PFA screw cap guards against contamination.
Outstanding chemical resistance, can be used with strong oxidants, highly concentrated acids and alkalis, hydrocarbons, and ketones.
With laser-engraved lot number and batch certificate. Thermal stress up to 121ºC (autoclaving) does not permanently exceed the tolerance limit.
To preserve the ring mark, do not clean at temperatures exceeding 60ºC.

The advantages of PFA
- Long-term maintenance of low-concentration reference materials in PFA containers
- No memory effects
- Practically no carryover, no cross-contamination due to the extremely hydrophobic, anti-adhesive and smooth surfaces
- High thermal stability, from -200°C to +260°C
- Chemical inertness against nearly all chemicals
- Good transparency and dimensional stability, suitable for volumetric instruments
- Easy to clean
- Use of high purity raw materials

Capacity ml	Height mm	Neck thread GL	Tolerance ± ml	PK	Cat. No.
10	90	18	0.04	1	**9.276 919**
25	115	18	0.04	1	**9.276 920**
50	150	18	0.06	1	**9.276 921**
100	180	18	0.10	1	**9.276 922**
250	235	25	0.15	1	**9.276 923**
500	270	25	0.25	1	**9.276 924**



3 Gas washing bottles, PFA

VITLAB

With cap with S40 screw thread and frit made of PTFE. Approx. pore size 50 µm for optimal formation of gas bubbles into the liquid. Because all parts are made of high-quality fluorocarbon resins, a broad range of applications are possible. The threaded inlet and outlet connections accept 4 x 6mm i.d. x o.d. tubing , (1000 ml version: 5 x 8mm i.d. x o.d. tubing).

Capacity ml	Height mm	Diam. mm	PK	Cat. No.
250	160	61	1	**9.110 320**
500	190	76	1	**9.110 322**
1000	240	96	1	**9.110 324**

E & OE.

1 Gas washing columns, FEP/PTFE

NEW!

BOLA

PTFE top with two threaded connections. The standard PTFE frit has a pore size of approx. 3 µm and is screwed on the riser tube with an M8x1 thread. It can be exchanged with the PTFE gas distributor with fine bores which needs a lower primary pressure.
Temperature resistance: from -200°C to +250°C
- transparent
- unbreakable
- frit easily exchangeable



Type	Capacity ml	Height mm	For external tube/pipe mm	PK	Cat. No.
Column	500	400	8	1	**9.110 306**
Column	1000	700	8	1	**9.110 308**

2 Sample jars with screw cap, PFA

VITLAB

With screw cap made of PFA. Cylindrical, tall shape.
Ideal for sample collection, transport and storage of samples.
The advantages of PFA
- Specially suitable for use in trace analysis
- Ideal for sensitive and valuable samples
- Long-term maintenance of low-concentration reference materials in PFA containers
- No memory effects
- Practically no carryover, no cross-contamination due to the extremely hydrophobic, anti-adhesive, smooth surfaces
- High thermal stability from -200°C to +260°C, autoclavable at 121°C (2 bar) according to DIN EN 285
- Chemical inertness against nearly all chemicals
- Good transparency and dimensional stability
- Easy to clean
- Use of high purity raw material



Capacity ml	Neck thread GL	Diam. with cap mm	Height with cap mm	PK	Cat. No.
30	40	38	54	1	**9.401 810**
60	40	38	90	1	**9.401 812**
90	56	54	62	1	**9.401 814**
180	56	54	112	1	**9.401 816**

3 Jars, PFA

NEW!

Saint Gobain

PFA jars store solutions, paste and bulk materials with no concern about leaching, corrosion, contamination or evaporation. They are resistant to corrosive liquids, acids, solvents, sensitive reagents, and staining solutions. PFA jars feature a large mouth for easy access and non-stick surface for easy cleaning. There is an area for identification marking on the side of the jars. Stackable, these jars have a knurled top for secure grip to facilitate easy opening and closing.
- Chemically resistant
- Ultra-pure
- Heat resistant and usable to cryogenic temperatures
- Secondary inner seal design for safety and integrity
- Ideal for storing digestion samples



Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
60	50,8	46,8	1	**6.267 468**
120	66,0	53,2	1	**6.267 469**
240	66,8	96,8	1	**6.267 470**
360	84,4	90,6	1	**6.267 471**
480	65,2	94,3	1	**6.267 472**
1000	106,7	150,0	1	**6.267 473**
2000	104,1	269,1	1	**6.267 474**

4 Premium screw cap, TpCh260

DURAN Group

TpCh260 (similar to PFA), with PTFE coated silicone seal. Colourless (to avoid risk of leaching) and temperature resistant from -196°C to +260°C. Ideal for dry sterilization.
USP/FDA standard conformity. DFM available on request. Autoclavable.
With Retrace code (Batch Identification). Certificate available via the internet.



Neck thread GL	Diam. mm	Height mm	PK	Cat. No.
25	32	32	1	**9.072 159**
45	51	26	1	**6.205 218**



1 Premium pouring ring for Premium screw cap, TpCh260

Colourless pouring ring TpCh260, height 4mm. Temperature resistant from -196°C to +260°C. *DURAN Group*

Neck thread GL	PK	Cat. No.
45	1	**6.803 677**



2 Sealing tape, PTFE

For covering areas which require protection against chemicals of all types at temperatures of -150 to +260°C. Non-swelling. Easy loosening of seams even after continuous operation. Supplied in rolls as outlined below.

Width mm	Length cm	Wall thickness mm	PK	Cat. No.
12.8	670	0.1	1	**9.404 952**
24.0	670	0.1	1	**9.404 955**



3 Raschig Rings for distillation, PTFE

NEW!

- Packing for distillation columns *Saint Gobain*
- Chemically inert
- High surface area per unit of volume
- Minimum resistance to gas and liquid flow

Length mm	Diam. mm	PK	Cat. No.
3	3	1	**9.012 473**
6	6	1	**9.012 476**



4 Boiling Stones, PTFE

NEW!

Ultra-pure, virgin PTFE chips promote gentle, efficient boiling and help prevent overheating, even of highly volatile liquids. Ideal for continuous extraction methods. *Saint Gobain*
Stones minimize "bumping" during reflux and distillation. The boiling stones are not affected by acids, hydrocarbons, ketones, esters, alcohols or alkalis. They are easily cleaned and non-contaminating. Shows no trace of face acidity or alkalinity. They will not scratch or abrade glassware and leave no residue. Usable up to 288°C.

- Chemical resistant
- Ideal for boiling organic liquids
- Minimizes superheating

Weight g	PK	Cat. No.
450	1	**9.012 310**



5 Balls, PTFE

NEW!

PTFE balls minimize "bumping" during boiling. They are inert and can be used up to 288°C. 100 balls per package. *Saint Gobain*

- For column packing and mixing beds
- Resistant to most chemicals
- Non-contaminating

Diam. mm	PK	Cat. No.
3.2	100	**9.012 453**
6.4	100	**9.012 456**
9.5	100	**9.012 459**

E & OE.

1 Spatulas, PTFE fluoropolymer, coated

NEW!

Saint Gobain

These spatulas are designed for use in the most severe laboratory conditions. They are made of nickel-plated stainless steel and fluoropolymer coating. The coating eliminates surface buildup or loss of valuable sample due to sticking. Will not scratch or damage delicate surfaces.
- Extra heavy-duty PTFE coatings
- Resistant to low and high temperatures
- Use for handling chemically active materials



Description	Length mm	Figure	PK	Cat. No.
Double-ended spatula	200	a	1	**9.220 940**
Spoon spatula	225	b	1	**9.220 945**
Tapered pallet	102	c	1	**9.220 950**

2 Stirrers, PTFE

NEW!

Saint Gobain

These stirrers are ideal for scraping precipitates and residues. Chisel tip on one end and diagonal cut on other end permits applications in confined vessels. Chemically inert PTFE offers resistance to adhesion of any material. Unbreakable and heat resistant to 288°C, they will not crack or break under severe conditions, such as thermal and mechanical shock, and will not scratch glassware.
- Highly inert PTFE coating
- Non-stick, easy to clean
- Low and high temperature resistant



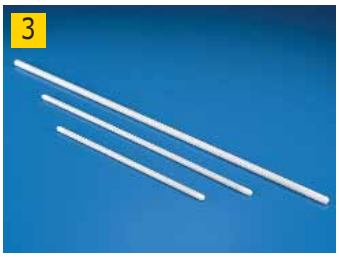
Length mm	PK	Cat. No.
100	1	**6.267 604**
150	1	**6.267 605**
200	1	**6.267 606**

3 Stirring Rods, PTFE® Fluoropolymer

NEW!

Saint Gobain

Contains fully enclosed steel insert for stiffness, yet can be bent to various shapes for use as a powered stirrer. Heat resistant to 288°C and completely inert to highly corrosive reagents. Antistick properties facilitate cleaning.
- Inert to corrosives
- Easy to clean
- Bendable into shapes



Length mm	PK	Cat. No.
204.8	1	**6.267 420**
255.6	1	**6.267 421**
306.4	1	**6.267 422**
410.6	1	**6.267 423**

4 Forceps, PTFE Fluoropolymer, coated

NEW!

Saint Gobain

Forceps are made of nickel-plated steel and have an extra heavy-duty coating of PTFE. The forceps have the same great features as the spatulas and tongs.
- Ridged grips prevent slips
- Inner pin retains closed position
- Rounded precision tip for accuracy and safety



Length mm	PK	Cat. No.
116	1	**9.171 555**

5 Forceps, PTFE

NEW!

Saint Gobain

Made from PTFE resin with an encapsulated metal insert for strength. Chemically inert and non-contaminating, these forceps are ideal for laboratory work involving hot, cold, delicate or highly reactive materials.
- Chemically inert
- Non-contaminating
- Will not scratch delicate surfaces



Length mm	PK	Cat. No.
150	1	**6.267 478**



1 Tong, PTFE fluoropolymer, coated

NEW!

Saint Gobain

The stainless steel tongs are covered with extra-heavy, non-stick PTFE coating and have the same great feature as the PTFE coated spatulas.
- Opposing grip handle for easy operation
- Coated tension screw will not corrode
- Contoured jaw enables handling of crucibles and other objects
- Tapered tips for enhanced grip; rounded for safety
- Use for handling chemically active materials

Length mm	PK	Cat. No.
240	1	**6.267 479**



2 Dipper, PFA

NEW!

Saint Gobain

Resistant to most chemicals, the Chemware® dipper is ideal for ultra-pure applications and use with aggressive media. Handle design allows dipper to hook over edge of vessel, eliminating dripping of corrosive fluids onto surrounding surface. Use with containers that have at least an 80mm opening.
- Non-contaminating
- Superior chemical resistance
- Lowest concentration of metal ions of any fluoropolymer

Diam. mm	Length mm	PK	Cat. No.
76	180	1	**6.267 475**



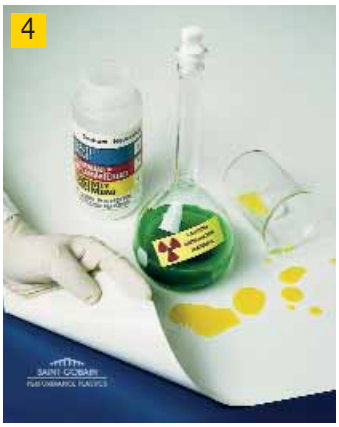
3 Chemware® Sieves, PFA

NEW!

Saint Gobain

Resistant to most chemicals, Chemware® sieves are ideal for ultra-pure applications. Two mesh sizes are available-0.5mm and 1.0mm. Use with containers that have openings of 80mm or greater and a capacity ranging from 300ml to 1000ml.
- Non-contaminating and resistant to most chemicals
- Ideal for coarse sorting or draining of aggressive media
- Handle can be hung over the edge of the vessel for draining

Aperture size mm	Diam. mm	Length mm	PK	Cat. No.
0.5	76	180	1	**6.267 476**
1.0	76	180	1	**6.267 477**



4 Bytac® Bench protectors

NEW!

Saint Gobain

Bytac® Bench protectors, FEP Film with Vinyl or Aluminum Backing. Inert to most chemicals - Non-stick; easy to clean - Use to resurface bench tops and line fume hoods. Contrasting work surface for viewing color changes during titrations. Protects surfaces against absorption of radioactive chemicals.
Vinyl backing is recommended for all applications up to 93°C
Aluminium foil-backing is resistant to high temperatures up to 182°C for up to one hour

Width mm	Length m	Description	PK	Cat. No.
635	4.6	FEP/Vinyl	1	**9.106 300**
320	4.6	FEP/Vinyl	1	**6.267 458**
100	33.0	FEP/Vinyl	1	**6.267 459**
50	33.0	FEP/Vinyl	1	**6.267 460**
25	33.0	FEP/Vinyl	1	**6.267 461**
635	4.6	FEP/Alu	1	**9.106 310**
320	4.6	FEP/Alu	1	**6.225 629**
100	33.0	FEP/Alu	1	**6.267 462**
50	33.0	FEP/Alu	1	**6.267 463**
25	33.0	FEP/Alu	1	**6.267 464**



5 Mini-Sampler, PTFE

Bürkle

For ultrapure sampling.
Also suitable for viscous oils.
Complete with one PFA Sample Jar 180 ml, 5 m PTFE suction tubing (6 x 8 mm), one tubing cutter, one stainless steel tubing weight and 20 seal-it safety seal labels in case.

Type	PK	Cat. No.
Mini sampler	1	**9.303 975**

1 Sampler LiquiSampler, PTFE/FEP

Bürkle

DIN 53242. For liquids. Made of ultra pure and chemically inert PTFE/FEPPP for contamination-free sampling. Practical push button, single-handed operation. Suitable for point, cross-sectional, and bottom sampling. Ideal for sampling from open and closed drums, kegs, tanks, silos, water sources (ponds, lakes, streams, rivers). Suitable for all commercial kegs and drums with openings of at least 25mm diameter. All surfaces are non-porous and crevice-free preventing accumulation of dirt. Only round-profile screwthreads, suitable for food hygiene applications, are used. Simple to dismantle and clean.

Material	Length mm	Diam. mm	PK	Cat. No.
PTFE/FEP	600	25	1	**6.255 307**
PTFE/FEP	1000	25	1	**9.303 950**
PTFE/FEP	2000	25	1	**9.303 951**

1



Sampler ViscoSampler, PTFE/FEP

Bürkle

Ultra-pure sampler with powerful suction for tough substances.
Choice of construction. PTFE/FEP.
Specially designed for tough substances, such as slime, slurries, wet clay and soil samples, sediments, oils, emulsions and creams.
The filter flask sucks up and discharges the material. All surfaces are non-porous and crevice-free, preventing dirt accumulation. Only round-profile threads, suitable for food hygiene applications, are used. Allow easy dismantling and cleaning.

Material	Length mm	Diam. mm	PK	Cat. No.
PTFE/FEP	600	25	1	**6.803 102**
PTFE/FEP	1000	25	1	**9.303 960** 2
PTFE/FEP	2000	25	1	**9.303 961**

2



9.303 960

3 Bottletop Dispenser Dispensette® TA, Analog

BRAND

The product range of Dispensette® bottle-top dispensers is well-known for its wide variety of applications. The wide range of Dispensette® dispensers provides premium dispensing options for the complete spectrum of liquid reagents. The Dispensette® TA provides outstanding performance for precise volume dispensing of high-purity media for trace analysis. Also suitable for HF with platinum-iridium valve spring.

General features of the Dispensette® TA bottle-top dispenser:
- Plastics in contact with media consist of high-purity materials such as PTFE, ETFE, FEP, and PFA. The purest sapphire is used for replaceable valves. Depending on the application, platinum-iridium or tantalum are available as spring materials.
- A field-tested cleaning process before use in trace analysis is described in the operating manual.
- If contamination of the bottle contents must be avoided, we recommend using the device without the SafetyPrime™ recirculation valve.
- The 45 mm standard thread plus the included adapters fit most common lab bottles.
- The valve block can be rotated 360° so that the bottle label always faces the user for safety.
- Telescoping filling tube adjusts to different bottle sizes.
- Easy disassembly for replacement of the dispensing cartridge.

Items supplied: Dispensette® TA, DE-M marking, with performance certificate, discharge tube, telescoping filling tube, SafetyPrime™ recirculation valve and recirculation tube (optional), mounting tool and bottle adapters GL 28/S 28 (ETFE), GL 32 (ETFE) and S40 (PTFE), operating manual.

3



Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Valve spring	Recycle valve	PK	Cat. No.
1 - 10	0.2	0.5	0.1	Pt / Ir	without	1	**4.007 914**
1 - 10	0.2	0.5	0.1	Pt / Ir	with	1	**4.007 915**
1 - 10	0.2	0.5	0.1	Tantalum	without	1	**4.007 916**
1 - 10	0.2	0.5	0.1	Tantalum	with	1	**4.007 917**

For PTFE/PFA tubings, please see page 143.

Colorimeters, Lovibond® PFXi series

Tintometer

dThe PFXi series of spectrophotometric colorimeters introduces a unique concept in liquid colour control: RCMSi technology (Remote Calibration & Maintenance Service via internet). Users can benefit from the capability for remote calibration and servicing via the internet - eliminating any costs and time delays associated with servicing and guaranteeing compliance with standards. The PFXi range is supplied with a full range of colour scales for specific markets including, but not limited to, Petroleum, Edible Oils, Pharmaceuticals, Brewing and Honey. Users can upgrade scales remotely at any time. Every PFXi is supplied with colour control software for data analysis (LAN & USB cable provided). Optical glass cells, a certified glass calibration filter, a spare lamp and user instructions included. The PFXi-880 and -995 series are available with an optional integrated heater unit. (This is not available for the PFXi-195). This is a critical feature when dealing with materials such as fats and waxes where temperature needs to be maintained at a constant temperature +10°C above the "Cloud Point" of the material.
Please Note: CIE values and spectral data readings are standard on all the instruments listed below.

Type	For	Colour scale	PK	Cat. No.
PFXi-195/1	Chemicals & Industrial Oils	Pt-Co/Hazen/APHA, Gardner, Iodine	1	**9.947 280** 1
PFXi-195/2	Petroleum Oils & Waxes	Saybolt, ASTM Color, Pt-Co/Hazen/APHA	1	**9.947 281**
PFXi-195/4	Beers, Malts & Caramels	EBC (CIE & 430nm), ASBC (CIE & 430nm), Series 52	1	**9.947 282**
PFXi-195/5	Pharmaceutical Solutions	European & US Pharmacopoeia, Pt-Co/Hazen/APHA	1	**9.947 283**
PFXi-880/L	Oils and Fats	RYBN colour	1	**9.947 284**
PFXi-880/P	Fuels and Waxes	Saybolt, ASTM Color, IP Units	1	**9.947 285**
PFXi-995	Transparent Samples	AOCS-Tintometer®, Gardner, Saybolt, Kreiss, Hess-Ives, Hunter Lab, Iodine colour, ASTM Color, Pt-Co/Hazen/APHA	1	**9.947 286**
PFXi-995/P	Petroleum Oils and Waxes	Saybolt Colour, ASTM Colour, Pt-Co/Hazen/APHA Colour, Gardner Colour, Lovibond® RYBN, IP Units, CIE Values, Spectral Data	1	**9.947 287**

1



9.947 280

2



2 Visual Colorimeter, Lovibond® Tintometer Model F

Tintometer

- Individually housed glass colour standards
- Prismatic optical system for accurate and repeatable colour matching
- Standardised and diffused tungsten-halogen light source
- Replacement inserts simplify cleaning and maintain interior whiteness

The Model F is a versatile visual colorimeter for measuring the colour of liquids, solids, powders and pastes in terms of Lovibond units. The user simultaneously compares the colour of light that is either transmitted through or reflected from the sample with that transmitted through a series of glass colour filters in 3 primary colours - red, blue and yellow. The slides are adjusted until a visual colour match is found for the light from the sample and the colour is then expressed in Lovibond RYBN units.

The Model F is supplied with a complete set of Lovibond coloured glass filters (Red 0.1 to 70; Yellow 0.1 to 70; Blue 0.1 to 40; Neutral 0.1 to 3.0), a sample chamber insert for easy cleaning, fused glass cells (one each of 1" and 5¼"), accessories and instructions. An optional solid sample accessory pack is available for measuring light-reflecting products. Includes a 12 Volt a.c. power pack switchable to suit 110/220/Volt supply.

Description	PK	Cat. No.
Tintometer Model F	1	**9.947 340**

Each instrument is supplied with optical cuvettes of the appropriate path length for the individual colour scales, calibration filter, spare lamp and operating instructions.

Accessories for visual Colorimeter, Lovibond® Tintometer Model F

Tintometer

Description	PK	Cat. No.
1/2" optical glass cell	1	**9.947 341**
1" optical glass cell	1	**9.947 342**
5 1/4" optical glass cell	1	**9.947 343**
Replacement sample chamber insert for Model F	3	**9.947 346**
Accessory pack for solid sample measurement	1	**9.947 347**

E & OE.

1 Lovibond® Nessleriser Systems, Pt-Co/Hazen/APHA Scale

Tintometer

For colour grading of clear, light yellow liquids such as clear oils, chemicals, petrochemicals and water. Each system covers a set measuring range and includes:
- A visual comparator instrument with a long path length, ensuring good sensitivity and accuracy when grading pale samples.
- A selection of Pt-Co/APHA colour standards; stable-coloured glass filters in test discs, which have been precalibrated to give direct Pt-Co Colour readings over set measuring ranges.
- A standardised bench-top light source to ensure constant and uniform lighting conditions for colour matching and therefore consistent and accurate readings.
- Nessler cylinders of the appropriate path length.

Model	Apparatus included
AF 329:	Nessleriser 2150 with Daylight 2000 Lighting Unit and 113mm (50ml) Nessler cylinders, Nessleriser 2250 upgrade with 250mm Nessler cylinders, Pt-Co discs CAA (0 to 30mg Pt/l) CAB (30 to 70mg Pt/l), NSB (70 to 250mg Pt/l), stand for using Nessleriser with natural light.
AF 325:	Nessleriser 2150 with Daylight 2000 Lighting Unit and 113 mm (50ml) Nessler cylinders, Pt-Co discs NSH (10 to 90mg Pt/l), NSB (70 to 250mg Pt/l), stand for using Nessleriser with natural light.
AF 328:	Nessleriser 2250 with Daylight 2000 Lighting Unit and 250mm Nessler cylinders, Pt-Co discs CAA (0 to 30mg Pt/l), CAB (30 to 70mg Pt/l), stand for using Nessleriser with natural light.

Type	Pt-Co range	PK	Cat. No.
AF 329	0 - 250 mg Pt/l	1	**9.947 334**
AF 325	10 - 250 mg Pt/l	1	**9.947 335**
AF 328	0 - 70 mg Pt/l	1	**9.947 336**

1



Nessler Tube, without spout, borosilicate 3.3

NORMAX - Fabrica

For use, for example, with the Nessleriser systems from Lovibond®.

Description	Capacity ml	Dimensions (dia. x H) mm	PK	Cat. No.
tall form, graduated at 50 ml	50	20 x 300	1	**9.170 621** 2
tall form, graduated at 100 ml	100	24 x 375	1	**9.170 622**
short form, graduated at 50 ml	50	25 x 175	1	**9.170 623** 3
short form, graduated at 100 ml	100	32 x 200	1	**9.170 624**

2



9.170 621

3



9.170 623

Reagent tablets for Nessler Tubes

NEW!

AQUALYTIC

For use for example with the Nessleriser systems from Lovibond®.

Type	For	PK	Cat. No.
DPD (Ness) No. 1	Chlorine	100	**9.947 079**
DPD (Ness) No. 2	Chlorine	100	**9.947 080**
DPD (Ness) No. 3	Chlorine	100	**9.947 081**

1 QUANTOFIX® test strips

For semi-quantitative determinations. Strips 6mm wide x 95mm long.
Supplied in packs of 100 strips.

MACHEREY-NAGEL

1



For	Measuring range	PK	Cat. No.
Aluminium*	0 to 500mg/l Al^{3+}	100	**9.130 401**
Ammonia*	0 to 400mg/l NH_4^+	100	**9.130 414**
Arsenic 10*	0 to 0.5mg/l $As^{3+/5+}$	100	**9.130 416**
Arsenic 50*	0 to 3.0mg/l $As^{3+/5+}$	100	**9.130 415**
Arsenic Sensitive*	0 to 0.5mg/l $As^{3+/5+}$	100	**9.130 440**
Ascorbic acid	0 to 2000mg/l Vitamin C	100	**9.130 402**
Calcium**	0 to 100mg/l Ca^{2+}	60	**9.130 417**
Carbonate hardness	0 to 20 °d	100	**9.130 418**
Chlorine*	0 to 100mg/l Cl_2	100	**9.130 419**
Chlorine Sensitive CE***	0 to 10mg/l Cl_2	100	**4.005 102**
Chloride	0 to 3000mg/l Cl^-	100	**9.130 420**
Chromate*	0 to 100mg/l CrO_4^{2-}	100	**9.130 403**
Cyanide*	0 to 30mg/l CN^-	100	**9.130 421**
EDTA	0 to 400mg/l EDTA	100	**9.130 432**
Formaldehyde*	0 to 200mg/l HCHO	100	**9.130 422**
Total Iron 1000	0 to 1000mg/l $Fe^{2+/3+}$	100	**6.243 754**
Total Iron 100	0 to 100mg/l $Fe^{2+/3+}$	100	**9.130 439**
Glutaraldehyde CE***	0 to 2.5 %	100	**9.130 438**
Potassium*	0 to 1500mg/l K^+	100	**9.130 423**
Cobalt	0 to 1000mg/l Co^{2+}	100	**9.130 406**
Copper	0 to 300mg/l Cu^{2+}	100	**9.130 407**
Concentration of cooling lubricants	0 to 200mmol/l KOH	100	**9.130 433**
Molybdate*	0 to 250mg/l Mo^{6+}	100	**9.130 424**
Nickel	0 to 1000mg/l Ni^{2+}	100	**9.130 408**
Nitrate/Nitrite	0 to 500mg/l NO_3^-, 1 to 80mg/l NO_2^-	100	**9.130 409**
Nitrite	0 to 80mg/l NO_2^-	100	**9.130 410**
Nitrite 3000	0 to 3000mg/l NO_2^-	100	**9.130 425**
Nitrite/pH	0 to 80mg/l NO_2^-, pH 6.0 to 9.6	100	**6.227 796**
Peracetic acid 50 CE***	0 to 50 mg/l PAA	100	**6.238 574**
Peracetic acid 500 CE***	0 to 500 mg/l PAA	100	**9.130 436**
Peracetic acid 2000 CE***	0 to 2000 mg/l PAA	100	**9.130 437**
Peroxide 25	0 to 25mg/l H_2O_2	100	**9.130 427**
Peroxide 100 CE***	0 to 100mg/l H_2O_2	100	**9.130 411**
Peroxide 1000	0 to 1000 mg/l H_2O_2	100	**9.130 426**
Phosphate*	0 to 100mg/l PO_4^{3-}	100	**9.130 428**
Quaternary ammonium compounds	0 to 1000mg/l Benzalkonium chloride	100	**9.130 434**
Sulphate	<200 to >1600 mg/l SO_4^{2-}	100	**9.130 429**
Sulphite	0 to 1000mg/l SO_3^{2-}	100	**9.130 412**
Zinc*	0 to 100mg/l Zn^{2+}	100	**9.130 430**
Tin	0 to 500mg/l Sn^{2+}	100	**9.130 413**
Multistick for aquarists, total hardness	0 to 25°d	100	**9.130 431**

* Test strips with reagent
**Box with 60 test strips and reagent
***CE-marked according to the directive for medical products 93/42/EWG.

2



2 Water hardness test strips, AQUADUR®

For determining water hardness. Supplied in boxes of 100 strips.
Colour change from green to red.

MACHEREY-NAGEL

Scale gradation °d*	PK	Cat. No.
<3 / >5 / >10 / >15 / >20 / >25	100	**9.130 393**
<3 / >4 / >7 / >14 / >21	100	**9.130 394**
<3 / >4 / >8.4 / >14	100	**9.130 400**

* German units. Multiply by 1.25 to convert to UK units (°e), and by 10 for US units (mg/l $CaCO_3$)
Test strips are also available as individually sealed test strips or as test cards.

E & OE.

1 2 MERCKOQUANT® test strips

Other tests on request. *Merck*

For	Measuring range	PK	Cat. No.
Ammonia	10 to 400 mg/l NH_4^+	100	**9.129 902**
Ascorbic acid	50 to 2000 mg/l	100	**9.129 904**
Chromate	3 to 100 mg/l CrO_4^{2-}	100	**9.129 909**
Cyanide	1 to 30 mg/l CN^-	100	**9.129 912**
Iron	3 to 500 mg/l $Fe^{2+/3+}$	100	**9.129 913**
Formaldehyde	10 to 100 mg/l HCHO	100	**9.129 914**
Total hardness	5 to 25 °dH	100	**9.129 916**
Total hardness	3 to 21 °dH	100	**9.129 918**
Total hardness	3 to 21°dH	1000	**9.129 919**
Copper	10 to 300 mg/l Cu^{2+}	100	**9.129 923**
Nickel	10 to 500 mg/l Ni^{2+}	100	**9.129 928**
Nitrate	10 to 500 mg/l NO_3^-,	100	**9.129 931**
Nitrite	2 to 80 mg/l NO_2^-	100	**9.129 932**
Nitrite	0.1 to 3 mg/l NO_2^-	100	**9.129 933**
Peracetic acid	5 to 50 mg/l	100	**9.129 943**
Peroxide	0.5 to 25 mg/l H_2O_2	100	**9.129 934**
Sulphite	10 to 400 mg/l SO_3^{2-}	100	**9.129 938**

1



2



Test kits, *VISOCOLOR®*

***VISOCOLOR® HE* Ammonium.** Highly sensitive test kit for testing of ammonium. *MACHEREY-NAGEL*
Measuring range (scale gradation):
0.0/0.02/0.04/0.07/0.10/0.15/0.20/0.30/0.40/0.50mg/l NH_4^+

***VISOCOLOR® ECO* Nitrate.** Test kit for Nitrate testing.
Measuring range (scale gradation): 0/1/3/5/10/20/30/50/70/90/120mg/l NO_3^-
This test kit is qualified for the analysis of seawater.

***VISOCOLOR® ECO* Nitrite**. Test kit for Nitrite testing.
Measuring range (scale gradation): 0.0/0.02/0.03/0.05/0.07/0.1/0.2/0.3/0.5mg/l NO_2^-
This method is qualified for the analysis of seawater.

VISOCOLOR® alpha pH 5 to 9. Test kit for the pH analysis.
Measuring range (scale gradation): pH 5.0/5.5/6.0/6.5/7.0/7.5/8.0/8.5/9.0
This test kit is qualified for the analysis of seawater.

***VISOCOLOR® HE* Phosphate.** Highly sensitive test kit for Phosphate analysis.
Measuring range (scale gradation): 0.0/0.05/0.10/0.15/0.20/0.3/0.4/0.6/0.8/1.0mg/l P
This test kit is qualified for the analysis of seawater.

***VISOCOLOR® HE* Oxygen SA 10.** Test kit for the titrimetric analysis of dissolved oxygen in water according to DIN EN 25 813.
Measuring range: 1 syringe filling is enough for testing 0.2 to 10.0mg/l O_2. 1 scale line = 0.2mg/l O_2
Contents: sufficient for 100 tests with an average oxygen content of 9.0 mg/l
This test kit is qualified for the analysis of seawater.

***VISOCOLOR® HE* Carbonate hardness C 20.** Test kit for carbonate hardness in water as well as for the partial alkalinity. Dual range test kit for carbonate hardness (=m-value) as well as the partial alkalinity (=p-value).
Measuring range: 1 syringe filling is enough for testing 0.5 to 20.0°d and /or 0.2 to 7.0mmol/l H^+.
This test kit is qualified for the analysis of seawater.

***VISOCOLOR® alpha* Total Hardness.** Test kit for total hardness.
Reaction basis: Titration
Measuring range: 1 drop = 1°d
Contents: sufficient reagents for 100 tests with an average hardness of 10°d.
This test kit is qualified for the analysis of seawater after dilution (1+29).

3



9.304 581

4



9.304 583

5



9.304 585

Type	For	PK	Cat. No.
VISOCOLOR® HE Ammonium	110 tests	1	**9.304 581** 3
VISOCOLOR® ECO Nitrate	110 tests	1	**9.304 565**
VISOCOLOR® ECO Nitrite	120 tests	1	**9.304 582**
VISOCOLOR® alpha pH 5.0-9.0	200 tests	1	**9.304 570**
VISOCOLOR® HE Phosphate	300 tests	1	**9.304 583** 4
VISOCOLOR® HE Oxygen SA 10	100 tests	1	**9.304 569**
VISOCOLOR® HE Carbonate hardness C 20	200 tests	1	**9.304 585** 5
VISOCOLOR® alpha Total hardness	100 tests	1	**9.304 586**

VISOCOLOR® reagent case and photometer

NEW!

MACHEREY-NAGEL

1



9.304 587

***VISOCOLOR*® *ECO* reagent case**
For mobile use with test instructions for visual determination, analytical accessories and the following tests:
Ammonium 0.2 - 3mg/L NH_4^+/Carbonate Hardness 1 drop = 1.25°e/total hardness 1 drop = 1.25°e/ Nitrate 1 - 120mg/L NO_3^- /Nitrite 0.02 - 0.5mg/L NO_2^-/pH 4.0 - 9.0/Phosphate 0.2 - 5mg/L P

***VISOCOLOR*® reagent case for soil analysis**
The *VISOCOLOR*® reagent case for soil analysis is the perfect companion for economical, fast and convenient soil analysis, both in the field or in your laboratory, including the following tests:
QUANTOFIX® test strips: Ammonium 10 - 400mg/L NH_4^+/Nitrate/Nitrite 10 - 500mg/L NO_3^-/1 - 80mg/L NO_2^- /***VISOCOLOR*® *ECO* test kits:** Potassium 2 - 15mg/L K^+/***VISOCOLOR*® *HE* test kits:** pH 4.0 - 10.0/ Phosphate 1.0 - 20.0mg/L P/**pH-Fix test strip:** pH 2.0 - 9.0

2



9.304 588

***VISOCOLOR*® reagent case for soil analysis with PF-3 Soil**
The newest version of the *VISOCOLOR*® reagent case for soil analysis includes, beside reagents and accessories, also the compact photometer PF-3 Soil.
The reagent case contains the following test kits:
Quantofix® test strips: Nitrate/Nitrite: 10-50mg/L NO_3^-/1-8mg/L NO_2^-
***VISOCOLOR*® *ECO* test kits:** Ammonium 3: 0.1-2.5mg/L NH_4^+/Potassium: 2-15mg/L K^+/Nitrate: 4-60mg/ L NO_3^-/Phosphate: 0.6-15.0mg/L PO_4^{3-}/**pH-Fix test strips:** pH 2.0-9.0

3



6.267 820

***VISOCOLOR*® *SCHOOL* reagent case**
The *VISOCOLOR*® *SCHOOL* reagent case is especially designed for schools and caters to the needs of both students and teachers. All reagents are approved to be used in schools in Germany (GUV - SR 2004 directive) and can be disposed of easily just down the drain without any harm to the environment.
Ammonium 0.2 - 3mg/L NH_4^+, Nitrate 1 - 90mg/L NO_3^-, Nitrite 0.02 - 0.5mg/L NO_2^-, Phosphate 0.5 - 15mg/L P, pH 4.0 - 9.0, Total hardness 1 drop = 17.8mg/L $CaCO_3$

***VISOCOLOR*® *FISH* reagent case**
The *VISOCOLOR*® *FISH* reagent case is developed for the requirements in analysis of fisheries waters. The flexible and tough reagent case is especially suited for mobile analysis directly at the point of interest. Beside the needed accessories, the *VISOCOLOR*® *FISH* reagent is equipped with 6 tests for colorimetric and titrimetric determination of the following classic parameters: Ammonium: 0.2-3mg/L NH4+, Nitrate: 1-90mg/L NO_3^-, Nitrite: 0.02-0.5mg/L NO_2^-, Phosphate: 0.5-15mg/L PO_4^{3-}, pH: 4.0-9.0, Total Hardness: 1 drop = 1°d

4



6.252 729

Compact photometer PF-12^{Plus}:
Photometer for laboratories, in a practical case with manual, rechargeable batteries and battery charger

Light source: Xenon lamp
Detector: Silicon photo-element
Display: Backlit graphic display, 64 x 128 pixels
All important data at a glance: Result in respective unit, date, time, sample number, sample location and dilution
Operation: Display user guidance, plastic foil keyboard
Test selection via test number or parameter lists
12 languages (de, en, fr, es, it, nl, hu, pl, pt, cz, id, si)
Accuracy: ±1%
Long-term stability: < 0.002A/h
Interface: USB 2.0
Power supply: Via USB power supply, standard or rechargeable batteries
Dimensions: 215 x 100 x 65mm
Weight: 0.7kg

5



9.304 591

Type	PK	Cat. No.	
VISOCOLOR® *ECO* Analysis kit	1	**9.304 587**	1
VISOCOLOR® soil kit, incl. manual	1	**9.304 588**	2
VISOCOLOR® reagent case for soil analysis with PF-3 Soil, incl. manual	1	**6.267 820**	3
VISOCOLOR® *SCHOOL* Analysis kit	1	**6.252 729**	4
VISOCOLOR® *FISH* reagent case	1	**6.267 821**	
Compact photometer PF-12^{Plus}	1	**9.304 591**	5

List price for one package, volume discount at 10 packages.

E & OE.

1 Photometers PrimeLab 1.0

NEW!

Pool-i.d. GmbH

The new PrimeLab 1.0 photometer is the first and only photometer using just one LED and one (JENCOLOR) sensor, simultaneously covering 400 wavelengths in one go. The
JENCOLOR sensor allows self-calibration of the unit in seconds.
More than 120 test methods are available on the PrimeLab 1.0 to be individually selected when device is purchased. Even after purchase, not chosen parameters can be activated afterwards by entering a code. Step-by-step guidance through each test method in 4 different languages (7 languages when using the App) are displayed on the screen. User can choose to either use tablet, liquid or powder reagents.
Wireless Bluetooth technology combined with powerful PC-software (PrimeLab Desktop Assistant) and App for Android, iOS and Windows with free Cloud-Service, make the PrimeLab a powerful tool for on-spot-testing (battery) also for each lab (DC-connected).
Each measurement can be connected to an individual "account", identifying the water source, to always keep track of test results. Users can create and export test reports per "account" via software and/or App, where he also can store individual water treatment chemicals to create dosage recommendations, based on test results, account settings (such as water source volume) and individual water treatment chemicals.
Using the PrimeLab adapter for Turbidity (NTU), PTSA and Fluorescein, even those parameters can be tested by the PrimeLab whereas user normally needs to purchase a second device. Further info under www.primelab.org

1



PrimeLab 1.0 Multitest Photometer BASIC-KIT 3-in-1 (Chlorine/pH/Chlorine dioxide):
PrimeLab 1.0 Multitest Photometer in a black plastic case with foam insert.
4 x 24mm/10ml Glass-vials, light shield, stirring rod, 10ml syringe, cleaning brush, Bluetooth-USB-dongle for non-bluetooth PC, 4 x AAA-batteries, DC-adapter with international plugs, CD-ROM "PrimeLab Desktop Assistant", full printed manual.
Pre-activated parameters:
ID11 - Chlorine (free/combined/total) usning DPD tablets
ID16 - Chlorine dioxide using DPD tablets
ID38 - pH using Phenol Red tablets
Reagent tablets to do 50 tests of the above mentioned parameters

PrimeLab 1.0 Multitest Photometer ALL-IN-KIT (all current and future parameters activated):
PrimeLab 1.0 Multitest Photometer in a black plastic case with foam insert.
4 x 24mm/10ml Glass-vials, light shield, stirring rod, 10ml syringe, cleaning brush, filter-kit containg 20ml luer-lock-syringe, filter-adapter as well as 50 filter papers each of GF/C and 0.45µ, 100ml dilution tube, Bluetooth-USB-dongle for non-bluetooth PC, 4 x AAA-batteries, DC-adapter with international plugs, CD-ROM "PrimeLab Desktop Assistant", full printed manual,
All available parameters are activated on the device. Parameters released in the future will be automatically added and activated while performing an update through PC-software or App.

Specifications:

Optic:	JENCOLOR Multispectral sensor, covering 380-780 nm
Power:	4 x AAA batteries/5.0 V DC-adapter with international plugs
Size:	180 x 90 x 60 mm
Weight:	160g
Communication:	Wireless via Bluetooth
Connection:	Free PC software (windows) "PrimeLab Desktop Assistant" and free Android/iOS/Windows App
Time/date:	RTC (real time clock) with date
Auto-off:	Set by user (0 - 99 min)
Display:	LCD (monochrome)
Calibration:	Auto-calibration function due to JENCOLOR sensor
One-Time-Zero:	Intelligent OTZ, based on chosen method
Memory:	On device: 20 accounts/100 test results. Unlimited via software and App
Languages:	English, Spanish, French, German. Software/App: English, Spanish, French, German, Italian, Russian, Chinese
Environment:	30-90% RH (not condensating), ca. 5°C-45°C
Certification:	CE

Description	Measuring range	PK	Cat. No.
BASIC-KIT 3-in-1	View a full range of available test methods and ranges on www.primelab.org	1	**6.268 024**
ALL-IN-KIT		1	**6.268 025**

Accessories to Photometers PrimeLab 1.0

NEW!

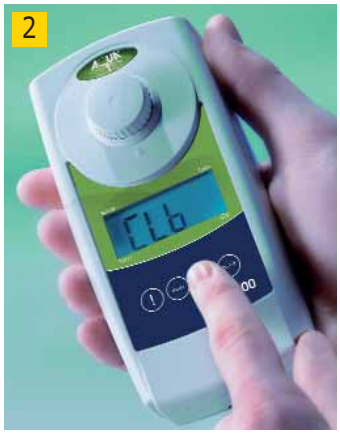
Pool-i.d. GmbH

Description	PK	Cat. No.
Set of 10 x 10ml glass-vials	10	**6.268 026**
Set of 10 x plastic stirring rods	10	**6.268 027**
Set of 5 cleaning brushes	5	**6.268 028**
20ml luer-lock syringe for filter-adapter	1	**6.268 029**
Filter-adapter for 20ml luer-lock-syringe to be used with 25mm filter papers	1	**6.268 030**
50 filter papers GF/C (25mm)	50	**6.268 031**
50 filter papers 0.45µ (25mm)	50	**6.268 032**
adapter to use 16mm vials on PrimeLab (e.g.: for COD vials)	1	**6.268 033**
Professional lab-pipette (0-10ml) with 2 tips	1	**6.268 034**
Set of 10 tips (10ml) for professional lab-pipette	10	**6.268 035**
100ml plastic dilution tube	1	**6.268 036**
microfiber cloth to clean glass vials	1	**6.268 037**
Adapter-kit "Turbidity"	1	**6.268 038**
Adapter-kit "PTSA"	1	**6.268 039**
Adapter-kit "Fluorescein"	1	**6.268 040**
Reference solution "ZERO, Chlorine, pH, Cyanuric Acid (tablet reagents)"	1	**6.268 041**
Reference solution "ZERO, Chlorine, pH, Cyanuric Acid (liquid reagents)"	1	**6.268 042**
Reference solution (10ml each) 0,5 / 10 / 1000 NTU	1	**6.268 043**
Reference solution (100ml each) "100 µg/l PTSA" and aqua dest	1	**6.268 044**
Reference solution (100ml each) "100 µg/l Fluorescein" and aqua dest	1	**6.268 045**

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1 2 Photometers AL100

NEW!

AQUALYTIC

The AQUALYTIC® AL100 Photometers are designed for analysis of different parameters in drinking water, industrial process water and waste water. With a total of more than 30 different types, instruments are available for routine testing as well as for special applications.
The AL100 uses high quality interference filters with long-life LEDs as a light source without any moving parts in a transparent sample chamber. The units supply accurate, reproducible results very quickly. Other major advantages include ease of operation, ergonomic design, compact dimensions and safe handling. Provided with calibration and software-based adjustment options the AL100 is suitable for use as a testing instrument. The tests are conducted using either AQUALYTIC® tablet reagents with long-term stability and a shelf life of 5 or 10 years, VARIO powder reagents or using liquid reagents.

- Optics: High-quality Interference Filters
- Wavelength accuracy: ±1 nm.
- Power supply: 4 micro batteries (AAA), capacity approx. 17 hours or 5000 tests.
- Automatic switch-off.
- LCD Display (backlit on keypress).
- Internal ring memory for 16 data sets.
- Dimensions (L x W x H): 155 x 75 x 35 mm.

Supplied with: Photometer in a plastic carrying case, with reagents for 100 tests, cells and batteries

Optional: IRiM - infrared interface module for data transfer to computer or printer.

Description	Measuring range	PK	Cat. No.
Ammonium tablet reagents	0.02 - 1.0mg/l	1	**9.699 280**
Chlorine tablet reagents	0.01 - 6.0mg/l	1	**7.627 340**
Chlorine powder reagents	0.02 - 2.0mg/l** / 0.1 - 8.0mg/l***	1	**6.251 486**
Chlorine liquid reagents	0.02 - 4.0mg/l	1	**6.252 939**
Chlorine dioxide tablet reagents	0.02 - 11mg/l	1	**9.699 281**
Iron tablet reagents	0.02 - 1.0mg/l	1	**9.699 282**
Copper tablet reagents	0.05 - 5.0mg/l	1	**9.699 283**
Manganese LR tablet reagents	0.2 - 4.0mg/l	1	**9.699 284**
Phosphate tablet reagents	0.05 - 4.0mg/l	1	**9.699 285**
Silicon dioxide tablet reagents	0.05 - 4.0mg/l	1	**9.699 286**
2 in 1 Chlorine /pH tablet reagents	0.01 - 6.0mg/l* / 6.5 - 8.4pH	1	**9.699 287**
3 in 1 Chlorine LR / Chlorine HR / Chlorine dioxide tablet reagents	0.01 - 6.0mg/l / 5 - 200mg/l / 0.05 - 11mg/l	1	**9.699 288**
5 in 1 Chlorine / pH / Cyanuric acid / Alkalinity-M / Calcium hardness tablet reagents	0.01 - 6.0mg/l* / 6.5 - 8.4pH / 0 - 160mg/l Cys / 5 - 200 mg/l $CaCO_3$ (TA); 0 - 500 mg/l $CaCO_3$ (CaH)	1	**9.699 289**
Reference standard kit Chlorine	0.2 / 1.0mg/l	1	**7.627 352**
Reference standard kit Chlorine	1.0 / 4.0mg/l	1	**9.699 290**
Reference standard kit pH	7,45pH	1	**9.699 291**
Infrared data transfer module IRiM		1	**9.699 247**

*Delivery without reagents for measuring range 0.1 - 10 mg/l Cl_2.
**24mm diam. glass cell
***10mm diam. multi cell-2

E & OE.

1 Photometers AL100 Boiler Water, Cooling Water

NEW!

Photometer instruments, specially designed for cooling and boiler water analysis. Thanks to the handy format and the user-friendly indicator chemistry, most of the important parameters can be determined on site. The photometers are supplied pre-calibrated with test methods, simply add the appropriate AQUALYTIC® reagent sets (tablets, powder packs and liquids). *AQUALYTIC*

Manufactured under tightly controlled conditions, sealed reagents have a shelf-life of up to 10 years since, until used, they are not exposed to the elements. A step by step instruction manual enables even photometer novices to quickly understand the procedures to ensure rapid and accurate results every time. Easy-to-use with push-button technology, photometry is widely regarded as the simplest yet most accurate method to analyze water, removing any possible subjectivity when reading results that can occur with visual testing equipment. Both photometers are further equipped with functionality expected of the AQUALYTIC® brand such as scroll memory, backlit display, recall of stored data and the ability to transfer results to a PC. Supplied in a case with accessories (**without reagents**), these photometers provide an efficient, portable and self-contained option for Boiler Water and Cooling Water testing. CE-Conformity

Please order reagents separately! Please pay attention that some reagents could be used for **Boiler Water** or **Cooling Water only**.

Optics	LEDs, interference filters (IF) and photo sensor in transparent sample chamber
Wavelength Accuracy	±1 nm
Photometric Accuracy	3% FS (T = 20°C - 25°C)
Photometric Resolution	0.01 A
Power Supply	4 micro batteries (AAA), capacity approx. 17 hours or 5000 tests
Auto-Off	automatic switch-off
Display	backlit LCD (on keypress)
Storage	internal ring memory for 16 data sets
Interfaces	infrared interface for test data transfer
Additional Feature	real time clock and date
Calibration	factory calibration and user calibration. Reset to factory calibration possible
Dimensions	155 x 75 x 35 mm (L x W x H)
Weight	basic unit approx. 260 g
Environmental conditions	temperature: 5 - 40°C, rel. humidity: 30 -90% (non condensing)

Description	For	Package contents	PK	Cat. No.
AL 100 Boiler			1	**9.699 278**
AL 100 Cooling			1	**9.699 279**
Set Aluminium (0,01 - 0,25) mg/l Al		20ml for 100 tests	1	**6.225 880**
Set DEHA (20 - 500 µg/l DEHA)	only for Boiler water	set for 100 tests	1	**6.257 410**
Set Copper (0,3 - 5,0 mg/l Cu)		combi pack no.1/2, each 100 tabl.	200	**6.232 946**
Set Oxygen (10 - 800 µg/l O2)	only for Boiler water	liquid reagent of 30 vials	1	**6.229 104**
Set Chlorine (0,01 - 6,0 mg/l Cl2) and (5 - 200 mg/l Cl2)	only for Cooling water	combi pack, each 100 tabl.	100	**6.230 324**
Set Sulfate (5 - 100 mg/l SO4)	only for Cooling water	powder pack for 100 tests	100	**6.204 319**
Set Chloride (0,5 - 20 mg/l Cl-)	only for Boiler water	liquid reagent of 65ml	1	**9.699 330**
Set Iron (0,03 - 2,00 mg/l Fe2+/3+)		liquid reagent of 65ml	1	**9.699 331**
Set Phosphate (5 - 80 mg/l PO4)	only for Boiler water	liquid reagent of 65ml	1	**9.699 332**
Set Polyacrylate (1 - 30 mg/l)		liquid reagent of 65ml	1	**9.699 333**
Set Zinc (0,1 - 2,5 mg/l Zn)	only for Cooling water	liquid reagent of 65ml	1	**9.699 334**

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1 Photometer system AL400

NEW!

AQUALYTIC

With the modern design of the AL400 we have succeeded in combining the mobility of a portable photometer with the characteristics of a modern laboratory photometer.
This new unit covers all the important parameters of water analysis, from aluminium to zinc. The high level of accuracy of Aqualytic® reagents and the user-friendly nature of the instrument guarantee rapid and reliable analysis of your water samples. Depending on the application, the unit will operate with tablet reagents, powder reagents, liquid reagents or tube tests (16/13mm).
The AL400 operates with 6 interference filters and uses long-life LED's as a light-source. No moving parts are involved. The AL400 has a memory, in which up to 1000 data sets can be stored. The optional infra-red interface (IRIM = infra-red interface module) enables data to be transmitted to a computer or printer (RS232/USB). Now also available on request with Bluetooth®.

Highlights:
- easy to use
- backlit display
- more then 120 pre-programmed methods
- automatic wavelength selection
- user Interface in English, German, French, Spanish, Italian, Portuguese (BR), Polish and Indonesian.
- Storage of 1000 data sets
- More than 35 user-defined methods possible
- Infrared Interface
- Waterproof Housing
- Mobile
- CE marked

Supplied with:
The instrument is supplied complete and ready-to-use incl. 4 batteries, 3 vials diam. 24 mm, 3 vials diam. 16 mm, 1 adapter each for 16 mm and 13 mm vials, carrying case with water resistance foam, **but without reagents.**

Specifications

Optics:	High-quality Interference Filters
Power Supply:	4 batteries (1.5V Mignon AA/LR6)
Operation time:	approx. 26 hours; continuous operation or 3500 tests
Dimensions (WxDxH):	approx. 210 x 95 x 45mm (unit) approx. 395 x 295 x 106mm (case)
Wavelengths:	530/ 560/ 610/ 430/ 580/ 660 nm

Type	Description	PK	Cat. No.
Photometer AL400		1	**9.699 235**
Verification standard kit		1	**9.699 246**
Set of 10 round cuvettes with cap	16 mm dia.	1	**9.699 240**
Set of 12 round cuvettes with cap	24 mm dia.	1	**9.699 231**
Adapter, grey	for 16mm dia. cuvettes	1	**9.699 226**
Adapter, black	for 16mm dia. cuvettes	1	**9.699 227**
Adapter, grey	for 13mm dia. cuvettes	1	**9.699 228**
Adapter, black	for 13mm dia. cuvettes	1	**9.699 229**
Sealing ring for cuvette	24mm dia.	12	**9.699 243**
Plastic funnel with handle		1	**9.699 244**
Stirring rod, plastic	13 cm long	1	**9.699 266**
Cleaning brush	10 cm long	1	**9.699 267**
Infrared data transfer module IRiM		1	**9.699 247**

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2 Waste Water Set-Up AL400

AQUALYTIC

Waste Water Set-Up including Photometer AL400 with standard accessory, thermoreactor AL125, Infra-red data transmission module IRiM, tube stand, membrane filter set, instruction manual, guarantee sheet and reagents for the following parameters:
COD 0 - 150 mg/l and 0 - 1500 mg/l, Ammonia 1 - 50 mg/l N, Nitrate 1 - 30 mg/l N Nitrite LR 0.01 - 0.3 mg/l N, Nitrogen 5 - 150 mg/l N, Phosphate 0.02 - 1 mg/l P/0.06 - 3.5 mg/l PO_4

Type	PK	Cat. No.
Waste Water Set-Up AL400	1	**9.699 236**

E & OE.

Photometer system AL450

AQUALYTIC

With Dual Beam Technology. The AL450 is a modern, microprocessor-controlled photometer with ergonomically designed keypad and large-format graphic display. It is equipped with a wide range of pre-programmed methods (e.g. ammonia, COD, phosphate) based on the proven range of Aqualytic® tablet reagents, liquid reagents, vial tests and powder reagents. The calibration and software-supported control options mean that the unit is also suitable for use as a testing instrument. The seven standard rechargeable batteries (supplied) ensure easy mobile use.

Advantages
- wide range of pre-programmed methods
- large, graphics display
- RS232 interface
- suitable for use with standard rechargeable batteries
- updates for new methods and languages via the Internet
- 1000 data set memory
- custom method recall is also possible



9.699 230



6.226 018

Comprises: AL450, ready-to-use incl. 7 x rechargeable batteries and battery charger for 100 - 240V, 3 each 24mm and 16mm cuvettes, 16mm cuvette adapter, 3 x syringes, 1 x 100ml plastic beaker and case with waterproof insert.
Without reagents and without battery (please order separately)**.**

Verification Standard Kit: The verification standard kit for the AL450 is designed to reassure the user about the accuracy and the reliability of the results. The shelf life of the standard kit is two years from the date of production, provided that storage and use are in accordance with the instructions provided. Measurements are taken in mAbs.

Specifications

Optics:	Dual-Beam Technology, High-quality Interference Filters
Measuring time:	approx. 10 seconds
Power supply:	7 Ni-MH-battery pack (1.5V AA), charged in the unit using external power pack
Dimensions (HxWxD):	70mm x 265mm x 195mm
Ambient operating conditions:	up to max 90% humidity (non condensing), approx. 5 to 40°C
Approval:	CE
Wavelengths:	430/ 530/ 560/ 580/ 610/ 660nm

Type	Description	PK	Cat. No.
Photometer AL450		1	**9.699 230** 1
Set of 10 round cuvettes with cap	16mm dia.	10	**9.699 240**
Set of 12 round cuvettes with cap	24mm dia.	12	**9.699 231**
Adapter	for round vials, 16mm dia.	1	**9.699 264**
CSB reactor AL125	with 24 apertures	1	**9.920 204**
Verification standard kit		1	**6.226 018** 2
Lithium button cell CR2032		1	**9.012 971**
Mains adapter TR15RA150 Level V	for Multi/Pool/Turbi, incl.4 adapter	1	**9.699 273**

3 Reagent tablets for photometers Aqualytic

AQUALYTIC



For	Type	PK	Cat. No.
Ammonia	Ammonia No. 1	100	**9.947 060**
Ammonia	Ammonia No. 2	100	**9.947 062**
Bromine, Chlorine, Chlorine dioxid	DPD No. 1	100	**9.947 065**
Bromine, Chlorine, Chlorine dioxid	DPD No. 1	250	**9.947 066**
Iron	Iron LR	100	**9.947 100**
Nitrite, Nitrate	Nitrite LR	100	**9.947 108**

4 Cuvettes for photometers

NEW!

AQUALYTIC



Type	Diam. mm	PK	Cat. No.
Set of 10 round cuvettes with cap	16	1	**9.699 240**
Set of 5 round cuvettes with cap	24	5	**6.230 635**
Set of 12 round cuvettes with cap	24	1	**9.699 231**

Handheld photometers pHotoFlex® series, with/without pH and turbidity measurement

Handheld photometers for use in a wide range of areas such as process control, mobile water testing or wine industry. Easy operation with menu driven, user guidance. *WTW*

- Smart cuvette adapter: holds 28mm or 16mm round cuvettes with height 91 to 104mm; to be used with a variety of different test types
- Optics: LED's with filters, accuracy < 2nm, 436nm, 517nm, 557nm, 594nm, 610nm, 690nm
- Concentration, Absorption, Transmission
- Methods can be downloaded from the Internet
- 35 (pHotoFlex®) 100 user defined routines
- 100 (pHotoFlex® STD)/1000 data sets, RS 232 interface
- pH range: pH 0 to 16.00 (±0.01) for DIN standard combination electrodes
- incl. calibration interval and calibration protocol
- Batteries: 4 button cells

Optional: LabStation with rechargeable batttery and power plug, GLP-compliant software LSdata for simplified laboratory evaluation and operation, charging function; accu and power supply separately. LSdata is also available as stand-alone package.

pHotoFlex® (R) STD
Water Analysis purely w/o pH- and turbidity measurement for standard parameters

pHotoFlex® pH
Just like the standard version of pHotoFlex STD plus full electrochemical pH-and ORP measurement via electrodes. This allows also the measurement of the parameters NH_3 and CO_2.
- pH 0 ... 16.00 (±0.01) for Standard-DIN pH-electrodes with automatic temperature compensation ATC and automatic buffer recognition
- Calibration intervall setting and calibration record

pHotoFlex® Turb:
Generally as pHotoFlex® (R) STD, with additional turbidity measurement:
- IR light source acc. DIN 27027 /ISO 7027
- Measuring range: 0 to 1100 NTU/FNU
- Resolution: 0 to 9.99 NTU: 0.01; 10 to 99 NTU: 0.1; 100 to 1100 NTU: 1NTU
- Accuracy: 0.01 NTU or 2% of measured value
- 3 point calibration
- Standard set with traceable AMCO® Standards (0.02 - 10 - 1000 NTU)

Complete pHotoFlex® Sets:
The mobile laboratory: smart with integrated lab table to hold instrument, cuvettes, beaker and stand for pH electrode. Complete sets with:
- pH electrode SenTix 41 with technical buffers
- 1 adjustable pipette with 5ml volume for pHotoFlex® models
- Calibration standard kit for pHotoFlex® Turb and Turb® 40 IR/T

pHotoFlex® pH Set:
Field case with pHotoFlex®, table insert, pH electrode Sentix® 41 and stand, TEC buffer, 5ml variable pipette, and accessories, PC cable and LSdata software.

pHotoFlex® Turb Set:
Field case with pHotoFlex® Turb, table insert, pH electrode Sentix® 41 and stand, TEC buffer, 5ml variable pipette, and accessories, PC cable and LSdata software.

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9.923 625

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9.923 601

Type	PK	Cat. No.	
pHotoFlex® STD	1	**9.923 624**	
pHotoFlex® pH	1	**9.923 625**	1
pHotoFlex® Turb	1	**9.923 626**	
pHotoFlex® pH Set	1	**9.923 601**	2
pHotoFlex® Turb/Set	1	**9.923 602**	

E & OE.

1 Photometer pHotoLab® S6 and S12 - Filter photometer

WTW

High-precision, laboratory photometers with multilevel AQA/IQC functions. Features easy operation, GLP-conforming documentation, simultaneous turbidity compensation: open cover, place cell, measure! Automatic selftest and zeroing of the optical systems during start up. Graphics display with instructions. AutoSelect for cuvettes recognition via barcode; all necessary settings automatically of more than 150 programmed methods with automatic cuvette detection. Unique barcode-support for 10, 20 und 50 mm cuvette for high quality and economic reagent test kits. The RS232 interface transfers data to the user's PC. With real time clock and memory (incl. date/time) for 500 (S6) or 1000 (S12) data records. To be used with 16mm round cells and rectangular cells (only S12) 10, 20 and 50mm path length. Autozeroing. CE, UL, CUL tested.

photoLab® S6
With 6 interference filters for 340/445/525/550/605/690nm ±2nm. For routine applications with round cuvettes in waste water analysis.

photoLab® S12
With 12 interference filters ±2nm. Wavelength according to S6 with additional filters for 410/500/565/620/665/820nm. All test kits can be used (round cuvettes and reagent test kits), 50 user defined methods, Kinetic functions.



Type	Description	PK	Cat. No.
photoLab® S6	Mains version, 220V European plug	1	**9.923 631**
photoLab® S6-A	Rechargeable battery version, 220V European plug	1	**9.923 632**
photoLab® S12	Mains version, 220V European plug	1	**9.923 635**
photoLab® S12-A	Rechargeable battery version, 220V European plug	1	**9.923 636**
LP 6/12	Spare lamp for S6, S12	1	**9.923 638**

2 photoLab® 6000 series for VIS and UV-VIS

WTW

Whether for water analysis, food and beverage or education and research applications, the pHotoLab® 6000 series is universally applicable and offers complete photometric functionality at an outstanding price: performance ratio and precision. Fast, routine measurement, as well as complex spectral analytics can be performed easily, supported by function keys F1-F4. The on-screen user guide almost replaces the operating manual. The pHotoLab® meters and the WTW Online-system IQ Sensornet are interactively connected with the easy IQ-LabLink procedure for easy data referencing.

Routine Measurement:
- more than 200 methods for routine parameters
- barcode recognition for more than 150 cell and reagent test kits
- direct methods such as SAC at 436 and 254nm, Chlorophyll, Ammonia e.g.

Spectral Analysis:
- absorbance spectra
- kinetics
- multi wavelength measurement (e.g. for the wine industry)
- User defined methods and profiles
- Comprehensive programming options for multiwavelength- and lab analytics
- PC software pHotoLab® Data spectral and application packages for brewing optional
- enhanced AQA with user administration for environmental analytics and industrial needs
- IQ-LabLink for easy data referencing with WTW-Online System IQ Sensornet
- update and data exchange via USB stick
- interfaces: USB-A, USB-B, RS232
- optional direct printing to PDF file
- extensive testing routines and optical testing equipment (optional)
- 4nm band pass
- wavelength accuracy/reproducability: 1nm/0.5nm
- photometric reproducibility t ±0.002 E @ 1 E (or better)
- photometric accuracy 0.003 for < 0.600E, 0.5% of result for 0.600 to 2.000E
- approx. 4 MB storage for 1000 measurement values and spectral data sets
- weight: 4 kg (allows onsite usage with car battery and optional WTW adapter cable)



Type	Description	PK	Cat. No.
photoLab® 6100 VIS	340-1100nm for VIS range with Tungsten halogen lamp	1	**6.232 685**
photoLab® 6600 UV-VIS	190-1100nm for UV-VIS range with Xenon flash lamp	1	**6.234 159**
photoLab® Brew	Application package brewery analysis for the photoLab® 6000 Series	1	**9.920 080**
photoLab® Data spectral	PC software for data management of photoLab® 6000 Series	1	**9.920 081**

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1 Photometer photoLab® and pHotoFlex®, stored test programs

A: Stored in photoLab® S6, S12, photoLab® 6000 Serie and photoLab® Spektral *WTW*
B: Stored in photoLab® S12, photoLab® 6000 Serie and photoLab® Spektral
C: Stored in pHotoFlex® STD, pHotoFlex® pH and pHotoFlex® Turb
D: Stored in photoLab® 6000 series

Reagent-free tests:
Cu - copper plating bath, 690nm, 820nm - copper plating bath - B
CrO_3 - chromium plating bath - chromium plating bath - B
Ni - nickel plating bath - nickel plating bath - B
HZ - Hazen colour - Hazen colour - B
IFZ - iodine number, 340nm, 455nm - iodine number - B
m-1 (DFZ) - colouring - FB445 - B, C
m-1 (DFZ) - colouring - FB525 - A, C
m-1 (DFZ) - colouring - FB620 - B, C
FAU - turbidity 620 - T620 - B
E - extinction - extinction - A, B, C
SAK - Spectral absorption coefficient at 254 and 436nm photoLab® 6100 VIS (436nm) and photoLab® 6600 UV-VIS (254/436nm)

Further tests on demand, range information is based on max. range and can also be smaller for pHotoFlex®.

Type	Description	For	Measuring range mg / l	No. of determinations	PK	Cat. No.
14831	Ag, Silver	B, C	0,25 - 3,00	100	1	**9.920 905**
14825	Al, Aluminium	B, C	0,02 - 1,20	300	1	**9.920 906**
14821	Au, Gold	B, C	0,50 - 12,00	80	1	**9.920 907**
14839	B, Boron	B	0,05 - 0,80	60	1	**9.920 908**
14555	COD-O_2, COD	A, C	500 - 10000 mg/l	25	1	**9.920 879**
14560	COD-O_2, COD	A	4,0 - 40,0 mg/l	25	1	**9.920 880**
14690	COD-O_2, COD	A, C	50 - 500 mg/l	25	1	**9.920 934**
14691	COD-O_2, COD	A, C	300 - 3500 mg/l	25	1	**9.920 935**
14895	COD-O_2, COD	A, C	15 - 300 mg/l	25	1	**9.920 936**
C3/25	COD-O_2, COD	A, C	10 - 150 mg/l	25	1	**9.920 956**
C4/25	COD-O_2, COD	A, C	25 - 1500 mg/l	25	1	**9.920 957**
14551	C_6H_5OH, Phenol	B, C	0,10 - 2,50	25	1	**9.920 893**
14815	Ca, Calcium	B, C	5,00 - 160,00	100	1	**9.920 909**
14834	Cd, Cadmium	A, C	0,025 - 1,00	25	1	**9.920 873**
01745	Cd, Cadmium	A, C	0,002 - 0,50	55	1	**9.920 946**
00595	Cl_2, Free chlorine	A, C	0,03 - 6,00	200	1	**9.920 949**
00597	Cl_2, Free + total chlorine	A, C	0,03 - 6,00	200	1	**9.920 950**
00599	Cl_2, Free + total chlorine	B	0,01 - 6,00	200	1	**9.920 951**
Cl-3 TP	Cl_2, Total chloride	C, D	0,00 - 2,00	100	1	**9.920 864**
14730	Cl, Chloride	A, C	5,00 - 125,00	25	1	**9.920 910**
14897	Cl, Chloride	B, C	2,50 - 250,00	100	1	**9.920 911**
14561	CN, Cyanide	A, C	0,01 - 0,50	25	1	**9.920 881**
09701	CN, Cyanide	B, C	0,002 - 0,5	100	1	**9.920 914**
14552	Cr, Chromate (Chromium)	A, C	0,05 - 2,00	25	1	**9.920 875**
14758	Cr, Chromate (Chromium)	B	0,01 - 3,00	250	1	**9.920 915**
Cu-1 TP	Cu, Copper	C, D	0,00 - 5,00	100	1	**9.920 862**
14553	Cu, Copper	A, C	0,05 - 8,00	25	1	**9.920 887**
14767	Cu, Copper	B, C	0,02 - 6,00	250	1	**9.920 916**
14549	Fe, Iron	A, C	0,05 - 4,00	25	1	**9.920 883**
14761	Fe, Iron	B, C	0,005 - 5,00	1000	1	**9.920 917**
14896	Fe, Iron	C	1,00 - 50,00	25	1	**9.920 918**
00809	F, Fluoride	A,C	0,10 - 1,80	25	1	**9.920 966**
00961	GH, total hardness / Ca	A, C	5,00 - 215,00	25	1	**9.920 919**
14500	HCHO, Formaldehyde	C	0,10 - 8,00	25	1	**9.920 885**
14678	HCHO, Formaldehyde	A, B	0,02 - 8,00	100	1	**9.920 921**
14779	HS, Hydrogen sulphide	B	0,02 - 1,50	220	1	**9.920 922**
14562	K, Potassium	A, C	5,0 - 50,0	25	1	**9.920 886**
00815	Mg, Magnesium	A, C	5,0 - 75,0	25	1	**9.920 953**
14770	Mn, Manganese	B, C	0,01 - 10,0	500	1	**9.920 924**
19252	Mo, Molybdenum	B	0,5 - 45,0	100	1	**9.920 964**
Mo-1 TP	Mo, Molybdenum	C, D	0,0 - 35,0	100	1	**9.920 965**
00816	Mn, Manganese	A, C	0,10 - 5,00	25	1	**9.920 963**
09711	N_2H_4, Hydrazine	B	0,005 - 2,00	100	1	**9.920 983**
00860	Molybdate	B, C	0,02 - 1,00	25	1	**6.225 979**
14537	N_{total}, Totale Nitrogen	A, C	0,5 - 15,0	25	1	**9.920 897**
14763	N_{total}, Totale Nitrogen	A	10,0 - 150,0	25	1	**9.920 926**

E & OE.

Photometer photoLab® and photoFlex®, stored test protocols

WTW

Type	Description	For	Unit	No. of determinations	PK	Cat. No.
14544	NH_4-N, Ammonium	A, C	0,5 - 16,0	25	1	**9.920 927**
14559	NH_4-N, Ammonium	A	4,0 - 80,0	25	1	**9.920 928**
14752	NH_4-N, Ammonium	B, C	0,01 - 3,00	500	1	**9.920 929**
A6/25	NH_4-N, Ammonium	A, C	0,20 - 8,00	25	1	**9.920 958**
14554	Ni, Nickel	A, C	0,10 - 6,00	25	1	**9.920 888**
14785	Ni, Nickel	B, C	0,02 - 5,00	250	1	**9.920 930**
14776/1	NO_2-N, Nitrite	B, C	0,005 - 1,00 mg/l	1000	1	**9.920 931**
N5/25	NO_2-N, Nitrite	A, C	0,010 - 0,700 mg/l	25	1	**9.920 960**
14542	NO_3-N, Nitrate	A, C	0,5 - 18,0 mg/l	25	1	**9.920 890**
14556	NO_3-N, Nitrate	B, C	0,10 - 3,00 mg/l	25	1	**9.920 891**
14773	NO_3-N, Nitrate	B	0,2 - 20,0 mg/l	100	1	**9.920 932**
14764	NO_3-N, Nitrate	A	1,0 - 50,0 mg/l	25	1	**9.920 933**
14942	NO_3-N, Nitrate	B, C	0,2 - 17,0 mg/l	50	1	**9.920 870**
N2/25	NO_3-N, Nitrate	A	0,5 - 25,0 mg/l	25	1	**9.920 959**
14694	O_2, Oxygen	A	0,5 - 12,0 mg/l	25	1	**9.920 925**
00607/1	O_3, Ozone	B, C	0,010 - 4,0 mg/l	200	1	**9.920 952**
01744	pH	A	6,4 - 8,6 pH	280	1	**9.920 945**
14833	Pb, Lead	A	0,10 - 5,00 mg/l	25	1	**9.920 872**
14546	PO_4-P, Phosphate	A, C	0,5 - 25,0 mg/l	25	1	**9.920 896**
14842	PO_4-P, Phosphate	B	0,5 - 30,0 mg/l	400	1	**9.920 939**
14848	PO_4-P, Phosphate	B, C	0,01 - 5,00 mg/l	420	1	**9.920 940**
00616	PO_4-P, Phosphate	A, C	3,0 - 100,0 mg/l	25	1	**9.920 954**
00798	PO_4-P, Phosphate	B, C	1,0 - 100,0 mg/l	100	1	**9.920 955**
P6/25	PO_4-P, Phosphate	A, C	0,05 - 5,00 mg/l	25	1	**9.920 961**
P7/25	PO_4-P, Phosphate	A, C	0,5 - 25 mg/l	25	1	**9.920 962**
14683	RH, Residual hardness	A	0,50 - 5,00 mg/l Ca	25	1	**9.920 941**
14794	Si, Silicate	B, C	0,005 - 5,00 mg/l	300	1	**9.920 942**
00857	Si, Silicate	B, C	0,5 - 500,0 mg/l	100	1	**9.920 868**
14622	Sn, Tin	B	0,10 - 2,50 mg/l	25	1	**9.920 943**
14394	SO_3, Sulfite	B	1,0 - 20,0 mg/l	25	1	**9.920 900**
01746	SO_3, Sulfite	B	1,0 - 60,0 mg/l	150	1	**9.920 948**
14564	SO_4, Sulfate	A	100 - 1000 mg/l	25	1	**9.920 899**
14791	SO_4, Sulfate	B	25 - 300 mg/l	200	1	**9.920 944**
14548	SO_4, Sulfate	A, C	5 - 250 mg/l	25	1	**9.920 898**
14697	Ten-A, Surfactants anionic	B, C	0,05 - 2,00	25	1	**9.920 904**
14566	Zn, Zinc	A, C	0,20 - 5,00 mg/l	25	1	**9.920 901**
14832	Zn, Zinc	B	0,05 - 2,50 mg/l	90	1	**9.920 902**
00861	Zn, Zinc	A, C	0,025 - 1,000 mg/l	25	1	**9.920 866**

1 Thermoreactor AL125

NEW!

AQUALYTIC

Chemical digestion of samples is required for the photometric determination of COD, TOC, total chromium, total phosphate and total nitrogen. The required temperatures and reaction time can be selected by using the membrane keypad of the reactor AL125. The unit works at three different temperatures (100/120/150°C) and three pre-set reaction times (30/60/120 minutes). When digestion is complete, the reactor automatically switches off and gives a corresponding LED indication with short beep alarm.
The AL125 reactor is fitted with 24 holes for 16 mm diameter vials.

Specifikations

Power supply	230 V/50-60 Hz or 115 V/50-60 Hz (switchable)
Power	550 W
Dimensions	248 x 219 x 171 mm
Weight	3.9 kg
Holes in the aluminium block	24 holes, 16.2 mm ±0.2 mm
Selectable temp.	100/120/150°C
Probe type	Pt100 A class
Temperature stability	±1°C at the Pt100
Selected time	30/60/120/min. and continuous operation (∞)
Heating up	from 20°C to 150°C in 12 min.
Regulation	Microprocessor
Protection against overheating	on a heating block at 190°C
Beeper	max. 88 dB (Piezo Summer)
Environmental conditions	10 - 40°C max. 85 % rel. humidity



Type	Description	PK	Cat. No.
CSB reactor AL125	with 24 borings	1	**9.920 204**

1



9.920 806

2



9.920 808

Thermoreactor CR 2200/CR 4200

WTW

CR 2200:
- routine unit for waste water analysis
- Stored programs for all important digestions
- thermoblock with 12 holes for 16mm o.d. reaction tubes
- temperatures: 100°C, 120°C, 148°C and 150°C
- 8 fixed heating programmes: 148°C and 2 hours, 148°C and 20 minutes, 120°C and 30 minutes, 120°C and 60 minutes, 150°C and 120 minutes, 120°C and 120 minutes, 100°C and 60 minutes, 30 minutes
- Automatic temperature switch-off after end of set programs

CR 4200:
- Professional unit for waste water analysis
- 2 thermoblocks with 12 holes each for 16mm o.d. reaction tubes,
- 8 fixed heating programs (as CR2200) and 8 user-defined programs (from room temperature (25°C) to 170°C and 0 to 180 minutes)
- High Temperature Capability
- 2 different programs and and temperates can be used simultaneously (CR 4200 only)
- Automatic temperature switch-off after end of set programs
- Optional: External temperature probe TFK CR

Type	PK	Cat. No.
CR 2200	1	**9.920 806** 1
CR 4200	1	**9.920 808** 2

3



3 COD measuring station, AL200 COD Vario

NEW!

AQUALYTIC

According to ISO 15705. This measuring station from AQUALYTIC® allows the accurate, rapid, and economical determination of meaningful waste water COD levels (Chemical Oxygen Demand). Easy operation, even by unskilled operators. Comprises of COD photometer, 25 tube tests covering lower measuring ranges, a reactor block for sample digestion and a tube stand. Waterproof acc. to IP 68, 1 hour at 0.1 meter.

Specifications:

Range:	0 to 15.000 mg/L
Measurement cycle:	approx. 3 seconds (method dependent)
Display:	LCD readout
Optics:	High-quality Interference Filters
Power:	4 batteries (AA) capacity approx. 53 hours or 15000 tests (continuous operation with backlit switched off)
Overall WxDxH:	190 x 110 x 55mm
Storage:	16 data sets
Interface:	internal interface for test data transfer

Type	Description	PK	Cat. No.
COD measuring station AL200 COD Vario		1	**9.920 205**
AL200 COD Vario(photometer only)		1	**9.950 531**
COD reactor AL125	with 24 borings	1	**9.920 204**

4



4 COD-Standard cuvette test, 16mm

AQUALYTIC

Due to the chemical properties suitable for various photometers (e.g. Aqualytic, Hach disclaimer) with 16mm tube diameter.

Description	PK	Cat. No.
0 to 150mg/l O_2	25	**9.950 533**
0 to 1500mg/l O_2	25	**9.950 534**
0 to 15000mg/l O_2	25	**9.950 535**

E & OE.

1 COD sample digestion units PA-CSB

Unit configuration for simultaneous digestion of maximum 6 or 12 COD samples in acc. with ISO, DIN etc. *Behr*
A digestion unit consists of the following components:
- TRS 300 microprocessor-controlled time and temperature control unit with COD program
- CSB/E Precision heating block for RG 2 reaction vessels
- E/B Insert and yoke type frame for RG 2 reaction vessels
- KW/N Cooling trough with holder and stands for E/B
- RG 2 Reaction vessels
- LK 1 COD air coolers
- LS Air cooler stands for LK COD air coolers

Type	PK	Cat. No.
PA-CSB 6	1	**9.920 540**
PA-CSB 12	1	**9.920 541** 1

2 COD workstations, PB-CSB/M

For COD determination. Complete workstations for simultaneous determination of maximum 6 or 12 samples in acc. with ISO, DIN etc. Manual metering and titration. *Behr*
A workstation consists of the following components
- TRS 300 Microprocessor-controlled time and temperature control unit with COD program
- CSB/E Precision heating block for RG 2 reaction vessels
- E/B Insert and yoke type frame for RG 2 reaction vessels
- KW/N Cooling trough with holder and stands for E/B
- SM 12/N Series magnetic stirrer for E 12/B insert/yoke type frame (only for PB-CSB 12/M)
- RG 2 Reaction vessels
- MRST 2 Magnetic stirrer rod set , 12 rods
- SIST 100 Boiling stones , contents 100 g
- LK1 COD Air coolers
- LS Air cooler stand for LK COD air coolers
- PTFE 29 PTFE Collars for LK 1, set of 12 collars
- TS COD Transport stands for E/B insert/yoke type frame
- HTI 1 Manual titration station

Type	PK	Cat. No.
PB-CSB 6/M	1	**9.920 542**
PB-CSB 12/M	1	**9.920 543** 2

1



9.920 541

2



9.920 543

3



3 behr COD Heating Blocks

COD acc. to ISO Precision heating blocks with 6, 12 or 24 sample positions. Flat surface heater for even temperature distribution to each sample position. Stainless steel and powder coated steel casing. Extensive insulation provides for inoffensive temperatures of the casing surfaces.
End-to-end grooves in the precision aluminum plate at the bottom of the bores simplify sample handling and provide for exemplary safety of the analyst. During sample insertion the grooves cause pressure compensation. Thus even the most accurately fitting reaction vessels slip easily into the bores, which is required to effortlessly handle the behr insert and yoke type frames for RG 2 reaction vessels.
When inserting the samples into the hot heating block adherent moisture on the vessel surface evaporates in sudden bursts. The grooves drain off the vapor which otherwise might cause the vessels to jump up and down which might eventually lead to the destruction of the vessels.
In case of one or more vessels overflowing the liquid COD samples discharge through the grooves minimizing the danger of damages inside the block caused by acids.

Type	Description	Power consumption W	Temp. range max. °C	PK	Cat. No.
CSB 6 / E	for 6 RG reaction vessels	800	299	1	**9.920 721**
CSB 12 / E	for 12 RG reaction vessels	1500	299	1	**6.510 709**
CSB 24 / E	for 24 RG reaction vessels	2000	299	1	**6.054 780**

1



1 TRS 300 programmable temperature and time control unit

Programmable control unit for behrotest® digester blocks *Behr*

behr one-button operation for particularly easy and quick programming. Menu navigation in the language of the country. 10 optionally configurable programs for block temperature and digestion time.
The TRS 300 has a special COD program which has already been set by the plant. Therefore in the operation mode „COD" it heats up to a temperature which is 20°C above the set target temperature. After inserting the samples, the 20°C higher target value remains for another 6 minutes. This procedure ensures heating up to 148°C within 10 minutes which is specified by the ISO norm, and at the same time causes extremely high temperature constancy during the subsequent reaction process. The supplied Windows software permits the user to transfer time/temperatures profiles, which are specifically for the application, via the RS232 interface in both directions between one or more units (TRS 300) and a PC. Temperature data can also be transmitted from the unit to the PC via the RS232 interface while operating. The user can save them if necessary and print them out as graphics. Integrated safety function switches the connected units off if there is a short-circuit and an interruption of the temperature sensor.

Type	Description	PK	Cat. No.
TRS 300	Temperature and control unit	1	**6.229 909**

2



2 behrotest ® HTI 1 manual titration station

The HTI 1 manual titration station consists of *Behr*
- a burette with digital display and
- a magnetic stirrer with a precisely fitting holder for COD reaction vessels. A screen serves as a neutral background and allows the user to determine the colour change at the end of the titration precisely. He/she will therefore always carry out titration under similar visual conditions. This improves the precision and the reproducibility of the results.

The precise positioning of the reaction vessels in the holder on the top of the magnetic stirrer also contributes to this. The angled wing of the screen protects against lateral dazzling light.

Specifications

Voltage	230 VAC/ 115 VAC
Frequency	50/60 Hz
Weight	approx. 3.5 kg
Dimensions in mm (WxDxH)	approx. 330 x 200 x 600

Type	Description	PK	Cat. No.
HTI	Manual titration station	1	**9.920 730**

3



3 COD cooling trough

The cooling trough prevents the overheating of the COD samples during the critical addition of sulphuric acid. In addition, it is used to cool the samples after the heating phase. *Behr*

Type	Description	PK	Cat. No.
KW 6 /N	Cooling trough for E 6/B insert frame	1	**9.920 706**
KW 12/N	Cooling trough for 2 E 12/B insert frame	1	**6.052 519**
KW 24/N	Cooling trough for E 12/BV insert frame	1	**6.089 903**
LS 6	Stands for 6 COD air coolers	1	**9.920 723**
LS 12	Stands for 12 COD air coolers	1	**6.051 958**

COD magnetic stirrer

The continuously adjustable COD series magnetic stirrer with 12 stirring points is used to mix the samples during the metering process. Due to its watertight casing and also its external power supply and control, it is suitable for use under water. *Behr*

Type	Description	PK	Cat. No.
SM/12N	Series magnetic stirrer for E 12/B insert	1	**6.055 561**

E & OE.

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Made in Germany

1



1 COD metering funnel

COD metering funnels, placed on top of the COD reaction vessels, simplify the addition of sulphuric acid to several samples simultaneously.
COD metering funnel together with a cooling trough and a series magnetic stirrer increase the safety and offer considerable relief to the user when determining the COD.

Behr

Type	Description	PK	Cat. No.
DT 30	metering funnel, 30 ml, for sulphuric acid	1	**9.920 713**

2



2 HCl-absorber

To expel chloride, e.g. when determining the COD of sea water.

Behr

Type	Description	PK	Cat. No.
HCL 29	HCL absorber to expel chloride	1	**6.060 789**

3



3 Reagent metering unit

Metering unit to automate and accelerate the metering of potassium chromate solution and sulphuric acid when preparing COD samples. Metering in a maximum of 12 samples simultaneously.
Connection to direct activation of the 12-position magnetic stirrer SM 12/P.
Metering in optimal time intervals: The metering of sulphuric acid is carried out in several processes, the samples are thus constantly cooled and stirred. This method accelerates the preparation of samples and at the same time prevents non-standard overheating of the samples during addition.
Safety for the user: Due to the automatic addition of reagent there is no risk at any time of coming into contact with chemicals
Practice-oriented and user friendly software: The complete programming of the behr DS 20 is very easy to use and user-friendly with the Windows user interface

Behr

Type	Description	PK	Cat. No.
DS 20	for up to 12 samples, incl. burettes and cooling trough	1	**9.920 747**

4



4 Automatic metering and titration unit DT 20

Dosage:
Time optimized COD interval dosage. The addition of sulfuric acid is carried out in several steps, while the samples are constantly cooled and stirred. This method accelerates sample preparation and at the same time prevents non-standard overheating of the samples during acid addition.
Titration:
Instead of the commonly known over-titration, the behr-specific dynamic titration guarantees the exact end-point recognition, even in the case of the typical COD edge steepness, and thus particularly accurate test results

Behr

Type	Description	PK	Cat. No.
DT 20	Automatic metering and titration	1	**9.920 748**

E & OE.

1 2 B.O.D. auto-check measurement systems, OxiTop®

In accordance with DIN EN 1899 H55. *WTW*

Modular and mercury-free B.O.D. systems for practical, daily operation. The system is TÜV/GS tested. With no mechanical moving parts the programme-controlled, Inductive Stirring System is durable and does not require any type of maintenance. The magnetically coupled stirring bars are periodically speeded up, or slowed down from the minimum to the maximum stirring speed respectively. A controlled "catching device" forces the stirrer bars into the magnetic field and synchronises them with the stirring speed. An optimal gas exchange for BOD determinations is therefore guaranteed in the sample bottle. The mercury-free, OxiTop measuring system works manometrically with a pressure sensor and 2-digit digital display.

- Large measuring range with overflow indicator
- Auto Temp function - intelligent temperature monitoring for automatic start under the best possible conditions
- Automatic zero setting at start
- Integral memory - daily readings no longer required
- Battery powered with typical running time of 2 years.

system comprises:
B.O.D. measuring units with inductive stirring system and OxiTop® measuring system, ready for use in thermostatic cabinets and incubators with amber sample bottles 600ml, stirring bars, stirring bar remover, sodium hydroxide pellets, rubber sleeves, 164ml and 432ml overflow measuring flasks, chart paper block and nitrification inhibitor. Any conventional manometric B.O.D. system can be converted to the OxiTop® system. Various conversion kits are available for this - details on request.

IS 6 and IS 12:

Number of stirring positions:	6 or 12
Speed:	180 to 450 rpm.
Safety class:	3, IEC 1010
Protection system:	IP 30 DIN 40050
Supply requirements:	Far range mains adapter 100 to 240 V, 50/60 Hz

OxiTop-System:

Instrument range:	0 to 50 digits (display units)
Operating pressure range:	500 to 1100 hPa
Display accuracy:	±1 digit (±3.55 hPa)
Safety class:	3, IEC 1010
Protection system:	IP 54 DIN 40050

Type	Description	PK	Cat. No.
OxiTop® IS 6	for 6-place	1	**9.920 000**
OxiTop® IS 12	for 12-place	1	**9.920 001**
OxiTop® IS 12-6	generally as OxiTop® IS 12, but with 6 OxiTop® measuring systems, suitable for expansion to 12 measuring units	1	**9.920 003**

1



2



1 B.O.D. auto-check measurement systems, OxiTop® Control

In accordance with DIN EN 1899 H55. *WTW*

OxiTop® Measuring System with infra-red communication between measuring head Oxitop C and the Controller Oxitop Control 100.
Sample administration for up to 100 parallel samples and automatic sample ID. The display presents a clear view of the whole sample management and process with indication of the process step. The display function means that manual identification or labelling is no longer necessary. The two operating modes included, " Routine B.O.D." and "Standard B.O.D." fulfil standard requirements and additional demands such as calculation and statistics. GLP-compliant documentation with testing agent monitoring is included. It is not possible to switch samples. The progress of individual sample procedures is stored in the measuring head with 180 to 360 data records. Each measuring system independently implements a temperature-controlled start using the integral AutoTemp function. The measuring positions can be called up at any time using the controller and their measurements loaded into the controller's memory (even through the closed insulating glass door or cover of the thermostatic cabinets and OxiTop® boxes). B.O.D. evaluation and curve construction is carried out in the controller. Data output to PC is possible via the RS 232 interfaces. OxiTop® Control can be expanded as required using extension sets. The inductive stirring system corresponds with OxiTop® (see previous page).

Complete system comprises:
OxiTop® B.O.D. controller, OxiTop®-C measuring heads (each battery operated) and inductive stirring system, ready for use in OxiTop® thermostatic cabinets and incubators. Controller inludes graphics display, sample management for up to 100 measuring positions, amber sample bottles 600 ml, stirring bars, stirring bar remover, sodium hydroxide pellets, rubber sleeves, 164ml and 432ml overflow measuring flasks, chart paper block and nitrification inhibitor.

Controller OxiTop® OC 100:

Measuring ranges:	0 to 40/80/200/400/800/2000/4000mg/L B.O.D.
Safety class:	3, IEC 1010
Protection system:	IP 42 DIN 40050.

OxiTop®-C measuring head:

Measurement principle:	manometric, by means of a pressure sensor
Operating pressure range:	500 to 1350 hPa
Accuracy:	±1 % Meas. value ±1 hPa
Resolution:	1 hPa (corresponds with 0.7 % of the B.O.D. measuring range)
Display:	LED pilot lamp
Safety class:	3, IEC 1010
Protection system:	IP 54 DIN 40050

Type	Description	PK	Cat. No.
OxiTop® Control 6	for 6-place	1	**9.920 010**
OxiTop® Control 12	for 12-place	1	**9.920 011**

2 Controlled temperature cabinet, OxiTop® Box

With temperature regulated forced air circulation. *WTW*
Benchtop model with transparent, hinged cover. can be used with various accessories,
including OxiTop® IS, OxiTop® Control and IS 602. With interior power supply socket to allow operation of stirrers etc. within the chamber. Corrosion-resistant housing made of stainless steel or plastic. Temperature control is maintained using forced air circulation refrigeration unit. Cross flow ventilation provides uniform temperature distribution. Overtemperature protection, automatic defrosting and condensate evaporation are also provided, to maximise system efficiency. Stability at 20°C ±0.5°C. A special storage rack is provided for methylene blue samples. Also suitable for "BOD dilution" samples.

Dimensions (WxDxH):	425 x 600x 375 mm
Weight:	approx. 30 kg
Supply requirements:	230 V 50 Hz (+10 %, -15 %) 200 W.

Type	PK	Cat. No.
OxiTop® Box	1	**9.920 025**

1



2



1 BOD-Measurement-System BD600

NEW!

AQUALYTIC



BOD measurement is an important measurement of the effects of domestic and industrial waste water on sewage plants and outflow points.
The AQUALYTIC® sensor system BD 600 is a 6 sample system that allows precise measurements of BOD based on the manometric principle. Manometric respirometers relate oxygen uptake to the change in pressure caused by oxygen consumption while maintaining a constant volume. Due to the modern integral pressure sensors, it is not necessary to use mercury for the measurements.
The BOD values are stored automatically in the sensor memory at regular intervals and can be called up on the large-format display at any time without the need for time-consuming conversion using factors. This means that test series that end on a Sunday can be evaluated during the following week without any problem. Measurement series can be stored on USB stick/ SD card or transferred via USB cable to evaluate the data on a computer.
The measurement period is user-selectable between 1 and 28 days to suit the application. While short measurement periods are useful for scientific applications, standard BOD measurements typically extend over a period of 5 days - and manometric determination of OECD, for example, generally takes place over a period of 28 days.
System comprises:
- BD 600, complete unit with 6 sensor heads and control unit with batteries
- Power supply unit incl. Y-cable for common power supply of BD 600 and stirring unit
- Inductive stirring unit
- 6 sample bottles
- 6 rubber gaskets
- 6 magnetic stirring rods
- 1 overflow flask, 157 ml
- 1 overflow flask, 428 ml
- 1 bottle, 50 ml potassium hydroxide solution
- 1 bottle, 50 ml nitrification inhibitor solution
- 1 instruction manual

Specifications

Measuring principle:	manometric, electronic pressure sensor
Ranges:	0 - 40, 0 - 80, 0 - 200, 0 - 400, 0 - 800, 0 - 2000, 0 - 4000 mg/l O_2
Measurement period:	User-selectable, between 1 and 28 days
Power supply:	3 x 1.5V alkaline batteries, size "C"
Protection class:	P 54 (Sensor)
Approval:	CE
Interface:	USB host port
Clock:	Real time
Application:	BOD5/ BODF/ OECD301F

Type	Description	PK	Cat. No.
BD600	BOD-Measurement-System	1	**6.268 048**

2 Controlled temperature cabinets BOD



WTW

To maintain samples at the same temperature during incubation, there is a need for an controlled temperature cabinet. WTW offers a choice of cabinet with temperature range adjustable from 10°C to 40°C (temperature stability ±0.5°C), power supply 230 V 50Hz. For stirring the samples there is a supply socket for a mixer inside the cabinet. Depending on the size of the samples there is max. space for 2 to 4 shelves. So up to 48 standard BOD samples, 4 x type IS 12 or 8 x IS 6-Var stirring platforms can be accommodated. For special applications the larger Model TS 1006-i is required, having enough space between the shelves for 1.5 litre bottles. Models TS 606/2-i and TS 606/4-i with separate glass door are designed for use with the larger OxiTop® Control system, allowing the digital readout to be viewed through the glass.

Temperature range:	+10°C to +40°C
Settable resolution:	1°C
Ambient temperature:	+10°C to +32°C (Climate class SN)
Storage:	-25°C to +65°C

Type	For	PK	Cat. No.
TS 606/2-i	2 BOD OxiTop® units	1	**9.926 304**
TS 606/4-i	4 BOD OxiTop® units	1	**9.926 308**
TS 1006-i	4 BOD OxiTop® units	1	**9.926 311**



1 Thermostatic cabinets

NEW!

AQUALYTIC

The incubators from AQUALYTIC® are designed for continuous tempering for different applications, mainly for the determination of BOD, the storage of wastewater samples, and the determination of enzymatic activity.
The temperature range is +2°C up to +40°C and can be regulated in steps of 0.1°C. Temperature tolerance is defined with ±1°C respectively ±0.5°C (at 20°C). Low engergy consumption due to reinforced isolation. The interior of the cabinets is equipped with sockets for connecting stirrers. There are 4 models available with standard doors from 135 to 445 litres net capacity, and 2 models with glass doors with 140 and 255 litres net capacity. Illuminated LED display with actual/setpoint display.

Specifications

Coolant:	R134a
Fan:	Axial, delivery rate 320m³/h
Power supply:	220-230V/50Hz

Description	Capacity l	PK	Cat. No.
With metal door, 3 metal racks + 1 bottom grid + 4 sockets	135	1	**9.699 142**
With metal door, 3 metal racks + 1 bottom grid + 5 sockets	175	1	**9.699 143**
With metal door, 4 metal racks + 1 bottom grid + 7 sockets	255	1	**9.699 144**
With metal door, 4 metal racks + 1 bottom grid + 9 sockets	445	1	**9.699 145**
With glass door, 3 metal racks + 1 bottom grid + 4 sockets	140	1	**9.699 146**
With glass door, 4 metal racks + 1 bottom grid + 7 sockets	256	1	**9.699 147**



2 Bottles (Karlsruhe bottles) with stoppers

Behr

The special bottle neck of the Karlsruhe bottles absorbs the water which is displaced by the stopper of the electrode. This construction guarantees clean working and ensures at the same time that the test results are not adulterated by unwanted entry of oxygen into the samples.

Capacity ml	Length*	PK	Cat. No.
100	20	1	**9.920 514**
100	60	1	**9.920 515**
250	20	1	**9.920 513**
250	60	1	**9.920 509**

* Stopper handle length (mm)



3 BOD meters Type KF 12, accessory funnel bottle

WTW

Karlsruher BOD bottle with NS19 conical ground joint.

Type	PK	Cat. No.
Karlsruher BOD bottle, 250ml	1	**9.304 170**



4 Dissolved oxygen bottles, Winkler pattern

Winkler pattern. Soda-lime glass.
For determination of dissolved oxygen in water. The measured capacity is specified to ±0.01ml. With white labelling area. Solid, bevelled glass stopper, secured with an accessory spring clip. Each bottle is adjusted to the relevant stopper. Stoppers and bottles are therefore not interchangeable. Each bottle and its stopper is marked with a unique, matching identification number.

Nominal capacity ml	NS	Snap-on clip	PK	Cat. No.
100 to 150	14/23	9.304 050	1	**9.304 038**
250 to 300	19/26	9.304 051	1	**9.304 048**



5 Spring clips for oxygen bottles according to Winkler

For bottles ml	PK	Cat. No.
100 - 150	1	**9.304 050**
250 - 300	1	**9.304 051**

E & OE.

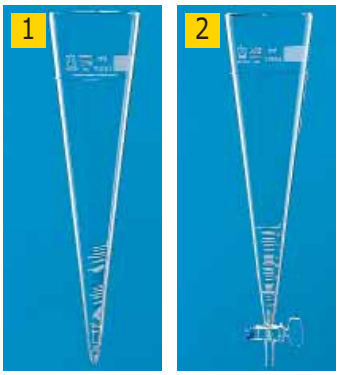
1 2 Sedimentation cones, borosilicate glass 3.3

Imhoff pattern. DIN 12672. Borosilicate glass 3.3. *Starke*
Graduations and inscriptions in contrasting white enamel. Ring mark at 1000ml.

Graduations, ml:	Subivisions ml/Tolerance ±ml:
0 to 2	0.1/0.1
2 to 10	0.5/0.5
10 to 40	1/1
40 to 100	2/2
100 to 1000	50/10

Type	Grad. ml	PK	Cat. No.
Without stopcock	up to 100*	1	**9.304 262**
With stopcock	up to 100*	1	**9.304 272**
Without stopcock	up to 1000	1	**9.304 273**

* No subdivisions from 100 to 1000 ml.



3 Sedimentation cone, plastic, SAN

Imhoff pattern. DIN 12672. Transparent SAN (Styrene acrylonitrile). With screw cap for draining the contents. Temperature-resistant up to max. 85°C. *Kartell*

Graduations, ml:	Subdivisions, ml
0 to 2	0.1
2 to 10	0.5
10 to 40	1
40 to 100	2
100 to 1000	50

Type	Grad. ml	PK	Cat. No.
With screw cap	up to 1000	1	**9.304 280**



4 Sedimentation cones, accessory stand

Acrylic/PP. To hold two Imhoff sedimentation cones. Compact and easy to transport even when fully loaded. *Kartell*

Width mm	Length mm	Height mm	PK	Cat. No.
150	300	300	1	**9.304 281**



5 Sedimentation cones, accessory holders

Imhoff pattern, solid grey PVC. Stable design. *Behr*

For	PK	Cat. No.
2 Imhoff funnels without stopcock	1	**9.882 101**
4 Imhoff funnels without stopcock	1	**9.882 102**
2 Imhoff funnels with stopcock	1	**9.882 103**
4 Imhoff funnels with stopcock	1	**9.882 104**



6 Flocculation tester AL30

AQUALYTIC

- Portable
- Continuously variable stirring speed
- Timer feature
- Height adjustment of the stirring blades during operation
- Central lamp for easy observation

Specifications

Stirring places:	4
Speed control:	20 - 40 - 50 - 100 - 120rpm
Timer:	0 to 30min (continuous)
Power Supply:	100V-240V/50-60Hz

Type	PK	Cat. No.
AL30	1	**9.699 301**
Bag for transport	1	**9.699 302**



1



9.951 491

2

2 Flocculation testers

Stuart

For flocculation tests of water and waste water.
- choice of 2- or 6-bank models
- digital speed display
- two adjustable speed presets
- accurate and reproducible speeds
- diffused base illumination with black background
- accepts beakers up to 1000ml.

Adjustable speed range 25 to 250rpm. Dimensions (H x W x D): 460 x 320 x 220mm (two-bank model)
460 x 750 x 220mm (six-bank model). For 230 V 50 Hz, single phase supplies. Supplied with rotor blades but without beakers.
With BioCote silver based antimicrobial protection.

Type	Description	PK	Cat. No.
SW5	Flocculation tester, 2-bank	1	**9.951 491** 1
SW6	Flocculation tester, 6-bank	1	**9.951 492**

3



3 Turbidity meter AL250T-IR

AQUALYTIC

With infrared light source.
Highlights:
- measuring ranges from 0.01 to 1100NTU (autorange)
- measurement with infrared light at an angle of 90°
- measurement of coloured liquids
- easy operation
- 600 tests between battery charges

The compact Aqualytic® infrared turbidity meter AL250T-IR is designed to allow fast, precise on-site testing. The unit measures the scattered light at an angle of 90°, as stipulated in EN ISO 7027.
The wide measuring range from 0.01 to 1100 TE/F = NTU = FNU permits use of the unit for various media, ranging from drinking water to waste water.
As infrared light is used for measurement, the unit can be used to test both coloured and colourless liquids.
The standards required for calibration of the unit are also supplied. A second adjustment mode allows alternative adjustment with user-defined turbidity standards.

Package contents:
AL250T-IR turbidity meter as described above, complete with 4 turbidity standards <0.1, 20, 200 and 800NTU, battery and test vial, in case.

Specifications:

Measurement cycle:	approx. 9 seconds
Display/Function:	LCD
Optics:	temperature-compensated LED and photosensor amplifier in water proof sample chamber
Keypad:	4 key polycarbonate membrane
Measuring range:	0.01 to 1100NTU (autorange)
Resolution:	0.01 to 9.99NTU = 0.01NTU 10.0 to 99.9NTU = 0.1NTU 100 to 1100NTU = 1NTU
Accuracy:	±2.5% of measuring value or ±0.01 NTU (0 to 500 NTU) ±5% (500 to 1100NTU)
Housing:	ABS
Dimensions (L x W x H):	190 x 110 x 55mm
Weight (Basis unit):	approx. 0.4kg
Temperature:	0 to 40°C
Humidity (rel.):	30 to 90% R.H.
CE-conformity:	DIN EN 50081-1, VDE 0839 part 81-1: 1993-03, DIN EN 50082-2, VDE 0839 part 82-2: 1996-02

Type	PK	Cat. No.
AL250T-IR	1	**9.920 203**

Accessories for turbidity meter AL250T-IR/AL450T-IR

AQUALYTIC

Description	PK	Cat. No.
Set of 12 empty sample vials, diam. 24 mm	1	**6.223 191**
Set of turbidity standards T-CAL (<0.1, 20, 200, 800 NTU)	1	**9.920 493**

E & OE.

1 Turbidity Meter HI 98713-02

Hanna

Optical system of the meter, the infrared LED, assures long term stabilty and minimizes stray light and colour interferences. Instrument meets the requirements of the ISO 7027 method and provides reliable and accurate measurements even on low turbidity values. Very wide range from the 0.00 to 1000 FNU. Meter can be used for various applications from drinking water to waste water. Automatic 2/3/4- point calibration with the supplied Calibration standards (<0.1, 15, 100, 750 FNU). Calibration data can be ckecked at any time by simply pressing a button (GLP features). Up to 200 measurements can be logged and tranfered later to PC via USB interface.
Supplied with: Meter HI 98713-02, carrying case, 5 sample cuvets and caps, 4 calibration standards, cuvette cleaning cloth, batteries and 12 VDC adapter,



Specifications:

Measuring range:	0.00 to 9.99; 10.0 to 99.9; 100 to 1000 FNU
Accuracy:	±2% of readung plus 0.1 FNU
Calibration:	2-, 3- or 4-point calibration
Logging Capacity:	200 records
PC Interface:	USB or RS 232
Power supply:	4 x 1.5V alkaline batteries or 12VDC Adapter

Type	PK	Cat. No.
HI 98713-02	1	**9.922 810**

2 LLG-Extraction thimbles, cellulose

NEW!

Made of cellulose.



Diam. mm	Length mm	PK	Cat. No.
19	90	25	**9.045 705**
20	80	25	**9.045 701**
22	80	25	**9.045 700**
25	100	25	**9.045 709**
26	60	25	**9.045 707**
28	80	25	**9.045 711**
30	80	25	**9.045 708**
33	80	25	**9.045 702**
33	94	25	**9.045 703**
33	100	25	**9.045 704**
33	118	25	**9.045 706**
37	130	25	**6.256 301**
43	123	25	**9.045 710**
58	170	25	**6.263 174**

3 Extraction and filter thimbles Grade 603

Manufactured in pure cellulose according to DIN 12449.

GE Healthcare



Int. diam. mm	Length mm	Standard extractor capacity ml	For	PK	Cat. No.
22	80	30	Büchi (1)	25	**9.043 901**
25	80			25	**9.043 909**
25	100	70	Büchi (1)	25	**9.043 902**
26	60			25	**9.043 910**
33	80		Gerhardt (2) / Foss Tecator (3)	25	**9.043 907**
33	90			25	**9.043 911**
33	94	100	Büchi (1)	25	**9.043 903**
33	100			25	**9.043 916**
33	118			25	**9.043 904**
33	130			25	**9.043 917**
33	205	250		25	**9.043 905**
35	150			25	**9.043 915**
40	85			25	**9.043 918**
43	123		Büchi (1)	25	**9.043 950**
44	230			25	**9.043 906**

12. Environmental-, soil-, water-, food analysis
Sample analysis/Extraction





1 2 Extraction thimbles

Cellulose. Supplied in packs of 25. Dimensions given are nominal internal diameter x external length in mm.

GE Healthcare

Int. diam. mm	Length mm	Type	PK	Cat. No.
10	50	Single	25	**9.951 335**
18	55	Single	25	**9.951 336**
19	90	Single	25	**9.951 337**
22	80	Single	25	**9.951 338**
25	80	Single	25	**9.951 339**
25	100	Single	25	**9.951 340**
26	60	Single *	25	**9.951 341**
28	80	Single	25	**9.951 342**
28	100	Single	25	**9.951 343**
28	120	Single	25	**9.951 344**
30	80	Single	25	**9.951 345**
30	100	Single	25	**9.951 346**
33	80	Single	25	**9.951 347**
33	94	Single	25	**9.951 348**
33	100	Single	25	**9.951 349**
33	118	Single	25	**9.951 350**
37	130	Single	25	**9.951 351**
41	123	Single	25	**9.951 352**
43	123	Single	25	**9.951 353**
60	180	Single	25	**9.951 354**
22	80	Double	25	**9.951 355**
33	80	Double	25	**9.951 356**

*Fits Soxtec™ extractor



3 Stands for Extraction Thimbles

NEW!

Behr

Type	Description	PK	Cat. No.
RIP 4	for 4 extraction thimbles	1	**9.843 949**
RIP 6	for 6 extraction thimbles	1	**9.843 950**



4 Complete compact extraction systems, with heating

Complete compact extraction systems with stand, heating module, mount, hoses and glassware (round-bottom reaction flask, extractor, Dimroth condenser for extraction). Infinitely variable heating regulation.

Behr

- practical stand for holding the condensers securely between extractions
- extractor sizes from 30 ml to 1000 ml
- the use of extractors with a stopcock eliminates the need for any additional distillation after extraction
- Condensers with screwed-on tubing nipples

Type	Description	PK	Cat. No.
KEX 30	for 30ml extraction with 100 ml distilling flasks	1	**9.843 777**
KEX 60	for 60ml extraction with 250 ml distilling flasks	1	**9.843 835**
KEX 100	for 100ml extraction with 250 ml distilling flasks	1	**9.843 778**
KEX 30 F	for 30ml extraction with stopcock and 100 ml distilling flasks	1	**9.843 836**
KEX 60 F	for 60ml extraction with stopcock and 250 ml distilling flasks	1	**9.843 837**
KEX 100 F	for 100ml extraction with stopcock and 250 ml distilling flasks	1	**9.843 786**
KEX 250 F	for 250ml extraction with stopcock and 500 ml distilling flasks	1	**9.843 779**
KEX 500 F	for 500ml extraction with stopcock and 1000 ml distilling flasks	1	**9.843 838**
KEX 1000 F	for 1000ml extraction with stopcock and 2000 ml distilling flasks	1	**9.843 839**

E & OE.

Extraction apparatus, Soxhlet-pattern

Extraction apparatus, Soxhlet-pattern. With Dimroth condenser and round-bottom flask.
Made of Duran® tubing.

Extractor ml	Condenser NS	Round bottom flasks Capacity ml	PK	Cat. No.
30	29/32	100	1	**9.043 001**
70	34/35	100	1	**9.043 002**
100	45/40	250	1	**9.043 003** 1
150	45/40	250	1	**9.043 004**
200	45/40	250	1	**9.043 008**
250	45/40	500	1	**9.043 005**
300	60/46	500	1	**9.043 009**
500	60/46	1000	1	**9.043 006**
1000	71/51	2000	1	**9.043 007**

1



9.043 003

2 Serial Extraction Apparatus behrotest® for Soxhlet-/Fat-Extraction

Behr

behrotest® serial heaters are the economical and user-friendly solution for the classic Soxhlet or fat extraction:
- complete with reaction vessels, extraction spacers and coolers
- energy for each sample position is individually adjustable
- cooling water distributor ensures even cooling at all sample positions
- practical stand for holding the condensers securely between extractions
- mounts for holding the extraction spacers after removing the sample vessels
- S models: The extractors with stopcock do away with the need for any additional distillation after extraction

2



Type	Description	Capacity ml	PK	Cat. No.
R 304	4-position	30	1	**9.043 030**
R 306	6-position	30	1	**9.043 031**
R 304 S	4-position, with stop-cock	30	1	**9.043 035**
R 306 S	6-position, with stop-cock	30	1	**9.043 036**
R 604	4-position	60	1	**9.043 037**
R 606	6-position	60	1	**9.043 038**
R 604 S	4-position, with stop-cock	60	1	**9.043 039**
R 606 S	6-position, with stop-cock	60	1	**9.043 040**
R 104 S	4-position, with stop-cock	100	1	**9.043 029**
R 106 S	6-position, with stop-cock	100	1	**9.043 028**
R 108 S	8-position, with stop-cock	100	1	**9.043 041**
R 254 S	4-position, with stop-cock	250	1	**9.043 042**
R 256 S	6-position, with stop-cock	250	1	**9.043 043**

3 Single-reflux distillation apparatus

NEW!

Behr

Complete equipment for reflux distillation, consisting of
- Compact frame with supporting brackets for cooler depositing and cooler holder
- Standing basin
- Reaction flask
- Behr high performance glass cooler
- Tubing

3



Type	Description	PK	Cat. No.
KRD 50	1 heating place for 50ml	1	**9.843 970**
KRD 100	1 heating place for 100ml	1	**9.843 971**
KRD 250	1 heating place for 250ml	1	**9.843 972**
KRD 500	1 heating place for 500ml	1	**9.843 973**
KRD 1000	1 heating place for 1000ml	1	**9.843 974**



1 Serial heating unit for reflow distillation

NEW!

Complete equipment for reflux distillation, consisting of *Behr*
- Hot bench, 4 or 6 heating positions
- Standing basin
- Stand rods
- Cooling water distribution with condenser rack and cooler stand
- Reaction flask
- Behr high performance glass coolers

Type	Description	PK	Cat. No.
RH 104	4 heating places for 100ml round flasks	1	**9.843 963**
RH 106	6 heating places for 100ml round flasks	1	**9.843 964**
RH 254	4 heating places for 250ml round flasks	1	**9.843 965**
RH 256	6 heating places for 250ml round flasks	1	**9.843 966**
RH 504	4 heating places for 500ml round flasks	1	**9.843 967**
RH 506	6 heating places for 500ml round flasks	1	**9.843 968**



2 Hydrolysis/crude fibre separation set , behrotest

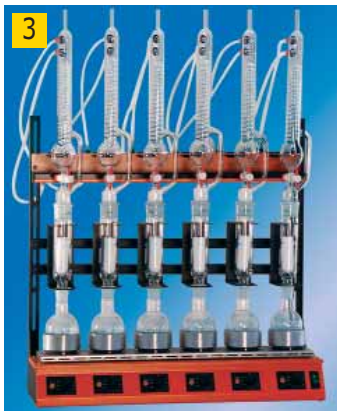
behrotest® Hydrolysis apparatus, complete with: *Behr*
- Serial heating unit with individually adjustable heating places
- Cooling water distribution with condenser rack and hoses
- Beakers (600ml), cold fingers

Type	Description	PK	Cat. No.
EXR 4	Hydrolysis/crude fibre separation unit, 4 sample positions	1	**9.843 828**
EXR 6	Hydrolysis/crude fibre separation unit, 6 sample positions	1	**9.843 827**

Complete Compact Extraction System

Compact Extraction System in accordance with Twisselmann *Behr*
Complete compact extraction system with stand, heating module, mount, hoses and glassware (round-bottom reaction flask, extractor, Dimroth condenser for extraction).

Type	Description	PK	Cat. No.
KEX 100 T	Compact system for Twisselmann extraction	1	**9.843 824**



3 behrotest® Multi-sample Extractors for Twisselmann Extraction

Economical and user-friendly units for extraction in accordance with Twisselmann: *Behr*
- each sample position is individually adjustable
- cooling water distributor ensures an even cooling at all sample positions
- practical stand for holding the condensers securely between the extractions
- mounts for holding the spacers after the removal of the sample containers

Type	Description	PK	Cat. No.
R 104 T	Multi-sample extractor for an extraction in accordance with Twisselmann, complete for 4 samples	1	**9.843 825**
R 106 T	Multi-sample extractor for an extraction in accordance with Twisselmann, complete for 6 samples	1	**9.843 826**

E & OE.

1 Extraction Unit for the Randall Method

Behr

Manual apparatus for hot extraction according to Randall. Several times faster than a customary Soxhlet extraction. Incl. 1 set of extraction thimbles, 100 ml.
- Optimal safety thanks to screw-fastened extraction units

Multiple position extraction units:
- Every extraction thimble with sample can be independently adjusted
- The user can lower and raise all the extraction units into/out of the heating chamber with a single lever
- Every heating position has a separate temperature control



Specifications

Dimensions (H x W x D, cm):	approx. 81 x 55 x 63
Weight, kg:	approx. 32
Voltage:	230V 50Hz a.c.
Power consumption:	Max. 1500W

Type	Description	PK	Cat. No.
E1	One sample position	1	**9.843 923**
E4	Four individually adjustable sample positions	1	**9.843 922**
E6	Six individually adjustable sample positions	1	**9.843 924**
EX 75 HS	Extraction thimbles for the EB 75 reaction flask	25	**9.843 926**
EB 75	Reaction flask	1	**9.843 927**

Exhaust Device, borosilicate

Behr

- Filter mountings, 400 ml, with thread
- PP funnels with thread
- Slotted sieve plate with 2 gaskets
- Stainless steel rack
- Water jet pump

Type	Description	PK	Cat. No.
FU 4	Filtration unit, 4 places	1	**9.843 844** 2
FU 6	Filtration unit, 6 places	1	**9.843 845**



9.843.844

Filtration Device for Crude Fibre separation

Behr

e.g. to determine the raw fibre content according to EN ISO6865

Type	Description	PK	Cat. No.
SC 4	Filtration unit, 4 places	1	**9.843 833** 3
SC 6	Filtration unit, 6 places	1	**9.843 834**



9.843 833

For extraction apparatus, Soxhlet, please see page 1149.

We can supply this manufacturer's whole product range !

behr Labor-Technik

partner of the LLG Lab Logistics Group

1



9.843 770

InKjel M manually adjustable infrared digestion system

Behr

Rapid digestion system with manually adjustable energy control and direct heating of the samples through high-quality quartz radiators (1500W).
- Quartz infra-red radiators peak at 830°C within 1 min.

Particularly uniform heating at all sample positions
All InKjel systems are fitted completely with multi-level consoles, fume extraction unit, sample rack and glass digestion vessels.

Configurations available:
- 6 sample vessels each 250ml
- 12 sample vessels each 100ml
- 12 sample vessels each 250ml
- 4 sample vessels each 500ml
- 4 sample vessels each 750ml

Type	For	PK	Cat. No.	
InKjel 1210 M	12 sample vessels each 100ml	1	**9.843 757**	
InKjel 625 M	6 sample vessels each 250ml	1	**9.843 770**	1
InKjel 1225 M	12 sample vessels each 250ml	1	**9.843 771**	
InKjel 450 M	4 sample vessels each 500ml	1	**9.843 768**	
InKjel 475 M	4 sample vessels each 750ml	1	**9.843 769**	

2



9.843 706

Infrared rapid digestion system with temperature control

NEW!

Behr

The temperature-controlled InKjel TC-series devices combine the advantages of infrared and block digestion in one system: Fast Infrared digestion at defined temperatures ensures high sample throughput.
In the programmable version InKjel TCP, the user has a choice of 25 freely configurable programs for temperature and digestion time.
The high-quality quartz infrared heaters of InKjel TC reach 830°C in a minute and achieve uniform heating at all sample positions.

Type	For	PK	Cat. No.	
InKjel 625 TCM	6 sample vessels each 250ml	1	**9.843 701**	
InKjel 1210 TCM	10 sample vessels each 100ml	1	**9.843 702**	
InKjel 1225 TCM	12 sample vessels each 250ml	1	**9.843 703**	
InKjel 450 TCM	4 sample vessels each 500ml	1	**9.843 704**	
InKjel 475 TCM	4 sample vessels each 750ml	1	**9.843 705**	
InKjel 625 TCM	6 sample vessels each 250ml	1	**9.843 706**	2
InKjel 1210 TCM	12 sample vessels each 100ml	1	**9.843 707**	
InKjel 1225 TCM	12 sample vessels each 250ml	1	**9.843 708**	
InKjel450 TCM	4 sample vessels each 500ml	1	**9.843 709**	
InKjel 475 TCM	4 sample vessels each 750ml	1	**9.843 710**	

3



6.233 440

InKjel P infrared digestion system with 10 freely configurable programmes

Behr

Rapid digestion system with 10 freely configurable programmes for power and digestion time and direct heating of the samples through high-quality quartz radiators (1500W).
- Quartz infra-red radiators peak at 830°C within 1 min.
- Particularly uniform heating at all sample positions
- The supplied Windows software permits the user to transfer time/temperatures profiles, which are specifically for the application, via the RS232 interface in both directions between one or more units and a PC.
- A library with common applications is already included on the CD.

All InKjel systems are fitted completely with multi-level consoles, fume extraction unit, sample rack and glass digestion vessels.

Configurations available:
- 6 sample vessels each 250ml
- 12 sample vessels each 100ml
- 12 sample vessels each 250ml
- 4 sample vessels each 500ml
- 4 sample vessels each 750ml

Type	For	PK	Cat. No.	
InKjel 1210 P	12 sample vessels each 100ml	1	**9.843 756**	
InKjel 625 P	6 sample vessels each 250ml	1	**9.843 760**	
InKjel 1225 P	12 sample vessels each 250ml	1	**6.233 440**	3
InKjel 450 P	4 sample vessels each 500ml	1	**9.843 758**	
InKjel 475 P	4 sample vessels each 750ml	1	**9.843 759**	

E & OE.

1 Standard Kjeldahl block digestion systems K 8, K 12 and K 20

Behr

Block digestion systems with high-quality corrosion-resistant block housing made of stainless steel. With 8, 12 or 20 sample slots for standard Kjeldahl digestion vessels with a volume of 250 ml. High-efficiency heating and extraction hood with exhaust collector.
- behr single-knob control for particularly easy and fast programming.
- Menu navigation in national language.
- 10 freely configurable programs for block temperature and digestion time.
- Applications can be saved.
- USB interface.
- The Windows software supplied enables the user to bidirectionally transfer application-specific time/temperature profiles between one or several units and a PC via the interface.
- The removable inspection door on the insertion rack enables the progress of the digestion to be observed.

Complete systems with digestion vessels, rack and extraction hood.

1



Type	Description	PK	Cat. No.
K 8	with 8 sample slots, for digestion vessels with a volume of 250 ml	1	**9.843 900**
K 12	with 12 sample slots, for digestion vessels with a volume of 250 ml	1	**9.843 901**
K 20	with 20 sample slots, for digestion vessels with a volume of 250 ml	1	**9.843 902**

2 Micro Kjeldahl block digestion systems K 6, K 24 and K 40

Behr

Block digestion systems with high-quality corrosion-resistant block housing made of stainless steel. With 16, 24 or 40 sample slots for micro Kjeldahl digestion vessels with a volume of 100 ml. High-efficiency heating and extraction hood with exhaust collector.
- behr single-knob control for particularly easy and fast programming.
- Menu navigation in national language.
- 10 freely configurable programs for block temperature and digestion time.
- Applications can be saved.
- USB interface.
- The Windows software supplied enables the user to bidirectionally transfer application-specific time/temperature profiles between one or several units and a PC via the interface.
- The removable inspection door on the insertion rack enables the progress of the digestion to be observed.

Complete systems with digestion vessels, rack and extraction hood.

2



Type	Description	PK	Cat. No.
K 16	with 16 sample slots, for digestion vesselswith a volume of 100 ml	1	**9.843 903**
K 24	with 24 sample slots, for digestion vesselswith a volume of 100 ml	1	**9.843 904**
K 40	with 40 sample slots, for digestion vesselswith a volume of 100 ml	1	**9.843 905**

3 Accessories for Kjeldahl rapid sample digestors

NEW!

Behr

3



Type	Description	PK	Cat. No.
KT 1	Catalyst tablets (5.0 g K2SO4; 0.5 g CuSO4)	1000	**9.843 767**
KT 2	Catalyst tablets (5.0 g K2SO4; 0.15 g CuSO4; 0.15 g TiO2)	1000	**9.843 773**
KT 3	Catalyst tablets (3.5 g K2SO4; 0.4 g CuSO4)	1000	**9.843 752**
KT 4	Catalyst tablets (3.5 g K2SO4; 3.5 g Se)	1	**9.843 969**
AFS	Antifoam tablets	1000	**9.843 753**
SIST 100	Boiling stones, contens 100g	1	**9.920 710**
WP	Nitrogen-free weighing boats	100	**9.843 754**
SR 3i	Sample vessel, 250ml, for InKjel	1	**9.843 766**
SR 4	Sample vessel	1	**9.843 750**
SR 5	Sample vessel	1	**9.843 751**
KJ 500	Sample vessel, 500ml, for InKjel	1	**9.843 775**
KJ 750	Sample vessel, 750ml, for InKjel	1	**9.843 776**

1



1 behrosog 3 Scrubber

Behr

- Infinitely variable throughput
- Transparent protective shield for safe operation of the unit
- Exterior manual control elements with easy access prevent the analyst from touching hot glass parts
- Acid resistant diaphragm pump

Type	Description	PK	Cat. No.
behrosog 3	Scrubber with suction pump (40 l/min), cooling stage, neutralisation stage and drip catcher	1	**9.920 584**
ACS	Additional cooling for behrosog 3	1	**9.920 585**

2



9.843 815

Steam Distillation Unit S

Behr

- Exemplary safety and reliability
- Robust casing of polyurethane
- Distillation time approx.. 3 mins. per sample
- Detection limit 0.1 mg N
- Recovery rate >99.5%
- Reproducibility ±1%
- Steam generating capacity adjustable from 40% - 100%
- Extremely simple, menu-controlled operation of the programmable units via one single operating element (behr one-button operation)
- Programmable reaction time
- Serial interface (RS232)
- Filling level monitoring for can set
- Practical quick clamping device equally suited for the "left-handed" analyst

Type	Description	PK	Cat. No.
S 1	Steam distillation unit, partly automated with automatic addition of NaOH	1	**9.843 814**
S 2	Steam distillation unit, partly automated with automatic addition of NaOH and H2O	1	**9.843 813**
KAS 20	Can set for S 1 and S 2	1	**6.236 005**
S 3	Steam distillation unit, partly automated, like S2 with automatic extraction of the sample residues and with 10 programs	1	**9.843 815** 2
KAS 30	Set of 3 canisters (20 l each) for S 3, incl. float switch	1	**9.843 816**
S 4	Steam distillation unit, fully automatic, like S 3 with automatic extraction H3BO3 of the sample residues and with 99 programs	1	**9.843 817**
S 5	Steam distillation with automatic addition of NaOH, H2O and H3BO3 with automatic extraction of the sample residues, with 99 programs and a connection option for external titrator	1	**9.843 803**
KAS 40	Set of 4 x 20 l containers for S 4, incl. float switch	1	**9.843 818**
TB 1	Titration module for connection to steam distillation unit S 5	1	**9.843 832**

3



3 Steam distillation unit D1 and D2

Behr

- Alcohol
- Volatile acid contents
- Fermentation process (beer, etc.)
- Ammonium chloride in liquorice products

Distillation units for determining alcohol and volatile acid content in wine and other alcoholic drinks. Complete glassware, with volumetric flasks and pycnometer. Because of its rapidity, the behr D 1 and D 2 are especially suitable for high sample throughputs.
The supplied Windows software permits the user to transfer distillation parameters, which are specifically for the application, via the RS232 interface in both directions between one or more units and a PC. A library with common applications is already included on the CD. Data can also be transmitted from the unit to the PC via the RS232 interface while operating. The user can save them if necessary and print them out as graphics.

Type	Description	PK	Cat. No.
D1	for determining alcohol content, distillation into a pycnometer	1	**9.843 830**
D2	for determining Volatile acid content, distillation into an erlenmeyer flask 500 ml	1	**9.843 831**

E & OE.

1 Compact systems for sulphur dioxide determination, KSO/SO

For determination of sulphur dioxide (total SO_2), 2 absorption units per sample. With base unit, heating mantle, mounting frame and glassware, including 500ml reaction flasks. Systems with adsorption units or other flask sizes on request.

Behr



Type	Description	PK	Cat. No.
KSO 2	Complete compact sytem	1	**9.920 546**
SO 2-6	Sytem for 6 working units	1	**9.920 547**

2 Compact system for determination of water content

NEW!

Compact system for determination of water content by azeotropic distillation. Suitable for non-homogeneous and irregularly shaped food such as dried fruit and vegetables, Sauerkraut etc. With base stand, heating mantle, mounting frame and glassware.

Behr



Type	PK	Cat. No.
KWA 500	1	**9.920 548**
KWA 500/4 for 4 samples	1	**9.920 537**
KWA 500/6 for 6 samples	1	**9.920 538**

Infrared decomposition and separation systems with temperature control for cyanide distillation

NEW!

Infrared decomposition and separation systems with temperature control for cyanide distillation

Behr

State of the art and efficient system with four sample sites for the decomposition and separation of total cyanide.

Novel infrared digestion system with temperature control.

With integrated magnetic stirrer, according to national and international standards for cyanide determination in water samples.
With the appropriate accessories also suitable for the determination of readily liberated cyanide and cyanide content in soils according to DIN 11262

Available with manual control and electronic time/temperature programming.



9.843 711

Type	Description	PK	Cat. No.
CN 4 IR TCP	Rapid Infrared digestion unit CN 4 IR TCP incl. electronic time-/ temperature programming, for max. 4 samples	1	**9.843 711** 3

1



1 Milk dipper

NEW!

Nickel plated brass, with valve, sterilisable. *Gerber*

Capacity ml	PK	Cat. No.
1	1	**6.266 491**
2	1	**6.266 492**
4	1	**6.266 493**
5	1	**6.266 494**
10	1	**6.266 495**
20	1	**6.266 496**
40	1	**6.266 497**
50	1	**6.266 498**
100	1	**6.266 499**

2



2 Milk sample bottles

NEW!

Gerber

Type	PK	Cat. No.
50 ml, AR-glass, flat bottom, 4 ringmarks at 10 / 20 / 30 / 40 mm	1	**6.266 500**
Rubber stopper for milk sample bottle 6.266 500	1	**6.266 501**
50 ml, plastic, with snap cap	1	**6.266 502**

Rack for Milk sample bottles, stainless steel

NEW!

Meshes: 35 x 35 mm *Gerber*

Type	PK	Cat. No.
Bottlerack for 3 x 7 milk sample bottles	1	**6.266 503**
Bottlerack for 4 x 7 milk sample bottles	1	**6.266 504**
Bottlerack for 11 x 11 milk sample bottles	1	**6.266 505**

3



3 Centrifuge Micro II

Small centrifuge for the determination of fat and solubility of milk powder by Gerber. *Gerber*
With timer, automatic brake, temperature controlled heating with variable temperature setting. Digital microprocessor control of time and temperature. Lid latch. Steel casing (WxDxH): 430 x 460 x 280 mm. Incl. rotor and brass sleeves.

Type	PK	Cat. No.
for 8 butyrometers, 230 VAC, 50 Hz	1	**9.112 580**
for 12 butyrometers, 230 VAC, 50 Hz	1	**9.112 579**

4



6.254 782

Universal Gerber Centrifuge

NEW!

Multi-purpose centrifuge for the dairy laboratory.
3 pre-programmed speeds for:
- Gerber butyrometers (350 x g)
- Solubility index in milk powder (164 x g)
- Extraction tubes Roese-Gottlieb/Mojonnier (80 x g)

1 variable speed (200 to 1300rpm) available on request
Microprocessor controller with LCD display for speed, duration, temperature and errors.
Automatic brake, lid lock and imbalance switch-off.
Temperature thermostatically controlled. Steel housing (WxDxH): 640 x 640 x 450mm. Power supply: 230VAC, 50/60Hz

Description	PK	Cat. No.
Centrifuge without heating, with universal rotor for 12 positions, without inserts	1	**6.254 782** 4
Centrifuge without heating, with special-rotor incl. 36 sleeves	1	**6.264 744**
Centrifuge with heating (temperature control to 65°C) and special rotor incl. 36 sleeves	1	**6.264 745**

For more centrifuges, please see page 631.

E & OE.

Accessories for Gerber Centrifuges Universal

Gerber

Type	PK	Cat. No.
Universal rotor with 12 places, without inserts	1	**9.112 584** 1
Butyrometer insert, sleeve with ring, int. diam. 26mm	1	**9.112 585**
Solubility insert, stainless steel sleeve, int. diam. 31mm, for intake of milk powder solubility tubes by ADPI	1	**9.112 586**
Insert acc. Röse-Gottlieb, with aluminium mounting for Mojonnier tubes	1	**9.112 587**
Special rotor complete with 36 free-swinging sleeves of stainless steel, for Gerber butyrometers and solubility tubes by Gerber	1	**9.112 583** 2

1



9.112 584

2



9.112 583

3 Butyrometer water bath Butytherm Mini

For 12 butyrometers, stainless steel tank, holds approx. 8 liters, dimensions int. (L x W x H): 300 x 150 x 200mm. Thermostat up to 90°C, heating 550 W, 230 VAC

Gerber

Type	PK	Cat. No.
Butyrometer water bath Butytherm Mini	1	**9.112 591**

3



4 Accessories for Butyrometer water bath Butytherm Mini

Gerber

Type	PK	Cat. No.
Flat lid with 12 openings for Butyrometer	1	**9.112 594**
Rack (PP) for 12 butyrometers, 2 x 6 positions, L x W x H 220 x 80 x 150mm, 2 handles (H=45mm)	1	**9.112 592**
Shaking cover (PVC) for rack with 12 tests	1	**9.112 593**

4



5 Butyrometer water bath WB 22 Pump

NEW!

The water provides optimal operating comfort by splash-proof keypad and bright strong multi-display (LED). Modern microprocessor technology with PID temperature control ensures optimum temperature stability in the water bath. The circulation pump is used to improve the temperature distribution. The adjustable overheating protection protects the samples. Bath tanks and all parts in contact with the bath liquid are made of high quality stainless steel. Temperature range: +5°C above ambient to 85°C (±0.2). Volume: 22 liters, interior dimensions (L x W x H): 490 x 290 x 150mm, heating: 1100W, 230 VAC.

Gerber

Type	PK	Cat. No.
WB 22 Pump	1	**6.266 506**

5



Accessories for Butyrometer water bath WB 22 Pump

NEW!

Gerber

Type	PK	Cat. No.
Rack for 8 butyrometers, stainless steel	1	**6.266 507** 6
Rack for 20 butyrometers, stainless steel	1	**6.266 508**
Bottom plate for butyrometer racks	1	**6.266 509**

6



6.266 507

1



1 Butyrometer heating bath

NEW!

Grant

Robust, high precision temperature-controlled stirred bath specifically designed for use in dairy laboratories, with sufficient depth to allow immersion of Gerber butyrometers. Also suitable for general laboratory applications where a deeper tank is required.

- Temperature range ambient +5°C to 100°C
- Stability ±0.05°C
- Precision digital thermostatic temperature control, with stirred circulation
- Capacity for up to 36 Gerber butyrometers
- Fixed over-temperature cutout
- 3 programmable temperature sets
- Removable control unit for easy cleaning and servicing. All immersed parts, the heater, float, stirrer and temperature sensor, are made of materials that will resist occasional contamination of the water by spilt Gerber acid
- Space for three purpose-designed racks (H1-25M), each with the capacity to hold 12 butyrometers
- Robust stainless steel inner tank and outer case with a hinged lid plus handle for convenient access
- User calibration facility for optimum accuracy at the required operating temperature
- The bright LED display constantly displays actual temperature for at-a-glance reassurance
- Sophisticated digital control unit provides adaptive intelligent PID temperature control
- Low liquid protection and fixed over-temperature protection
- Simple-to-use rotor plus two function keys for quick temperature setting and menu navigation

Specifications

Temperature range:	ambient +5 to 100°C
Stability:	±0.05°C
Display:	4-digit LED
Display resolution:	0.1°C
Heater power:	230V, 1.3kW
	120V, 1.4kW
Working area/tank opening:	240 x 210mm
Tank capacity (nominal):	20L
Liquid depth min/max:	185/225mm
Electrical power:	230V 50/60Hz 1.4kW
	120V 50/60Hz 1.5kW

Type	Description	PK	Cat. No.
T100-MST20	Tank and control unit	1	**9.699 676**
MST20	Spare tank	1	**9.699 677**
H1-25M	Test tube rack for 12 butyrometers	1	**9.699 678**

2



9.112 565

Milk Butyrometer Original Gerber

NEW!

Gerber

With frosted label on bulb, plain neck, without stopper, for milk quantities of 10.73-11 ml. All instruments manufactured according to ISO-standard 488IDF 105.

Fat %	Graduation	PK	Cat. No.
0 - 4	0.05	1	**9.112 565** 2
0 - 5	0.05	1	**6.266 487**
0 - 6	0.1	1	**9.112 588**
0 - 7	0.1	1	**6.803 740**
0 - 8	0.1	1	**6.224 904**
0 - 9	0.1	1	**6.226 307**
0 - 10	0.1	1	**6.225 776**
0 - 12	0.1	1	**6.236 033**
0 - 14	0.2	1	**6.236 845**
0 - 16	0.2	1	**6.266 488**

3



9.112 566

Skim Milk Butyrometer

NEW!

Gerber

With frosted label on bulb, without stopper.

Fat %	Graduation	Description	PK	Cat. No.
0 - 0.5	0.02	Milk: 43.5ml ±0.5ml, closed bulb, plain neck	1	**9.112 566** 3
0 - 1	0.01	Milk: 10.73 - 11ml, open bulb, ring neck*	1	**9.112 563**
0 - 1	0.02	Milk: 10.73 - 11ml, open bulb, plain neck*	1	**9.112 564**

*Stopper Cat. No. 9.112 576 please order separately.

E & OE.

Cream Butyrometer Koehler Gerber Standard

NEW!

1

Volumetric method for 5 ml cream, with frosted label on bulb, ring neck, without stopper

Gerber

Fat %	Graduation	PK	Cat. No.
0 - 40	0.5 (± 0.25)	1	**9.112 567**
0 - 50	0.5 (± 0.25)	1	**6.224 905** 1
0 - 60	1.0 (± 0.5)	1	**6.264 746**
0 - 70	1.0 (± 0.5)	1	**9.112 568**



6.224 905

Ice Cream Butyrometer Koehler

NEW!

2

Volumetric method for 5 ml cream, closed bulb with frosted label, plain neck, without stopper

Gerber

Fat %	Graduation	PK	Cat. No.
0 - 15	0.2	1	**6.266 489**
0 - 20	0.2	1	**6.234 868** 2
0 - 25	0.2	1	**6.264 747**



6.234 868

Cream Butyrometer Roeder with accessories

NEW!

3

Gravimetric method for 5 g cream, with 2 openings, frosted label on bulb, complete with rubber stoppers and glass beaker with stem without hole

Gerber

Fat %	Graduation	PK	Cat. No.
0 - 50	0.5 (±0.25)	1	**9.112 570** 3
0 - 60	1.0 (±0.5)	1	**6.264 748**
0 - 70	1.0 (±0.5)	1	**6.204 427**
0 - 20 - 50	0.5 (±0.25)	1	**7.659 958**
0 - 35 - 65	0.5 (±0.25)	1	**9.112 571**
0 - 30 - 55	0.5 (±0.25), Norm: DIN	1	**6.243 590**
0 - 50 - 75	0.5 (±0.25), Norm: DIN	1	**6.237 816**



9.112570

Cheese and Quark Butyrometer with Accessories

NEW!

4

Weighing method for 3 g cheese, with two openings, frosted label on bulb, complete with rubber stoppers and glass beaker with 16 holes

Gerber

Fat %	Graduation	PK	Cat. No.
0 - 40	0.2	1	**6.234 562**
0 - 40	0.5	1	**6.203 256** 4
0 - 40	0.5; officially verified	1	**6.264 749**
0 - 40	0.5; Norm: ISO/DIN/NE	1	**9.112 572**
0 - 40	0.5; Norm: ISO/DIN, officially verified	1	**6.266 490**



6.203 256

Dry Milk Butyrometer Teichert with Accessories

NEW!

5

Weighing method for 2.5 g dry milk, closed bulb with frosted label, neck Ø 17/18 mm, with rubber stopper and glass nail

Gerber

Fat %	Graduation	PK	Cat. No.
0 - 35	0.5 (±0.25)	1	**9.112 569** 5
0 - 70	1.0 (±0.5)	1	**6.203 600**



9.112 569

Accessories for Butyrometers

NEW!

Gerber

1



6.262 314

2



9.112 575

3



6.264 750

Description	PK	Cat. No.	
GERBAL-M stopper with bush, length 23.5mm	1	**9.112 573**	
Regulating pin for GERBAL-M stopper, nickel plated brass	1	**9.112 574**	
Double conical rubber stopper, 36x12/14mm for milk-, skim milk- and Koehler-Cream-Butyrometer	1	**6.224 906**	
Single conical rubber stopper 35x11/16mm, acid-proof for milk, skim milk and Koehler-Cream-Butyrometer	1	**6.202 638**	
Single conical rubber stopper, small, 15x10.5/13 mm for butyrometers with two openings	1	**9.112 576**	
Single conical rubber stopper, large, 30 x 17.5/20mm, with hole for beaker, for butyrometers with two openings	1	**9.112 575**	2
Single conical rubber stopper, large, 30 x 17.5/22mm, without hole, for butyrometers with two openings	1	**6.202 636**	
Glass beaker without holes for Cream Butyrometers	1	**9.112 577**	
Glass beaker with two holes for butter butyrometers	1	**6.262 314**	1
Glass Beaker with 16 holes for Cheese Butyrometers	1	**9.112 578**	
Glassnail for powder milk butyrometer	1	**6.234 037**	
Weighing funnel of glass, for weighing and filling the milkpowder into the butyrometer	1	**6.264 750**	3

4



9.112 589

Pipettes for Butyrometers

NEW!

Gerber

Description	PK	Cat. No.	
Milk pipette 11.00ml, verifiable	1	**9.112 589**	4
Milk pipette 10.75ml acc. to DIN 129837	1	**9.112 603**	
Cream pipette 5ml, 20°C	1	**9.112 609**	
Water pipette 5ml	1	**9.112 610**	
Sulfuric Acid pipette 10ml with 2 bulbs	1	**9.112 607**	
Amyl alcohol pipette 1ml with 1 bulb	1	**9.112 604**	

5



9.112 605

Accessories for glass butyrometers

Gerber

Type	PK	Cat. No.	
Tilt measure for 10 ml sulphuric acid, with rubber stopper, without bottle	1	**9.112 608**	
Tilt measure for 1 ml amyl alcohol, with rubber stopper, without bottle	1	**9.112 590**	
Milk syringe, exchangeable barrel, 11 ml	1	**9.112 605**	5
Cream syringe, exchangeable barrel, 5 ml	1	**9.112 611**	



1 Mono Water Stills without storage tank

Models 2001/2 and 2001/4 without storage tank, capacity 2L and 4L/hr., for bench mounting. Low-gas, bacteria and pyrogen free distillate, in conformity with DAB requirements and international pharmacopoeia regulations. Conductivity of distillate approx. 2.3µs/cm at 25°C. Evaporator, condenser (cooler) with baffle and heating element made of stainless steel. Evaporator is easily accessible by lifting out the condenser. Degassing of carbon dioxide through vent in the condenser. Main switch with pilot lamp on the front of the unit. Housing electrostatically powder-coated with epoxy resin. Cooling water inlet and outlet*on the right-hand side of the unit.
Water connection: cooling water inlet ½ inch (12.7mm i.d.), cooling water outlet ½ inch* (12.7mm i.d.). Thermometer to display the temperature of the cooling water. Distillate withdrawal through drain tube on the front of the unit. Economical energy consumption by distilling the heated cooling water. Thermostatic low water cut-off, to protect the heating element in case of low water. Power connection
through mains connection cable with German shock-proof type (Schuko) plug, for 230V 50/60Hz (other voltages are available - details on request).

*Tubing for water inlet and outlet can be supplied as accessory items.

GFL



Type	Output	Water consumption	Dimensions (W x D x H)	Power	Weight	PK	Cat. No.
	L / hr.	approx. L / hr.	mm	W	g		
2001/2	2	20	280 x 250 x 490	2000	7500	1	**9.910 600**
2001/4	4	40	280 x 250 x 490	3000	7500	1	**9.910 601**

2 Mono Water Stills with storage tank

Models with storage tank; 2002 (4 litres), 2004 (8 litres), 2008 (16 litres) and 2012 (24 litres) Models with storage tank, suitable for bench and wall mounting.
Low-gas, bacteria- and pyrogen-free distillate, in conformity with DAB requirements and international pharmacopoeia regulations. Conductivity of distillate approx. 2.3µs/cm at 25°C. Evaporator with baffle is easily accessible by lifting the lid. Evaporator, condenser (cooling coil) positioned in the storage tank, storage tank for distillate and heating element are of stainless steel. Storage tank for distillate holds double the hourly capacity of the unit. Water supply through a built-in solenoid valve with connection for mains pressure water tubing, ½ inch* (12.7 mm i.d.), cooling water pressure required: > 3 bar to max. 7 bar. After turning on the main switch the solenoid valve opens the water supply and closes it once the storage tank is full, thus avoiding unnecessary waste of water. Economical energy consumption by distilling the heated cooling water. Cooling water outlet with ¾ inch (19 mm i.d.) tubing connection. Water that has not been condensed flows off through the cooling water outlet*. The evaporator is drained via a tap on the right-hand side of the unit. Automatic indication when cleaning required. Degassing of carbon dioxide through vent in the top. An electronic level switch switches the still off when the storage tank is full and restarts it automatically when distillate is withdrawn. Distillate withdrawal through a tap on the front of the unit. Thermostatic low water cut-off, to protect the heating element in case of low water. Main switch and pilot lamps on the front of the unit. Double-walled housing, outer housing made of electrolytically galvanized sheet steel, electrostatically powder-coated with epoxy resin. Power connection through connection cable; 2 and 4 litre units have German shock-proof type (Schuko) plug.

*Tubing for water inlet and outlet can be supplied as accessory items.

GFL

Type	Output	Water consumption	Dimensions (W x D x H)	Power	Voltage	Weight	PK	Cat. No.
	L / hr.	approx. L / hr.	mm	W	50/60 Hz	kg		
2002	2	30	540 x 290 x 420	1500	230V	15.40	1	**9.910 602**
2004	4	48	620 x 330 x 460	3000	230V	20.20	1	**9.910 604**
2008	8	72	780 x 410 x 540	6000	400V*	30.70	1	**9.910 608**
2012	12	198	780 x 410 x 670	9000	400V*	43.00	1	**9.910 612**

* 400V/3/N/PE/three-phase current
Other voltages available - details on request.



1



1 Double Water Stills

GFL

Double distillation stills, models 2102, 2104 and 2108, suitable for bench and wall mounting. Low-gas, bacteria- and pyrogen-free distillate, in conformity with DAB requirements and international pharmacopoeia regulations. Conductivity of mono-distillate approx. 2.2µs/cm at 25°C, conductivity of bi-distillate approx. 1.6µs/cm at 25°C. Evaporator and baffle of the mono stage are easily accessible by lifting the condensers. Evaporator, condensers (coolers) 1st stage and heating element made of stainless steel, 2nd stage including baffle made of DURAN®/Borosilicate glass 3.3. Water supply through built-in, solenoid valve with ½ inch* (12.7 mm i.d.) tubing connection for mains water inlet required, cooling water pressure: > 3 bar to max. 7 bar. After switching on the power, the solenoid valve opens the water supply. Cooling water outlet with ¾ inch* (19 mm i.d.) tubing connection. Water that has not been condensed flows off through the cooling water outlet*.
Distillate withdrawal: stop valve made of Borosilicate glass 3.3 with PTFE plunger for mono distillate, outlet with dustproof shield made of Borosilicate glass 3.3 for bi-distillate. Low energy consumption achieved by distilling the heated cooling water. Low water cut-off: float switch and thermostatic overtemperature cut-out. Automatic indication for cleaning. Degassing of carbon dioxide through vent on the condensers. Two-part housing made of electrolytically galvanized sheet steel, electrostatically powder-coated with epoxy resin; upper part easily removable through quick-release catches. Mains switch and pilot lamps to monitor both distillation stages are on the front of the unit. Power connection through connection cable.

*Tubing for water inlet and outlet can be supplied as accessory items.

Type	Output	Water consumption	Dimensions (W x D x H)	Power	Voltage	Weight	PK	Cat. No.
	L / hr.	approx. L / hr.	mm	W	50/60 Hz	kg		
2102	2	72	500 x 260 x 470	3500	230V	18.00	1	**9.910 642**
2104	4	120	550 x 280 x 570	6500	400V*	23.00	1	**9.910 644**
2108	8	198	700 x 390 x 700	11500	400V*	39.00	1	**9.910 648**

* 400V/3/N/PE/three-phase current
Other voltages available - details on request.

2



2 Mono/Double Glass Water Stills

GFL

Mono Water Stills: models 2202, 2204, 2208 for 2, 4 and 8 litres/hr, Bi Distillation Stills: models 2302, 2304 for 2 and 4 litres /hr, fully automatic. Suitable for bench and wall mounting. Low-gas, bacteria- and pyrogen-free distillate, in conformity with DAB requirements and international pharmacopoeia regulations. Conductivity of mono-distillate approx. 2.2µs/cm at 25°C, conductivity of bi-distillate approx. 1.6µs/cm at 25°C. Minimal metal ion content in the distillate. Evaporators, condensers and overflows made of DURAN®/Borosilicate glass 3.3. Condensers with dribble guard. Quartz sleeved heating element. Condensers are kept sterile by steam. Water supplied through built-in solenoid valve with connection for ½ inch* (12.7mm i.d.) mains water pressure tubing, required water pressure >3 bar up to max. 7 bar. After the main switch is switched on, the solenoid valve opens to start the water supply. Cooling water outlet with ½ inch* (12.7mm i.d.) tubing connection . Water that has not been condensed flows out through the cooling water outlet*. Low energy consumption through distilling the heated cooling water. Distillate withdrawal at the right-hand side of the unit through tubing connection*. Electronic level control during the whole distillation process. Water level control in the condenser has automatic power cut-off in the event of water shortage. Electronic impurity detector starts automatic water change to rinse and clean the condenser. Degassing of carbon dioxide through vents on the condenser. Main and function switches as well as pilot lamps for monitoring are on the front of the unit. Housing made of electrolytically galvanized sheet steel, electrostatically powder-coated with epoxy resin. Visible distillation process through easily removable, unbreakable front screen that does not steam up. Power connection through connection cable (models 2202, 2204 and 2302 with German shock-proof type (Schuko) plug.

*Tubing for water inlet and outlet can be supplied as accessory items.

Technical Specification

Dimensions (WxDxH)

2202/2204:	650 x 200 x 390mm
2208/2302/2304:	650 x 365 x 390mm

Type	Output	Water consumption	Power	Voltage	Weight	PK	Cat. No.
	L / hr.	approx. L / hr.	W	50/60 Hz	kg		
2202 (Mono)	2	48	1500	230V	16.00	1	**9.910 672**
2204 (Mono)	4	96	3000	230V	17.00	1	**9.910 673**
2208 (Mono)	8	144	6000	400V*	24.00	1	**9.910 674**
2302 (Bi)	2	96	2900	230V	24.00	1	**9.910 675**
2304 (Bi)	4	144	5800	400V*	24.00	1	**9.910 676**

* 400V/3/N/PE/three-phase current
Other voltages available - details on request.

E & OE.

1 2 Accessories for water stills

Dechlorite Filter 2904 *GFL*

For all GFL water stills. Eliminates chlorine particles in the mains water, added by the local water suppliers. Complete with connections for ½ inch (12.7mm i.d.) pressure tubing, including first filter charge. The charge should be changed every six months. Tubing for the water inlet and outlet are available as accessories

Spare Filling 2905

Spare filter charge for Dechlorite Filter 2904.

Phosphate Cartridge 2906

For all GFL water stills. Prevents limescale formation in the condenser by phosphatising the supply water. Can be used from 4-15°dH (German hardness). Complete with connections for ½ inch (12.7mm i.d.) pressure tubing, including first filling. The filling should be replaced according to consumption. Tubing for the water inlet and outlet are available as accessories.

Spare Filling 2907

Spare Filling for Phosphate Cartridge 2906.

Separate Water Supply 2901/2902/2903

To feed the evaporator with softened or desalinated water (pressure >1 bar) and the cooling coil (pressure >3 bar) with phosphate-treated, or standard mains water. Efficiency of the still is reduced by approx. 10 to 15%. **2901** for Water Stills 2002 to 2012, **2902** for Glass Water Stills, **2903** for Water Stills 2102 to 2108. Tubing for the water inlet and outlet are available as accessories. Installation must be performed at the factory.

Level Control Switch 2908/2910

To control the water level in external reservoirs for Water Stills. To switch off power and water when the external reservoir is full (not included). **2908** for Glass Water Stills 2202 to 2208, 2302 and 2304. **2910** for Water Stills 2004 to 2012 and 2102 to 2108. Installation must be performed at the factory. When using an external reservoir with level switch 2910, the internal reservoir is disabled.

Type	Description	PK	Cat. No.
2904	Dechlorite filter	1	**9.910 664**
2905	Spare filling for dechlorite filter	1	**9.910 665**
2906	Phosphate cartidge	1	**9.910 666**
2907	Spare filling for phosphate cartidge	1	**9.910 667**
2901*	Separate water supply for water stills 2002 to 2012	1	**9.910 661**
2902*	Separate water supply for glass water stills	1	**9.910 662**
2903*	Separate water supply for water stills 2102 to 2108	1	**9.910 663**
2908*	Level control switch for an external storage tank for glass water stills 2202-2208 and 2302 and 2304	1	**9.910 668**
2910*	Level control switch for an external storage tank for Water Stills 2004 to 2012 and 2102 to 2108	1	**9.910 669**

Other accessories such as pre-filter, wall brackets, hose sets, separate water supply with solenoid valve and heating with thermostat for the internal storage tank on request.
*Installation must be performed at the factory





Deioniser, behropur®

behropur® mixed-bed ion exchangers deliver de-ionized water according to Grade 3 of the ISO 3696 standard, -Water for analytical laboratory use; Specification and test methods. *Behr*
The resins inside the behropur® ion exchangers are of certified quality.
The completely equal distribution of water inside the ion exchanger leads to the maximum utilization of the exchange capacity of the unit. Thus the user benefits from very low conductance water throughout the life cycle of each exchanger charge.

1



1 Deioniser, behropur®

Heavy-walled, robust and practical mixed bed deioniser in blue polyethylene with free flow output to the reservoir. Also ideal for the post desalination of reverse osmosis systems or for aquariums. *Behr*

- Can be directly connected to the water supply and is immediately ready for operation.
- Automatic venting as water is supplied from below.
- Minimal risk of contamination due to slotted filter in the raw water inlet.
- Nozzles are durable and easy to clean. Highly resistant to abrasion or shocks.
- Extremely sturdy, heavy-duty nozzle welding by the manufacturer's own welding process.
- Resistivity meter fitted.
- B5 and B10 can also be used as wall mounted devices (wall mounting included).
- Also available with water quality cut-out and solenoid valve which engages if specified limits are exceeded and reservoir level control.
- Resistivity control available directly on the unit or remotely at any location.

Output data:

Model	**B5/B10**
Cation exchange capacity*at 10°dH:	500 L/1000 L
Flow max.:	50/100 L/hr.
Dia.:	16/21 cm
Height:	53/63 cm

Type	Description	PK	Cat. No.
B5	unpressurised, complete with resistivity meter	1	**9.882 114**
B10	unpressurised, complete with resistivity meter	1	**9.882 115**
B5Z	dual cartridge for unpressurised	1	**9.882 116**
B10Z	dual cartridge for unpressurised	1	**9.882 117**
B5A	unpressurised, resistivity meter with water quality cut-out and solenoid valve	1	**9.882 118**
B10A	unpressurised, resistivity meter with water quality cut-out and solenoid valve	1	**9.882 119**

* Limiting value 20 µS

2



2 Deionisers, pressure-resistant, behropur®

Compact and secure mixed bed deionisers for small to medium-sized volumes of ultra pure water. Ideal for feeding laboratory washing machines, general requirements in the laboratory, low level consumption in industry and for post-treatment desalination of the output from reverse osmosis systems. *Behr*

- Optimal utilisation of the deioniser due to totally uniform water distribution in the resin chamber.
- Can be connected directly to the raw water mains without a pressure reducer.
- Back pressure resistant.
- Also available with water quality cut-out and solenoid valve, which engages if specified limits are exceeded, and reservoir level control.
- Resistivity control available directly on the unit or remotely at any location.

Performance data:

Model	**B10dN/B22dN/B45dN**
Cation exchange capacity at 10°dH:	1200 L/2400 L/5500 L
Flow max.:	300/500/800 L/hr
Dia.:	21/21/26 cm
Height incl. LF:	68/112/125 cm
Height, cartridge only:	55/98/110 cm

Type	Description	PK	Cat. No.
B10dN	Pressure-resistant mixed bed unit, with resistivity meter	1	**9.882 120**
B10dNZ	Dual cartridge for pressure-resistant mixed bed unit B10dN	1	**9.882 123**
B10dNA	Pressure-resistant mixed bed unit, with resistivity meter	1	**9.882 126**
B22dN	Pressure-resistant mixed bed unit, with resistivity meter	1	**9.882 121**
B22dNZ	Dual cartridge for pressure-resistant mixed bed unit	1	**9.882 124**
B22dNA	Pressure-resistant mixed bed unit stivity, meter with water quality cut-out	1	**9.882 127**
B45dN	Pressure-resistant mixed bed unit, with resistivity meter	1	**9.882 122**
B45dNZ	Dual cartridge for pressure-resistant mixed bed unit B45dN	1	**9.882 125**
B45dNA	Pressure-resistant mixed bed unit, meter with water quality cut-out	1	**9.882 128**

* Limit value 20 µS/cm

1 Mixed-bed ion exchanger made of stainless steel

Behr



Standard cartridge made of V4A stainless steel for general purpose application: To supply laboratory glassware washers, for general laboratory maintenance and for small industrial consumers.
For subsequent demineralization of reverse osmosis systems.
- pressure resistant to 10 bar
- optimum exploitation of the ion exchanger capacity due to absolute uniform water distribution in the unit
- flow rates up to 700 litres/hour
- the unique behropur® jet nozzle system distributes the raw water over the entire resin bed. This ensures an optimum exchange capacity and quality
- can be connected to the raw water network directly and without a pressure reducer
- resistant to alternating pressure
- hard rubber collars vulcanized to the base and top of the unit offer effective protection
- convenient transport thanks to the handles embedded into the top part of the unit
- conductivity is controlled directly on the unit (installed measuring equipment) or with remote location meter
- Also available with shut-off when the limit value is reached and limit control

E28d Pressure resistant mixed-bed unit made of V4A special alloy, permanent pressure resistant to 10 bar, complete with conductivity meter
E40d Pressure resistant mixed-bed unit made of V4A special alloy, permanent pressure resistant to 10 bar, complete with conductivity meter
E28dZ Pressure resistant mixed-bed unit made of V4A special alloy, permanent pressure resistant to 10 bar, spare cartridge
E40dZ Pressure resistant mixed-bed unit made of V4A special alloy, permanent pressure resistant to 10 bar, spare cartridge
E28dA Pressure resistant mixed-bed unit made of V4A special alloy, permanent pressure resistant to 10 bar, conductivity meter with limit switch and electrovalve
E40dA Pressure resistant mixed-bed unit made of nylon, permanent pressure resistant to 8 bar, conductivity meter with limit switch and electrovalve

Specifications	**E 28/E 40 d**
Exchange capacity*at 10°dH	2800 litres/4000 litres
Flow max. litres/hour	500/700
Diameter in cm	24/24
Height incl. LF in cm	74/84
Height of cartridge only in cm	60/70

Type	PK	Cat. No.
E28d	1	**9.915 730**
E40d	1	**9.915 731**
E28dZ	1	**9.915 732**
E40dZ	1	**9.915 733**
E28dA	1	**9.915 734**
E40dA	1	**9.915 735**

* Limit value 20 µS/cm

2 Filter for behropur® mixed-bed ion exchanger

Behr



Filter for pressure-resistant behropur® mixed-bed ion exchangers. Transparent casing.
Once added to the ion exchanger, it completely retains even the finest particles and protects your high-quality equipment. Due to the transparent casing of the FG 130, you can see the state of the filter insert at any time and at a glance.
Depending on the requirements, you can use a universal filter (5µ) or a carbon filter (20µ). Downstream filters may only be used on pressure-resistant behropur® ion exchangers. Pressure-free exchangers are destroyed by the counter pressure. It could also subsequently result in expensive damage.

FG 130 behropur® filter housing for filter inserts with a length of 5". Transparent casing made of PP. Connections ¾", maximum operating pressure 8bar, max. temp. 50°C

FE 130 behropur® filter insert, PP, 5µ, length 5", max. pressure 6bar, max. temp. 80°C

AF 130 behropur® filter insert, carbon, 20, length 5", max. pressure 6bar, max. temp. 50°C

Type	PK	Cat. No.
FG 130	1	**9.915 736**
FE 130	1	**9.915 737**
AF 130	1	**9.915 738**

1



1 Deionisers, SG stainless steel (V4A)

evoqua

The high quality 1.4404 stainless steel deionizers can be operated at pressures of up to 10 bar and are more resistant to mechanical stress than conventional glass fiber reinforced plastic cartridges. Evoqua has optimized the water flow to ensure that the resin bed can be used to its full capacity. All deionizers are available with the proven stainless steel quick-fit couplers (SK) or with 3/4" threaded connectors. All deionizers are supplied without conductivity meter and hose set (or probe).
Please order these devices separately.

Type	Output L / hr.	Diam. mm	Height mm	Weight kg	PK	Cat. No.
Spare cartridge for SG 2000 SK	450	230	410	16	1	**9.914 442**
Spare cartridge for SG 2800 SK	800	230	570	22	1	**9.914 452**
Spare cartridge for SG 4500 SK	1000	230	785	33	1	**9.914 437**
Spare cartridge for SG 6200 SK	1000	230	1025	46	1	**9.914 432**
Spare cartridge for SG 2000 3/4"	450	230	410	16	1	**9.914 512**
Spare cartridge for SG 2800 3/4"	800	230	570	22	1	**9.914 509**
Spare cartridge for SG 4500 3/4"	1000	230	785	33	1	**9.914 506**
Spare cartridge for SG 6200 3/4"	1000	230	1125	46	1	**9.914 587**

2



2 Conductivity monitoring, 3D

NEW!

Aqua Lab GmbH & Co.

The conductivity meter 3D is battery driven to control the conductivity of pure and demineralized water. The scaled value can be controlled with three light-emitting diodes (LED) green, yellow, red.
The limited values are available in two performances. <1, <20, >20 µS/cm and <5, <20, >20 µS/cm, and two applications: straight (illustration 2) and angular (illustration 3)
The unit consists of a plastic housing with a R ¾" connection.

- **profitabilty:** battery-driven - longlasting duration
- **individuality:** no electrical connection necessary
- **safety device:** conductivity meter 3D - 3 light emitting diodes (LED)
- **connectors:** R ¾" union nut

3



9.700 804

Measuring range	External dimensions (W x D x H) mm	Weight kg	Type	Measuring range limit value	PK	Cat. No.
0,1 - 20 µS/cm	55 x 40 x 110	0.3	straight	<1/<20/>20	1	**9.700 802**
0,1 - 20 µS/cm	55 x 40 x 110	0.3	straight	<5/<20/>20	1	**9.700 803**
0,1 - 20 µS/cm	55 x 40 x 110	0.3	angular	<1/<20/>20	1	**9.700 804** 3
0,1 - 20 µS/cm	55 x 40 x 110	0.3	angular	<5/<20/>20	1	**9.700 805**

4



9.914 516

Conductivity meters

evoqua

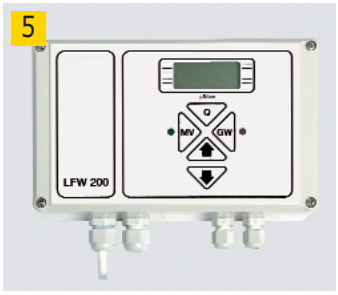
Model P 2/30 Sk.
With analogue display 0 to 30µS/cm and connector coupling. With quick couplings and integrated cell (c=0.2).

Model P2/30.
With analogue display 0 to 30µS/cm and threaded connections. With screw connections 3/4" and integrated cell (c=0.2).

Model LFW 200.
With digital display 0.1 to 199.9µS/cm. With potential free switching contact (adjustable value), malfunction alarm indicator, connections for solenoid valve, K = 0.2 cell with or without temperature compensation (Pt 500) and reservoir float switch with external indication. Designed for wall mounting. Dimensions (Wx D x H): 200 x 60 x 120mm. Cell not included. Please order separately.

Model P1/50 WA
With analogue display, measuring range 0 to 50µS/cm, potential free switching contact (value free selectable), for wall mounting. Cell not included. Please order separately.

5



9.914 517

Type	PK	Cat. No.
P 2/30 SK	1	**9.914 460**
P 2/30 3/4"	1	**9.914 516** 4
LFW 200	1	**9.914 517** 5
P1/50 WA	1	**9.914 518**
Scew-in cell, 1/2'', c=0.2, 3m cable for P1/50 WA/LFW 200	1	**6.057 070**

E & OE.

1 Conductivity monitoring, 3HD, flow controlled

NEW!

Aqua Lab GmbH & Co.



The conductivity meter 3HD is battery driven, flow controlled equipment to control the conductivity of pure and demineralized water. The scaled value can be controlled with three light-emitting diodes (LED) green, yellow and red.
Re-ionizing and wrong conductivity devices by long duration of no use are excluded.
The preseted values are <5, <20, >20 µS/cm.
The unit consists of a plastic housing with a R ¾" connection. No electrical connection necessary.

- **proftabilty:** battery-driven - longlasting duration
- **individuality:** no electrical connection necessary
- **safety device:** conductivity meter 3HD - 3 light emitting diodes (LED)
- **connectors:** R ¾" union nut

Measuring range	External dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
0,1 - 20 µS/cm	110 x 40 x 145	0.5	1	**9.700 806**

2 Ultrapure water system, arium® pro

Sartorius

ASTM Typ1 water purification system for the high-end user. Whether for routine analysis or critical applications where reagent-grade water is required, the system consistently supplies high quality that is perfect for your applications. arium® pro features a convincing innovative design, quality and ease of use. From the intuitive menu navigation to the operator friendly setup, all units in the arium® pro series feature ultra easy operation and ultra high flexibility for producing laboratory-grade purified water. arium® pro UV and pro VF water purification systems are also optionally available with an integrated TOC monitor for regularly checking the organic water constituents in product water. The TOC can be measured manually or automatically as required.

Areas of Application
- Atomic absorption (AA)
- Ion exchange chromatography (IC)
- High performance liquid chromatography (HPLC)
- Polymerase chain reaction (PCR)
- Inductively coupled plasma mass spectrometry (ICP-MS)
- Preparing cell culture media
- Protein purification
- Manufacturing reagents
- Preparing buffers and media
- Rinsing glass vessels



Features
- Innovative glass operator interface with touch function
- Integrated TOC measurement (optional)
- Volume- and time-controlled dispensing
- Freely adjustable flow rates up to 2 L/min
- Conductivity measurement for feed and product water
- Integrated monitoring of water consumption
- Data logging on SD card and printer or PC
- Activatable PIN code for basic configurations
- Service and alarm functions supported by graphic displays
- Intelligent alarm system
- Compact design

Product Water Quality

Resistivity:	18.2 MΩ x cm
TOC (at 50ppb feed water):	
arium® pro DI/UF:	≤ 5ppb*
arium® pro UV/VF:	< 2ppb*
Endotoxin at arium® pro UF/VF:	< 0.001 EU/ml
Particles (at 0.2µm):	< 1/ml
Bacteria (CFU/1000ml):	< 1
Flow rate (at 2 bar without final filter)	
arium® pro DI/UV:	up to 2 L/min
arium® pro UF/VF:	up to 1.7 L/min

Type	Description	PK	Cat. No.
arium® pro DI-T	standard	1	**9.914 548**
arium® pro UV-T	with UV-lamp, for chromatographic applications	1	**9.914 549**
arium® pro UF-T	with ultra filter, for cell culture applications	1	**9.914 550**
arium® pro VF-T	with ultra filter and UV-lamp, for standard, cell culture and chromatographic applications	1	**9.914 553**

*Values may vary depending on the quality of the feed water, the amount of contamination contained in the feed water, and/or the type of cartridge in use.

1 Pure water purification systems Barnstead™ Pacific™ TII

Thermo Scientific

The Thermo Scientific Barnstead Pacific TII water purification systems support daily requirements from 20Litres to 200Litres Type 2 water using tap water as feed source. A 30L, 60L, or 100L polyethylene reservoir is required to store and dispense the pure water.
Applications include routine laboratory work: lab glassware rinsing, supplying autoclaves, water baths, incubators and ultrapure water purification systems, preparing and diluting media, buffers and reagents.

Product features:

Multiple options for Type 2 water
Five system options with permeate flows of 3L/hr, 7L/hr, 12L/hr, 20L/hr, or 40L/hr. Future system upgrades accommodate greater capacities to meet growing water demands. Space-saving design permits benchtop installation or wall mounting with integrated mounting bracket.

Operational reliability
Microprocessor controlled for automatic operation with continuous monitoring of all critical parameters.
Automatic return to "operating" mode ensures recirculation during standstill periods.
Optional UV lamp prevents biological contamination.

Easy-to-operate
Resistivity/conductivity clearly displayed on large back-lit control panel that tilts for optimum viewing. Status of current operating mode clearly indicating "production", "stand-by", "cleaning" modes. Reservoir fill-level shown as %. System parameters are code-protected to prevent accidental changes to set points.
GLP-Compliant documentation
Optional printer connects to RS-232 port for data recording and traceability. Cell constant of 0.01cm^{-1} ensures precise conductivity measurements. Temperature compensation for the conductivity measurement has an accuracy of ±0.1°C (in conformity with USP 645).

Optional hand dispenser with flexible circulating line for dispensing water in a distance of up to 3 m. The kit contains a 0.2 µm end filter.


1

Pure water Specifications

Operating pressure:	2 to 6bar
Temperature:	+2°C to +35°C
Permeate conductivity:	0.067 to 0.1µS/cm (at <30ppm CO_2 in feeding water)
Permeate resistance at 25°C:	15 to 10MΩ.cm
Removal bacteria, Pyrogens:	>99%
TOC value:	<30ppb
Interface:	RS 232

Specifications

Power supply:	90-240V/50-60Hz
Dimensions (WxDxH):	372 x 330 x 613mm
Feedwater connector:	Tubing 1.5m with 8mm o.d. and R¾" inner thread
Wastewater connector:	¼" or 8mm o.d., tubing 2m, pressureless drain
Power Consumption:	0.08kW

Type	Permeate L/hr	PK	Cat. No.
Pacific TII 3	3	1	**9.535 536**
Pacific TII 3 (UV)	3	1	**9.535 541**
Pacific TII 7	7	1	**9.535 537**
Pacific TII 7 (UV)	7	1	**9.535 542**
Pacific TII 12	12	1	**9.535 538**
Pacific TII 12 (UV)	12	1	**9.535 543**
Pacific TII 20	20	1	**9.535 539**
Pacific TII 20 (UV)	20	1	**9.535 544**
Pacific TII 40	40	1	**9.535 540**
Pacific TII 40 (UV)	40	1	**9.535 545**

Accessories for pure water purification system Barnstead™ Pacific TII and RO

Thermo Scientific

Type	PK	Cat. No.
Pretreatment complete with prefilter and hardness stabilization	1	**9.535 978**
5µm prefilter and activated carbon 10 inch cartridge	1	**9.535 951**
Hardness stabilization for treatment	1	**9.535 957**
Filter set	1	**9.535 980**
UV Lamp for UV models	1	**9.535 979**

E & OE.

1 Pure water purification system Barnstead™ Pacific™ RO

1



Thermo Scientific

The Thermo Scientific Barnstead Pacific RO water purification systems are modularly designed laboratory reverse osmosis system for the production of 20L to 200L pure water from tap water. Applications include routine laboratory work: lab glassware rinsing, supplying autoclaves, water baths and incubators, preparing an diluting buffers and reagents. A 30L, 60L, or 100L polyethylene reservoir is required to store and dispense the permeate water.

Product features: Space-saving design allows system to sit on the laboratory bench or be mounted on the wall. Simple system upgrade accommodates future pure water capacity requirements.

Reliable operation: Microprocessor control offers automatic operation with continual monitoring of all important parameters. Required filling level of the reservoir can be customized. Automatic return to operating mode ensures recirculation during periods of standstill.

Easy-to-operate clear display: Resistivity/conductivity clearly displayed on large back-lit control panel that tilts for optimum viewing. Status of current operating mode clearly indicates ”production“, ”stand-by“, ”cleaning“ modes. Reservoir fill-level shown as %.

Integrated feed water monitoring: Good quality feed water is a prerequisite for high purity water and extends cartridge service life.

GLP-compliant documentation: Real-time clock records system errors and faults. Ongoing data storage collects four weeks information displayed in clear text. Operating system is code-protected to prevent unauthorized changes to system settings. RS-232 interface with adjustable sender interval allows for customized timing of data transmission of measured values and faults to a PC or data printer. Cell constant of 0.16cm^{-1} ensures precise conductivity measurements.

Pacific RO pretreatment: Two 10in. (25.4cm) cartridge filter housings with a 5µm prefilter and activated carbon to prevent entry of particles >5µm and high concentrations of free chlorine includes hardness stabilizer cartridge which binds calcium and prevents its precipitation.

Worry-free pure water storage: Reservoir are constructed of pigment-free polyethylene. Conical bottom allows for easy cleaning, disinfecting and complete emptying.

Optional hand dispenser with flexible circulating line for dispensing water in a distance of up to 3 m. The kit contains a 0.2 µm end filter.

Pure water specifications

Operating pressure:	2 to 6bar
Removal bacteria and particles:	99%
Removal anorganic components:	98%

Specifications

Power supply:	90-240 V/50 Hz, rubber connector 1.8m
Dimensions (WxDxH):	372 x 330 x 603mm
Feedwater connector:	Tubing 1.5m with 8mm o.d. and R¾" inner thread
Wastewater connector:	¼" or 8mm o.d., tubing 2m, pressureless drain
Power consumption:	0.1kW

Type	Permeate L/hr	PK	Cat. No.
Pacific RO 3	3	1	**9.535 531**
Pacific RO 7	7	1	**9.535 532**
Pacific RO 12	12	1	**9.535 533**
Pacific RO 20	20	1	**9.535 534**
Pacific RO 40	40	1	**9.535 535**

2 Reservoirs for pure water purification system Barnstead™ Pacific™ TII and RO

2



Thermo Scientific

For safely and convenient storage of high purity water

- Large opening for easy and effective cleaning
- Vent filter with CO_2 absorber to prevent conductivity increases from drawn-in CO_2
- Sterile overflow to prevent microorganisms from entering and contaminating reservoir water
- Constructed with inert materials opaque to light
- Recirculation pump protects high purity water from bacterial growth during standstill while maintaining a low conductivity value
- Simple and space-efficient wall mounting
- Conical bottom outlet for complete emptying
- Allows complete draining and efficient cleaning and disinfection

Capacity litres	Diam. mm	Height mm	PK	Cat. No.
30	380	602	1	**9.535 929**
30*	380	602	1	**9.535 928**
60	380	916	1	**9.535 933**
60*	380	916	1	**9.535 932**
100	380	1255	1	**9.535 937**
100*	380	1255	1	**9.535 936**

*with pressure pump

Accessories for reservoirs pure water purification system Barnstead™ Pacific™ TII und RO

Thermo Scientific

Type	PK	Cat. No.
Sterile tank overflow	1	**9.535 922**
CO_2 absorber and sterile vent filter	1	**9.535 923**
Sterile vent filter	1	**9.535 924**
Replacement UV Lamp for tank	1	**9.535 994**
UV lamp assembly for tank	1	**9.535 925**
Wall mounting bracket for 30L reservoir	1	**9.535 926**
Wall mounting bracket for 60L reservoir	1	**9.535 927**

Accessories for Ultrapure water purification systems Barnstead™ GenPure/GenPure Pro/GenPure xCAD Plus

Thermo Scientific

Description	PK	Cat. No.
Ultrapure water filter set	1	**9.535 971**
Sterile filter 0.2µm	1	**9.535 961**
UV replacement lamp	1	**9.535 969**
Disinfection cartridge	1	**6.243 959**
Disinfection granules	12	**6.243 960**
Data printer	1	**9.535 974**
xCAD client, wall, radius: 0.8m, 1.2l/min, inlet: 3m	1	**9.535 874**
xCAD client, bench, radius: 0.8m, 1.2l/min, inlet: 3m	1	**9.535 897**
Hand dispenser with 3m flexible circulation tubing , end filter: 0.2µm	1	**9.535 898**

1 Ultrapure water purification systems Barnstead™ GenPure xCAD Plus with stand-alone remote dispensers

NEW!

Thermo Scientific

1



Type	Description	PK	Cat. No.
GenPure xCAD Plus (bench)	AAS, IC, ICP, Standard buffer	1	**9.535 810**
GenPure xCAD Plus UV (bench)	Trace analysis, HPLC, ICP-MS, IC	1	**9.535 811**
GenPure xCAD Plus UF (bench)	Micro- and molecular biology, PCR, IVF	1	**9.535 812**
GenPure xCAD Plus UV/UF (bench)	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 813**
GenPure xCAD Plus UV-TOC (bench)	Trace analysis, HPLC, ICP-MS, IC, TOC analysis	1	**9.535 814**
GenPure xCAD Plus UV/UF TOC (bench)	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 815**
GenPure xCAD Plus (wall)	AAS, IC, ICP, Standard buffer	1	**9.535 816**
GenPure xCAD Plus UV (wall)	Trace analysis, HPLC, ICP-MS, IC	1	**9.535 817**
GenPure xCAD Plus UF (wall)	Micro- and molecular biology, PCR, IVF	1	**9.535 818**
GenPure xCAD Plus UV/UF(wall)	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 819**
GenPure xCAD Plus UV-TOC (wall)	Trace analysis, HPLC, ICP-MS, IC, TOC analysis	1	**9.535 872**
GenPure xCAD Plus UV/UF TOC (wall)	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 873**

UF=with ultra filtration, UV=with UV photo oxidation 185/254nm, UV-TOC=with UV photo oxidation 185/254nm and TOC display, UV-TOC/UF=with UV photo oxidation 185/254nm, TOC display and ultra filtration

E & OE.

Ultrapure water purification systems Barnstead™ GenPure™, ASTM I

Thermo Scientific

The Thermo Scientific Barnstead GenPure systems deliver ultrapure 18.2 MΩ.cm water from pretreated feed water for the most demanding and sensitive applications.
Applications include molecular biology and microbiology, cell and tissue culture, PCR, DNA sequencing, electrophoresis and analytical chemistry: HPLC, GC, GC-MS, ICP-MS, AA, IC, TOC measurements. GenPure systems product water quality exceeds international standards ASTM Type I, ISO 3696 Grade1, ASTM D1193 and CLSI-CLRW.

Product features:

Flexibility of water dispensing is guaranteed through three different GenPure versions: the standard version with a fixed outlet, the GenPure Pro with an attached flexible dispenser and the GenPure xCAD models with a remote dispenser, which can be either bench or wall mounted. The ergonomically designed controller tilts for the ease-of-use and better visibility. It has a four line alpha-numeric display.

Online TOC measurement with UV intensity monitoring: real-time TOC monitoring allows for measurement of organic substances present in the water. Continuous monitoring of UV intensity removes the risk of false TOC values due to diminished UV intensity. Fault message alerts user when the UV lamp intensity is no longer sufficient for accurate TOC measurements

UV Photo-oxidation 185/254 nm: high performance UV assembly reliably reduces the content of microorganisms and their metabolites

Measurement of conductivity/resistivity: conductivity cells are carefully calibrated prior to each measurement via built-in reference resistance with cell constants at 0.01cm-1cm. Temperature measurements are made by platinum chip sensor with ±0.1°C accuracy. An additional cell monitors feed water conductivity and prevents the user when it drops below the set value.

Quick-connect cartridge replacement: aquastop quick-connect capability enables cartridge replacement within seconds even mid-operation

Exact dosing: electronic dosing for fully automatic volume control of 0.01L-65L with <0.5% accuracy

GLP-compliant documentation: real-time clock and code-protected operating system prevents unauthorized changes to system settings. RS-232 interface with adjustable send - interval for safe data transfer of all measured data, faults, date and time to a PC or log printer. Digital microprocessor control automatically monitors and stores faults from the last four weeks. USP-compliant conductivity measurement with temperature compensation can be switched on or off.

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9.535 875

2



9.535 887

Ultrapure water Specifications ASTM Typ I

Flow rate, max.:	Up to 2L/min
Operating pressure:	2 to 6bar
Temperature:	2°C to 35°C
Conductivity:	0.055µS/cm
Resistance at 25°C:	18.2MΩxcm
TOC value in ppb (Models with UV):	1 - 5
TOC value in ppb (Models without UV):	< 10
Endotoxins*in EU/ml (Models with UF):	< 0.001
RNase*in ng/ml (Models with UF):	0.01
DNase*in pg/µl (Models with UF):	4
Bacterial content:	<1cfu/ml
Particles >0.2µm/mL:	< 1
Dimensions (WxDxH):	372 x 330 x 615mm
Dimensions xCAD (WxDxH):	260 x 530 x 725mm
Feedwater connector:	¾" o.d.
Drainwater connector:	¼"
Power Consumption:	0.1 kW
Power supply:	90-240V/50-60Hz

Type	Description	PK	Cat. No.
GenPure	AAS, IC, ICP, Standard buffer	1	**9.535 875** 1
GenPure UF	Micro- and molecular biology, PCR, IVF	1	**9.535 876**
GenPure UV	Trace analysis, HPLC, ICP-MS, IC	1	**9.535 878**
GenPure UF/UV	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 877**
GenPure UV-TOC	Trace analysis, HPLC, ICP-MS, IC, TOC analysis	1	**9.535 879**
GenPure UV-TOC/UF	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 880**
GenPure Pro	AAS, IC, ICP, Standard buffer	1	**9.535 887** 2
GenPure Pro UF	Micro- and molecular biology, PCR, IVF	1	**9.535 888**
GenPure Pro UV	Trace analysis, HPLC, ICP-MS, IC	1	**9.535 890**
GenPure Pro UV/UF	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 889**
GenPure Pro UV-TOC	Trace analysis, HPLC, ICP-MS, IC, TOC analysis	1	**9.535 891**
GenPure Pro UV-TOC/UF	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 892**

UF=with ultra filtration, UV=with UV photo oxidation 185/254nm, UV-TOC=with UV photo oxidation 185/254nm and TOC display, UV-TOC/UF=with UV photo oxidation 185/254nm, TOC display and ultra filtration
*depending on feed water quality

1



9.535 827

Ultrapure water purification system Barnstead™ MicroPure™, ASTM I

Thermo Scientific

Thermo Scientific Barnstead MicroPure ultrapure water purification systems. The Thermo Scientific Barnstead MicroPure systems deliver ultrapure 18.2 MΩ.cm water from pretreated feed. The "micro-sized" compact and reliable systems were designed for laboratories that require up to 15L/day of ultrapure water for applications such as HPLC or other instrumental analyses, sample preparation, glassware rinsing, or molecular biology work in which endotoxins and/or nucleases would interfere.

Product features:

Smart features

- Backlit display tilts for easy viewing
- Variable speed dispensing
- Optional integrated 6L feed water reservoir so you can place the system without direct access to a water line
- Feed water quality monitoring
- Good feed water quality leads to consistently ultrapure water and a longer cartridge life time

Smart design

- Recirculation pump prevents bacterial growth during standstill and allows for constant monitoring of all system functions leading to the immediate display of fault messages if a problem is detected
- Systems ship fully equipped with pressure reducer, ultrapure cartridge and 0.2µm sterile filter

Superior filters

- Ultrafilter is flushed automatically to assure the highest retention of endotoxins and nucleases, which produces a long two year lifetime
- Validated 0.2µm final filter with folded membrane can be sterilized up to 5 times

Specifications

Flow rate, max.:	1L/min
Operating pressure:	2 to 6bar
Temperature:	+2°C to +35°C
	0.055µS/cm
Resistance at 25°C:	18.2 MΩxcm
TOC value (models with UV):	1 to 5ppb
TOC value (models without UV):	< 10ppb
Bacterial content:	<1cfu/ml
Particles >0.2µM/mL:	<1
Endotoxins (Models with UF):	<0.001EU/ml
Power consumption:	0.06kW
Feedwater connector:	8mm o.d.
Power supply:	90-240V, 50/60Hz, automatic voltage regulation to 24 V
Dimensions (WxDxH):	305 x 300 x 545 mm
Dimensions models with reservoir (WxDxH):	305 x 400 x 545 mm

Type	Description	PK	Cat. No.
MicroPure Standard	AAS, IC, ICP, Standard buffer	1	**9.535 823**
MicroPure UF	Micro- and molecular biology, PCR, IVF	1	**9.535 824**
MicroPure UV	Trace analysis, HPLC, ICP-MS, IC	1	**9.535 826**
MicroPure UF/UV	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 825**
MicroPure Standard-ST	AAS, IC, ICP, Standard buffer	1	**9.535 827** 1
MicroPure UF-ST	Micro- and molecular biology, PCR, IVF	1	**9.535 828**
MicroPure UV-ST	Trace analysis, HPLC, ICP-MS, IC	1	**9.535 830**
MicroPure UF/UV-ST	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 829**

With UF = ultrafiltration, UV = UV photo-oxidation 185/254nm, UF/UV = Ultra Filtration and UV photo-oxidation 185/254 nm

Accessories for Ultra pure water system Barnstead™ MicroPure™

NEW!

Thermo Scientific

Description	PK	Cat. No.
Ultra pure filter set	1	**9.535 963**
Sterile filter 0.2µm	1	**9.535 961**
UV replacement lamp	1	**9.535 960**
Disinfectant cartridge	1	**9.535 968**
Disinfectant granules	1	**6.243 960**
Wall mounting bracket	1	**9.535 976**

E & OE.

1 Pure- and Ultrapure water purification system Barnstead™ Smart2Pure™, ASTM I and II

1



Thermo Scientific

The Thermo Scientific Barnstead Smart2Pure system is a compact system which converts tap water to into both ASTM Type I and II water. The Smart2Pure 3 and 6 feature a built-in 6L reservoir to store the Type II water. The Smart2Pure 12 offers the choice of a 30L or 60L reservoir for customizable storage capacity.

Product features:

Powerful performance
Based on your requirements, choose from capacities of 3L/hr, 6L/hr or 12L/hr

Lasting economy
Water purification progresses through independent cartridges with Aquastop quick connects for fast replacement
Module 1 - Combination of pretreatment and the reverse osmosis membrane
Module 2 - Polishing cartridge contains high-quality ultrapure resin for consistent purity and long cartridge life

Easy-to-operate
Dispensing is easy and features variable speed to control flow. The display can be tilted for optimal reading. Optional UV bulb and UF ultrafilter to customize ultrapure water

Placement options
Position on laboratory bench or mount it on the wall

Smart integrated 6L reservoir for the Smart2Pure 3 and 6
Constructed with pigment-free materials, conical bottom outlet allows for complete draining and efficient cleaning and disinfection.

Smart2Pure 12 offers reservoir options, either 30L or 60L
Large opening for easy and effective cleaning by hand. Sterile venting filter/reservoir overflow protects against contamination by microorganisms. Optional CO_2 absorber prevents TOC value increases from drawn-in CO_2. Polyethylene reservoir is opaque to light. Recirculation pump protects the high purity water from bacterial growth during standstills and maintains the low conductivity value. Wall-mount optional for simple space-savings. Conical bottom outlet allows for complete draining and efficient cleaning and disinfection.
- Optional hand dispenser with flexible circulating line for dispensing water in a distance of up to 3 m. The kit contains a 0.2 µm end filter.

Ultrapure water Specifications ASTM Typ I

Flow rate:	1.0l/min
Flow rate UF-models:	0.6l/min
Conductivity:	0.055µS/cm
Resistance at 25°C:	18.2MΩxcm
TOC value:	<10ppb
TOC values UV-models:	1 to 5ppb
Endotoxins UF-models:	0.005EU/ml
Bacterial content:	<1cfu/ml
Particles >0.2µM/ml:	<1

Pure water Specifications ASTM Typ II

Permeate flow rate at 15°C:	
Smart2Pure 3:	3 l/h
Smart2Pure 6:	6 l/h
Smart2Pure 12:	12 l/h
Permeate conductivity:	0.067 to 0.1µS/cm
Permeate resistance at 15°C:	15 to 10MΩxcm

Specifications

Power supply:	90-240V/Hz
Dimensions (WxDxH):	305 x 400 x 545mm
Feedwater connector:	¾ inch
Drain connection:	¼ inch

Type	Description	PK	Cat. No.
Smart2Pure 3	AAS, IC, ICP, Standard buffer	1	**9.535 860**
Smart2Pure 3 UF	Micro- and molecular biology, PCR, IVF	1	**9.535 861**
Smart2Pure 3 UV	Trace analysis, HPLC, ICP-MS, IC	1	**9.535 862**
Smart2Pure 3 UF/UV	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 863**
Smart2Pure 6	AAS, IC, ICP, Standard buffer	1	**9.535 864**
Smart2Pure 6 UF	Micro- and molecular biology, PCR, IVF	1	**9.535 865**
Smart2Pure 6 UV	Trace analysis, HPLC, ICP-MS, IC	1	**9.535 866**
Smart2Pure 6 UF/UV	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 867**
Smart2Pure 12	AAS, IC, ICP, Standard buffer	1	**9.535 868**
Smart2Pure 12 UF	Micro- and molecular biology, PCR, IVF	1	**9.535 869**
Smart2Pure 12 UV	Trace analysis, HPLC, ICP-MS, IC	1	**9.535 870**
Smart2Pure 12 UF/UV	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	**9.535 871**

With UF = ultrafiltration, UV = UV photo-oxidation 185/254nm, UF/UV = Ultra Filtration and UV photo-oxidation 185/254 nm

Accessories for pure and ultrapure purification systems Barnstead™ Smart2Pure™

Thermo Scientific

Description	PK	Cat. No.
Wall mounting bracket	1	**9.535 976**
Ultrapure water cartridge	1	**9.535 966**
UV replacement lamp	1	**9.535 960**
Sterile filter, 0.2µm for direct removal/device	1	**9.535 961**
Reservoir vent filter	1	**9.535 986**
Disinfection granules	1	**6.243 960**
Pretreatment Pack for Smart2Pure 3	1	**9.535 970**
Pretreatment Pack for Smart2Pure 6	1	**9.535 972**
Pretreatment Pack for Smart2Pure 12	1	**9.535 973**
CO_2 adsorber and sterile venting filter for Smart2Pure 12	1	**9.535 923**
UV immersion lamp for tank for Smart2Pure 12	1	**9.535 925**
Smart2Pure 12 Tank 30 l	1	**9.535 931**
Smart2Pure 12 Tank 60 l	1	**9.535 935**
Wall mounting bracket for Smart2Pure 12 30L reservoir	1	**9.535 926**
Wall mounting bracket for Smart2Pure 12 60L reservoir	1	**9.535 927**

1 Reverse osmosis systems, Ultra Clear™ RO EDI

evoqua

The well-proven Ultra Clear™ RO range has been enhanced to peak water quality level in the plus series by adding electronic deionisation cells: accessory deionisers for removing inorganic materials from the output are therefore no longer required.
Technical parameters:
- Resistance up to 17 megohm (0.07µS/cm)
- TOC < 5 to 20ppb at RO cell output (if feed water < 100ppb)
- Micro-organism reduction > 99%
- Typical pure water quality < 0.07µS/cm

In all Ultra Clear™ RO systems the quality of the feed and output water will be shown on the display.

Features:
- pure water treatment for simple analysis, laboratory rinsing machines, autoclaves, up to ultrapure water systems
- germ/pyrogen retention rate >99%
- modern, maintenance-friendly design
- modular flushing for long service life
- complete, connection-ready system; fittings allow supply tanks to be expanded if required (e.g. Ultra Clear™ RO supply tanks with 30, 60 and 80 litre capacities)
- conductivity monitor e.g. for downstream ion exchanger possible
- menu-driven controller, RS232 interface
- Ultra Clear™ RO DI: includes post-treatment module for residual desalination of permeate Entrance- and Product water quality will be shown on the display.

Specifications

Connections:	Permeate, concentrate, raw water: 8/6 mm/R 3/4"
Rating:	200/300W
Dimensions (WxDxH):	340 x 420 x 520mm
Colloidal index (SDI):	< 3
Supply water pressure:	2 to 6 bar (0 to 5 bar Ultra Clear™ RO EDI 10)
Input conductivity:	< 1400 µS/cm

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Type	Pure water output at 15°C L / hr.	Weight kg	PK	Cat. No.
Ultra Clear™ RO EDI 10	10	20	1	**6.267 641**
Ultra Clear™ RO EDI 30	30	33	1	**6.267 642**
Ultra Clear™ RO EDI 55	55	35	1	**9.914 623**

E & OE.

1 Reverse osmosis system, Ultra Clear™ RO

NEW!

evoqua

Eight models with outputs from 10 to 100 l/hr that provide pure water supplies from 50 to 2400 litres per day. The application of low- energy- membranes ensures an efficient and economical operation.



Features:
- pure water treatment for simple analysis, laboratory rinsing machines, autoclaves, up to ultrapure water systems
- germ/pyrogen retention rate >99%
- modern, maintenance-friendly design
- modular flushing for long service life
- complete, connection-ready system; fittings allow supply tanks to be expanded if required (e.g. Ultra Clear™ RO supply tanks with 30, 60 and 80 litre capacities)
- conductivity monitor e.g. for downstream ion exchanger possible
- menu-driven controller, RS232 interface
- Ultra Clear™ RO DI: includes post-treatment module for residual desalination of permeate Entrance- and Product water quality will be shown on the display.

Specifications

Connections:	permeate, concentrate, raw water: R 3/4"
Salt retention rate, normal:	99%
Residual conductivity, Ultra Clear™ RO DI:	< 0.1µS/cm
Germs:	> 99%
Power requirement:	200/300W
Input conductivity:	< 2000µS/cm
Blocking index SDI:	< 3
Dimensions (WxDxH):	340 x 420 x 520mm (Ultra Clear™ RO 200: H= 1350mm)
Supply water pressure:	2 to 6bar (0 to 5bar Ultra Clear™ RO 10/Ultra Clear™ RO DI 10)

Type	Pure water output at 15°C L / hr.	Weight kg	PK	Cat. No.
Ultra Clear™ RO 10	10	22	1	**6.267 635**
Ultra Clear™ RO DI 10	10	23	1	**6.267 636**
Ultra Clear™ RO 20	20	30	1	**6.267 637**
Ultra Clear™ RO DI 20	20	26	1	**6.267 639**
Ultra Clear™ RO 30	30	35	1	**6.267 638**
Ultra Clear™ RO DI 30	30	28	1	**6.267 640**
Ultra Clear™ RO 60	60	40	1	**9.914 612**
Ultra Clear™ RO 100	100	33	1	**9.914 661**

2 Accessories for ultra pure water systems Ultra Clear™ RO

NEW!

evoqua



Type	For	Change interval	PK	Cat. No.
Pre-treatment module AMB	all sytems Ultra Clear™ RO	every 6 months***	1	**9.914 524**
Pre-treatment module VMD	Ultra Clear™ RO DI 10-40	every 3 months***	1	**9.914 520**
RO module**	Ultra Clear™ RO DI 20 Ultra Clear™ RO 20	every 2 to 3 years	1	**9.914 519**

** number depending on the size of the system
***Interval of exchanges depends on raw water quality and throughput

1



1 Ultra pure water systems, Ultra Clear™

evoqua

The Ultra Clear™ series is a user-friendly ultra-pure water system which is available in 12 different versions - for each application there is the right system. The units are modular and can be upgraded with UV-Oxidation or Ultra-filtration accessories. The Ultra Clear™ system can be mounted on the wall without any accessories - a wall bracket is included. Requirements for AAS, HPLC, IC, ICP/MS, cell cultures, micro biology and TOC- Analytic etc. have not only been fulfilled but significantly exceeded, depending on the unit. The Ultra Clear is a bench top system, the Integra a space saving, under-bench installation. Ultra Clear™ (Integra) UV and Ultra Clear™ (Integra) UV UF are available with TOC- Monitoring (TM-version) and UV- intensity measurement

- programmable microprocessor control system with keypad, plain text display, resistance or conductance display with temperature compensation
- additional pressure reducing valve is not required
- input and output conductivity levels given, together with entry of limits
- internal sterile filtration filter 0.1µm, 1000cm², and additional disinfection
- circulation mode programmable (intermittent/non-stop)
- very quiet (under 40dB)
- easy module change by quick-connector coupling system

Specifications:

Ultra-pure water output up to L/min:	2
Resistance at 25°C Megohm:	18.2
Conductivity at 25°C µS/cm:	0.055
Bacteria KbE/ml:	< 1
Particle >0.1µm amount/ml:	< 1
Dimensions (WxDxH):	340 x 320 x 540mm
Supply requirements:	100-240V 50/60Hz

Type	TOC value	Endotoxin content EU/ml	PK	Cat. No.
Ultra Clear™	5 - 10 ppb	-	1	**9.914 497**
Ultra Clear™ UV	<1 ppb	-	1	**9.914 496**
Ultra Clear™ UV UF	<1 ppb	<0,001	1	**9.914 495**
Ultra Clear™ UV TM*	<1 ppb	-	1	**9.914 476**
Ultra Clear™ Integra UV TM*	<1 ppb	-	1	**9.914 477**
Ultra Clear™ UV UF TM*	<1 ppb	<0,001	1	**9.914 478**
Ultra Clear™ Integra UV UF TM*	<1 ppb	<0,001	1	**9.914 479**

* pure water system with TOC-Monitoring

2



2 Ultra Clear water systems, accessories

NEW!

evoqua

Type	Change interval	PK	Cat. No.
Pre-treatment module VMD	1 to 2 x per year	1	**9.914 520**
Pre-treatment module DTO (UV version)	1 to 2 x per year	1	**9.914 513**
Post-treatment module MF III D	1 to 2 x per year	1	**9.914 521**
Post-treatment module ILT (optional)	1 to 2 x per year	1	**9.914 514**
Sterile filter 0.1 µm, 1000 cm²	every 6 months	1	**9.914 522**
UV replacement bulb UC (circulation)	1 to 2 x a year	1	**6.265 906**
Ultrafiltration module Preventor 5000	every 2 years	1	**6.234 665**
Desinfection kit (3-pack)		1	**6.234 666**

E & OE.

1 Ultra pure water system, Ultra Clear™ TWF

evoqua

The Ultra Clear™ TWF is an ultra-pure water system which accommodates almost any option that can be directly connected to the drinking water mains system - with an output of up to 2 l/min. UV oxidation, ultra-filtration and TOC monitoring can be integrated into all UV models. Permeate can be easily tapped directly from the tank for simple flushing purposes and a separate flushing machine can also be operated. Typical system applications: AAS, IC, GC, HPLC, TOC analysis, cell and tissue cultures, DNA sequencing, in-vitro fertilisation, PCR, and much more.

- microprocessor control with clear text display, resistance and conductivity display temperature compensated
- conductivity control with limit value entries for permeate and purest water
- sterile filter 0.1µm
- circulation mode with day and night programme to condition individual components during night-time periods
- simple module changing with pluggable connector system featuring "Aqua-Stop"



Specifications:

Ultra-pure water rating:	up to 2L/min
Resistance at 25°C:	18.2Megohm
Conductivity at 25°C:	0.055µS/cm
Bacteria:	< 1KbE/ml
Particle >0.1 to 1µm:	< 1 count/ml
Permeate rating:	< 10 l/h
Input conductivity:	< 2000µS/cm
Power requirement:	50W
Silt density index SDI:	< 3
Dimensions (WxDxH):	560 x 320 x 530mm
Supply requirements:	100-220V/50-60Hz

Type	TOC value	Endotoxin content EU/ml	PK	Cat. No.
Ultra Clear™ TWF	5 to 10 ppb	-	1	**9.914 643**
Ultra Clear™ TWF UV	<1 ppb	-	1	**9.914 644**
Ultra Clear™ TWF UV TM + TOC-Monitor	<1 ppb	-	1	**9.914 645**
Ultra Clear™ TWF UV UF	<1 ppb	0.001	1	**9.914 647**
Ultra Clear™ TWF UV UF TM + TOC-Monitor	<1 ppb	0.001	1	**9.914 648**

Ultra Clear TWF pure water systems, accessories

NEW!

Type	Change interval	PK	Cat. No.
Pre-treatment module AMB	every 6 months	1	**9.914 524**
Post-treatment module MF III D	1 to 2 x a year	1	**9.914 521**
Sterile filter 0.1 µm	every 6 months	1	**9.914 522**
UV replacement bulb UC (circulation)	1 to 2 x a year	1	**6.265 906**
RO-Module	every 2 to 3 years	1	**9.914 519**
UV replacement bulb UC (tank)	1 to 2 x a year	1	**6.265 907**
CO2 trap CT1 incl. Vent filter (spare cartridge)	1 x a year	1	**9.914 527**
Ultrafiltration module Preventor 5000	every 2 years	1	**6.234 665**
Desinfection kit (3-pack)		1	**6.234 666**

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LLG-PCR Tubes and Plates, PP

- Premium quality
- Produced in a cleanroom environment
- RNase-, DNase-, Human DNA- and Pyrogen-free
- Virgin Polypropylene
- Compatible with all major thermal cyclers

1



1 LLG-PCR tubes with attached lids, PP

- Individual tubes
- Compatible with all major thermal cyclers
- 0.2ml or 0.5ml
- Maximum tube capacity: 0.25ml or 0.6ml when closed
- Individual attached flat or domed snap caps
- Consistent wall thickness for uniform heat transfer
- Cap design ensures fit and helps reduce sample evaporation
- Virgin polypropylene, certified RNase, DNase and endotoxin free

Description	PK	Cat. No.
0.2ml, single, flat cap	1000	**9.407 501**
0.2ml, single, domed cap	1000	**9.407 502**
0.5ml, single, flat cap	1000	**9.407 504**
0.5ml, single, domed cap	1000	**9.407 505**

LLG-PCR-Tubes, 8 Strips with attached individual caps, PP

- for 0.2 ml Thermal cycler blocks
- with flat or domed cap
- made of high quality polypropylene, RNase-, DNase- and Endotoxin free

Description	PK	Cat. No.
8 PCR tube strips with individually attached flat snap caps	250	**9.407 515** 2
8 PCR tube strips with individually attached domed ultra clear snap caps	250	**9.407 516**

2



9.407 515

3



9.407 503

LLG-PCR-Tubes, 8 Strips, PP

NEW!

- For 0.2ml thermal cycler blocks
- Detached cap strips can be used as individual tubes when cut
- With domed or flat caps
- Consistent wall thickness for uniform heat transfer
- Contamination-free opening
- Cap strips provide tight seal during all PCR cycles
- Easy-to-use
- Maximum tube capacity: 0.25ml when closed
- Highly transparent cap makes them ideal for qPCR
- Virgin polypropylene, certified RNase, DNase and endotoxin free

Description	PK	Cat. No.
8 PCR tube strips plus detached cap strips, domed caps	250	**9.407 503** 3
8 PCR tube strips plus detached cap strips, flat caps	250	**9.407 514**
8 PCR detached cap strips, flat caps	120	**6.254 729**
8 PCR detached cap strips, domed caps	120	**9.407 522**
8 PCR detached cap strips, domed caps	250	**7.656 858**

E & OE.

1 PCR Products, BRAND



BRAND has significantly expanded its product range of extra-thin-wall disposable products, which were specially developed to satisfy the demands of PCR applications. *BRAND*

Quality features
- Suitable for use in common thermal cyclers
- PP, extra-thin uniform wall thicknesses to provide the optimal thermal transfer and short cycle times
- 96-well PCR plates with blue alphanumeric code and cut corner marking
- Highly clear flat covers optimally suited for qPCR
- DNase-, DNA- and RNase-free
- Autoclavable at 121°C (2 bar), acc. DIN EN 285
- qPCR: Products which are suitable for Real Time PCR (qPCR)

White PCR products offer significantly better results for qPCR, and are specifically recommended by many thermal cycler manufacturers.

2 Single PCR tubes with attached caps, PP



0.2 ml and 0.5 ml PCR tubes with attached caps are compatible with leading thermal cyclers with heated lids. The caps are easy to open and close without tools, yet ensure a tight fit to reduce sample evaporation. The various colors of the PCR tubes allow fast sample classification. *BRAND*

Capacity ml	Description	Colour	PK	Cat. No.
0.2	domed cap	clear	1000	**9.409 370**
0.2	flat cap	clear	1000	**9.409 371**
0.2	flat cap	pink	1000	**9.409 280**
0.2	flat cap	yellow	1000	**9.409 281**
0.2	flat cap	green	1000	**9.409 282**
0.2	flat cap	blue	1000	**9.409 283**
0.5	flat cap	clear	1000	**9.409 372**
0.5	flat cap	pink	1000	**9.409 284**
0.5	flat cap	yellow	1000	**9.409 285**
0.5	flat cap	green	1000	**9.409 286**
0.5	flat cap	blue	1000	**9.409 287**

3 Strips of 8-/12- PCR tubes plus detached cap strips, PP autoclavable



PP. Strips of 8 or 12 connected PCR tubes (0.2ml). Cap strips consisting of 8 or 12 domed caps (available separately) provide tight seal during all PCR cycles, thus protecting samples from cross-contamination. The tubes have a holding strap at one end, and the cover strips on each lid have a small lip on the side for careful, contamination-free opening. Consistent tube wall thickness allows rapid heat transfer along the entire exterior tube surface. Made of pure, virgin polypropylene, free from RNase-, DNase- and DNA. Autoclavable at 121°C (2 bar), according to DIN EN 285. *BRAND*

Capacity ml	Description	Colour	PK	Cat. No.
0.2	Strips of 8 PCR tubes, without caps	clear	125	**9.409 374**
0.2	Strips of 8 PCR tubes, without caps	pink	125	**9.409 620**
0.2	Strips of 8 PCR tubes, without caps	yellow	125	**9.409 621**
0.2	Strips of 8 PCR tubes, without caps	green	125	**9.409 622**
0.2	Strips of 8 PCR tubes, without caps	blue	125	**9.409 623**
0.2	Strips of 8 PCR tubes, without caps	white	125	**7.654 202**
0.2	Strips of 8 PCR caps, domed	clear	125	**9.409 375**
0.2	Strips of 8 PCR caps, domed	pink	125	**9.409 624**
0.2	Strips of 8 PCR caps, domed	yellow	125	**9.409 625**
0.2	Strips of 8 PCR caps, domed	green	125	**9.409 626**
0.2	Strips of 8 PCR caps, domed	blue	125	**9.409 627**
0.2	Strips of 8 PCR caps, flat	clear	125	**6.230 345**
0.2	Strips of 8 PCR tubes, with separate flat caps	clear	250	**4.007 894**
0.2	Strips of 8 PCR tubes, with separate domed caps	clear	250	**4.007 895**
0.2	Strips of 12 PCR tubes, without caps	clear	125	**9.409 628**
0.2	Strips of 12 PCR tubes, without caps	pink	125	**9.409 629**
0.2	Strips of 12 PCR tubes, without caps	yellow	125	**9.409 630**
0.2	Strips of 12 PCR tubes, without caps	green	125	**9.409 631**
0.2	Strips of 12 PCR tubes, without caps	blue	125	**9.409 632**
0.2	Strips of 12 PCR caps, domed	clear	125	**9.409 633**
0.2	Strips of 12 PCR caps, domed	pink	125	**9.409 634**
0.2	Strips of 12 PCR caps, domed	yellow	125	**9.409 635**
0.2	Strips of 12 PCR caps, domed	green	125	**9.409 636**
0.2	Strips of 12 PCR caps, domed	blue	125	**9.409 637**

1



9.409 377

PCR tubes strips , PP, with attached individual caps

NEW!

The strips of 8 PCR tubes with attached, flat individual caps provide an ideal protection against contamination. The highly transparent cap makes them ideal for a quantitative Real Time PCR. Available in Standard (0.2ml) or Low Profile (0.15ml).

BRAND

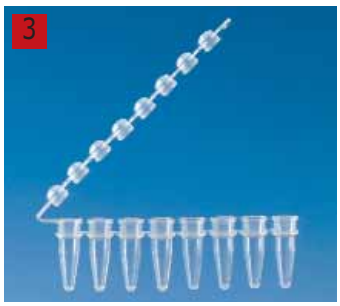
2



6.228 560

Capacity ml	Type	Colour	PK	Cat. No.
0.20	Standard	transparent	120	**6.228 560** 2
0.20	Standard	white	120	**9.409 245**
0.15	Low Profile	transparent	120	**9.409 377** 1
0.15	Low Profile	white	120	**9.409 246**

3



3 Strips of 8 PCR tubes with attached cap strips

Eight 0.2 ml PCR tubes joined together in a strip with attached, hinged 8-cap strips. PP. The hinged, domed cap makes opening and closing the tubes with one hand easier.

BRAND

Type	PK	Cat. No.
Colourless	125	**9.409 373**

4 5 LLG-96-well PCR Plates, PP

- cut-away corner for orientation
- clear well bottom for sample visibility, with V-Bottom
- compatible with leading thermal cyclers
- consistent wall thickness for uniform heat transfer
- holes in the skirt for easy handling
- virgin polypropylene, certified RNase, DNase and endotoxin free

Description	Capacity µl	PK	Cat. No.
96 Well Plate, skirted, low profile, PP	200	25	**9.407 507** 4
96 Well Plate, non-skirted, PP	300	25	**6.238 061** 5

6 LLG-384-well PCR plates, PP

- maximum well volume: 40µl
- working well volume: 25µl
- cut-away corners for plate orientation
- fully skirted for use with automated systems
- holes in the skirt for easy handling
- compatible with all leading 384 block thermal cyclers
- high temperature tolerance (-196°C to + 120°C)
- virgin polypropylene, certified RNase, DNase and endotoxin free

Description	Capacity µl	PK	Cat. No.
384 Well Skirted PCR Plate, thin wall, PP	40	50	**9.407 500**

4



9.407 507

5



6.238 061

6



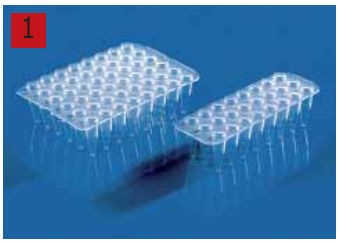
E & OE.

PCR-plates for precise analyses

Ultra-thin wall design facilitates rapid and steady heat transfer. Smooth interior tube surface minimises binding of enzymes and nucleic acids. Raised rims of wells protect against cross-contamination and provide tight seal particularly in combination with BRAND´s new sealing mats. *BRAND*

1 24/48 well PCR Plates, non-skirted, PP, for qPCR

0.2ml wells. The 24 /48 well plates reduce material costs and allow work on a compact PCR plate even with small sample throughputs. *BRAND*



Description	Colour	PK	Cat. No.
24-well, standard profile, elevated rim	clear	40	**6.229 655**
24-well, standard profile, elevated rim	white	40	**4.007 901**
48-well, standard profile, elevated rim	clear	20	**9.409 368**
48-well, standard profile, elevated rim	white	20	**4.007 902**

White PCR products for Real Time PCR

The use of real-time PCR (qPCR) is becoming increasingly widespread. The new line of white PCR products by BRAND offers significantly better results in this application than transparent tubes or plates. The different products in this line are uniformly colored with TiO2 (titanium dioxide), so that in combination with the smooth surfaces, the optimum reflection of the fluorescence signal is provided. *BRAND*

96 well PCR-Plates, PP, for PCR or qPCR

NEW!

The ultra thin-walled PCR plate design facilitates constant, rapid and precise heat transfer. The smooth vessel interior minimizes the binding of enzymes and nucleic acid to the walls. The rim of the wells are designed to protect against cross-contamination, allowing a reliable seal with the sealing mats tailored to the plates. *BRAND*



9.409 247



9.409 381

96-well, non-skirted
PP. 0.2 ml wells. 96-well non-skirted PCR plates are suitable for most commercially available thermal cyclers.



9.409 264



9.409 383

96-well, semi-skirted
PP. 0.2 ml wells. 96-well semi-skirted PCR plates can easily be labelled or tagged with a barcode.

96-well, semi-skirted. Suitable for Roche® LightCycler® 480 and other thermal cyclers
PP. 0.15 ml wells. Semi-skirted. With black alphanumeric code. Available with or without self-adhesive sealing film (polyester, high-transparent, for qPCR).



4.007 899



9.409 351

96-well, skirted
PP. 0.2 ml wells. 96-well skirted PCR plates are especially rigid, and are optimally suited for use with automatic pipetting systems and for being transported.

Description	Volume ml	Colour	Cut corner	PK	Cat. No.
Low Profile, non-skirted	0.15	clear	H12	50	**9.409 247** 2
Low Profile, semi skirted	0.15	clear	A12	50	**9.409 256**
Low Profile, semi skirted, raised skirt	0.15	clear	A1	50	**9.409 258**
Low Profile, fully skirted*	0.15	clear	H1	50	**9.409 351** 7
Low Profile, non-skirted	0.15	white	H12	50	**9.409 248**
Low Profile, semi skirted	0.15	white	A12	50	**9.409 257**
Low Profile, semi skirted, raised skirt	0.15	white	A1	50	**9.409 259**
Low Profile, for LightCycler® 480 (Roche®), semi skirted*	0.15	white	H12	50	**4.007 899** 6
Low Profile, for LightCycler® 480 (Roche®), semi skirted, incl. films*	0.15	white	H12	50	**4.007 900**
Low Profile, fully skirted*	0.15	white	H1	50	**9.409 266**
Standard profile, non-skirted	0.20	clear	A12	50	**9.409 254**
Standard profile, semi skirted	0.20	clear	A12	50	**9.409 264** 4
Standard profile, non-skirted, elevated rim	0.20	clear	H12	50	**9.409 381** 3
Standard profile, semi skirted, elevated rim	0.20	clear	H12	50	**9.409 383** 5
Standard profile, non-skirted	0.20	white	A12	50	**9.409 255**
Standard profile, semi skirted	0.20	white	A12	50	**9.409 265**
Standard profile, non-skirted, elevated rim	0.20	white	H12	50	**4.007 896**
Standard profile, semi skirted, elevated rim	0.20	white	H12	50	**4.007 897**

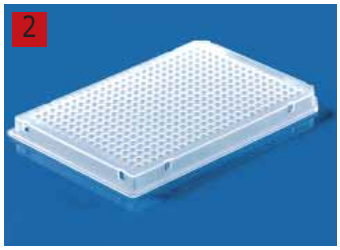
*Black alphanumeric code, no additional markings on the cut corner.



1 PCR Plates384-well

The 40µl wells can hold sample volumes of 2µl to 30µl. This helps to reduce reagents costs and shortens cycle times. The plates can be filled using conventional multichannel pipettes or automated systems. Suitable for qPCR (quantitative Real Time PCR). *BRAND*

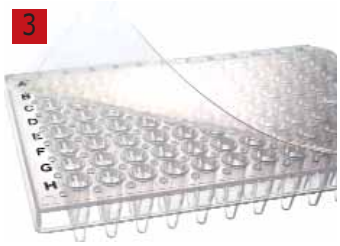
Description	PK	Cat. No.
384-well PCR plate, fully skirted, PP	50	**9.409 391**
384-well PCR plate, fully skirted, PP	50	**9.409 306**
384-well PCR plate, fully skirted, rigid plate	50	**9.409 307**



2 384 well PCR-Plates, white, for real-time PCR

White, PP. Suitable for qPCR. 0.03ml tubes. *BRAND*

Description	PK	Cat. No.
fully skirted, for LightCycler® 480 (Roche®)	50	**4.007 898**



6.238 132



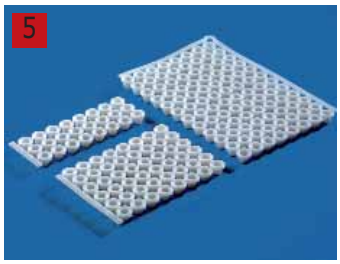
9.407 506

LLG-PCR adhesive film and foil

For use in cyclers with screw-down or clip-down lids. With end tabs

PCR Film: Clear film allows both the visual inspection of samples and fluorescence measurements.
PCR Foil: Easy to pierce, no residue of adhesive on the pipette tips.
QPCR Foil: Adhesive seal optically clear, peelable, for QPCR and fluorescence applications.

Description	Temp. range °C	PK	Cat. No.
PCR film	-20 to +120	100	**6.238 132** 3
PCR foil	-80 to +150	100	**9.407 506** 4
QPCR foil	-40 to +120	50	**6.240 725**



5 PCR Sealing Mats

PCR sealing mats have been designed to fit BRAND PCR plates exactly and reduce evaporation losses by up to 75% compared to conventional systems. They are characterised by their high flexibility, tight sealing, autoclavability and are easily pierced by pipette tips. *BRAND*

Description	Material	PK	Cat. No.
Sealing mat for 24-well PCR plates	TPE	10	**9.409 369**
Sealing mat for 48-well PCR plates	TPE	10	**6.230 903**
Sealing mat for 96-well PCR plates	TPE	5	**9.409 384**
Sealing mat for 384-well PCR plates	Silicone	10	**9.409 311**



6 Sealing Films, Self-adhesive

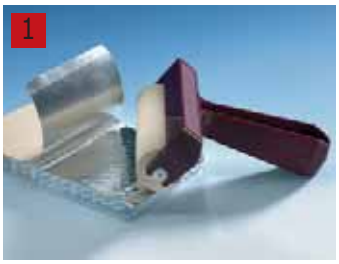
NEW!

In case the microplates, PCR- and Deepwellplates need not only to be covered, but also securely sealed, self-adhesive sealing films are available. These film sheets can be easily applied on the plates and removed also without the use of expensive equipment. They are available in different versions and are especially well-suited for storage or cell- and tissue-culture. *BRAND*

Application	Description	Material	PK	Cat. No.
ELISA, PCR	single film	polypropylene	100	**9.409 386**
ELISA; Real Time PCR	single film, highly transparent	polyester	100	**4.000 237**
Cold storage	roll with 100 sheets	aluminium	100	**9.409 387**
Cold storage	single film	aluminium	100	**6.223 125**
Storage	single film, DMSO-resistant	polypropylene	100	**9.408 983**
Sealing foil, gas-permeable, non-sterile	single film, gas-permeable	rayon	100	**9.407 620**
Cell- and tissue culture	single film, gas-permeable, sterile	rayon	50	**6.224 223**
Automation	single film	PE/PP	50	**4.000 389**
Storage, fluorescence measurement	single film	vinyl	50	**4.000 390**
Luminescence measurement	single film	vinyl	50	**4.000 391**

E & OE.

1 Roller for sealing films



The self-adhesive films can be securely and easily applied with a roller. The hard rubber roller ensures that the film is attached to the plate with a uniform pressure. The rugged handle with comfort-grip lessens fatigue.

BRAND

Type	PK	Cat. No.
Roller for sealing films	1	**4.000 392**

2 AccuSeal Semi-Automated Plate Sealer



- Accepts a wide range of microplates and heat seals
- User-friendly control system
- Large digital display shows all operating parameters
- Adjustable sealing temperature: 100°C to 190°C, or no heat
- Precise temperature, timing and pressure for consistent sealing

Labnet

Specifications

Dimensions (WxDxH):	171mm x 324mm x 362mm
Weight:	12kg
Sealing Temperature:	Off, 100 to 190°C (increments of 1.0°C)
Temperature Accuracy:	±1.0°C
Temperature Uniformity:	±1.0°C
Sealing Time:	0.5 to 10 sec (incements of 0.1 sec)
Compatible Plate Materials:	PP (Polypropylene), PS (Polystyrene), PE (Polyethylene)
Compatible Plate Types:	Standard Assay Plates, Deep-Well Storage plates, PCR Plates (Non-Skirted, Semi-Skirted, Full-Skirted)
Maximum Plate Height:	45mm
Compatible Sealing Film Types:	Foil Polypropylene laminate, Clear Polyester-polypropylene laminate, Clear polymer, Thin clear polymer, Foil-laminate, Foil

Type	Description	PK	Cat. No.
AccuSeal	includes adapters for standard and deepwell microplates, 230V	1	**9.595 290**
AccuSeal	adapter for sealing PCR plates	1	**9.595 291**

3 96-Well PCR Rack, HDPP



- Manufactured from high density polypropylene which is fully autoclavable. Excellent rack for "before" and "after" PCR sampling.
- This rack can be used alone or inserted in the workstation.
- This working/storage rack is designed to accommodate 96 pieces 0.2ml PCR tubes or strips of 8 and 12 tubes.
- Tube wells are easly identified with alphanumeric,embossed numbers and letters.
- Translucent clear cover protects the tubes from dust and has a non-slip surface to allow safe storage of multiple racks.
- Dimensions (WxDxH): 125 x 88 x 31mm

Isolab

For tubes ml	PK	Cat. No.
0.2	1	**6.255 804**

4 96-Well PCR Rack, PP

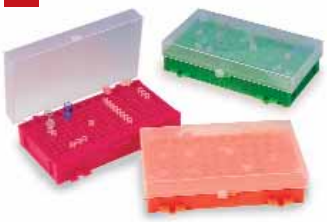


Removable hinged lid lies flat. Perfect for pre- or post-PCR sampling. Sturdy polypropylene rack accommodates individual 0.2ml tubes or strips of 8 or 12 tubes. Tube wells are easily identified with embossed numbers and letters. Dimensions (L x W x H): 130 x 98 x 33mm. Autoclavable.

Heathrow Scientific

For tubes ml	Colour	PK	Cat. No.
0.2	blue, green, pink, yellow, orange	5	**9.409 661**

1



1 40/168-well PCR Rack, PP

Heathrow Scientific

Removable hinged lid fits both sides. Flip this polypropylene reversible rack to the size of tubes you need. PCR side of the rack has 168 wells that hold 0.2ml tubes. The wells accommodate 8- or 12-tube strips or individual tubes. The opposite side of the rack has 40 wells that hold 0.5ml tubes. Both sides of the rack have 12 wells for 1.5ml tubes. Dimensions (L x W x H): 206 x 131 x 54mm. Autoclavable.

For tubes ml	Colour	PK	Cat. No.
0.2	blue, green, purple, yellow, orange	5	**9.409 660**

2



2 PCR box and PCR rack

BRAND

The rack can be fitted into the box. Together, they create an ideal workstation for 0.2 ml PCR tubes, available in individual, 8-tube strip and 12 tube strip or 96-well plate formats.
The box with transparent lid can be stacked to save space and is temperature resistant from -80 to +121°C. Assorted colours (red, yellow, purple, green, blue).

Description	PK	Cat. No.
PCR-Box /-Rack	5	**9.409 379**

3



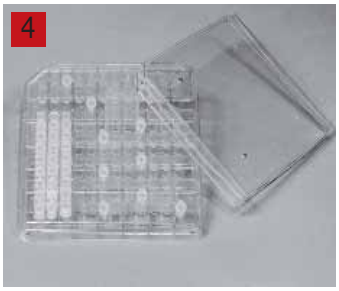
3 PCR Mini cooler, PP

BRAND

With transparent lid.
For protecting samples prior to warming. The mini PCR cooler keeps samples at 4°C for approx. 3 hours. The insulating gel changes from violet to pink at 7°C. Suitable for 0.2 ml single vessels, 8-strips, 12-strips as well as 96-well PCR plates.

Description	PK	Cat. No.
PCR Mini cooler	2	**6.228 848**

4



4 PCR-Tube Cryobox

NEW!

Bel-Art Products

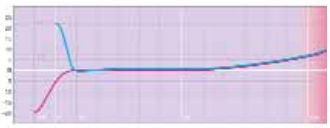
Designed to fit in a standard 53mm freezer rack, this 144-place PCR Tube Freezer Box will hold individual and/or strip 0.2ml PCR tubes.
- Designed for ULT freezer storage at temperatures down to -86°C
- Durable and impervious to moisture
- Clear polycarbonate lid and base and alpha-numeric index make it easy to identify samples within the box
- Two boxes may be stacked to fit together in one space in a 53mm freezer storage rack if using flat-capped PCR tubes

Description	PK	Cat. No.
PCR-Tube Cryobox 144 x 0.2ml Tubes	5	**9.401 095**

5



6



5 6 PCR-Coolers

Eppendorf

The PCR-Cooler acts as a thermochromic temperature self-indicator: pink or light-blue (depending on the model chosen) when temperature exceeds +7°C, violet or dark blue when ice-cold.

Description

The new Eppendorf PCR-Cooler reliably maintains a sample temperature of 0°C*for over an hour, changing colour when the temperature exceeds +7°C. Better than an ice bath, PCR-Cooler is simple to handle, space-saving and contamination-free, making it the perfect preparation for PCR reactions. The temperature of single tubes is indicated by the colour of the respective individual apertures. Furthermore, samples are prevented from freezing by the specially developed cone contour. Eppendorf PCR-Cooler: the cooling unit in the universal 96-well format for 0.2ml and 0.5ml PCR tubes, for tube strips, plates and for individual tubes. The Eppendorf PCR-Cooler is a compact, innovative solution for protecting, transporting and storing sensitive samples and obviously also ideal for safely stopping reactions.

Application note.

By changing colour from violet to pink or dark blue to light blue, the PCR-Cooler shows when the temperature has exceeded +7°C. The crucial factor for sample cooling is the well colour in the PCR-Cooler.

Description	PK	Cat. No.
PCR-Cooler, 0.2ml starter set (1 x pink, 1 x blue)	1	**9.283 576**
PCR-Cooler, 0.2ml pink	1	**9.283 577**
PCR-Cooler, 0.2ml blue	1	**9.283 578**
PCR tubes, 0.2ml, transparent	1000	**9.283 579**
twin.tec PCR Plate 96 semi-skirted, transparent	25	**9.283 595**
twin.tec PCR Plate 384 skirted, transparent	25	**9.283 596**

* With 2 hours precooling at -20°C.

E & OE.

1 CloneSaver™ Cards

GE Healthcare

- 96-well format for high throughput applications
- Stabilize BAC and plasmid DNA in one easy step from bacterial culture, resuspended colony, glycerol stock or purified plasmid DNA
- Clones can be rapidly screened by PCR without need for minipreps
- Plasmid DNA on Clone SaverCards is stable at room temperature for at least 4 years (real-time data)
- DNA is easily accessible for downstream applications such as transformations and PCR



Description	PK	Cat. No.
CloneSaver Resealable Multi-Barrier Pouch	50	**9.971 715**
CloneSaver Cards in 96-well Format	5	**9.971 716**

2 FTA® Cards

GE Healthcare

FTA Classic Cards
Four sample areas for storage of up to 4 x 125µl whole blood or 4 x 75µl plant homogenate per card. Convenient for multiple applications of the same specimen or collection of multiple animal or plant samples. Also available in Indicating (pink) FTA format.

FTA Mini Card
Two sample areas for storage of up to 2 x 125µl whole blood or 2 x 75µl plant homogenate per card. Convenient for protocols that require different locations for testing and archiving samples. Also available in Indicating (pink) FTA format.

FTA Micro Card
One sample area for storage of up to 125µl whole blood or 75µl plant homogenate per card. Recommended when only one sample is needed. Also available in Indicating (pink) FTA format.

FTA Gene Card
Three sample areas in a card frame for storage of up to 3 x 75µl whole blood or 3 x 50µl plant homogenate per card. Can be run in most automatic dispensing/pipetting systems when used with the FTA Gene Card Tray.

Indicating FTA Cards:
With colour indicator that changes from pink to white when sample is applied. useful for colourless samples.



Type	Description	PK	Cat. No.
FTA Classic Card	sample area 125µl / total 500µl	100	**9.971 708**
Indicating FTA Classic Card	sample area 125µl / total 500µl	100	**9.971 709**
FTA Mini Card	sample area 125µl / total 250µl	100	**9.971 710**
Indicating FTA Mini Card	sample area 125µl / total 250µl	100	**9.971 711**
FTA Micro Card	sample area 125µl / total 125µl	100	**9.971 712**
Indicating FTA Micro Card	sample area 125µl / total 125µl	100	**9.971 713**
FTA Gene Card	sample area 75µl / total 225µl	100	**9.971 714**

FTA Card Accessories

GE Healthcare

FTA Purification Reagent
Removes haem, PCR inhibitors, and other potential contaminants to ensure superior quality DNA for downstream analysis.

FTA Gene Card Tray
Holds two FTA Gene Cards for use in automatic liquid handling systems.

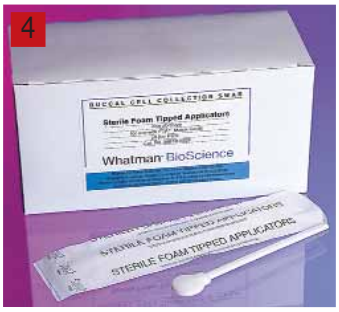
Sterile Foam Tipped Applicator
Easy-to-use applicator for the noninvasive collection and transfer of buccal cells to FTA Cards.

Multi-Barrier Pouches
For transporting or storing FTA Cards. Protects cards from environmental contamination. Tamper-evident seals maintain sample security for forensic samples. A resealable pouch is also available when multiple access to FTA cards is needed.

Storage Desiccant Packets
Ensure that FTA Cards remain dry during transport or storage. Contains indicator that changes colour to verify moisture adsorption.



9.971 718



9.971 719

Description	PK	Cat. No.
FTA Purification Reagent, 500 ml	1	**9.971 718** 3
FTA Gene Card Trays	20	**9.971 721**
Sterile Foam Tipped Applicator Swabs	100	**9.971 719** 4
Omniswab	100	**9.971 732**
Multi-Barrier Pouch, Large (for Classic Cards)	100	**9.971 733**
Desiccant (1 gm)	1000	**9.971 720**

1



1 Thermal Cycler MultiGene™ Mini

Labnet

MultiGene Mini is a compact and lightweight thermal cycler. This cycler is packed with features typically found only on larger thermal cyclers. Excellent accuracy and uniformity combine with fast ramping rates to provide quality results. An algorithm calculates sample temperature, based on volume, to control heating and cooling of the block. This means that samples reach programmed temperatures quickly, without any overshoot or lagging. Powerful Peltier units provide ramping rates as fast as 5°C/second.

Specifications:

Max. number of programmes:	99
Block capacities:	25 x 0.2ml tubes or 18 x 0.5ml tubes
Heated lid temperature	105°C
Max. heat/cool rate	5°C per sec/ 4°C per sec
Temp range/ uniformity:	4°C to 99°C
Dimensions (WxDxH):	218mm x 285mm x 178mm
Weight:	3.2kg
Supply requirements:	230V, 50/60Hz*

Description	PK	Cat. No.
MultiGene Mini Personal Thermal Cycler with 18 x 0.5 ml tube block	1	**9.595 341**
MultiGene™ Mini Personal with 24 x 0.2 ml tube block	1	**9.595 316**

*120V available on request

2



2 Thermal Cycler MultiGene™ OptiMax

Labnet

The Thermal Cycler MultiGene™ OptiMax replaces the MultiGene™ Gradient and therefore includes the same approved features like easy handling and reliability.

Improved features:

- Individual temperature setting for each block
- Faster speeds
- No condensation after overnight cooling at 4°C
- With TM Calculator for the determination of the melting point
- With PC Viewer for viewing the actual temerature profiles in real time
- With USB and RS232 interface
- 6-segment block temperature control with user able to select 6-segment temperatures independently, array in 4 x 4 well format
- Temperature and time increments/decrements
- Password protected programs

Specifications:

Sample capacity:	1 x 96 well plate, 12 x strip tubes (8 x 0.2ml), 96 x 0.2ml tubes
Programmable temperature range:	+4°C to +99.9°C
Temperature control:	Calculated or block
Temperature accuracy/uniformity:	±0.5°C/±0.5°C
Heating/cooling method:	Peltier
Max. heating/cooling rate:	±5°C/±3.5°C per second
Temperature range of 6-segment blocks:	+30°C to +99°C (can be set independently)
Maximum temperature difference between 6-segment blocks:	±24°C
Programmable lid temperature:	+60°C to +65°C, +100°C to +115°C
Program memory:	200 complete programs
User program folders:	50 sets
Dimensions (WxDxH):	240 x 420 x 250mm
Weight:	9kg
Supply requirements:	240V, 50/60 Hz*

Type	PK	Cat. No.
MultiGene™ OptiMax	1	**9.595 319**

*120V available on request

E & OE.

1 Thermal cyclers ³PRIMEBASE/³PRIMEX/³PRIMEG



Personal Thermal cycler - find space on any laboratory bench *Techne*

- Approved cycler with new design
- With and without gradient function
- Gradient upgrade from ³PRIMEX to ³PRIMEG
- 3.5" colour touch screen with graphical display
- Fast heating and cooling rates
- Height-adjustable and heatable lid, temperature from 100°C to 115°C, with ON/OFF switch and automatic switch off against overheating
- 1.000 programs storable
- Password protected
- Auto-Restart
- USB port
- 4 years warranty for the Prime Thermal cycler

Specifications

Block temperature:	+4°C to +100°C
Temperature gradient (only ³PRIMEG or ³PRIMEX with upgrade):	+30°C to +80°C
Max. Gradient:	+14°C
Block uniformity at 55°C:	<±0.3°C
Max. Heating rate:	3.0°C/s
Dimensions (WxDxH):	210 x 350 x 180

Type	Description	PK	Cat. No.
³PRIMEBASE	incl. block for 18 x 0.5ml tubes	1	**9.595 501**
³PRIMEBASE	incl. block for 24 x 0.2ml tubes	1	**9.595 502**
³PRIMEX	incl. block for 30 x 0.5ml tubes	1	**9.595 503**
³PRIMEX	incl. block for 48 x 0.2ml tubes	1	**9.595 504**
³PRIME gradient upgrade	Gradient upgrade from ³PRIMEX to ³PRIMEG	1	**9.595 505**
³PRIMEG	incl. block for 30 x 0.5ml tubes	1	**9.595 506**
³PRIMEG	incl. block for 48 x 0.2ml tubes	1	**9.595 507**

Purchase of this instrument conveys a limited non-transferable immunity for the purchaser's own internal research and development and applied fields other than human in vitro diagnostics under non-real-time thermal cycler patents of Applied Biosystems LLC.

2 Thermal cyclers PRIME/ PRIMEG



High throughput Thermal cycler - perfect for a high sample throughput *Techne*

- Approved cycler with new design
- With and without gradient function
- Gradient upgrade from PRIME to PRIMEG
- now available with combination block for 33 x 0.2 ml and 33 x 0.5 ml PCR tubes
- 5.7" colour touch screen with graphical display
- fast heating and cooling rates
- height-adjustable and heatable lid, temperature from 100°C to 115°C, with ON/OFF switch and automatic switch off against overheating
- 1000 programs storable
- Password protected
- Auto-Restart
- USB port
- 4 years warranty for the Prime Thermal cycler

Specifications

Block temperature:	+4°C to +100°C
Temperature gradient (PRIME only with upgrade):	+30°C to +80°C
Max. Gradient:	+29°C
Block uniformity at 55°C:	<±0.3°C
Max. Heating rate:	3.4°C/s
Dimensions (WxDxH):	240mm x 420mm x 240mm

Type	Description	PK	Cat. No.
PRIME	incl. block for 60 x 0.5ml tubes	1	**9.595 508**
PRIME	incl. block for 96 x 0.2ml tubes and 96well PCR plates	1	**9.595 509**
PRIME	incl. combination block for 33 x 0.2ml and 33 x 0.5 tubes	1	**9.595 513**
PRIME gradient upgrade	Gradient upgrade from PRIME to PRIMEG	1	**9.595 510**
PRIMEG	incl. block for 60 x 0.5ml tubes	1	**9.595 511**
PRIMEG	incl. block for 96 x 0.2ml tubes and 96well PCR plates	1	**9.595 512**
PRIMEG	incl. combination block for 33 x 0.2ml and 33 x 0.5 tubes	1	**9.595 514**

Purchase of this instrument conveys a limited non-transferable immunity for the purchaser's own internal research and development and applied fields other than human in vitro diagnostics under non-real-time thermal cycler patents of Applied Biosystems LLC.

1



9.595 515

Real-time PCR-system Prime Pro 48

NEW!

Techne

The new Prime Pro 48 real time PCR system from Techne (UK) is a high specification, economically priced real-time thermal cycler. The Prime Pro 48 system has a unique high thermal block uniformity (±0.1°C). This uniformity as well as validated sample volumes of down to 5µl enable an optimized reaction run time for 40 cycles down to only 15 minutes. The uniform temperature across the plate is achieved with a unique heating and cooling system that quickly enables a uniform temperature of ±0.1°C in every well of the block within a fraction of a second of reaching each well temperature. This high uniformity eliminates the need for triplicates which reduces reagent running costs. Prime Pro 48 accommodates a unique and economical 48-well PCR plate, the size of which is only 1/8 the size of a standard 96-well plate. The well format mirrors a 384-well plate therefore allowing the use of a 16-channel micropipette. The small plate cuts reagent costs in half whilst still producing a strong fluorescent signal. Applications include e.g. absolute and relative quantification, Allelic Discrimination and High Resolution Melt.

Features:
- Validated volume per well: 5 to 20 µl
- High temperature uniformity of ±0.1°C across the whole block instantly after every temperature change
- 40 cycles in 40 minutes before optimization, and down to only 15 minutes when optimized
- Genotype in 4 minutes with over 99% accuracy
- Patented "Adaptive LED Control" minimizes optical artifacts and prevents premature detector saturation
- Dual LED excitation (452nm to 486nm and 542nm to 582nm)
- 4 emission filters (505nm to 545nm, 562nm to 596nm, 604nm to 644nm, 665nm to 705nm)
- Data is always collected in all four filters for all wells
- Distinguishes 5000 and 10000 template copies with 99 percent confidence

Additional features:
- 48-well block
- MIQE compliant
- 400 analyte specific qPCR reagent kits available
- No calibration required
- Calibrated dyes: SYBR®, FAMTM, HEXTM, ROXTM, Cy®5.
- Additional dyes within the filter wavelength range are supported with no additional calibration required
- Unlimited software license
- 1 year warranty

Custom 48-well qPCR plates and corresponding seals have to be ordered separately.

Specifications

Temperature range:	30 to 100°C
Temperature stability:	±0.1°C
Temperature uniformity:	±0.1°C within 1sec
Average ramp rate:	5.5°C/sec
Dimensions (WxDxH):	345 x 310 x 320mm
Weight:	13.6kg

Type	PK	Cat. No.	
Prime Pro 48	1	**9.595 515**	1
PCR plates Prime Pro 48	50	**9.595 517**	
Plate seals Prime Pro 48	50	**9.595 516**	



E & OE.

1 UV/PCR cabinet UVT-B-AR

Grant



Economy bench-top model for protection against contamination during a variety of DNA/RNA procedures.
- UV surface irradiation, via single 25 W 254 nm open UV lamp
- Patented high intensity UV air cleaner, 25 m3/hour cleaner-recirculator continuous air flow with 1cm UV irradiation distance
- UVlamp in the upper hood disinfects the working area, inactivating DNA/RNA fragments during 15-30 min of exposure
- UV exposure control, 24 hour digital timer
- Convenient, easy to use digital timer for accurate control of UV exposure
- White lamp provides local illumination of the workplace to optimise visual control during operations
- Shock proof glass panels, metal framework and stainless steel work surface
- Automatic switch-off of open UV light when door opened
- Contains an integral power socket

Specifications

External dimensions (WxDxH):	690 x 585 x 555mm
Working area dimensions (WxDxH):	650 x 475mm
Weight:	32kg

Type	PK	Cat. No.
UVT-B-AR	1	**9.721 070**

UV sterilisation cabinets

NEW!

Cleaver Scientific



9.584 775

These UV Sterilisation Cabinets provide a convenient area for setting up PCR reactions in a nucleic acid free environment thus limiting PCR reaction contamination. Acting effectively as a low cost alternative to a clean room, the powerful UV lights on the cabinets denature nucleic acids in 5 to 30 minutes making them unsuitable for amplification. The cabinet incorporates safety features to prevent user exposure to UV light. The UV lights themselves are timer controlled and there are safety switches on the cabinets doors which turn off the UV lights when opened.

Specifications	**Maxi/Mini**
UV Lights:	4 x 15W
White Lights:	15
Dimensions (H x W x D):	770 x 560 x 420mm/510 x 560 x 350mm
Weight:	19kg/12kg

Type	Description	PK	Cat. No.
CSL-UVCAB	UV sterilisation cabinets Maxi, with timer, four UV lights and white light, no Tray	1	**9.584 774**
CSL-UVCABMINI	UV sterilisation cabinets Mini, with timer, UV light and white light, no Tray	1	**9.584 775**
Universal tray	white, 680 x 540mm	1	**6.258 034**
Radiation-use tray	yellow, 680 x 540mm	1	**9.584 788**

3 PCR Cabinets Type Airstream® SCR/PCR

Esco



Active PCR Cabinet with built-in UV Decontamination and true vertical laminar airflow.

- Average Airflow Velocity (adjustable): 0.3m/s
- HEPA filter with Prefilter
- The air cleanliness within the work zone is better than ISO Class 5
- Sentinel-Microprocessor maintains steady blower speed (only 0.9m and 1.2m models)
- Hinged polycarbonate front window
- Tempered glass side panel
- ISOCIDE™ antimicrobial coating on all painted surfaces minimizes contamination.
- Fluorescent lighting provides superior illumination of the work zone
- Build-in UV lamp with timer
- Pass-through ports in the back wall

More options, support stands on request.

Type	Size	External dimensions (W x D x H) mm	PK	Cat. No.
Airstream® SCR-2A1	0.6 m	730 x 617 x 950	1	**7.939 129**
Airstream® PCR-3A1	0.9 m	1035 x 617 x 950	1	**7.939 127**
Airstream® PCR-4A1	1.2 m	1340 x 617 x 950	1	**7.939 128**

1



1 Gel electrophoresis tank Battery Gel

Cleaver Scientific

The MSBGEL battery mini-gel is designed specifically with safety and cost in mind as no power supply is necessary.

Supplied with:
MSBGEL: Battery operated horizontal gel 6 x 7.5cm, 2 x 8 sample combs, casting gates, two 9 volt batteries.

Specifications

Gel dimensions (W x L):	6 x 7.5cm
Unit dimensions (W x L x H):	11 x 17 x 3.5cm
Max. sample capacity:	32 samples
Buffer volume:	50ml

Type	Description	PK	Cat. No.
MSBGEL	BatteryGel	1	**9.584 690**
MSBG-1-8	Comb 8 sample, 1mm	1	**9.584 692**
MSBG-1-16	Comb 16 sample, 1mm	1	**9.584 693**

2



2 Gel electrophoresis tank MiniRapide

Cleaver Scientific

The miniRapide is a completely self contained system designed for quick checks of samples. Gel casting, running and analysis are all performed in the same ultra compact unit. Buffer and gel volumes have been kept to a minimum and the parallel electrode arrangement allows ultra efficient current transfer, enabling resolution to be completed within 30 minutes. The UV transparent base allows direct viewing on a UV Transilluminator with no need for time consuming transfer and potential gel damage. Dual comb slots allow the loading of up to 40 samples per gel while multichannel pipette compatible combs further enhance the speed and convenience.

Supplied with: miniRapide, 10 x 8cm, 2 x 8 sample combs 1.5mm, electrodes and casting dams.

Specifications

Gel dimensions (W x L):	10 x 8cm
Unit dimensions (W x L x H):	15 x 15 x 4cm
Max. sample capacity:	40 samples
Buffer volume:	50ml

Type	Description	Sample volume µl	PK	Cat. No.
FMMS10	miniRapide		1	**9.584 680**
FMMS-8-1	Comb 8 sample, 1mm	40	1	**9.584 681**
FMMS-16-1	Comb 16 sample, 1mm	15	1	**9.584 682**
FMMS-20MC-1*	Comb 20 sample MC, 1mm	10	1	**9.584 683**
FMMS-8-1.5	Comb 8 sample, 1.5mm	60	1	**9.584 684**
FMMS-16-1.5	Comb 16 sample, 1.5mm	23	1	**9.584 685**
FMMS-20MC-1.5*	Comb 20 sample MC, 1.5mm	15	1	**9.584 686**

* Multichannel compatible.

3



3 Gel electrophoresis tank multiSUB Mini DUO

Cleaver Scientific

The multiSUB Mini is the smallest unit in the range, designed for low to medium numbers of samples. The small gel size maximises run economy but does not compromise versatility as two tray options are available, 7 x 7cm and 7 x 10cm, and combs ranging from preparative up to 16 samples. Simply by altering the gel tray or comb, this compact unit is capable of resolving up to 64 different samples, prepping 1ml of sample or separating sample bands over a distance of 9cm.

Supplied with: multiSUB Mini, 7 x 7cm & 7 x 10cm UV Tray, 2 x 8 sample combs 1mm, loading guides, electrodes and dams.

Specifications

Gel dimensions (W x L):	7 x 7cm and 7 x 10cm
Unit dimensions (W x L x H):	21 x 9 x 9cm
Max. sample capacity:	7 x 7cm tray, 32 samples 7 x 10cm tray, 64 samples
Buffer volume:	225ml

Type	Description	Sample volume µl	PK	Cat. No.
MSMINIDUO	multiSUB Mini DUO		1	**7.920 043**
MS7-8-1	Comb 8 sample, 1mm	25	1	**9.584 655**
MS7-12MC-1*	Comb 12 sample MC, 1mm	14	1	**6.232 523**
MS7-16-1	Comb 16 sample, 1mm	10	1	**6.227 253**
MS7-8-1.5	Comb 8 sample, 1.5mm	37	1	**6.227 144**
MS7-12MC-1.5*	Comb 12 sample MC, 1.5mm	20	1	**6.233 617**
MS7-16-1.5	Comb 16 sample, 1.5mm	15	1	**9.584 656**

* Multichannel compatible.

E & OE.

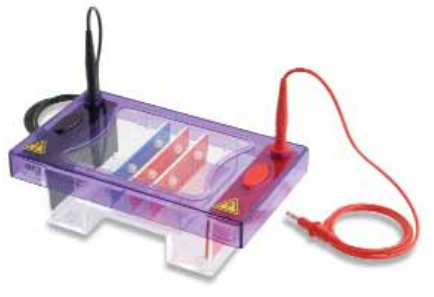
1 Gel electrophoresis tank multiSUB Midi DUO

Cleaver Scientific

With gel tray options of 10 x 7cm and 10 x 10cm, the multiSUB Midi has been designed for routine horizontal gel electrophoresis. Extending only the width of this unit allows more samples to be resolved per gel than the multiSUB Mini without a significant increase in buffer or gel volumes. A maximum of 100 samples per gel can be resolved making this unit ideal for those routinely checking medium numbers of samples over short to medium gel run lengths.

Supplied with**:** multiSUB Midi, 10 x 7cm & 10 x 10cm UV Tray, 2 x 16 sample combs, loading guides, electrodes and dams.

1



Specifications

Gel dimensions (W x Ll):	10 x 7cm and 10 x 10cm
Unit dimensions (W x L x H):	22 x 12.5 x 9cm
Max. sample capacity:	10 x 7cm tray, 50 samples 10 x 10cm tray, 100 samples
Buffer volume:	300ml

Type	Description	Sample volume µl	PK	Cat. No.
MSMIDIDUO	multiSUB Midi DUO		1	**6.238 115**
MS10-8-1	Comb 8 sample, 1mm	41	1	**9.584 657**
MS10-10MC-1*	Comb 10 sample MC, 1mm	27	1	**9.584 658**
MS10-12-1	Comb 12 sample, 1mm	23	1	**9.584 659**
MS10-16-1	Comb 16 sample, 1mm	16	1	**9.584 660**
MS10-20MC-1*	Comb 20 sample MC, 1mm	14	1	**9.584 661**
MS10-25-1	Comb 25 sample, 1mm	10	1	**9.584 662**

* Multichannel compatible.

2 3 Gel electrophoresis tank MultiSUB Choice

Cleaver Scientific

Gel size: 15 x 15cm (W x L). This unit is ideal for restriction fragment analysis, sample prep or checking of high number of samples. The multiSUB choice offers a high degree of versatility. Two additional tray options are available: 15 x 7cm and 15 x 10cm. Gel casting is easy by using casting dams.

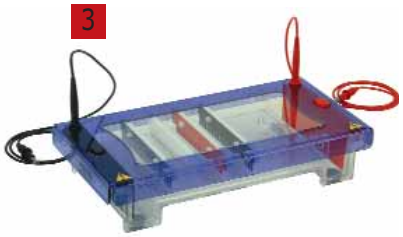
- colour coded combs 0.75/1.0 /1.5/2.0mm
- 3, 4 or 6 comb positions for maximum 210 samples
- low buffer volume: 500ml
- injection moulded construction: durable, leakproof environment for complete safety and long life
- simple gel casting by using dams

Supplied with:
MSCHOICE15: MultiSUB Choice, 15 x 15cm UV Tray, 2 x 20 sample combs, loading guides, electrodes and dams.
MSCHOICETRIO: MultiSUB Choice Trio, 15 x 7, 10 & 15cm UV Tray, 2 x 20 sample combs, loading guides, electrodes and dams.
MSCHOICEST20: MultiSUB Choice Stretch 20, 15 x 20cm UV tray, 4 x 28 sample combs, loading guides, electrodes and dams.
MSCHOICEST25: MultiSUB Choice Stretch 25, 15 x 25cm UV tray, 4 x 28 sample combs, loading guides, electrodes and dams.

2



3



Specifications

Unit dimensions (w x l x h):	26.5 x 17.5 x 9cm 41 x 17.5 x 9cm (Stretch models)
Max. sample:	15 x 7 cm Tray - 70 Samples 15 x 10 cm Tray - 140 Samples 15 x 15 cm Tray - 210 Samples 15 x 20 cm Tray - 280 Samples 15 x 25 cm Tray - 350 Samples
Buffer volume:	500ml 1000ml (Stretch models)

Type	Description	Sample volume µl	PK	Cat. No.
MSCHOICE15	MultiSUB Choice 15		1	**9.584 651**
MSCHOICETRIO	MultiSUB Choice Trio		1	**6.239 273**
MSCHOICEST20	MultiSUB Choice Stretch 20		1	**9.584 663**
MSCHOICEST25	MultiSUB Choice Stretch 25		1	**9.584 664**
MS15-20-1	Comb 20 sample, 1 mm	21	1	**6.234 451**
MS15-35-1	Comb 35 sample, 1 mm	10	1	**6.238 277**
MS15-18MC-1*	Comb 18 sample MC, 1 mm	11	1	**9.584 665**
MS15-30MC-1*	Comb 30 sample MC, 1 mm	13	1	**6.238 278**
MS15-20-1.5	Comb 20 sample, 1.5 mm	32	1	**6.233 618**
MS15-18MC-1.5*	Comb 18 sample MC, 1.5 mm	17	1	**9.584 667**
MS15-30MC-1.5*	Comb 30 sample MC, 1.5 mm	19	1	**9.584 666**

* Multichannel compatible.

1



1 Gel electrophoresis tank MultiSUB Maxi DUO/Maxi 25

Cleaver Scientific

The multiSUB Maxi is primarily designed for resolution of high numbers of samples such as from Cloning or PCR. The multiSUB Maxi allows ultra high-resolution separations over extended runs. Tray sizes correspond to standard blotter sizes. It also allows easy sample transfer onto a membrane for further analysis. Four gel tray sizes are available: 20 x 10cm, 20 x 15cm, 20 x 20cm and 20 x 25cm. Multichannel pipette compatible, 40 combs facilitates speed loading of up to 440 samples per gel. 50 sample combs allow maximum sample capacity of 550 samples per gel.

Supplied with:
MSMAXIDUO: multiSUB Maxi, 20 x 10 and 20 x 20cm UV Tray, 2 x 20 sample, 1mm thick combs, casting dams, electrodes and loading guides.
MSMAXI25: multiSUB Maxi, 20 x 25cm UV Tray, 2 x 20 sample, 1mm thick combs, casting dams, electrodes and loading guides.

Specifications

Gel dimensions (w x l):	10 x 7cm and 10 x 10cm
Unit dimensions (w x l x h):	22 x 12.5 x 9cm
Max. sample:	10 x 7cm tray, 50 samples
Capacity:	10 x 10cm tray, 100 samples
Buffer volume:	300ml

Type	Description	Sample volume µl	PK	Cat. No.
MSMAXIDUO	MultiSUB Maxi DUO		1	**9.584 670**
MSMAXI25	MultiSUB Maxi 25		1	**9.584 671**
MS20-20MC-1*	Comb 20 sample MC, 1mm	27	1	**9.584 672**
MS20-30-1	Comb 30 sample, 1mm	17	1	**9.584 673**
MS20-40MC-1*	Comb 40 sample MC, 1mm	11	1	**9.584 674**
MS20-50-1	Comb 50 sample, 1mm	10	1	**9.584 675**
MS20-20MC-1.5*	Comb 20 sample MC, 1.5mm	41	1	**9.584 676**
MS20-30-1.5	Comb 30 sample, 1.5mm	26	1	**9.584 677**

* Multichannel compatible.

2



2 3 Gel electrophoresis tank MultiSUB midi-96

Cleaver Scientific

The multiSUB Midi 96 Gel System is ideal for high throughput electrophoresis of PCR products or samples containing a small number of DNA bands. Its 10 x 12cm (W x L) gel dimensions and 96-well comb block format correspond to the standard micro plate configuration, with additional lanes for markers. Two different types of comb are available: one which has 8 wells and one additional lane for DNA markers and one which has 8 wells and 2 additional lanes for markers. The offset layout of the wells allows a maximum run length of 1.8cm per well, resulting in improved separation. multiSUB Midi 96 can accommodate samples from a 96-well plate; samples can be loaded directly using 8-channel pipettes. As with all multiSUB units, leak-proof casting is simplified using the supplied casting dams while their ultra-compact size minimises buffer usage and bench space requirements. MSMIDI96 Stretch Systems are also available for those users requiring an extended run length per well of up to 3.6cm.

Supplied with:
MSMIDI96: Multi Sub Midi96, UV tray, Comb block with 12 x 8 sample, 1mm thick combs, electrodes and casting dams.
MSMIDI96ST: Multi Sub Midi96 STRETCH, UV tray, Comb block with 12 x 8 sample, 1mm thick combs, electrodes and casting dams.

3



Specifications

	MSMIDI96/MSMIDI96ST
Gel dimensions (W x L):	10 x 12cm/10 x 24cm
Unit dimensions (WxDxH):	22 x 12.5 x 9cm/46.5 x 12.5 x 8cm
Max. sample capacity:	96 samples plus 1 or 2 marker lanes
Buffer volume:	300ml/700ml

Type	Description	PK	Cat. No.
MSMIDI96	MultiSub Midi96	1	**9.584 720**
MSMIDI96-8-1.5-CB*	Comb 8 sample MC + 1 Marker, 1.5mm thick COMB BLOCK	1	**9.584 721**
MSMIDI96-8-1/2M-CB*	Comb 8 sample MC + 2 Marker, 1mm thick COMB BLOCK	1	**9.584 722**
MSMIDI96-8-1.5/2M-CB*	Comb 8 sample MC + 2 Marker, 1.5mm thick COMB BLOCK	1	**9.584 723**
MSMIDI96ST	MultiSub Midi96 STRETCH	1	**9.584 724**
MSMIDI96ST-8-1.5-CB*	STRETCH Comb 8 sample MC + 1 Marker, 1.5mm thick COMB BLOCK	1	**9.584 725**
MSMIDI96ST-8-1/2M-CB*	STRETCH Comb 8 sample MC + 2 Marker, 1mm thick COMB BLOCK	1	**9.584 726**
MSMIDI96ST-8-1.5/2M-CB*	STRETCH Comb 8 sample MC + 2 Marker, 1.5mm thick COMB BLOCK	1	**9.584 727**

* Multichannel compatible.

E & OE.

1 2 Real-time horizontal gel electrophoresis system runVIEW

Cleaver Scientific

- Versatile, self-contained system on the market for real-time horizontal gel electrophoresis
- System includes everything except chemicals and reagents to run horizontal SYBR- and EtBr-stained gels in real-time
- Combines the flexibility and high resolution capability of the MSCHOICE system with the time- and space saving convenience of having the power supply and gel illuminator integrated within one highly compact bench top unit
- Optional dark room with 12.1 megapixel digital camera fits directly over the base unit and gel tank to allow gels to be imaged either as bands migrate in real-time or at the end of the electrophoresis run
- Includes accessories for standard gel electrophoresis and for size fractionation and simplified real-time gel free DNA band extraction and purification
- runVIEW Gel System with bluVIEW Lid Design: Orange spectral emission filter with condensation-free viewing panel.
- Extractor fan in the bluVIEW lid eliminates condensation to optimise DNA visualisation and resolution during electrophoresis.

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Included Double-sided Combs: 2x 1-sample/2-sample preparatory; 2x 4-sample preparatory/16-sample combs; 4x 20- /28- sample multichannel compatible screening. Comb Thickness: 1mm. Extra-thick 2x 4- and 2x 6-sample 3mm preparatory combs are also included.

Specifications

runVIEW Viewing Dock

Blue Light Wavelength:	470nm
Voltage/Resolution:	25-150V/1V
Current/Resolution:	300mA/1mA
Power:	30W
Timer:	1 to 999 min (with alarm)
Dimensions (WxDxH):	29.3 x 22.0 x 8.0cm
Power supply:	100-240V, 50/60Hz

runVIEW Gel System

Gel Dimensions (W X L):	15 x 7cm, 15 x 10cm and 15 x 15cm
Unit dimensions (W X D X H):	26.5 x 17.5 x 9.0cm
Buffer volume:	500ml

Type	Description	PK	Cat. No.
CSL-RVMSCHOICE7	runVIEW system complete with 15 x 7cm gel tray, 1 set of casting dams and 8 double-sided combs	1	**9.584 764**
CSL-RVMSCHOICE10	runVIEW system complete with 15 x 10cm gel tray, 1 set of casting dams and 8 double-sided combs	1	**9.584 765**
CSL-RVMSCHOICE15	runVIEW system complete with 15 x 15cm gel tray, 1 set of casting dams and 8 double-sided combs	1	**7.920 135**
CSL-RVMSCHOICETRIO	runVIEW system complete with 15 x 7, 15 x 10 and 15 x 15cm gel trays, 3 sets of casting dams and 8 double-sided combs	1	**9.584 766**
CSL-RVBSBVLID	runVIEW base station and bluVIEW lid	1	**9.584 767**
CSL-RVGELDOC	runVIEW gel documentation hood with 12,1MP camera	1	**9.584 768**

3 Power supply nanoPAC-300 Mini for gel electrophoresis tanks

Cleaver Scientific

The nanoPAC-300 is capable of running all Cleaver Scientific horizontal multiSUB™ systems and vertical omniPAGE mini gel systems.

- Maximum constant current output of 400mA
- Constant voltage up to 300V
- Adjustable in 1V and 1mA increments
- Two parallel outputs
- Continuous run or timed setting up to 999 minutes
- Automatic safety shutdown
- Alarm function
- Easy-to-clean polycarbonate housing
- 3-digit LED display

3



Type	Supply requirements	Rating W	PK	Cat. No.
nanoPAC-300 Mini	300V / 400mA	60	1	**6.253 368**

Further power supplies please see page 1211.

1 Enduro™ power supplies

NEW!

Labnet

Dependable performance, intelligent control, for the connecting of different chamber systems.
- Select constant voltage or constant current mode
- Automatic crossover between modes protects gels.
- Compact, lightweight and stackable
- Designed for safety
- Extremely quiet operation

Specifications	**Model 300 V**
Output voltage range/increments	2-300V/1V 4-500mA/1mA 90W max/na
Timer	1-999 minutes or continuous
Programmable	No
Dimensions/Wt	19 x 25 x 8 cm/2.2kg
Input voltage	120-230V
	Model 250 V
Output voltage range/increments	5-250V/1V 10-3.000mA/10mA 1-300W/1W
Timer	1 min to 99h 59 min or continuous
Programmable	10 steps/program, 20 program memory
Dimensions/Wt	19 x 25 x 8 cm/2.5kg
Input voltage	120-230V

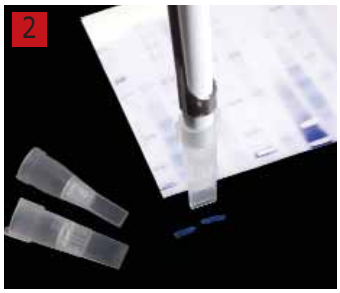
Description	PK	Cat. No.
Enduro 300 V power supply	1	**9.595 314**
Enduro 250 V power supply	1	**9.595 306**

Additional accessories are available.

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2 Disposable Gel Excision Tips GelX

Cleaver Scientific

Widely acclaimed as an excellent tool for gene cloning, Cleaver Scientific GelX disposable gel excision tips offer a unique and convenient way to excise nucleic acid and protein bands from gels. GelX tips allow completely safe and contamination free removal of the gel band of interest without the need to handle potentially dangerous scalpels. The gel band is neatly extracted and contained in the tip, when it is then dispensed into a tube for further analysis. Once used, the tip is ejected for disposal.
- Eliminates scalpel damage to transilluminator or gel tray
- Designed for removing bands from agarose and protein gels
- One-handed operation
- Push button gel and tip release mechanism
- Fits standard 1000µl pipettes
- Autoclavable, and DNase and RNase free
- Sterile versions also available

Type	Dimensions mm	Description	PK	Cat. No.
CSL-GELX4	4 x 1	1 bag	250	**6.237 751**
CSL-GELX4RACK	4 x 1	5 racks of 48 pieces	240	**6.237 752**
CSL-GELX6.5	6.5 x 1	1 bag	250	**9.584 699**
CSL-GELX6.5RACK	6.5 x 1	5 racks of 48 pieces	240	**7.900 620**

E & OE.

1 Agarose for gel electrophoresis

Cleaver Scientific

AG agaroses are suitable for routine analysis of nucleic acids. They combine tensile strength with low electroendosmotic effects to achieve high resolving power for a wide size range of nucleic acid fragments.
AG agaroses are also very environmentally friendly, being manufactured by a process which excludes organic solvents.
Low melting point agarose is available (please enquire).



Specifications

CAS:	9012-36-6
Appearance:	White to off-white powder
EEO:	<0.13
Gelling Point:	36°C ±1.5°C (1.5 % gel)
Melting Point:	88°C ±1.5°C (1.5 % gel)
Solubility:	Clear, colourless solution at 1g in 100ml water
Moisture:	≤10%
Gel Strength:	>1200 g/cm² (1% Gel)
Sulphate:	≤0.20%
DNase, RNase, Protease, Endonuclease:	None Detected

Type	Capacity g	PK	Cat. No.
CSL-AG100	100	1	**9.584 695**
CSL-AG500	500	1	**9.584 696**
CSL-AG1000	2 x 500	1	**9.584 697**
CSL-AG2000	4 x 500	1	**9.584 790**
CSL-AG5000	10 x 500	1	**9.584 791**
CSL-AG10KG	20 x 500	1	**9.584 792**
CSL-AG20KG	40 x 500	1	**9.584 793**

2 UV lamps

Vilber Lourmat

- Filtered and unfiltered*UV lamps with different wave lengths and power levels for a broad range of applications
- Models with wave length selector suited for multiple applications

Further models on request.

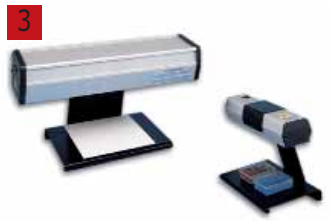
Note: please order lamp holder separately.



Type	Description	Filter size mm	Wave-length nm	No. of Tubes	Tubes W	Spare tubes Type	PK	Cat. No.
BVL-115.L	Single wavelength	295 x 66	365	1	15	J	1	**9.971 936**
BVL-215.G	UV sterilization lamp*	-	254	2	15	I	1	**9.971 915**
BVL-208.G	UV sterilization lamp*	-	254	2	8	F	1	**9.971 935**
BVL-4.LC	wavelength selector	70 x 48	365 / 254	1 / 1	4	B / A	1	**9.971 917**
BVL-6.LC	wavelength selector	145 x 48	365 / 254	1 / 1	6	D / C	1	**9.971 918**
BVL-8.LM	wavelength selector	220 x 48	365 / 312	1 / 1	8	G / E	1	**9.971 937**

3 Lamp holder for UV lamps

Vilber Lourmat



Type	For Type	PK	Cat. No.
SVL-6	BVL-4, BVL-8, BVL-6	1	**9.971 921**
SVL-30	BVL-115, BVL-215	1	**9.971 922**

4 Handle for UV lamps

Vilber Lourmat

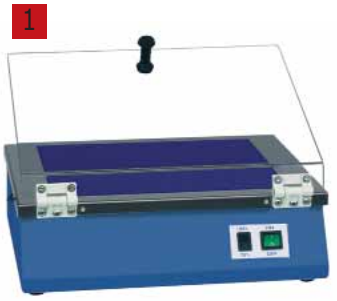


Type	For Type	Mounting	PK	Cat. No.
SMU	BVL-4, BVL-8, BVL-6	clip	1	**9.971 938**
SMA	BVL-4, BVL-8, BVL-6	handle	1	**6.230 416**

Foils please see page 180.

Spare UV tubes - please see page 1199.

1



1 Compact UV transilluminators

Vilber Lourmat

- Compact design (34 x 28cm)
- Metal housing, with stainless steel filter frame and "long life" filter
- Modern technology, highest quality manufacture
- Single or dual wavelength models available
- BECXF models have intensity selector (Hi/Lo)

Type	Description	Filter size mm	Wave-length nm	No. of Tubes	Tubes W	Spare tubes Type	PK	Cat. No.
BECXF-20.M	Hi / Lo Intensity	200 x 200	312	6	8	E	1	**9.971 910**
BECXF-26.M	Hi / Lo Intensity	210 x 260	312	6	8	E	1	**9.971 911**
BTCP-20.LM	Multi-band	200 x 200	365 / 312	5 / 6	8	D / E	1	**9.971 912**
BTCP-20.MC	Multi-band	200 x 200	254 / 312	5 / 6	8	E / F	1	**9.971 913**
BTCP-26.LM	Multi-band	210 x 260	365 / 312	5 / 6	8	G / E	1	**9.971 914**

2



2 UV transilluminators

Cleaver Scientific

Standard features include a high/low intensity safety switch and an efficient starter that allows each of the six 8W UV tubes to energise quickly without flickering, while special filter glass minimises unwanted background light. All of these features maximise contrast and sensitivity, allowing even the faintest fluorescent gels to be viewed. Two dual wavelength models offer added flexibility and convenience.

Type	Filter size mm	Wave-length nm	Tubes	Spare tubes Type	PK	Cat. No.
CSLUVTS254	210 x 210	254	6 x 8W	F	1	**9.584 770**
CSLUVTS312	210 x 210	312	6 x 8W	E	1	**6.231 832**
CSLUVTS365	210 x 210	365	6 x 8W	G	1	**9.584 771**
CSLUVTSDUO	210 x 210	254/365	6 x 8W	F / G	1	**9.584 772**
CSLUVTSDUO312	210 x 210	254/312	6 x 8W	F / E	1	**9.584 773**

3



3 Blue-LED-Transilluminators

biostep

UV protection shield optional.
Intensity setting 10 to 100%

Type	Filter size mm	Wave-length nm	Tubes	PK	Cat. No.
BST-20G-D2R	200 x 200	470	LED Matrix 504	1	**4.007 023**
BST-30G-D4R	230 x 300	470	LED Matrix 756	1	**4.007 024**

4



4 UV transilluminators - Professional Line

Vilber Lourmat

- high intensity output for high UV intensities
- metal housing, with stainless steel filter frame and "long life" filter
- modern technology, highest quality manufacture
- intensity selector (Hi/Lo)
- integral UV safety screen
- top dimensions: 47 x 33cm

Type	Description	Filter size mm	Wave-length nm	No. of Tubes	Tubes W	Spare tubes Type	PK	Cat. No.
BETXF-20.M	Hi/Lo Intensity	200 x 200	312	6	15	H	1	**9.971 906**
BETXF-26.M	Hi/Lo Intensity	210 x 260	312	6	15	H	1	**9.971 907**

E & OE.

1 UV transilluminators ENDURO™

Labnet



The ENDURO™ UV Transilluminators represent a great new imaging product true to ENDURO™ name. These UV transilluminators have been designed for rugged use and durability with exceptional performance. The use of UV Black Glass minimizes the striping effect seen on many UV transilluminators. This provides a more uniform background for gel imaging. Conventional UV shields leak some UV (~8%), but the Enduro UV transilluminators allow no leakage.

- Compact size with 210mm x 260mm viewing area
- Available in single or dual wavelength models
- Unique heavy duty hinge design can be held in place at any angle for gel cutting
- UV shield fully protects user from UV light
- Uniform UV Black Glass provides improved imaging contrast

Spare tubes available on request.

Type	Filter size mm	Wave-length nm	Tubes W	PK	Cat. No.
U1001	210 x 260	302	6 x 8	1	**9.595 345**
U1002	210 x 260	302 / 365	5 x 8 / 6 x 8	1	**9.595 346**

Spare tubes for UV instruments and UV lamps

Suitable for instruments from Vilber Lourmat, Cleaver Scientific and biostep (instruments of other suppliers on request).

Type	Wave-length nm	Tubes W	For Type	PK	Cat. No.
A	254	4	BVL-4.LC	1	**6.230 463**
B	365	4	BVL-4.LC	1	**6.230 464**
C	254	6	BVL-6.LC	1	**6.230 465**
D	365	6	BVL-4.LC	1	**6.224 405**
E	312	8	BECXF-20.M, BECXF-26.M, BTCP-20.LM, BTCP-20.MC, BTCP-26.LM, CSLUVTS312, CSLUVTSDUO312	1	**6.225 934**
F	254	8	BVL-208.G, CSLUVTS254, CSLUVTSDUO, CSLUVTSDUO312	1	**6.242 036**
G	365	8	BVL-8.LM, BTCP-20.LM, BTCP-26.LM, CSLUVTS365, CSLUVTSDUO	1	**6.240 332**
H	312	15	BVL-215.M, BETXF-20.M, BETXF-26.M	1	**6.232 337**
I	254	15	BVL-215.G	1	**6.237 967**
J	365	15	BVL-115.L	1	**6.228 209**

2 Gel documentation system Doc-Print VX5

Vilber Lourmat

- Compact, PC-independent gel documentation system
- Robust and durable
- Easy handling, even with wet gloves
- Large TFT display, excellently readable
- Context-sensitive task buttons, quick-shot button
- Highly-sensitive scientific camera for high imaging quality (2.0 MP/16-Bit)

All models with the following standard components:
- Sensitive CCD camera, zoom, UV spectral filter, hood
- Control unit with integrated display and USB ports
- Free PC analysis software

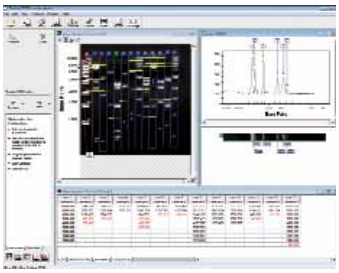


Type	Description	PK	Cat. No.
DP VX5	With standard components	1	**7.930 022**
DP VX5-P	With standard components and thermal printer	1	**7.930 023**
DP VX5-20.M	With standard components and transilluminator BECXF-20.M	1	**9.971 928**
DP VX5-P-20.M	With standard components, thermal printer and transilluminator	1	**9.971 929**

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1 2 Gel documentation system microDOC with UV-Transilluminator

Cleaver Scientific

Recently upgraded with a new 12.1 megapixel digital CMOS camera to guarantee superb resolution, the microDOC is the researcher's choice for a simple ultra-compact gel documentation system that meets constraints in both budget and space within the laboratory. A large 8" TFT screen enables images, including agarose and fluorescent gels, colorimetric gels, autoradiography film and blotting membrane, to be captured in colour, clearly and easily. The system is computer-free and supplied with a 4GB storage card and 58mm ethidium bromide filter as standard, while an optional SYBR filter is also available. Files are saved onto the 4GB storage card in RAW, TIFF-RGB and JPEG formats and may be transferred to computer for analysis with the highly recommended TotalLab™ 1D software.

microDOC BASIC: The microDOC BASIC is a simple low-cost system comprising a lift-off dark room hood and 12.1 megapixel digital camera, through which the gel is viewed directly. This system can be supplied with optional TotalLab 1D Analysis Software and any one of the 21 x 21cm transilluminators (please enquire).

TotalLab™ 1D software: is supplied only as part of a complete package with each of the microDOC and transilluminator options. Its main functions include: lane creation, background subtraction, band detection, profile deconvolution, and molecular size, pI and quantity calibration. More sophisticated TotalLab™ Quant and Phoretix standalone software options are available for 1D applications that require band matching, array, colony counting and image ToolBox functionalities.

Camera:
- File Format Design rule for Camera File system, DPOF (version 1.1) compliant
- Focus-Area Selection AF mode and manual focus are available
- Hood (excludes MicroDOC Basic/1D models)
- Multi-Power Source For camera, Inner light lamp, TFT screen
- Safety Door Switch Automatically disconnects UV transilluminator, while opening the chamber door during operation
- with Video and Audio Input

Printer (option): The Mitsubishi P93 is a high speed, high resolution thermal printer that is perfectly suited to printing images directly from the microDOC. Connected to the microDOC by a BNC cable, the Mitsubishi P93 prints 325dpi images, up to 133 x 99mm in size. Thermal printer paper is also available.

Specifications Camera:

Effective Pixels:	approx. 12.1 megapixels
Type CMOS:	CMOS 1/1.7", approx. 12.1 million pixels
Lens:	6.1 (W) - 30.5 (T) mm (35mm film equivalent: 28 (W) - 140 (T) mm)
Maximum Aperture:	f/2.8 (W) - f/4.5(T)
Image Resolution:	640 x 480 up to 4.000 x 3.000
Data Type Still images:	Exif 2.3(JPEG), RAW (CR2)
Movies:	MOV (Image data: H264 ; Audio data: Linear PCM (stereo))
Filter:	Ethidium Bromide or SYBR Green (58mm)
Inner White Light:	2x 3W white light LED (excl. MDOC Basic Models)
Monitor:	8" TFT liquid crystal screen
Display Format:	960 x 234mm
Luminance:	350 cd/mm
Display Mode:	NTSC/PAL mode switchable
Chamber Dimension (WxDxH):	290 x 220 x 320mm
Rated Voltages:	110 - 220V
Weight Approx.	6.1 kg

Description	PK	Cat. No.
Compact Gel documentation system	1	**6.231 823**
microDOC with UV-Transilluminator 312nm	1	**9.584 755**
microDOC with UV-Transilluminator 254/312nm	1	**9.584 756**
microDOC with UV-Transilluminator 254/365nm	1	**9.584 757**
microDOC basic system with lift-off dark room hood and camera only	1	**9.584 758**
Compact Gel documentation system*	1	**9.584 759**
microDOC with UV-Transilluminator 312nm*	1	**9.584 760**
microDOC with UV-Transilluminator 254/312nm*	1	**9.584 761**
microDOC with UV-Transilluminator 254/365nm*	1	**9.584 762**
microDOC basic system with lift-off dark room hood and camera only*	1	**9.584 763**

* incl.Analysis Software TotalLab1D.

E & OE.

1 2 Gel documentation system omniDOC/omniDOCi

NEW!

Cleaver Scientific

The omniDOC offers high performance gel documentation and analysis at a relatively low cost. A high resolution 5 mega pixel camera with slide-out UV transilluminator, and optional blue epi-illumination module and white light table, makes the omniDOC suitable for imaging most fluorescent and colorimetric gels, while a USB port requires a cable to connect the dark room assembly to an external PC for control. Imaging applications are made easy by a pre-focused camera that requires little or no manual adjustment, while simple one-click image acquisition and analysis software guides the user through every step of the gel documentation process. A front LED indicator panel reveals at a glance the light source in use, whereas a viewing screen with universal filter and spring-loaded cover facilitates safe and convenient gel inspection. Simply install the omniDOC image acquisition and analysis software on a laptop or tablet, place the gel on the transilluminator or white light table within the darkroom, and then begin image capture, using your preferred excitation source and filter, either by pressing' the tabs on the omniDOC's front panel colour touchscreen, or by following the prompts within the software on your laptop or tablet. Once image acquisition is complete the gel may be analysed immediately using the complimentary analysis software included, or saved for later to perform analysis at a more convenient time and place. The software is downloadable as an app to iPAD, and Windows and Samsung Android tablets to provide full touchscreen remote control, making the omniDOCi probably the most portable and versatile imaging system on the market.

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OMNIDOC and OMNIDOCi features:

- Pre-focused 5 mega pixel camera with auto-exposure for almost instantaneous high resolution gel imaging; CMOS sensor for improved light sensitivity
- 6mm lens, F1.2 aperture size, with manual adjustment
- Interchangeable filter slide with 620nm ethidium bromide filter as standard; 520, 560 and 580nm filter options available for runSAFE, SYBR stain and other fluorescence applications
- Viewing pane with universal amber filter for gel inspection, which may be covered by a spring-loaded panel during documentation
- Internal white LED - aids gel positioning and focusing
- Slide-out 312nm transilluminator; uses optional plug-in white light table for coomassie, silver-stain and other colorimetric gels
- Large 210 x 260 m filter area
- Accessory white light table and blue lights allow easy switching between ethidium bromide, safe stained and protein gels
- Dark room assembly with corrosion resistant ABS construction
- Safety switch prevents accidental UV exposure when opening front door panel
- Power on-off switch
- USB port for PC connectivity in omniDOC, and used for maintenance and installation of updates in omniDOCi
- Wi-Fi connection for wireless remote control and image transfer to complimentary image acquisition and analysis software downloadable as an App (in omniDOCi models only) or supplied on disc for installation onto a laptop or PC (omniDOC and omniDOCi)

OMNIDOCi: OMNIDOC plus benefit of wireless connectivity to a remote laptop or tablet
omniDOCSAFE: OMNIDOC plus Blue LED Epi-illumination and 520, 560 & 580nm filters
omniDOCiSAFE: omniDOCSAFE plus benefit of wireless connectivity to a remote laptop or tablet

Type	Description	PK	Cat. No.
OMNIDOC	with 620nm (EtBr) emission filter, 312nm UV transilluminator and USB cable	1	**6.263 221**
OMNIDOCSAFE	as OMNIDOC plus Blue LED Epi-illumination Module, and 520, 560 and 580nm filters	1	**6.265 278**
OMNIDOCi	with 620nm (EtBr) emission filter, 312nm UV transilluminator and USB cable	1	**6.265 279**
OMNIDOCiSAFE	as OMNIDOCi plus Blue LED Epi-illumination Module, and 520, 560 and 580nm filters	1	**6.265 280**

3 Gel documentation system DP-1100

Vilber Lourmat

- PC-independent gel documentation system with compact, high-quality darkroom made of metal
- Robust and durable
- Easiest handling, even with wet gloves
- Large TFT display, excellently readable
- Context-sensitive task buttons, quick-shot button
- Highly-sensitive scientific camera for high imaging quality (2.0 MP/16-Bit)
- Sensitive CCD camera, zoom, UV spectral filter
- Darkroom with filter wheel, integrated, completely extendable transilluminator BECXF-26.M with automated UV security switch
- Control unit with integrated display and USB ports
- Free PC analysis software

3



Type	Description	PK	Cat. No.
DP-1100	With standard components	1	**9.971 930**
DP-1100-P	With standard components and thermal printer	1	**7.930 095**

1



1 Vacuum concentrator, Concentrator plus™

Eppendorf

The new Concentrator plus features a new LCD display and user-friendly control panel with clearly labeled function keys.
The new Concentrator plus from Eppendorf is available in two configurations:
- Complete system with an integrated service-free diaphragm pump
- Basic concentrator for connecting to an existing vacuum.

The Concentrator's heating technology optimises the evaporation process. No matter which configuration you choose, you're assured of quick and efficient-yet gentle-vacuum concentration of your samples (e.g. DNA/RNA, proteins). The complete system includes a vapour condenser that purifies the exhaust air by up to 85%. This serves as protection against unpleasant vapours.

2



9.776 623

Specifications	**Complete system/Basic device**
Max. power consumption:	350W/150W
Dimensions (WxDxH):	33cm x 58cm x 29cm/33cm x 37cm x 23cm
Weight:	31.5 kg/16.5 kg
Vacuum:	20hPa (20mbar)
Fixed rotation speed:	1.400rpm
Tube sizes:	0.2ml - 50ml
Capacity:	max. 144 tubes 2 microplates

Description	PK	Cat. No.
Complete system with integr. membrane vacuum pump and 48 x 1.5ml / 2.0ml fixed angle rotor	1	**9.776 620**
Complete system with integr. membrane vacuum pump, with connection for external units	1	**9.776 621**
Complete system with integr. membrane vacuum pump, w/o rotor	1	**9.776 622**
Single unit with 48 x 1.5ml / 2.0ml fixed angle rotor	1	**9.776 623** 2
Rotor F-35-6-30 for 6 x 15ml Falcon tubes	1	**9.776 624**

3



9.776 490

Rotors for Concentrator plus™

Eppendorf

Type	Description	PK	Cat. No.
F-45-48-11	for 48 tubes 1.5/2.0ml (11 x 41/11 x 47mm)	1	**9.776 465**
F-45-8-17	for 8 tubes 15ml (Falcon®) (17 x 120mm)	1	**9.776 490** 3
A-2-VC	for 2 x 96 tubes 0.2ml (128 x 86 x 27 mm)	1	**9.776 496**

Accessories for Concentrator Plus™

NEW!

Eppendorf

Description	PK	Cat. No.
Kit for upgrading from basic concentrator to complete system	1	**9.776 533**
Spacer for using fixed angle rotors in sandwich mode	1	**9.776 534**
CombiSlide® Adapter	1	**9.776 451**
Adapter, 0.5ml reaction tube and 0.6ml microtainer	6	**9.776 488**
Adapter for 0.2ml PCR tubes, for F-45-24-11	6	**9.776 504**
Work tray for 96 x 0.2ml PCR tubes	10	**9.283 623**
Frame for work tray	5	**9.283 624**

4



4 Rotational-Vacuum-Concentrator SpeedDry 2-18 CDplus Package

Christ

Inexpensive and compact table-top unit for smaller sample volumes, e.g. for gentle concentration of DNA/RNA, proteins in ethanol/methanol/water solutions and similar analytical steps.
- Simple operation with the push of a button: interface CDplus, automatic sequence for start and stop, vacuum on and off depending on rotor, automatic aeration, therefore samples are prevented from spitting.
- Magnetic drive system with speed control: centrifugal force eliminates bumping and foaming, no rotating parts outside the rotor chamber.
- Fast evaporation: high energy input through electrical heating of rotor chamber, can be set in 1°C intervals from room temperature to +60°C, large cross-section for optimized vapour transport to vacuum pump.
- Useful for water and solvent containing samples: basic SpeedDry system comes with durable glass cover, stainless steel rotor chamber, chemically resistant sealings, anodized rotors.
- Broadest range of rotors, large sample capacities.

Equipped with vacuum hose DN16, connection cable to vacuum pump and one rotor for 24 tubes 1.5/2.2ml - further rotors available as accessories, see list below.
Required for operation: chemically resistant diaphragm pump (final vacuum <10mbar, suction capacity approx. 2m³/h) and connecting pieces DN16. (e.g. type MZ 2C, manufacturer VACUUBRAND).

Type	PK	Cat. No.
RVC 2-18 Package	1	**9.883 154**
Membrane pump MZ 2C NT, two-step certification, 200-230 V/50-60 Hz, 100-115V/ 50-60Hz, 120 V/ 60Hz	1	**9.880 927**

E & OE.

Rotors for RVC 2-18 CDplus

Christ

Description	PK	Cat. No.
Aluminium angle rotor 40 x 0.25/0.5ml	1	**9.883 161**
Aluminium angle rotor 30 x 0.5/0.75ml	1	**9.883 162**
Aluminium angle rotor 24 x 1.5/2.2ml	1	**6.203 603** 1
Aluminium angle rotor 18 x 4/7ml	1	**6.203 604**
Aluminium angle rotor 12 x 10/15ml	1	**9.883 163**
Aluminium angle rotor 6 x 50ml	1	**9.883 164**
Aluminium angle rotor 6 x 50ml (FALCON)	1	**9.883 165**
Distance ring, aluminium black anodized, 20mm high	1	**6.252 163**

1



6.203 603

2 Rotational-Vacuum-Concentrator SpeedDry 2-25 CDplus Package

Christ

The Midi-Concentrator from Christ: all-purpose table-top system for routine concentration works of larger sample volumes. Suitable for typical solvents: e.g. acetonitrile, acetone, chloroform, dioxane, methylenchloride, ethanol, hexane, methanol, TFA, water.

- Simple operation with the push of a button: interface CDplus, automatic sequence for start and stop, vacuum on and off depending on rotor, automatic aeration, therefore samples are prevented from spitting.
- Magnetic drive system with speed control: centrifugal force eliminates bumping and foaming, no rotating parts outside the rotor chamber.
- Vacuum measurement and control.
- Ramp programming function for vacuum and temperature.
- Fast evaporation: high energy input through electrical heating of rotor chamber, cam be set in 1°C intervals from room temperature to +80°C, large cross-section for optimized vapour transport to vacuum pump.
- Useful for water and solvent containing samples: basic SpeedDry system comes with durable glass cover, stainless steel rotor chamber, chemically resistant sealings, anodized rotors.
- Broadest range of rotors, large sample capacities.
- Cold trap for improved, faster evaporation results and solvent recovery.

2



Equipped with cold trap (volume 2 litres, temperature -50°C), solvent-resistant glass lid with vacuum hose DN16 and one rotor for 24 tubes 10/15 ml, further rotors available as accessories, see list below.

Required for operation: chemically resistant diaphragm pump (final vacuum <10 mbar, suction capacity approx. 2 m³/h) and connecting pieces DN16. (e.g. type MZ 2C, manufacturer VACUUBRAND).

Type	PK	Cat. No.
RVC 2-25 CDplus Package	1	**9.883 155**
Chemistry vaccum system MZ 2C NT AK+EK with KF DN 16, Certification, 200-230 V/50-60 Hz, 100-115 V/50-60 Hz, 120V/60 Hz	1	**9.880 928**

Rotors for RVC 2-25 CDplus

NEW!

Christ

Description	PK	Cat. No.
Aluminium angle rotor 54 x 0.5/0.75ml	1	**9.883 169**
Aluminium angle rotor 36 x 1.5/2.2ml	1	**7.510 456** 3
Aluminium angle rotor 48 x 5/7ml	1	**9.883 170**
Aluminium angle rotor 36 x 8/10ml	1	**9.883 171**
Aluminium angle rotor 24 x 10/15ml	1	**9.883 168**
Aluminium angle rotor 12 x 30ml	1	**9.883 172**
Aluminium angle rotor 8 x 50ml (FALCON)	1	**9.883 173**
Aluminium angle rotor 8 x 50ml	1	**9.883 174**
Aluminium angle rotor 6 x 100ml	1	**9.883 175**
Aluminium swing-out rotor 2 x microtiter plate	1	**7.510 455**
Aluminium swing-out rotor 2 x deepwell plate	1	**9.883 176**
Distance ring, aluminium black anodized, 20mm high	1	**6.252 163**

3



7.510 456

BRAND*plates*® - A complete premium-quality line - for every application!

Microplates for Immunoassays (non-sterile)
Diagnosis of disease, pregnancy or verification of doping substances - many analyses in the modern laboratory are performed with immunological assays in microplates. They are characterized by their high specificity and provide the opportunity to detect the lowest concentrations of defined substances in complex liquids e.g. blood serum.
immunoGrade™ (high binding)
Optimized for the immobilization of IgG, highest binding capacity for molecules with mixed hydrophilic and hydrophobic regions. The surface of choice for the majority of standard ELISAs.
hydroGrade™
Strongly hydrophilic, high affinity to hydrophilic molecules like e.g., glycoproteins and peptides, antibodies with predominantly hydrophilic regions and nucleic acids.
lipoGrade™
Strongly hydrophobic (lipophilic), immobilization of biomolecules with predominantly hydrophobic regions. An alternative to the immunoGrade™ surface for the immobilization of molecules, e.g. lipoproteins or peptides.

Non-treated (sterile or non-sterile)
Non-treated PS microplates are used in the most diversified application fields, e.g. homogenous standard assays and extensive screening assays. The hydrophobic characteristics of untreated PS are often of use in performing theses applications! The new BRAND*plates*® range contains two types of non-treated microplates:
pureGrade™ (medium binding)
Non-treated, non-sterile surface. The standard plate for most applications. Particularly applicable for homogenous assays, screening, and in the field of storage.
pureGrade™ S
Non-treated surface, sterile. Sterilized via ß-radiation. Especially suited for bacteriological assays.

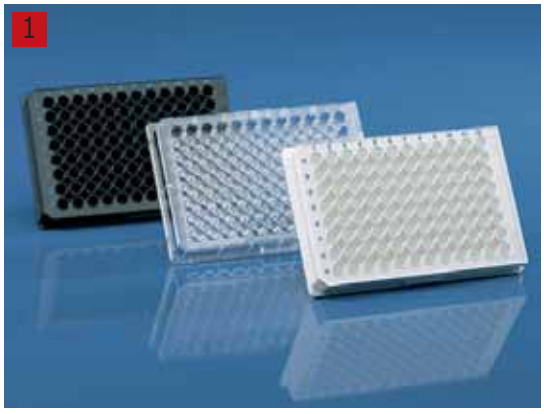
Colours, wells and shapes:
- 96- and 384-well format
- standard or transparent bottom
- transparent, white or black
- Various well bottom shapes: U-, V-, F-, C-bottom for 96-well format
- clearly distinguishable via color code: blue embossed alphanumeric coding for 96-well standard plates.
- free from endotoxins (< 0.01 EU/ml), DNase, DNA, RNase, non-cytotoxic (according to ISO 10993)
- ANSI/SLAS format
- **non-sterile products without lid, please order separately**
- **sterile products comply with ISO 11137 and AAMI guidelines. A SAL of 10^{-6} is reached. Supplied individually wrapped with lid.**

Get yourself familiar with the new range by using the BRAND*plates*® selection guide under www.brand.de.

1 ImmunoGrade™ (high binding)

PS, non-sterile. Optimized for the immobilization of IgG, standard ELISA assay. *BRAND*

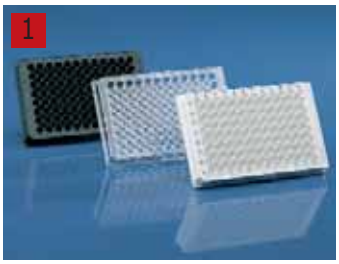
Description	Bottom shape/ Well volume µl	PK	Cat. No.
96-well, transparent	U / 330	100	**4.000 275**
96-well, transparent	V / 360	100	**4.000 276**
96-well, transparent	F / 350	100	**4.000 277**
96-well, transparent	C / 350	100	**4.000 278**
96-well, white	U / 330	100	**4.000 279**
96-well, white	C / 350	100	**4.000 280**
96-well, black	U / 330	100	**4.000 281**
96-well, black	C / 350	100	**7.635 711**
96-well, black / transparent	F / 330	100	**4.000 282**
384-well, transparent	F / 100	50	**4.000 283**
384-well, white	F / 100	50	**4.000 284**
384-well, black	F / 100	50	**4.000 285**



E & OE.

1 hydroGrade™

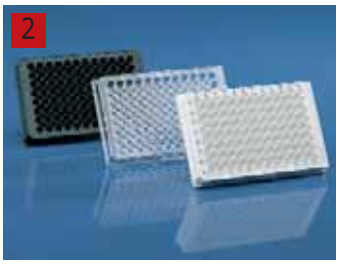
PS, non-sterile. Hydrophilic. For solid phase with hydrophilic molecules and liquid phase with hydrophobic molecules, resp. *BRAND*



Description	Bottom shape/ Well volume µl	PK	Cat. No.
96-well, transparent	U / 330	100	**4.000 286**
96-well, transparent	F / 350	100	**4.000 287**
96-well, transparent	C / 350	100	**4.000 288**
96-well, white	U / 330	100	**4.000 289**
96-well, white	C / 350	100	**4.000 290**
96-well, black	U / 330	100	**4.000 291**
96-well, black	C / 350	100	**4.000 292**
384-well, transparent	F / 100	50	**4.000 293**
384-well, white	F / 100	50	**4.000 294**
384-well, black	F / 100	50	**4.000 295**

2 lipoGrade™

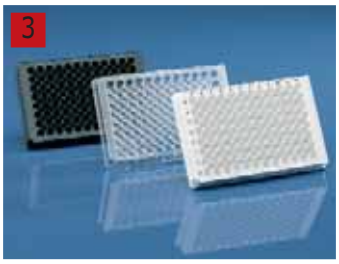
PS, non-sterile. Lipophilic/hydrophobic. For solid phase with hydrophobic molecules and liquid phase with hydrophilic molecules, respectively. *BRAND*



Description	Bottom shape/ Well volume µl	PK	Cat. No.
96-well, transparent	U / 330	100	**4.000 296**
96-well, transparent	V / 360	100	**4.000 297**
96-well, transparent	F / 350	100	**4.000 298**
96-well, transparent	C / 350	100	**4.000 299**
96-well, white	U / 330	100	**4.000 300**
96-well, white	C / 350	100	**4.000 301**
96-well, black	U / 330	100	**4.000 302**
96-well, black	C / 350	100	**4.000 303**
96-well, white / transparent	F / 330	100	**4.000 304**
96-well, black / transparent	F / 330	100	**4.000 305**
384-well, transparent	F / 100	50	**4.000 306**
384-well, white	F / 100	50	**4.000 307**
384-well, black	F / 100	50	**4.000 308**
384-well, hite / transparent	F / 120	50	**4.000 312**
384-well, black / transparent	F / 120	50	**4.000 313**

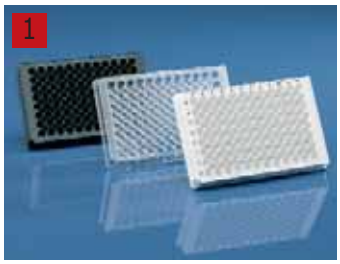
3 pureGrade™ (medium binding)

PS. Non-treated, non-sterile.
For homogenous assays, screenings, storage, etc. *BRAND*



Description	Bottom shape/ Well volume µl	PK	Cat. No.
96-well, transparent	U / 330	100	**4.000 238**
96-well, transparent	V / 360	100	**6.233 851**
96-well, transparent	F / 350	100	**6.231 785**
96-well, transparent	C / 350	100	**4.000 239**
96-well, white	U / 330	100	**4.000 240**
96-well, white	F / 350	100	**6.233 548**
96-well, black	U / 330	100	**4.000 241**
96-well, black	F / 350	100	**6.233 756**
96-well, white / transparent	F / 330	100	**4.000 242**
96-well, black / transparent	F / 330	100	**4.000 243**
96-well, UV-transparent*	F / 350	50	**9.408 976**
384-well, transparent	F / 100	50	**4.000 244**
384-well, white	F / 100	50	**4.000 245**
384-well, black	F / 100	50	**4.000 246**
384-well, white / transparent	F / 120	50	**4.000 250**
384-well, black / transparent	F / 120	50	**4.000 251**
1536-well, transparent	F / 10	50	**4.000 253**
1536-well, white	F / 10	50	**4.000 254**
1536-well, black	F / 10	50	**4.000 255**

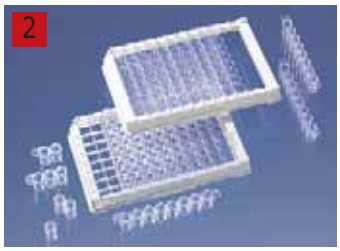
*slightly hydrophilized, not available in USA and Japan



1 pureGrade™ S

PS. Non-treated, sterile. *BRAND*
For bacteriological assays, screenings, storage, etc.

Description	Bottom shape/ Well volume µl	PK	Cat. No.
96-well, transparent	U / 330	50	**4.000 256**
96-well, transparent	V / 360	50	**4.000 257**
96-well, transparent	F / 350	50	**6.233 912**
96-well, transparent	C / 350	50	**4.000 258**
96-well, white	F / 350	50	**4.000 259**
96-well, black	F / 350	50	**4.000 260**
96-well, white / transparent	F / 330	50	**4.000 261**
96-well, black / transparent	F / 330	50	**4.000 262**
384-well, transparent	F / 100	50	**4.000 263**
384-well, white	F / 100	50	**4.000 264**
384-well, black	F / 100	50	**4.000 265**
384-well, white / tranpsarent	F / 120	50	**4.000 269**
384-well, black / transparent	F / 120	50	**4.000 270**
1536-well, transparent	F / 10	50	**4.000 272**
1536-well, white	F / 10	50	**4.000 273**
1536-well, black	F / 10	50	**4.000 274**



2 Strip plates 12xF8 BRAND*plates*®

BRAND*plates*® microplates have ideal optical characteristics and are manufactured according to ANSI and SBS standards. They are available as 96-well standard plates as well as strip plates with immunoGrade™ and pureGrade™ surfaces - for greater flexibility and optimal results. *BRAND*

immunoGrade™ high binding capacity (highbinding), ideal for IgG and molecules with hydrophobic and hydrophilic regions

pureGrade™ medium binding capacity (medium-binding), somewhat more hydrophobic than immunoGrade™

These offer high flexibility. Use only as many wells as necessary. Two variants are available:

Strip plates without grid: for processing 12 strips of 8 wells each. Individual strip can be removed from the frame and reinserted. The strips are not divisible.

Strip plates with grid: likewise for 12 strips of 8 wells each. Individual strips are removable from the plate and can be reinserted. The strips can be divided into 8 individual vessels and can be inserted individually into the frame plate.

Capacity µl	Type	Description	PK	Cat. No.
360	pureGrade™	without grid, not splittable	100	**4.007 910**
350	pureGrade™	with grid, splittable	100	**4.007 911**
360	immunoGrade™	without grid, not splittable	100	**4.007 912**
350	immunoGrade™	with grid, splittable	100	**4.007 913**



3 Lids for BRAND*plates*® microplates

To protect samples, reaction batches or cell cultures from both contamination and evaporation, compatible lids are available for all BRAND*plates*® microplates. The lids are made of crystal-clear polystyrene. They are optimally matched to the corresponding BRAND*plates*® microplates, so that plates with lids can also be stacked. The cut-corner sets the orientation of the lid. For 96-well standard plates, lids with condensation rings are also available. *BRAND*

Description	Height mm	PK	Cat. No.
for 96-well standard plates with condensation rings	8.0	100	**4.000 363**
for 96-well standard plates	8.0	100	**4.000 364**
for 96-well plates with transp. bottom and for 384-well plates	4.5	50	**4.000 365**
for 1536-well plates	5.5	50	**4.000 366**

E & OE.

1 C96 MicroWell™ Plates, PS

Thermo Scientific

- C-shaped bottom for optimal washing and liquid retrieval
- FluoroNunc™ for fluorescence based immuno assays with minimal auto-fluorescence
- MaxiSorp™ and PolySorp™ for quantitative and qualitative solid phase immuno assays
- Working volume range: 50 - 250µl/ well



Surface	Colour	Sterile	Description	PK	Cat. No.
MaxiSorp™	White	no*	without lid	60	**6.079 678**
MaxiSorp™	Clear	no*	without lid	60	**9.390 553**
MaxiSorp™	Clear	no*	without lid	60	**9.390 554**
PolySorp™	Clear	no	without lid	60	**9.390 557**

* certified.

2 F96 Immuno™ Plates, PS

Thermo Scientific

Clear, white or black plates with excellent optical clarity and flat bottom wells. MaxiSorp™, MediSorp™, MultiSorp™ und PolySorp™ are optimal for solid phase immuno assays.
Material plates: Polystyrene
Total volume µl/well: 400



Surface	Colour	Sterile	Description	PK	Cat. No.
Non-treated	Clear	no	without lid	180	**6.222 441**
Non-treated	White	no	without lid	180	**6.201 514**
Non-treated	Black	no	without lid	180	**6.228 233**
MediSorp™	Clear	no	without lid	60	**4.008 649**
MultiSorp™	Clear	no	without lid	60	**4.008 650**
MaxiSorp™ *	Clear	no	without lid	60	**9.390 550**
MaxiSorp™	Clear	no	without lid	60	**9.390 551**
PolySorp™	Clear	no	without lid	60	**9.390 555**
Non-treated	Clear	no	without lid	180	**4.008 780**
PolySorp™	Clear	no	without lid	180	**4.008 802**
MaxiSorp™ *	Clear	no	without lid	180	**4.009 010**
MaxiSorp™ *	Clear	no	without lid	180	**6.301 671**
Non-treated	Clear	no	with lid	160	**7.603 959**
Non-treated	Clear	no	without lid	60	**9.390 514**

* certified.

3 V96 MicroWell™ Plates, PS

Thermo Scientific

Clear plates with V-shaped well bottom for maximized sample recovery. The wells have raised rims and lids are supplied with rings, which prevent cross contamination.
Applications include: antibiotic screens, serological tests, storing and screening compounds and DNA libraries.
Material plates: Polystyrene
Total volume µl/well: 300



Surface	Colour	Sterile	Description	PK	Cat. No.
Non-treated	Clear	yes	with cap	50	**4.008 606**
Non-treated	Clear	yes	without cap	50	**9.390 513**
Non-treated	Clear	no	without cap	180	**9.390 512**

4 U96 MicroWell™/Immuno™ Plates, PS

NEW!

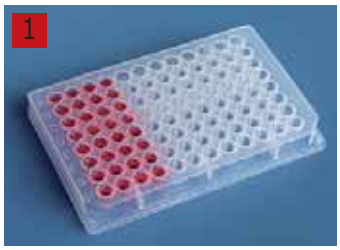
Thermo Scientific

Clear plates with excellent optical quality and round well bottom. Nunclon™Δ surface optimized for cell based assays and sterile non-treated versions for bacteriological applications. MaxiSorp™ und PolySorp™ suitable for solid phase immuno assays.
Material plates: Polystyrene
Total volume µl/well: 300



Surface	Colour	Sterile	Description	PK	Cat. No.
Nunclon™Δ	Clear	yes*	with lid	50	**9.407 471**
Non-treated	Clear	yes	without lid	50	**9.390 511**
Non-treated	Clear	yes	with lid	160	**4.009 009**
Non-treated	Clear	nein	without lid	180	**9.390 510**
MaxiSorp™	Clear	nein	without lid	60	**9.390 552**
PolySorp™	Clear	nein	without lid	60	**9.390 556**
HydroCell™	Clear	yes	with lid	8	**4.008 713**
Cell culture	Clear	yes	with lid	160	**4.008 768**

* certified.



1 Microtitration plates and sealing films

NEW!

Compatible with most microtitration plate centrifuges. *BRAND*

- For volumes up to 330µl
- U-bottom wells
- Autoclavable at 121°C (2 bar), according to DIN EN 285.
- High chemical resistance (e.g. phenol, chloroform, DMSO).
- Recessed hollows between the wells minimize contamination.
- Raised rings (rims) around the orifice of each well for easy sealing using self-adhesive sealing films.
- Plates can be sealed with self-adhesive, alphanumerically coded, DMSO-resistant, sealing film (cross-cut).

Type	PK	Cat. No.
Microtitration plate, PP, U-Bottom, 330µl	100	**9.408 970**
DMSO-resistant sealing film, PP	100	**9.408 983**
Sealing film, self-adhesive, PP	100	**9.409 386**
Sealing film, self-adhesive, Al	100	**9.409 387**



2 Lids for 96-well and 384-well Plates

Lids in various versions made of clear, strong polystyrene with notches for quick orientation. Reduce water loss due to lower evaporation. 96-well lids feature individual condensation rings. *Thermo Scientific*

Height mm	With	Sterile	PK	Cat. No.
7.90	Evaporation barrier	no	100	**9.407 480**
7.90	Evaporation barrier	yes	50	**9.407 481**
7.90	Evaporation barrier	yes	60	**6.802 229**
8.34	-	yes	60	**4.008 599**
8.34	-	no	60	**6.206 034**

Evaporation barrier is a rim around the inside edge of the lid.



3 Sealing Tapes for MultiWell Plates

Effectively seals all microplate formats for storage, PCR, microscopy, culture and protection. Pre-cut, plate-sized sheets. *Thermo Scientific*

Type 1) General use, PCR, storage, photo-sensitive samples
Type 2) Cell Culture, sterile applications
Type 3) Microscopy, good optics, low auto-fluorescence, DMSO compatible
Type 4) Breathable, cell culture

Type	Material	Glue	Sterile	Colour	PK	Cat. No.
1)	Aluminium	Silicone	no	Silver	100	**6.250 417**
2)	Polyester	Acrylic	yes	Clear	800	**9.407 482**
3)	Polyolefin	Acrylate	no	Clear	100	**6.223 248**
4)	Rayon	Acrylate	yes	White	50	**4.008 574**



4 Immuno™ Washers

- Easy-to-use
- Allow for a flexible washing procedure
- Uniform and efficient washing
- Rack included (not autoclavable)
- Adjustable to all well shapes
- Autoclavable at 121°C
- for tubing with 6mm bore

Thermo Scientific

Description	PK	Cat. No.
Nunc-Immuno™ Wash 8, 8-Channel	1	**6.302 667**
Nunc-Immuno™ Wash 12, 12-Channel	1	**6.700 069**

E & OE.

1 Manual Microplate washer Type 200

Mikura

The 200 Series Washer - very user-friendly manual washer.
- quiet and reliable operation in a compact modular format.
- accurate dispensing and low residual volumes.
- adjustable dispense pressure.
- filtered pump inlet and silenced outlet.
- fully autoclavable, metal free fluid path.
- colour coding for easy maintenance and system modularity.
- 8 or 12 way wash heads, optional aspirate probes and fill manifolds.
- optional head designs for paper disc washing.
- 12V d.c. remote power supply for piece of mind and added safety.



Technical specifications

Operating voltage/Hz:	100-240V 50/60Hz a.c.
Max current requirement:	12VA
Dispense reservoir:	2 litre bottle
Waste reservoir:	2 litre bottle
Weight of pump unit:	3.0kg
Weight of complete system:	4.8kg
Dimensions, WxDxH: (with reservoirs)	250 x 300 x 250mm

Type	PK	Cat. No.
8 Channel Washer complete	1	**4.006 931**
12 Channel Washer complete	1	**4.006 932**

2 Microplate Washer, Autura 1000

Mikura

Autura 1000 is a unique processor for the fully automated washing and filling of both, 96 and 384 well microplates, including deep well formats.
- Accurate dispensing precision and low residual volumes.
- Optional aerosol protection cover.
- Unique open construction for easy integration with robotic systems.
- Up to 25 user programmable wash protocols.
- Liquid level sensing in all reservoirs with audible and visual warning system.
- Extremely easy to clean and maintain.
- Autura accommodates all variants of 96 and 384 well microplates.
- Optional automatic rinse through wash head at set intervals.
- Internal RS232 port ensures Autura's robotic integration.
- USB port for remote computer interface.
- Remote control software available on request.



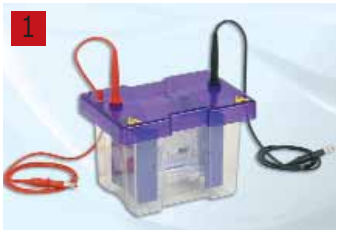
Additional features:
- Easy exchange of wash heads.
- Heads availability in 8, 12, 16 and 24 concentric tip configurations.
- Easy to read back illuminated full alpha numeric display.
- Autura operates on 12V DC, supplied via an external switch mode power supply, thus enhancing operational safety.
- Separate dispense and aspirate channels reduce the possibility of cross contamination.
- Compact design.

Specification

Operating voltage/Hz:	100-240V AC 50/60Hz
Max. Current requirement:	52VA
Dispense reservoir:	Up to 2 x 2L
Waste reservoir:	2L
Residual volume:	3µl per well typical action or 1µl per well with sweep
Precision:	CV = ±3% 300µl
Dispensing volume:	25µl to 1500µl in 25µl increments
Speed:	2.5mins*
Weight of complete system:	6.2kg
Dimensions of complete system (WxDxH):	230mm x 480mm x 320mm

Type	PK	Cat. No.
8 channel washer (96 well plates)	1	**4.006 927**
12 channel washer (96 well plates)	1	**4.006 928**
16 channel washer (96 well plates)	1	**9.951 950**
24 channel washer (96 well plates)	1	**9.951 951**
16 channel washer (384 well plates)	1	**9.951 952**
24 channel washer (384 well plates)	1	**9.951 953**

* to complete a 3 wash cycle using a double row 12 port head, 350µl/well, 96-well plate



1 Gel electrophoresis tank omniPAGE Mini

Cleaver Scientific

The preferred unit for routine mini protein electrophoresis, the omniPAGE mini is constructed using the latest injection moulding manufacturing techniques. This gives a high quality, low cost product with unsurpassed finish, durability and strength. The unit incorporates a sealing system which is compatible with all major types of 8 x 10cm and 10 x 10cm precast gel. Gel casting and running utilise the same insert, no transfer of glass plates during gel casting is necessary. The insert contains the option of sliding clamps or just one screw per clamping bar side allowing very rapid set up of both hand cast and precast gels. Ultra soft silicone seals and pressure bars which surround the glass plates guarantee leak proof gel casting. 2mm thick glass plates prevent breakage and have bonded spacers for convenience. Accessory electro blotting and tube gel modules are available which use the same outer tank and lid.

Supplied with:
CVS10D: omniPAGE Mini, 10 x 10cm Dual, 2 sets of Glass Plates, electrodes, 1mm thick bonded Spacers, 2 x 12 sample, 1mm thick combs. CLAMP VERSION.
CVS10DSYS: as CVS10D additionally with caster

Technical specifications

Gel dimensions (W x L):	7.5 x 8cm
Unit dimensions (WxDxH):	19 x 13 x 15cm
Max. sample capacity:	80 samples, 20 samples per gel
Buffer volume:	min. 250ml; max 1200ml

Type	Description	Sample volume µl	PK	Cat. No.
CVS10D	omniPage Mini		1	**9.584 652**
CVS10CBS	Complete system for Mini Vertical 10 x 10cm		1	**6.229 038**
CVS10DSYS	omniPage Mini incl. caster		1	**9.584 654**
VS10NG	Notched Glass Plates 2mm		2	**6.229 282**
VS10PGS0.75	Plain Glass Plates with 0.75mm Bonded Spacers		2	**9.584 730**
VS10PGS1	Plain Glass Plates with 1mm Bonded Spacers		2	**6.230 607**
VS10PGS1.5	Plain Glass Plates with 1.5mm Bonded Spacers		2	**9.584 731**
VS10-12-0.75	Comb 12 sample, 0.75mm	25	1	**9.584 732**
VS10-16MC-0.75*	Comb 16 sample MC, 0.75mm	20	1	**9.584 733**
VS10-8MC-1*	Comb 8 sample MC, 1mm	60	1	**6.232 797**
VS10-10-1	Comb 10 sample, 1mm	40	1	**6.232 290**
VS10-12-1	Comb 12 sample, 1mm	35	1	**6.232 176**
VS10-16MC-1*	Comb 16 sample MC, 1mm	25	1	**6.229 039**
VS10-20-1	Comb 20 sample, 1mm	20	1	**6.232 291**
VS10-12-1.5	Comb 12 sample, 1.5mm	50	1	**9.584 734**
VS10-16MC-1.5*	Comb 16 sample MC, 1.5mm	40	1	**9.584 735**

* Multichannel compatible.



2 Gel electrophoresis package omniPAGE TETRAD Mini-Set

The gel electrophoresis tank OmniPAGE Mini is suitable for parallel treatment of up to 4 gels with 20 samples each. The tank is easy to handle, especially leak proof and guarantees an efficient cooling. For self-cast gels and all major types of 8 x 10cm and 10 x 10cm precast gels.
Supplied with:
- omniPAGE Mini, 10 x 10cm Dual
- 1x CVS10DIRM Sliding Clamp PAGE insert
- 1x CVS10EXCASTER External Casting Upstand
- 1x VS10TANK Tank
- 1x VS10LID Lid
- 1x VS10DP Dummy plate
- 1x CSL-CAB set of electrophoresis cables, one black, one red
- 2x VS10PGS1 Plain glass plates with 1mm bonded spacer (pack of 2)
- 2x VS10NG Notched glass plates (pack of 2)
- 2x VS10NGS1 Notched glass plates with 1mm bonded spacer (pack of 2)
- 4x VS10-12-1 = 4x 12 sample combs, 1mm thick
- 1x VS10DCAST Casting base with casting mat

Type	PK	Cat. No.
omniPAGE TETRAD Mini-Set	1	**7.930 246**

E & OE.

1 Gel electrophoresis tank VS20 Wave Maxi

NEW!

Cleaver Scientific

The new VS20 WAVE Maxi System is Cleaver Scientific's latest product innovation for large-format vertical gel electrophoresis. Designed to perform a variety of separations, including first- and second-dimension SDS-PAGE, native, preparative, gradient and high-resolution nucleic acid electrophoresis, plus capillary tube gel IEF and electroblotting, the VS20 WAVE is one of the most versatile maxi vertical systems available.
By introducing innovative, new vertical screw-clamp technology only four screws are now necessary to secure as many 20x20cm gels. This gives the VS20 WAVE Maxi the selective advantage of a much faster set up speed compared to competitor products whose traditional clamping configurations require as many as 24 screws to secure just two glass plates. In addition, the WAVE's vertical screw-clamp configuration distributes pressure evenly along the height of the gel rather than in the centre to eliminate plate bowing and gel compression, but still maintains a leak-proof seal during casting; while the ergonomic wave-like design aids both handling and set up.
Whatever your requirements are the WAVE can be made to meet them. Regardless of whether it is running 2 or 4 gels, electroblotting, and IEF using capillary tube gels or IPG strips, all of these techniques may be performed using the same omni-purpose unit while retaining the benefits of large format electrophoresis, such as extended separation distances, greater sample throughput and superior resolution.

VS20WAVESYS incl. VS20 WAVE Maxi, Glass plates, 2 x 24 well combs, cooling coil, casting base
VS20WAVESYS-CU incl. VS20 WAVE Maxi, 20 x 20cm Dual, 2 sets of Glass Plates, 1mm thick bonded spacers, 2 x 24 sample, 1mm thick combs, cooling coil, dummy plate, caster, external casting upstand
VS20CBS incl. WAVE Maxi Vertical Unit, 2 x 4mm thick notched glass plates, 2 x 4mm thick plain glass plates with 1mm thick bonded spacers, 1 x dummy plate, 2 x combs (1mm thick 24 samples), 1 x casting base, silicone mat, cooling pack;
plus: 1x WAVE Standard Electroblotting Module which includes: WAVE Maxi Platinum Wire Blotting Insert, 4 x compression cassettes and 18x fibre pads

1



Specifications

Gel dimensions (W x L):	20 x 20cm
Gel dimensions (W x L) VS20CBS:	17.5 x 18cm
Unit dimensions (WxDxH):	30 x 18 x 27cm
Max. sample capacity:	2 x 24 samples
Buffer volume:	min. 4.8l (4 gels), max. 5.3l (2 gels)
Buffer volume VS20CBS:	min. 5.3l, max. 6.4l

Type	Description	Sample volume µl	PK	Cat. No.
VS20WAVESYS			1	**9.584 795**
VS20WAVESYS-CU			1	**9.584 796**
VS20CBS			1	**9.584 750**
VS20NG	20 x 20cm Notched Glass Plates 4mm thick		2	**6.232 288**
VS20PGS1	20 x 20cm Plain Glass Plates with 1mm Bonded Spacers		2	**6.232 289**
VS20PGS1.5	20 x 20cm Plain Glass Plates with 1.5mm Bonded Spacers		2	**9.584 737**
VS20-18MC-1*	Comb 18 sample MC, 1mm	50	1	**6.232 630**
VS20-24-1	Comb 24 sample, 1mm	40	1	**9.584 738**
VS20-36MC-1*	Comb 36 sample MC, 1mm	25	1	**9.584 739**
VS20-48-1	Comb 48 sample, 1mm	20	1	**9.584 740**
VS20-18MC-1.5*	Comb 18 sample MC, 1.5mm	80	1	**9.584 741**
VS20-24-1.5	Comb 24 sample, 1.5mm	60	1	**9.584 742**

Power supplies for gel electrophoresis tanks

- microprocessor controlled
- constant voltage or current

Supply requirements	Description	Rating W	PK	Cat. No.
300 V / 700 mA	no programs, 4 outputs, LED display, stackable	150	1	**4.006 960**
300 V / 3000 mA	30 programs, 4 outputs, LCD display, stackable	300	1	**4.006 961** 2
500 V / 600 mA	10 programs, 4 outputs, LED display, stackable	300	1	**4.006 962**

2



4.006 961

1



9.584 753

Semi Dry Blotters

Cleaver Scientific

These Semi Dry Blotters offer rapid transfer times for DNA, RNA and protein blotting; typically 15 to 30 minutes. All units can be used for all types of blotting: western, southern and northern via uncomplicated buffer and set up procedures and are compatible with gel thicknesses from 0.25 up to 10mm without the need for additional equipment. Each unit is compatible with their respective omniPAGE vertical gel system. Semi Dry Blotting has the added benefit of economic transfers due to very low buffer volumes - typically only a few millilitres of buffer are required per transfer. These Semi-Dry Blotters utilise a screw down lid, which secures the blot sandwich and allows complete control of pressure ensuring even transfer. The electrodes, comprising platinum coated anode and stainless steel cathode, will exhibit practically no corrosion and so provide many years of trouble free use. Uniform heat dispersion across the blot sandwich ensures stable transfer times and no heat induced sample loss or transfer distortions. Being translucent, it allows viewing of the blot sandwich to ensure correct positioning and transfer is occurring correctly. Electrode plates are fully separated to prevent arching or damage.

Type	Description	Dimensions (W x D x H) mm	Capacity Buffer ml	Qty. Blots	Dimensions blots cm	PK	Cat. No.
SD10	Semi Dry Mini, 10 x 10cm System	160 x 160 x 70	5	1	8 x 8,5	1	**9.584 753** 1
SD20	Semi Dry Maxi, 20 x 20cm System	260 x 260 x 70	20	1 2 4	16 x 17,5 16 x 8,5 8 x 8,5	1	**6.229 381**
SD33	Semi Dry Maxi Plus, 33 x 45cm System	33 x 45 x 70	75	1 2 5 10 20	33 x 45 26 x 20 16 x 17,5 16 x 8,5 8 x 8,5	1	**6.239 745**
SD50	Semi Dry Maxi Blotter 20 x 50cm System	26 x 56 x 70	50	1 2 2 6 13	20 x 50 16 x 17,5 26 x 20 16 x 8,5 8 x 8,5	1	**9.584 754**

2



2 LLG-Transfer membrane, PVDF

NEW!

Hydrophobic Polyvinylidene Fluoride (PVDF) transfer membrane with high binding capacity and low background. Ideal for use in protein binding applications such as Western blots, solid phase assays and immunoblotting procedures. BSA binding capacity of 125 mg/cm2

Length mm	Width mm	Pore size µm	PK	Cat. No.
3000	300	0.45	1	**6.268 166**
3000	300	0.22	1	**6.268 167**
200	200	0.45	25	**6.268 168**
200	200	0.45	5	**6.268 169**
200	200	0.22	5	**6.268 170**

3



3 LLG-Transfer membrane, supported nitrocellulose

NEW!

Supported Nitrocellulose transfer membranes combine the binding characteristics of nitrocellulose membranes with the strength of nylon membranes. These membranes are used for DNA/RNA transfers requiring low background or for multiple hybridizations. For use with chemiluminescence and radiographic detection systems. BSA binding capacity up to 100µg/cm².

Length mm	Width mm	Pore size µm	PK	Cat. No.
3000	300	0.45	1	**6.268 171**
3000	300	0.22	1	**6.268 172**
200	200	0.45	25	**6.268 173**
200	200	0.45	5	**6.268 174**
200	200	0.22	5	**6.268 175**

4



4 LLG-Transfer membrane, nitrocellulose

NEW!

Pure Nitrocellulose transfer membrane for all protein or immunoblotting applications. The high sensitivity and low background ensures excellent results in all transfers. Compatible with all detection systems. BSA binding capacity up to 100µg/cm².

Length mm	Width mm	Pore size µm	PK	Cat. No.
3000	300	0.45	1	**6.268 161**
200	200	0.45	25	**6.268 162**
200	200	0.22	25	**6.268 163**
200	200	0.45	5	**6.268 164**
200	200	0.22	5	**6.268 165**

E & OE.

1 Transfer membranes Nytran® N

Neutral nylon membranes. *GE Healthcare*
For DNA/RNA transfers. Very low background. For chemiluminescence detection and multiple hybridisations.



Dimensions mm	Pore size µm	PK	Cat. No.
200 x 200	0.20	10	**9.057 105**
300 x 3 m	0.20	1	**9.057 107**
200 x 3m reel	0.45	1	**9.057 116**
300 x 3m reel	0.45	1	**9.057 117**

2 Membrane Tweezers

NEW!

Swiss made. Made of austenitic steel. Non-magnetizable. Good corrosion resistance to most chemicals, salts and acids. Flat, with round tips and rounded edges. Especially suitable for safe handling of transfer membranes. *Ideal-tek*



Length mm	Form	PK	Cat. No.
115	flat, round tip	1	**9.160 131**

3 Storage boxes, PE-HD with tightly closing PE-LD lid

PE-HD. With tightly closing PE-LD lid. Suitable for cold storage rooms and refrigerators. Temperature range/withstands temperatures (without mechanical stress) from -20 to +95°C. Stackable. Acid and chemical resistant. Food safe. Colour: natural.

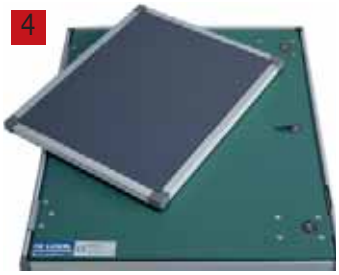


Capacity L	Width mm	Length mm	Height mm	PK	Cat. No.
0.50	103	103	64	1	**9.033 270**
1.00	103	103	127	1	**9.033 275**
1.00	103	208	64	1	**9.033 280**
1.50	103	208	94	1	**9.033 285**
2.00	103	255	94	1	**9.033 286**
2.00	208	208	64	1	**9.033 287**
3.20	208	208	94	1	**9.033 288**

4 X-Ray cassettes

Standard design with lead lining and snap fit lid.
- easy to open, easy to close with gentle pressure.
- firm, consistent support for films through special shaping:
  base pre-formed with convex profile.
- flexible, pure aluminium base (Absorption 1.2mm A\leq value)
  flim processed in frames:
- Aluminium base coated in impact-resistant paint
- Anodised aluminium frame
- Elastic foam for film protection
- Specifically designed for audioradiography at 70°C

Use our reinforcement films in the blue sensitivity range with these X-Ray cassettes.



Format mm	PK	Cat. No.
180 x 240	1	**9.106 580**
240 x 300	1	**9.106 581**
200 x 400	1	**9.106 582**
356 x 432	1	**9.106 583**

Reinforcement films for X-Ray cassettes

Reinforcement films Universal B 1
$CaWo_4$, blue.

Format mm	PK	Cat. No.
180 x 240	2	**9.106 570**
240 x 300	2	**9.106 571**
200 x 400	2	**9.106 572**
356 x 432	2	**9.106 574**

1



1 Dialysis membrane tubing OrDial

NEW!

Orange Scientific

Orange Scientific OrDial dialysis membrane tubings are made of high quality Regenerated Cellulose. They are produced with the highest care and attention to quality and stability. Still, they are extremely cost effective. The membranes are supplied dry containing glycerol acting as a preservative. Thus, the membranes should be cleaned before use.

Each box includes:
- Two free of charge dialysis membrane clips.
- Technical manual.
- Analytical data sheet (except D14b range).
- In order to prevent any damage to the membranes during transport, the membranes are packed in a carton. This carton is packed in a seal bag containing a desiccant and the bag is packed in another thick carton box.

Type	MWCO	Width (flat)	Length	Diam. (dry)	Thickness	Vol./cm	PK	Cat. No.
	da	mm	m	mm	µm	ml		
OrDial D35	3500	25	15	16	20	2.02	1	**6.266 373**
OrDial D35	3500	25	30	16	20	2.02	1	**6.266 374**
OrDial D35	3500	44	15	28	20	6.16	1	**6.266 375**
OrDial D35	3500	44	30	28	20	6.16	1	**6.266 376**
OrDial D35	3500	55	15	35	25	9.63	1	**6.266 377**
OrDial D80	6000 - 8000	25	15	16	20	2.02	1	**6.266 378**
OrDial D80	6000 - 8000	25	30	16	20	2.02	1	**6.266 379**
OrDial D80	6000 - 8000	34	15	22	23	3.81	1	**6.266 380**
OrDial D80	6000 - 8000	34	30	22	23	3.81	1	**6.266 381**
OrDial D80	6000 - 8000	44	15	28	20	6.16	1	**6.266 382**
OrDial D80	6000 - 8000	44	30	28	20	6.16	1	**6.266 383**
OrDial D80	6000 - 8000	55	15	35	25	9.63	1	**6.266 384**
OrDial D80	6000 - 8000	55	30	35	25	9.63	1	**6.266 385**
OrDial D14	12000 -14000	10	15	6	51	0.29	1	**6.266 386**
OrDial D14	12000 -14000	10	30	6	51	0.29	1	**6.266 387**
OrDial D14	12000 -14000	25	15	16	20	2.02	1	**6.266 388**
OrDial D14	12000 -14000	25	30	16	20	2.02	1	**6.266 389**
OrDial D14	12000 -14000	34	15	22	23	3.81	1	**6.266 390**
OrDial D14	12000 -14000	34	30	22	23	3.81	1	**6.266 391**
OrDial D14	12000 -14000	44	15	28	20	6.16	1	**6.266 392**
OrDial D14	12000 -14000	44	30	28	20	6.16	1	**6.266 393**
OrDial D14b	12000 -14000	10	30	6	51	0.29	1	**6.266 394**
OrDial D14b	12000 -14000	25	30	16	27	2.02	1	**6.266 395**
OrDial D14b	12000 -14000	32	30	20	30	3.15	1	**6.266 396**
OrDial D14b	12000 -14000	40	30	25	30	4.91	1	**6.266 397**
OrDial D14b	12000 -14000	80	15	51	51	20.43	1	**6.266 398**

2



2 Centrifugal concentrators, Vivaspin 2

Sartorius

Membrane: polyethersulphone. This 2 ml volume unit combines the rapidity of the classic Vivaspin products with reduced internal surface and membrane areas for superior recoveries from very dilute solutions. With a choice of suitable membranes (PES, CTA, Hydrosart) Vivaspin 2 provides the highest flexibility for process optimisation. Vivaspin 2 guarantees maximum sample recovery either by reverse centrifuging into the concentrate recovery cap or by directly pipetting the concentrate from the deadstop pocket built into the bottom of the concentrator.

Membrane surface:	1.2cm²
Max. rcf.:	8000 x g
Hold-up volume:	< 10µl

MWCO	PK	Cat. No.
da		
3000	25	**9.049 861**
5000	25	**9.049 760**
10000	25	**9.049 761**
30000	25	**9.049 762**
50000	25	**9.049 763**
100000	25	**9.049 764**
3000	100	**9.049 862**
5000	100	**9.049 777**
10000	100	**9.049 778**
30000	100	**9.049 779**
50000	100	**9.049 780**
100000	100	**9.049 781**

E & OE.

1 Vivaspin 6

Sartorius

Membrane: polyethersulphone. Vivaspin 6ml concentrators have been developed to offer increased volume flexibility and performance. Vivaspin 6 can process an impressive 6ml in either swing-out buckets or fixed angle rotors accepting standard 15ml conical bottom test tubes. The Vivaspin 6 features twin vertical membranes for unparalleled filtration speeds and 100x plus concentrations.



Membrane area:	2.5cm²
Max. centrifugal force:	10000 x g
Dead volume:	< 10µl

MWCO da	PK	Cat. No.
5000	25	**9.049 765**
10000	25	**9.049 766**
30000	25	**9.049 767**
50000	25	**9.049 768**
100000	25	**9.049 769**
0.2 µm	25	**9.049 770**
5000	100	**9.049 782**
10000	100	**9.049 783**
30000	100	**9.049 784**
50000	100	**9.049 785**
100000	100	**9.049 786**
0.2 µm	100	**9.049 787**
Starter kit (5 ea. 5K to 100K)	25	**9.049 753**

2 Centrifugal concentrators, Vivaspin 500

Sartorius

Membrane: polyethersulphone. Vivaspin 500µl unit with 2.2ml sample carrier tube can be used in a fixed angle rotor. The vertical, built-in membrane guarantees minimal membrane fouling and provides rapid sample concentration. Low protein adsorption gives minimal sample loss.



Membrane surface:	0.5cm²
Max. rcf.:	15000 x g
Hold-up volume:	< 5µl

MWCO da	PK	Cat. No.
3000	25	**9.049 863**
5000	25	**9.049 755**
10000	25	**9.049 756**
30000	25	**9.049 757**
50000	25	**9.049 758**
100000	25	**9.049 759**
Starter kit (5 ea. 5K to 100K)	25	**9.049 750**
3000	100	**9.049 864**
5000	100	**9.049 850**
10000	100	**9.049 851**
30000	100	**9.049 852**
50000	100	**9.049 853**
100000	100	**9.049 854**





1 Centrifugal concentrators, Vivaspin 20

Sartorius

Membrane: polyethersulphone. Vivaspin 20ml centrifugal concentrators have been developed to offer increased volume flexibility and performance. Vivaspin 20 handles up to 20ml in swing bucket centrifuges and 14ml in 25° fixed angle rotors accepting 50ml centrifuge tubes. Featuring twin vertical membranes for unparalleled filtration speeds the Vivaspin 20 can achieve 100x plus concentrations. Remaining volume is easy to read off the printed scale on the side of the concentrator and the modified dead stop pocket further simplifies direct pipette recovery of the final concentrate.

Membrane area:	6.0cm²
Max. centrifugal force:	8000xg
Dead volume:	< 20µl

MWCO da	PK	Cat. No.
3000	12	**9.049 855**
5000	12	**9.049 771**
10000	12	**9.049 772**
30000	12	**9.049 773**
50000	12	**9.049 774**
100000	12	**9.049 775**
300000	12	**9.049 857**
1000000	12	**9.049 858**
0.2 µm	12	**9.049 776**
3000	48	**9.049 856**
5000	48	**9.049 788**
10000	48	**9.049 789**
30000	48	**9.049 790**
50000	48	**9.049 791**
100000	48	**9.049 792**
300000	48	**9.049 859**
1000000	48	**9.049 860**
0.2 µm	48	**9.049 793**
Starter kit (2 ea. 5K to 0.2 µm)	12	**9.049 754**



2 Centrifugal filtration units, Centrisart I

Sartorius

Centrisart I is a ready to use unit for small volume centrifugal ultrafiltration to separate proteins from low molecular weight substances in biological samples.

Typical applications include:
- Drug binding studies
- Determination of metabolites in serum
- Protein removal from blood samples
- Cleaning of liposomes (virus removal)

Type	PK	Cat. No.
Centrisart 5,000 MWCO CTA	12	**9.054 671**
Centrisart 10,000 MWCO CTA	12	**9.054 672**
Centrisart 20,000 MWCO CTA	12	**9.054 673**
Centrisart 100,000 MWCO PES	12	**9.054 674**
Starter pack (3 units each of 5K, 10K, 20K, 100K)	12	**9.054 675**

CTA = Cellulose tri-acetate
PES = Polyethersulphone



E & OE.

1 Cell Culture Dishes, Nunclon™Δ Surface, PS, treated, sterile

NEW!



Thermo Scientific

Surface treated dishes for cell culture available in various sizes and formats are optically clear and suitable for microscopy. Nunclon™Δ surface modification is certified non-pyrogenic and tested for both monolayer formation and cloning efficiency employing primary cells as well as repeating cell lines. Sterile. With lid.
Material: Polystyrene

Dimensions mm	Height mm	Culture surface cm²	Working volume ml	PK	Cat. No.
Ø 35	10	8.8	3	500	**9.407 393**
Ø 60	15	21.5	5	400	**9.407 395**
Ø 100	15	56.7	12.5	150	**9.407 398**
Ø 100	20	56.7	12.5	240	**9.407 401**
Ø 150	20	145.0	35	80	**9.407 399**

2 Cell culture flasks, treated, PS, sterile

NEW!

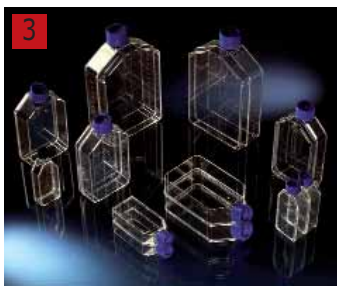


These cell culture flasks with standard treated surfaces are available with different growth areas from 12.5 to 182 cm².
Features:
- Vented or plug-seal caps are available
- Innovative angled neck design offers good pipette and cell scraper access
- Upper triangular and wider base shape provides stability
- Protruding ridge on the back side of the flask enables easy stacking
- Special writing area near the neck
- Engraved graduation on both flask sides
- Sterilized by gamma irradiation
- Non-pyrogenic

Material: Polystyrene

Culture surface cm²	Working volume ml	Cover type	Neck	Neck thread mm	PK	Cat. No.
12.5	20	standard	angled	45	10	**6.267 172**
12.5	20	vented	angled	45	10	**6.267 173**
25.0	40	standard	angled	45	10	**6.267 174**
25.0	40	vented	angled	45	10	**6.267 175**
75.0	75	standard	angled	45	5	**6.267 176**
75.0	75	vented	angled	45	5	**6.267 177**
182.0	400	standard	angled	45	5	**6.267 178**
182.0	400	vented	angled	45	5	**6.267 179**

3 Cell Culture Flasks, Nunclon™Δ Surface, PS/PE-HD, sterile



Thermo Scientific

Nunclon™Δ cell culture flasks with surface areas from 75 to 175cm² are available with filter caps or Vent/Close caps for good gas exchange. Short, wide neck (angled or straight) allows easy access to entire growth surface. The Nunclon™Δ treatment is limited to the intended growth area. Neck areas are not treated to prevent cell attachment and growth in undesired areas. Certified non-pyrogenic and tested for both monolayer formation and cloning efficiency employing primary cells as well as repeating cell lines. Sterile.
Material flasks: Polystyrene
Material caps: HDPE

Culture surface cm²	Neck	Cover type	Working volume ml	PK	Cat. No.
25	Angled	Filter	7	160	**9.390 345**
25	Angled	Vent/Close	7	160	**9.407 027**
80	Straight	Filter	30	50	**9.390 346**
80	Straight	Vent/Close	30	50	**9.407 077**
175	Straight	Filter	68	32	**9.390 348**

1



1 2 Cell Culture Flasks EasYFlask™, treated, PS/PE-HD, sterile

Thermo Scientific

Cell culture flasks available with Nunclon™Δ modified surface (culture areas of 25cm² to 225cm²) or Collagen I and Poly-D-Lysine coated (culture areas up to 175cm²). Choose cap: Filter caps for continuous venting or Vent/Close caps. Ergonomic closure enables opening and closing with 1/3 turn and "Y"-mark allows visual verification of vent position, even when stacked. Angled, wide neck gives easy access to entire growth surface. Graduations are both printed and moulded on the side walls. Certified non-pyrogenic and tested for both monolayer formation and cloning efficiency employing primary cells as well as repeating cell lines. Sterile.
Material flasks: Polystyrene
Material caps: PE-HD
Accessories: Vent/Close caps for 25cm² flasks, order no. 4.008 543.

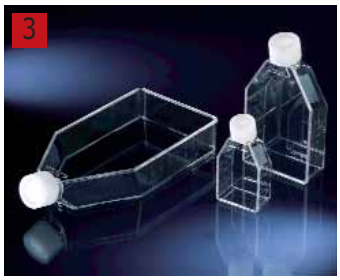
2



Surface	Culture surface cm²	Neck	Cover type	Working volume ml	PK	Cat. No.
Nunclon™	25	Angled	Filter	7	200	**9.390 331**
Nunclon™	25	Angled	Vent/Close	7	200	**9.390 330**
Nunclon™	75	Angled	Filter	25	100	**9.390 333**
Nunclon™	75	Angled	Vent/Close	25	100	**9.390 332**
Nunclon™*	175	Angled	Filter	55	30	**7.510 686**
Nunclon™*	175	Angled	Vent/Close	55	30	**4.008 552**
Nunclon™*	225	Angled	Filter	70	30	**6.236 539**
Nunclon™*	225	Angled	Vent/Close	70	30	**4.008 625**
Collagen I	25	Angled	Filter	7	60	**4.009 044**
Collagen I	75	Angled	Filter	25	30	**6.244 028**
Collagen I	175	Angled	Filter	55	30	**4.009 123**
Poly-D-Lysin	25	Angled	Filter	7	60	**4.009 043**
Poly-D-Lysin	75	Angled	Filter	25	30	**4.008 945**
Poly-D-Lysin	175	Angled	Filter	55	30	**4.009 122**

* Batch no. and cat. no. printed on each flask.

3



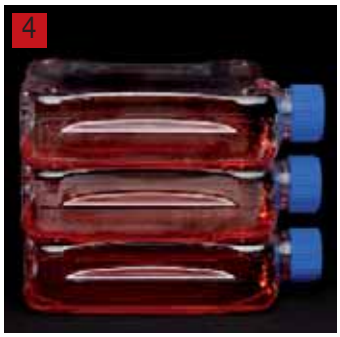
3 Cell Culture Flasks EasyFlask™/TripleFlask™, non-treated, PS/PE-HD, non-pyrogenic

Thermo Scientific

Non-treated, sterile flasks for suspension cell cultures. White caps for easy identification. Non-Pyrogenic.
Material flasks: Polystyrene
Material caps: PE-HD

Type	Capacity ml	Neck	Working volume ml	PK	Cat. No.
EasyFlask™	70	curved	7	200	**6.702 724**
EasyFlask™	260	curved	30	100	**6.222 672**
EasyFlask™	645	curved	55	30	**7.900 288**
TripleFlask™	800	straight	200	32	**7.900 289**

4



4 Cell culture flasks Nunc™ 300cm², treated, PS/PE-HD, sterile

NEW!

Thermo Scientific

The Thermo Scientific™ Nunc™ 300 cm² Cell Culture Flask is our newest and biggest cell culture flask. In fact, this 1.900 mL total volume flask provides the largest culture area of any single-layer flask on the market, and is cell culture treated to deliver a uniform surface chemistry for promoting cell attachment and expanded growth. Promotes cell attachment and growth: Vacuum-gas plasma tissue-culture treated polystyrene for uniform surface chemistry, cell attachment, spreading and promoting cell growth. Durable construction, friendly design: Blow-molded, one-piece design with straight neck and molded grip notches that make this 1.900ml flask easy to hold. Quick volume estimation and sample identification: Includes bold printed graduations (100ml to 500ml, in 50ml graduations) and a large writing patch. Maintains optimal sterility during growth and passage: Filter cap incorporates a 0.2µm pore size hydrophobic membrane that allows gas exchange while maintaining sterility. High-quality assurance: Sterilized by gamma irradiation, non-pyrogenic. Easy to stack: Prominent stacking feet on upper surface facilitate reliable stacking in incubators and under your culture hood.
Material flasks: Polystyrene
Material caps: PE-HD

Culture surface cm²	Neck	Cover type	Working volume ml	PK	Cat. No.
300	straight	Vent/Close	1900	12	**9.390 337**
300	straight	Filter	1900	12	**9.390 338**

E & OE.

1 Cell culture flasks TripleFlask Nunclon™ Δ Surface, PS/PE-HD, sterile

Thermo Scientific

Cell culture flasks with three parallel growth surfaces provide a total culture area of 500 cm² - with external dimensions of a 175 cm² standard flask. Ideal for scale-up.
Available with Vent/Close caps or filter caps for good gas exchange. Certified non-pyrogenic and tested for both monolayer formation and cloning efficiency employing primary cells as well as repeating cell lines. Sterile
Material flasks: Polystyrene
Material caps: PE-HD

1



Culture surface cm²	Neck	Cover type	Working volume ml	PK	Cat. No.
500	Straight	Filter	200	32	**9.390 351**
500	Straight	Vent/Close	200	32	**9.390 350**

Cell Culture Flasks, Nunclon™ Sphera™

NEW!

Thermo Scientific

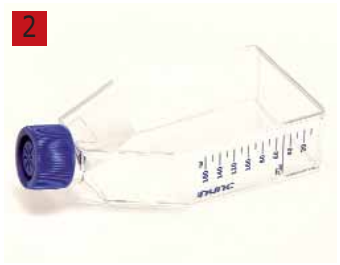
Optimizing spheroid formation
- Allows cells to grow in suspension with virtually no cell attachment
- Supports many different cell types and their ability to generate spheroids
- Enables consistent, repeatable cell growth

Growing 3D cancer cultures
- Minimizes variability and supports the consistent formation of cancer spheroids that simulate the 3D structures of tumor growth, providing a better model system for studying tumor cell progression and efficacy of anticancer agents in vitro

Promoting formation of embryoid bodies (EB)
- Demonstrates superior quality for embryoid body formation of pluripotent stem cells with minimal spontaneous differentiation
- Resultant cells are able to differentiate into all three germ layers

Certifications/Compliance
- Free of animal products Nonpyrogenic: Endotoxin tested (0.5 EU/mL)
- Biologically inert: USP biological reactivity class VI
- High level of sterility: SAL 10-6, ethylene oxide gas sterilization

2



6.265 521

Culture surface cm²	Neck	Working volume ml	Cover type	PK	Cat. No.
25	angled	7	filter	1	**6.265 520**
75	angled	25	filter	1	**6.265 521** 2

3 Multidishes, non-treated, PS, sterile

Thermo Scientific

Non-treated, sterile multidishes for suspension cell cultures are available in formats from 4 up to 48 wells. Raised well rims lower the risk of cross contamination. Excellent optical quality. Non-pyrogenic. With lid.
Material dishes and lids: Polystyrene

3



no. of wells	Working volume ml	PK	Cat. No.
4	1	120	**6.223 971**
6	3	75	**6.803 562**
12	2	75	**7.623 040**
24	1	75	**6.222 953**
48	0.5	75	**6.207 164**



1 Multidishes, Nunc™ cell culture treated surface, PS, sterile

Thermo Scientific

4- to 48-well multidishes with Nunclon™ Δ treated surface. 6-well plates also available with Poly-D-Lysine and Collagen I coating. Raised well rims lower the risk of cross contamination.
Excellent optical quality. All available surface modifications are certified non-pyrogenic and tested for both monolayer formation and cloning efficiency employing primary cells as well as repeating cell lines.
Sterile. With lid Material dishes and lids: Polystyrene

no. of wells	Culture surface cm²	Working volume ml	Description	PK	Cat. No.
4	1.9	1	Nunclon™Δ, Flat	120	**6.050 151**
4	21.8	5	Nunclon™Δ, Flat	100	**4.009 034**
6	9.6	3	Nunclon™Δ, Flat	75	**9.390 401**
6	9.6	3	Nunclon™Δ, Flat	85	**9.390 402**
6	9.6	3	Poly-D-Lysin, Flat	20	**4.008 850**
6	9.6	3	Collagen I. Flat	20	**4.008 874**
8	10.5	3	Nunclon™Δ, Flat	100	**4.009 045**
12	3.5	2	Nunclon™Δ, Flat	75	**9.390 403**
24	1.9	1	Nunclon™Δ, Flat	75	**9.390 410**
24	1.9	1	Nunclon™Δ, Flat	85	**7.634 155**
48	1.1	0.5	Nunclon™Δ, Flat	75	**9.390 411**
48	1.1	0.5	Nunclon™Δ, Flat	85	**6.206 402**



2 Cell Culture Dishes with thermosensitive UpCell™ Surface, PS

Thermo Scientific

UpCell™ Surface enables harvesting of adherent cells by simple reduction of temperature from 37°C to below 32°C.
- Without trypsinization you will get your cells with intact surface proteins for culture passaging, single- cell analyses and cell transplantation reasearch.
- No manual cell scraping to get high viability.
- Enables harvesting of cell sheets and creation of 3D- tissue models held together by normal cell junctions and extracellular matrix deposited by the cells.
- Available in sterile MicroWell™ Plate, Petridish or MultiDish format.
- With lids with airvent rims.
- Certified for functionality, sterility, non- pyrogenic and non- toxicity.

6- Well- Multidish and 3.5cm- Dish will be delivered with specific membrane for cell sheet transfer.

Type	no. of wells	Culture surface cm²	Dimensions mm	Working volume ml	PK	Cat. No.
MicroWell™ plate	96	0.3	128/86**	0.2	8	**4.008 724**
Multidish	48	1.1	128/86**	0.5	6	**4.008 658**
Multidish	24	1.9	128/86**	1	6	**4.008 657**
Multidish	12	3.5	128/86**	2	6	**4.008 656**
Multidish*	6	9.6	128/86**	3	6	**4.008 655**
Petridish 100 mm	1	56.7	92/17**	12.5	6	**4.008 763**
Petridish 100 mm, with grid	1	56.7	92/17**	12.5	6	**4.008 764**
Petridish 60 mm	1	21.5	60/15**	5	30	**4.009 049**
Petridish 60 mm, with grid	1	21.5	60/15**	5	30	**4.009 050**
Petridish 35 mm*	1	8.8	40/12**	3	30	**4.009 011**

*with membrane for cell sheet transfer
**Max. ext. dimension



E & OE.

1 Cell Culture Plates, treated, PS, sterile



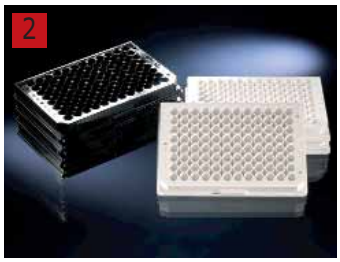
These standard surface treated cell culture plates exhibit a reduced evaporation due to raised well rims and uniform rings on the lids.
Features:
- Available with 6-, 12-, 24-, 48- or 96-wells (lid included)
- Flat well bottom
- 96-well plate also available as round bottom plate
- Single position lid reduces the risks of cross-contaminations
- Wells are labeled with alphanumeric code for easy identification
- Sterilized by gamma irradiation
- Non-pyrogenic

Material: Polystyrene

Surface	no. of wells	Culture surface	Working volume	PK	Cat. No.
		cm²	ml		
Treated	6	10.00	17.00	100	**6.267 166**
Treated	12	4.20	6.80	100	**6.267 167**
Treated	24	2.00	3.50	100	**6.267 168**
Treated	48	0.85	1.55	100	**6.267 169**
Treated	96	0.38	0.39	100	**6.267 170**
Treated*	96	0.38	0.32	100	**6.267 171**

*Round bottom

2 F96 MicroWell™ Plates, PS



Clear, white or black plates with excellent optical clarity and flat bottom wells. *Thermo Scientific*
Nunclon™Ä, Collagen I, Poly-D-Lysine surface modifications suitable for cell culture assays.
Material plates: Polystyrene
Total volume µl/well: 400

Surface	Colour	Sterile	Description	PK	Cat. No.
Nunclon™Δ	Clear	yes*	with lid	160	**6.803 751**
Nunclon™Δ	Clear	yes*	with lid	50	**9.407 473**
Nunclon™Δ	White	yes*	with lid	50	**6.802 646**
Nunclon™Δ	Black	yes*	with lid	50	**6.802 647**
Collagen I	Clear	no**	with lid	20	**4.008 866**
Poly-D-Lysin	Clear	no**	with lid	20	**4.008 858**
Non-treated	Clear	yes	with lid	160	**6.237 877**
Non-treated	White	yes	with lid	50	**6.231 848**
Non-treated	Black	yes	with lid	50	**7.601 891**
Non-treated	Clear	yes	without lid	180	**4.008 715**
Cell culture	Clear	yes	without lid	180	**4.008 767**
Non-treated***	Clear	yes	with lid	160	**6.803 101**
Non-treated	Clear	yes	without lid	50	**9.390 515**
Cell culture	Clear	yes	without lid	50	**9.407 475**

* certified.
**Produced in clean environment.
***with Barcode

96-well plate Nunclon™ Sphera™



6.264 322

Thermo Scientific

Optimizing spheroid formation
- Allows cells to grow in suspension with virtually no cell attachment
- Supports many different cell types and their ability to generate spheroids
- Enables consistent, repeatable cell growth

Growing 3D cancer cultures
- Minimizes variability and supports the consistent formation of cancer spheroids that simulate the 3D structures of tumor growth, providing a better model system for studying tumor cell progression and efficacy of anticancer agents in vitro

Promoting formation of embryoid bodies (EB)
- Demonstrates superior quality for embryoid body formation of pluripotent stem cells with minimal spontaneous differentiation
- Resultant cells are able to differentiate into all three germ layers

Certifications/Compliance
- Free of animal products
- Nonpyrogenic: Endotoxin tested (0.5 EU/mL)
- Biologically inert: USP biological reactivity class VI
- High level of sterility: SAL 10-6, ethylene oxide gas sterilization
- Shelf Life 4 years

Surface	Colour	Sterile	Description	PK	Cat. No.
Nunclon™ Sphera™	Clear	SAL 10^{-6}	round bottom	1	**6.264 322** 3
Nunclon™ Sphera™	Clear	SAL 10^{-6}	flat bottom	1	**6.264 323**

1



4.009 096

96-well plate Nunc™ Edge, 96-wells with flat bottom, PS

NEW!

Thermo Scientific

Minimize plate evaporation through the uniquely engineered design of Thermo Scientific™ Nunc™ Edge-96 Well Plate. The edge plate is engineered for optical superiority allowing your automated imaging systems to operate efficiently. The plates are made of clear polystyrene for excellent optical properties making it ideal for optical measurements

Features:
- Reduced Edge Effect virtually eliminates evaporation in lengthy incubations
- Overall plate evaporation rate reduced to <2% after seven days of incubation
- Low evaporation permits full-plate results
- Large evaporative buffer zones eliminate well-to-well variability
- Perimeter moat can be filled with 1.7mL sterile H_2O or media
- Low background fluorescence, ideal for optical instruments
- Ideal for image-based high content applications like measuring primary neuron cultures
- Customized bar coding available (upon request)
- Untreated or cell culture treated hydrophilic surface (Nunclon™ Δ)

Material: Polysytrene
Total well volume: 400µL

Surface	Colour	Sterile	Description	PK	Cat. No.
Nunclon™Δ	Clear	yes	without lid	160	**4.009 096** 1
Nunclon™Δ	Clear	yes	with lid	50	**4.008 772**
Non-treated	Clear	no	with lid	160	**4.009 033**
Non-treated	Clear	yes	with lid	50	**4.008 723**

2



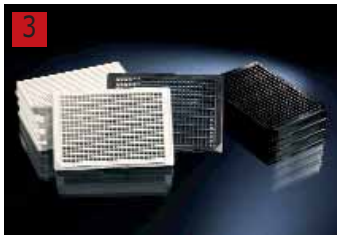
2 F96 Well Optical Bottom Plates, PS

Thermo Scientific

- Nunclon™Δ surface for cell culture
- Non-treated plates are optimised for scintillation counting
- White or black upper structure with polymer bottom plates combine the optical clarity of virgin crystalline polystyrene with optimal surface for a wide range of HTS applications
- Working volume range: 50 - 200µl/well

Surface	Colour	Sterile	Description	PK	Cat. No.
Cell Culture	White	yes	with lid	30	**4.008 852**
Cell Culture	Black	yes	with lid	30	**6.801 890**
Non-treated	White	no	without lid	30	**6.231 847**
Non-treated	Black	no	without lid	30	**6.901 329**

3



3 384 Well Optical Bottom Plates, PS

Thermo Scientific

Combining a white or black upper structure with an optically clear, flat well bottom polymer base allows for reading from bottom and top, or both. Nunclon™Δ surface modifications are for cell culture optimized. Non-treated plates are ideal for scintillation counting.

Material plates: Polystyrene
Total volume µl/well: 120

Surface	Colour	Sterile	Description	PK	Cat. No.
Cell Culture	White	yes*	with lid	30	**4.009 018**
Cell Culture	Black	yes*	with lid	30	**4.009 004**
Non-treated	White	no	without lid	30	**4.008 951**
Non-treated	Black	no	without lid	30	**4.008 753**

* certified.

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

Thermo SCIENTIFIC

E & OE.

1 BRAND*plates*® Insert System

For manual and automated cell and tissue culture work. *BRAND*
Includes two different cell culture plates and two types of cell culture inserts, which can also be used in combination.


1

Quality features

General
- Sterile according to ISO 11 137 and AAMI-Guidlines, SAL 10^{-6}
- Non cytotoxic according to ISO 10 993 5, endotoxin free (<0.01 EU/ml), free from DNA, DNase and RNase.

Plates
- Innovative, specially designed wells with side feeding ports,
- Manufactured according to the requirements in ANSI/SLAS Standards 1 and 4
- pureGrade™ S (untreated) and cellGrade™ plus (TC treated) surface

Inserts
- Track-etched PC- und PET membranes
- Hanging inserts
- Perfect positioning in the plates via guide ridges
- cellGrade™ plus surface (TC treated)

BRAND*plates*® plates
Cell culture plates for insert strips

24-well Standard Plate
The plate includes 24 individually fillable wells that can be fitted with strips of 4 inserts and/or individual inserts.

6-well Special Plate
The 4 wells are all connected as one large, elongated well. This well can be fitted with a strip of 4 inserts so that all 4 of the inserts in the strip can be supplied with medium at the same time.

BRAND*plates*® Insert Strips and Insert System
Cell culture inserts, smooth walled

Cell culture inserts with Inlet Opening System*
With special inlet channels, for automated in vitro preparation of human tissues. The Inlet Opening System*enables rapid, consistent changing of media, from submersion culture to air-lift culture. The special inlet channels enable adjustment of the medium level without damage to the skin mode

* Patent pending

BRAND*plates*® Insert System, 6-well Plates filled with 6 Insert Strips

NEW!

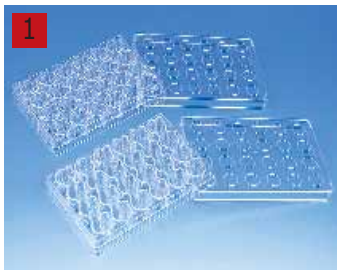
PS. cellGrade™ plus surface, sterile. Insert strips smooth walled or Inlet Opening System*. *BRAND*
In each case with lid with condensation rings.


2
6.257 647

Description	Pore size µm	Package contents	Membrane	PK	Cat. No.
smooth-walled	0.40	5 (30 Insert Strips)	PC	5	**6.257 647** 2
smooth-walled	1.00	5 (30 Insert Strips)	PC	5	**6.257 648**
smooth-walled	3.00	5 (30 Insert Strips)	PC	5	**6.257 649**
smooth-walled	8.00	5 (30 Insert Strips)	PC	5	**6.257 650**
Inlet Opening System	0.40	5 (30 Insert Strips)	PC	5	**6.257 651**
Inlet Opening System	1.00	5 (30 Insert Strips)	PC	5	**6.257 652**
Inlet Opening System	3.00	5 (30 Insert Strips)	PC	5	**6.257 653**
Inlet Opening System	8.00	5 (30 Insert Strips)	PC	5	**6.257 654**
smooth-walled	0.40	5 (30 Insert Strips)	PET	5	**6.257 655**
smooth-walled	1.00	5 (30 Insert Strips)	PET	5	**6.257 656**
smooth-walled	3.00	5 (30 Insert Strips)	PET	5	**6.257 657**
smooth-walled	8.00	5 (30 Insert Strips)	PET	5	**6.257 658**
Inlet Opening System	0.40	5 (30 Insert Strips)	PET	5	**6.257 659**
Inlet Opening System	1.00	5 (30 Insert Strips)	PET	5	**6.257 660**
Inlet Opening System	3.00	5 (30 Insert Strips)	PET	5	**6.257 661**
Inlet Opening System	8.00	5 (30 Insert Strips)	PET	5	**6.257 662**

* Patent pending

1



1 BRANDplates® 24-well Standard-Plates or 6-well Plates

NEW!

PS. pureGrade™ S or cellGrade™ plus surface, sterile. In each case with lid with condensation rings.
Packaging: single packed, with lid

BRAND

Description	Surface	PK	Cat. No.
24 well standard plate	pureGrade™ S	10	**6.257 627**
6 well plate	pureGrade™ S	10	**6.257 628**
24 well standard plate	cellGrade™ plus	10	**6.257 629**
6 well plate	cellGrade™ plus	10	**6.257 630**

2



2 BRAND*plates*® Single Insert System, 13mm, smooth walled or with Inlet Opening System

NEW!

PS. cellGrade™ plus surface, sterile. Single Inserts (single packed).

BRAND

Description	Pore size µm	Membrane	Height Insert mm	PK	Cat. No.
smooth-walled	0.40	PC	13	48	**6.266 249**
smooth-walled	1.00	PC	13	48	**6.266 253**
smooth-walled	3.00	PC	13	48	**6.266 257**
smooth-walled	8.00	PC	13	48	**6.266 261**
Inlet Opening System	0.40	PC	13	48	**6.266 250**
Inlet Opening System	1.00	PC	13	48	**6.266 254**
Inlet Opening System	3.00	PC	13	48	**6.266 258**
Inlet Opening System	8.00	PC	13	48	**6.266 262**
smooth-walled	0.40	PET	13	48	**6.266 251**
smooth-walled	1.00	PET	13	48	**6.266 255**
smooth-walled	3.00	PET	13	48	**6.266 259**
smooth-walled	8.00	PET	13	48	**6.266 263**
Inlet Opening System	0.40	PET	13	48	**6.266 252**
Inlet Opening System	1.00	PET	13	48	**6.266 256**
Inlet Opening System	3.00	PET	13	48	**6.266 260**
Inlet Opening System	8.00	PET	13	48	**6.266 264**

3



6.257 631

4



6.257 635

5



6.266 265

6



6.266 266

BRAND*plates*® Insert System, 13mm or 9mm, smooth walled or with Inlet Opening System

NEW!

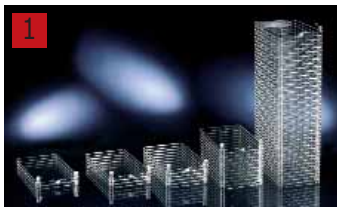
PS. cellGrade™ plus surface, sterile. Strips of 4 inserts, divisible (single packed).

BRAND

Description	Pore size µm	Membrane	Height Insert mm	PK	Cat. No.
smooth-walled	0.40	PC	13	12	**6.257 631** 3
smooth-walled	1.00	PC	13	12	**6.257 632**
smooth-walled	3.00	PC	13	12	**6.257 633**
smooth-walled	8.00	PC	13	12	**6.257 634**
Inlet Opening System	0.40	PC	13	12	**6.257 635** 4
Inlet Opening System	1.00	PC	13	12	**6.257 636**
Inlet Opening System	3.00	PC	13	12	**6.257 637**
Inlet Opening System	8.00	PC	13	12	**6.257 638**
smooth-walled	0.40	PET	13	12	**6.257 639**
smooth-walled	3.00	PET	13	12	**6.257 641**
smooth-walled	8.00	PET	13	12	**6.257 642**
Inlet Opening System	0.40	PET	13	12	**6.257 643**
Inlet Opening System	1.00	PET	13	12	**6.257 644**
Inlet Opening System	3.00	PET	13	12	**6.257 645**
Inlet Opening System	8.00	PET	13	12	**6.257 646**
smooth-walled	0.40	PC	9	12	**6.266 265** 5
smooth-walled	1.00	PC	9	12	**6.266 269**
smooth-walled	3.00	PC	9	12	**6.266 271**
smooth-walled	8.00	PC	9	12	**6.266 273**
Inlet Opening System	0.40	PC	9	12	**6.266 266** 6
smooth-walled	0.40	PET	9	12	**6.266 267**
smooth-walled	1.00	PET	9	12	**6.266 270**
smooth-walled	3.00	PET	9	12	**6.266 272**
smooth-walled	8.00	PET	9	12	**6.266 274**
Inlet Opening System	0.40	PET	9	12	**6.266 268**

E & OE.

1 Cell Factories with Nunclon™Δ Surface, PS, sterile



Thermo Scientific

Cell culture Cell Factories are optimal for industrial scale production of vaccines, monoclonal antibodies or pharmaceuticals. Nunclon™Δ modification is certified for cell culture, ideal for adherent cells and can be used for suspension cultures. Available in 1, 2, 4, 10 or 40 tray versions for easy scale-up. Additional connectors etc. please see Cell Factories Accessories. Sterile.
Material Cell Factories: Polystyrene

No. of chambers	Culture surface cm²	Capacity ml	PK	Cat. No.
1	632	200	8	**6.800 181**
2	1264	400	6	**6.231 100**
4	2528	800	10	**4.009 101**
10	6320	2000	2	**6.301 727**
40	25280	8000	2	**6.300 402**

2 Cell Factories EasyFill™ mit Nunclon™Δ Surface, PS, sterile



Thermo Scientific

A time and space saving vessel for large scale cell culture production. Suitable for industrial scale production of vaccines, monoclonal antibodies or pharmaceuticals. Nunclon™Δ surface modification is certified for cell culture and ensures consistent cell growth layer to layer, lot to lot. Ready to use and easy to fill and empty with plug and play connection. Wide range of accessories available for different methods of filling, venting and harvesting (please see Cell Factories Accessories). Sterile.
Material cell factories: Polystyrene

No. of chambers	Culture surface cm²	Capacity ml	PK	Cat. No.
1	630	200	6	**4.008 721**
2	1260	400	6	**4.008 786**
4	2520	800	4	**4.008 806**
10	6300	2000	2	**4.008 779**

EasyFill™ Cell Factory System Accessories, PE-HD

Thermo Scientific

It is now easy to create a Thermo Scientific Nunc EasyFill™ Cell Factory system for your applications.
- Connections made easy: Plug a media bag or tubing set to any cell factory.
- Save time and reduce costs: Minimise cleaning processes and sterility validations. Accessories are gamma irradiated and individually wrapped.
- Prevent build up of back pressure during filling application: New venting options provide additional air venting when filling and harvesting by gravity or with a peristaltic pump.

Description	PK	Cat. No.	
EasyFill™ Cell Factory Universal Adaptor Cap	12	**9.390 710**	3
EasyFill™ Cell Factory Barbed Cap, 1/4"	12	**9.390 711**	4
EasyFill™ Cell Factory Barbed Cap, 3/8"	12	**9.390 712**	5
1.0µm Air Vent Assembly, sterile	2	**9.390 713**	6
0.22µm Air Vent Assembly, sterile	2	**9.390 714**	7
Cell Factory Filling Tubing Set w/ Male MPC, sterile	2	**9.390 715**	8

3

9.390 710

4

9.390 711

5

9.390 712

6

9.390 713

7

9.390 714

8

9.390 715

1 Roller Bottles, InVitro/TufRol™/TufRol EZ, sterile

Thermo Scientific

Roller Bottles InVitro

For industrial scale production of vaccines, monoclonal antibodies or pharmaceuticals. In vitro Roller Bottles molded of durable PETG.
Excellent substrate for adherent cells. Quick-action ergonomic closure reduces wrist stain and increases productivity. Wide range of sizes with surface areas from 1.050cm² to 4.200cm². Available in both Standard and the patented Expanded Surface (XPS), which enables increased cell growth and product yield without the need to purchase additional production equipment or increase labor. In Vitro XPS Roller Bottles have specially designed pleats that dramatically expand the available growth surface. The pleats are oriented in the direction of rotation to minimise turbulence. Flat panels between sections allow microscopic viewing and expedite drainage during medium replacement and cell harvest. Easy-to-read graduations for medium fills. Lot number is printed on each bottle to maximise traceability. Sterile.

Roller Bottles TufRol™ and TufRol™ EZ

TufRol™ Roller Bottles enable to scale cell culture processes from plates, to flasks, to roller bottles. They can be used as the primary production vessel or as a mid-scale expansion platform to feed Cell Factories or Suspension Culture Bioreactors. One-piece, seamless design reduces possibility of leaking. TufRol™ EZ bottles with shallow or deep indents make them excellent for manual and automated handling. Proprietary manufacturing process for greater impact resistance. Vertical expanded surfaces version facilitates emptying and reduces retention of product. Certified non-cytotoxic, non-pyrogenic and sterile (10^{-3} SAL).
Validation Binder available.



Description	Culture surface cm²	Material	PK	Cat. No.
InVitro 1.2X, smooth surface, non-vented cap	1050	PETG	20	**4.008 624**
InVitro 1.2X, smooth surface, non-vented cap	1050	PETG	20	**4.008 608**
InVitro 1.2X, smooth surface, vented cap	1050	PETG	20	**4.008 674**
InVitro 1XL, smooth surface, non-vented cap	1800	PETG	22	**4.008 809**
InVitro 2X, pleated surface, non-vented cap	1700	PETG	20	**4.008 740**
InVitro 2.5X, pleated surface, non-vented cap	2100	PETG	20	**4.008 812**
InVitro 2.5X, pleated surface, non-vented cap	2100	PETG	20	**4.008 797**
InVitro 5X, pleated surface, non-vented cap	4200	PETG	22	**4.009 036**
TufRol™, Smooth surface, easy on/off vented screw-cap	850	PS	20	**9.407 100**
TufRol™, Smooth surface, easy on/off non-vented screw-cap	850	PS	20	**9.407 101**
TufRol™, Smooth surface, easy on/off non-vented screw-cap	850	PS	20	**9.407 102**
TufRol™, Smooth surface, in double bag, easy on/off non-vented screw-cap	850	PS	20	**9.407 103**
TufRol™ EZ, Smooth surface, shallow indent, EZ twist vented cap	850	PS	20	**9.407 104**
TufRol™ EZ, Smooth surface, shallow indent, EZ twist vented cap	850	PS	20	**9.407 105**
TufRol™ EZ, Smooth surface, shallow indent, in double bag, EZ twist vented cap	850	PS	20	**9.407 106**
TufRol™ EZ, Smooth surface, deep indent, EZ twist vented cap	850	PS	20	**9.407 107**
TufRol™ EZ, Smooth surface, deep indent, EZ twist vented cap	850	PS	20	**9.407 108**
TufRol™ EZ, Smooth surface, deep indent, EZ twist vented cap	850	PS	20	**9.407 109**
TufRol™ EZ, Smooth surface, deep indent, in double bag, EZ twist vented cap	850	PS	20	**9.407 110**
TufRol™, Pleated surface, in double bag, easy on/off vented cap	1450	PS	20	**9.407 111**
TufRol™, Pleated surface, easy on/off non-vented cap	1450	PS	20	**9.407 112**
TufRol™, Pleated surface, in double bag, easy on/off non-vented cap	1450	PS	20	**9.407 113**
Vented caps for TufRol™ roller bottles, sterile, PE-HD		PE-HD	500	**9.407 114**
Easy on/off caps for TufRol™ roller bottles, sterile, PE-HD		PE-HD	500	**9.407 115**

Articles with double bag for cleanroom use.



2 Cell Scrapers, sterile

Thermo Scientific

Available in two different lengths with adjustable blade for optimal application flexibility.
Non-pyrogenic. Sterile.

For bottles cm²	Length cm	Height mm	Width mm	PK	Cat. No.
25 - 80	23	7.5	15.5	50	**6.222 130**
75 - 175	32	16.0	17.5	250	**9.390 356**

E & OE.

1 LLG-Cell strainers, Nylon, sterile

NEW!

- Available in 3 mesh sizes, 40 µm: 70 µm, and 100 µm
- Color coded mesh size
- Designed to fit into 50 ml tubes
- Individually packaged
- Handle and mantle surface for improved aseptic handling
- Nylon mesh
- Non-pyrogenic



Mesh size µm	Colour code	PK	Cat. No.
40	blue	50	**6.268 093**
70	white	50	**6.268 092**
100	yellow	50	**6.268 091**

2 LLG-Pestle for Cell strainers, sterile

NEW!

- Facilitates the creation of homogenous suspensions
- Individually packaged
- Non-pyrogenic, Dnase/Rnase-free
- Sterile



Type	PK	Cat. No.
LLG-Pestle for Cell strainers, sterile	100	**6.268 090**

3 Cellstrainers EASYstrainers™, PP, sterile

NEW!

Greiner Bio-One

- Available in 3 mesh sizes: 40µm, 70µm and 100µm
- Color coded mesh size
- Designed to fit into 50ml tubes
- Individually packaged, convenient blister pack
- Handle and mantle surface for improved aseptic handling
- Vent opening for fast filtration
- PET mesh
- Non-pyrogenic



Mesh size µm	Colour code	PK	Cat. No.
40	green	50	**6.266 185**
70	blue	50	**6.266 186**
100	yellow	50	**6.266 187**

4 Cellstrainers Pierce™ Tissue Strainers, 250µm, Nylon

NEW!

Perbio Science Deutschland

- 250µm mesh size
- Designed to fit into 15ml tubes
- Up to 2.5ml tissue sample per load
- Nylon mesh



Mesh size µm	PK	Cat. No.
250	50	**6.266 188**

1



1 LLG-Serological pipettes type 1, PS, paper/plastic peel, sterile

- 1 ml, 5 ml, 10 ml, 25 ml and 50 ml pipettes contain a bi-directional secondary graduation scale for precise dosing
- Also available as short-pipettes (5 ml, 10 ml and 25 ml) or wide-mouth pipette (10 ml)
- Increased volume capacity through extra graduations
- Color coded ringmark for easy volume identification
- Single packed in easy-to-open plastic/paper packaging
- Plugged
- Pyrogen-free
- Sterile

Volume ml	Grad. ml	Colour code	Negative graduations up to	PK	Cat. No.
1	1/100	yellow	0,3	500	**9.380 440**
2	1/50	green	0,6	500	**9.380 441**
5	1/10	blue	3	200	**7.930 401**
10	1/10	orange	3	200	**6.268 240**
10	1/10	orange (wide mouth)	3	200	**9.380 442**
25	2/10	red	8	150	**7.930 403**
50	5/10	purple	10	100	**9.380 443**
5	1/10	blue (short form)	3	200	**6.265 881**
10	2/10	orange (short form)	10	150	**6.265 882**
25	5/10	red (short form)	9	100	**6.265 883**

2



3



2 3 LLG-Serological pipettes type 2, PS, paper/plastic peel, sterile

NEW!

- Single-piece pipette-bodies (except 50 ml pipette)
- 5 ml, 10 ml, 25 ml and 50 ml pipettes contain a bi-directional secondary graduation scale for precise dosing
- Increased volume capacity through extra graduations
- Color coded plug for easy volume identification
- Single packed in easy-to-open plastic/paper packaging
- Plugged
- Pyrogen-free
- Sterile

Volume ml	Grad. ml	Colour code	Negative graduations up to	PK	Cat. No.
1	1/100	yellow	0.3	500	**6.266 995**
2	1/50	green	0.4	500	**6.266 996**
5	1/10	blue	3	250	**6.266 997**
10	1/10	orange	3	200	**6.266 998**
25	2/10	red	2	100	**6.266 999**
50	5/10	purple	9	100	**6.267 100**

4



5



4 5 LLG-Serological pipettes Type 3, PS, plastic/plastic pack, sterile

NEW!

- Specially suited for use in clean rooms
- Single packed in easy-to-open plastic/plastic packaging
- Increased volume capacity through extra graduations
- Color coded for easy volume identification
- Plugged
- Pyrogen-free
- Sterile

Volume ml	Grad. ml	Colour code	Negative graduations up to	PK	Cat. No.
1	0.01	clear	0.3	1000	**6.268 099**
2	0.01	clear	0.3	1000	**6.268 100**
5	0.1	blue	2.0	200	**6.268 101**
10	0.1	orange	3.0	500	**6.268 102**
25	0.2	red	10.0	200	**6.268 103**
50	0.5	purple	10.0	200	**6.268 104**

E & OE.

Graduated pipettes for tissue culture, clear glass, amber stain graduation

EX (TD) calibrated. Short form. Main point ring graduation. Specially for tissue culture and working on cleanroom benches. With durable amber stain graduation. Zero to the tip, cotton plugged (8mm outer diameter). With mouth piece for cotton plug. *Hirschmann*

Volume ml	Grad. ml	Tolerance ± ml	Overall length ± 3 mm	PK	Cat. No.
1	0.1	-	230	1	**6.080 498**
2	0.1	-	230	1	**6.090 340**
5	0.1	-	230	1	**6.080 523** 1
10	0.1	-	230	1	**6.510 172**
25	0.2	-	230	1	**6.510 335**

1



6.080 523

2 3 LLG-Electrical pipette pump *Plus*

This ergonomic pipette controller is lightweight, made from UV resistant material, features adjustable valves and is microprocessor controlled for reliability and accuracy. The powerful pump offers rapid yet sensitive aspiration and dispensing. Filling and dispensing speed is easily set using the same hand by pressing the large control button. The bright LED display will indicate which of the three modes has been selected, High, Low or Gravity Mode. The user labelling area enables customization and instant recognition and/or task designation. Additional features include hand neutral design, concave padded triggers, a 1ml pipette adapter to increase stability of small pipettes, a long life Li-Ion battery that allows 20 hours of continuous usage, low battery indicator and two holders as standard

- For 1-100ml glass or plastic pipettes
- Soft touch triggers
- 5 different coloured autoclavable nose pieces as standard
- Uses standard 0.45µm hydrophobic filters
- Long life, easily changeable rechargeable battery
- Sensitive and adjustable aspiration and dispensing
- Labelling area for identification
- Delivered completely with universal voltage and plug faced charger
- Comes with bench stand and magnetic/fixable wall mount

2



3



Description	PK	Cat. No.
LLG-Electrical pipette pump *Plus*	1	**9.281 041**
Membrane filter, 0.45µm, PTFE, non-sterile	5	**9.281 005**

4 5 Disposable Erlenmeyer Flasks with screw closure, Type 4112, 4113, PETG, sterile

Sterile disposable flasks with white PE-HD closure reduce the chance for cross contamination. Ideal for shaker and suspension cell culture, media preparation or storage. Made of light, crystal clear PETG plastic. Molded-in graduations. Leak-proof PE-HD screw closures open to vent with 1/4 turn. Flasks offer a 5-year shelf life, a 10-6 SAL, are non-pyrogenic and non-cytotoxic. Individually packaged for easy storage and handling. Available with flat or baffled bottom.
Vented closures with finish 38-430 (for 125ml and 250ml) or with finish 45-430 (for 500ml, 1000ml and 2000ml) separate available. *Thermo Scientific*

Type	Description	Volume ml	Cover type	PK	Cat. No.
4112	Flat Bottom	125	38-430	24	**7.630 506**
4112	Flat Bottom	250	38-430	12	**6.802 833**
4112	Flat Bottom	500	45-430	12	**6.229 662**
4112	Flat Bottom	1000	45-430	6	**6.234 596**
4112	Flat Bottom	2000	45-430	4	**9.141 301**
4112	Flat Bottom	2800	70	4	**9.141 302**
4113	Baffled Bottom	125	38-430	24	**6.901 167**
4113	Baffled Bottom	250	38-430	12	**6.901 168**
4113	Baffled Bottom	500	45-430	12	**6.234 594**
4113	Baffled Bottom	1000	45-430	6	**6.234 595**
4113	Baffled Bottom	2000	45-430	4	**6.227 923**
4113	Baffled Bottom	2800	70	4	**9.141 303**
4114	Vented Closure		38-430	12	**6.229 663**
4114	Vented Closure		45-430	12	**6.227 924**

4



5



Our complete Liquid Handling range - please see page 830.



1 2 Disposable Erlenmeyer Flasks with vented closure, Type 4115, 4116, PETG, sterile

Thermo Scientific

With blue vented closure, the chance for cross contamination is reduced. Ideal for shaker and suspension cell culture, media preparation or storage. Made of light, crystal clear PETG. Molded-in graduations. Leak-proof PE-HD closure has a hydrophobic 0.2µm PTFE membrane that allows sterile air exchange. Flasks offer a 5-year shelf life, a 10^{-6} SAL, are non-pyrogenic and non-cytotoxic. Available with flat or baffled bottom. Individually packaged for easy storage and handling.



Type	Description	Capacity ml	Cover type	PK	Cat. No.
4115	Flat Bottom	125	38-430	24	**6.234 530**
4115	Flat Bottom	250	38-430	12	**6.231 087**
4115	Flat Bottom	500	45-430	12	**9.141 304**
4115	Flat Bottom	1000	45-430	6	**9.141 305**
4115	Flat Bottom	2000	45-430	4	**9.141 306**
4115	Flat Bottom	2800	70	4	**9.141 307**
4116	Baffled Bottom	125	38-430	24	**9.141 308**
4116	Baffled Bottom	250	38-430	12	**9.141 309**
4116	Baffled Bottom	500	45-430	12	**9.141 310**
4116	Baffled Bottom	1000	45-430	6	**9.141 311**
4116	Baffled Bottom	2000	45-430	4	**9.141 312**
4116	Baffled Bottom	2800	70	4	**9.141 313**



3 Square Media Bottles Typ 2019, PETG, sterile

Thermo Scientific

With white PE-HD screw closure. Reduced permeability to CO_2/O_2 which reduces pH-shift. Bottles and closures are radiation-sterilised and non-pyrogenic to eliminate costly washing, depyrogenation and autoclaving steps. Heatshrink band around closure and neck provides tamper-evident seal. Packed in shrink-wrapped trays. 2L size has molded-in handgrips and a 53-mm (53B) white closure. Bottles are sterile to 10-6 SAL, non-pyrogenic, non-cytotoxic and comply with USP Class VI guidelines. Sterile. Transparent. Leakproof. Graduated.

Type	Capacity ml	Cover type	Dimensions mm	PK	Cat. No.
2019	30	diam. 20 mm	64 x 38 x 38	24	**9.103 121**
2019	60	diam. 24 mm	82 x 41 x 41	24	**9.103 122**
2019	125	diam. 38 mm/design 430	110 x 54 x 54	24	**9.103 123**
2019	250	diam. 38 mm/design 430	146 x 61 x 61	24	**9.103 124**
2019	500	diam. 38 mm/design 430	177 x 74 x 74	12	**9.103 125**
2019	1000	diam. 38 mm/design 430	220 x 94 x 94	12	**9.103 126**
2019	2000	diam. 53 mm/design 53B	271 x 116 x 116	6	**9.103 127**



4 Media Bottles with Certified Cleanness Type 382019, PETG, sterile

Thermo Scientific

Suited for biopharmaceutical processing and storage of critical reagents and bulk intermediates such as vaccine and protein therapeutic preparations. Manufactured in a certified ISO 14644-1 Class 7 cleanroom. Containers are lot certified to comply with particulate limits specified in USP <788>, EP 2.9.19, and JP 14th ed. Part 1, Section 24. Packaging is designed for cleanroom applications. Bottle and closure are secured with a tamper-resistant heat-shrink band and packaged in heat-sealed bags to support cleanroom operations. USP Class VI, EP Modified Abnormal Toxicity, and USP <661> physicochemical tests compliant. Bottles meet the requirements for USP Class VI, EP Modified Abnormal Toxicity Test, are non-cytotoxic, non-pyrogenic, non-hemolytic, and comply with USP <661> physicochemical guidelines. Resins are free of animal derived components (ADCF). Leakproof.

Type	Capacity ml	Cover type	PK	Cat. No.
382019	30	diam. 20 mm /design 415	6	**9.102 958**
382019	60	diam. 24 mm /design 415	6	**9.102 959**
382019	125	diam. 38 mm /design 430	6	**9.102 960**
382019	250	diam. 38 mm /design 430	6	**9.102 961**
382019	500	diam. 38 mm /design 430	4	**9.102 962**
382019	1000	diam. 38 mm /design 430	4	**9.102 963**
382019	2000	diam. 53 mm /design 53B	1	**9.102 964**

E & OE.

1 InVitro™ Biotainer®-Bottle, Type 3025 , PETG, sterile



With PE screw cap with silicone seal. Ready to use. With printed graduations in ml. With ribbed hand-grips (except 125ml and 5000ml). Materials meet current USP VI, are non-cytotoxic and non-pyrogenic. *Thermo Scientific*

Type	Capacity ml	Cover type	PK	Cat. No.
3025	125	38 mm	5	**9.102 972**
3005	500	38 mm	5	**9.102 970**
3110	1000	48 mm	35	**9.102 974**
3230	2000	48 mm	20	**9.102 977**
3415	5000	48 mm*	6	**6.233 835**
3415	5000	48 mm	1	**9.102 984**

* with PE handle.

2 Filling and Venting Closures with 3 ports, Type 2162, PP



With TPE gasket and port caps, Nalgene 50 platinum-cured silicone tubing. All plastic screw closures for sterile liquid transfer of tissue media, biological reagents, pure water and chemicals to and from Nalgene-carboys. For applications such as bio-reactors and fermenters. Suitable for all large Nalgene carboys or bottles with screw closures of 53mm (53B) or 83mm (83B). Includes two Nalgene 550 platinum-cured silicone tubing for drop tube and splash guard. Can be used with Nalgene carboy bottles with properly set up peristaltic pumps. Autoclavable. *Thermo Scientific*

Type	Dimensions (dia. x H) mm	Cover type mm	For tubing bore mm	PK	Cat. No.
2162	66,7 x 68,6	53	6,3	1	**7.048 080**
2162	102 x 98	83	12,7	1	**7.048 081**
2162	102 x 98	83	6,3	1	**7.048 082**

3 Aspirator with trap flask FTA-1



Designed for routine aspiration of the supernatent alcohol/buffer from the walls of microtubes during DNA/RNA purification and other macromolecule reprecipitation techniques. *Grant*

- All in one system with integrated pump
- Pump is for 1.5ml reaction tubes and very small volumes with an average suction power of 600mL/min
- Trap flasks volume 1L
- Fitted with hydrophobic microbiological filter
- Vacuum pressure of - 500mbar

- The hydrophobic microbiological suction filter eliminates risk of contamination from the trap flask. Efficiency up to 99.9%, holds particles bigger than 0.027 micron, which are smaller than agents of Hepatitis A, B and C.
- Polyethylene tube connects collecting tip to the trapping flask
- Built-in micro-compressor creates negative pressure in trapping flask for removal of liquid from microtubes
- Slim power cord can be used inside workstations
- 1L trap flask for collection of alcohol/buffer from microtest tube walls during reprecipitation techniques
- Tube holder to accommodate two tubes for collecting tip washing and storing, enabling re-use of the tip.

Type	Description	PK	Cat. No.
FTA-1	All in one system	1	**9.721 058**
FTA-B	Spare aspiration trap bottle	1	**9.721 075**
FTA-T	Spare tubing set	1	**9.721 076**
MA-8	8 channel adapter set	1	**9.721 077**
MA-8T	8 channel tip	1	**9.721 078**

Filter Units - please see page 690.

In-Line Filters - please see page 684.



1 EcoVac safety suction systems

schuett-biotec

For safe and comfortable removal of liquid excess. EcoVac increases the safety standard, when working with infectious material. Completely autoclavable. Screw-cap of safety bottle incl. 2 self-locking fittings. When tubing is removed, they close automatically and the bottle will be sealed hermetically. Safety bottle made of impact and chemical-resistant polypropylene, with screw-cap incl. 2 self-locking fittings, ventilation system, safety filter and 5m of silicone tubing.

EcoVac vacuum pump (optional):
Quiet with low vibration. Throughput 4L/min., 300mbar ult. vacuum, with illuminated on/off switch and 1m connecting cable. Overall dimensions: 80mm x 60mm x 160mm (W x H x D). 230V 50/60Hz.

Foot-switch (optional):
For short-time repeated use of EcoVac.

Supplied with: EcoVac system (2 or 4), safety bottle (breakproof and chemically stable) with screw cap and 2 self-locking fittings, silicone tubing 2 x 1.5m (autoclavable), safety filter, 2 angled fittings for tubing connection, 1 aeration insert.

Type	Capacity Litres	PK	Cat. No.
EcoVac 2 System	2	1	**9.777 000**
EcoVac 4 System	4	1	**9.777 001**
Vacuum pump, incl. 1m cable		1	**9.777 005**
Foot switch		1	**9.777 008**
Safety filter		2	**9.777 009**
Spare 2L bottle incl. Screw-cap with 2 self-locking fittings		1	**9.777 007**
Spare 4L bottle incl. Screw-cap with 2 self-locking fittings		1	**9.777 010**



2 Safety suction systems AA, AC and AZ series

Hettich Benelux B.V.

The DITABIS Aspiration Systems are made for the controlled aspiration of liquids from typical lab containers like cuvettes, tubes, microplates, petri dishes or roller bottles. They are also suited for the disposal of liquid biological or chemical waste and filtration of liquids by means of filter systems.

- Membrane vacuum pump
- 2L or 4L bottle incl. fast lock clutches, filter, ventilation insert and 3M silicone hose

Features AA series:
- Membrane vacuum pump turns on and off automatically
- AA 02/04 with 1 handle
- AA 24 with 4L bottle, 2 handles and Y connector
- Enlarge the automatic suction system by adding up to 4 working places and reduce your expenses for each user.

Features AC series:
- Membrane pump with manual switch-off
- 2L or 4L bottle

Features AZ series:
- Small membrane vacuum pump
- 2L or 4L bottle
- Bottle holder optional

Type	Description	Bottle size ml	Dimensions (W x D x H) mm	Pump cap. L/min / mbar	PK	Cat. No.
AA 02	automatic switch-on / switch-off	2000	160 x 230 x 470	17 / 100	1	**9.777 220**
AA 04	automatic switch-on / switch-off	4000	160 x 230 x 530	17 / 100	1	**9.777 221**
AA 24	automatic switch-on / switch-off	4000	160 x 230 x 530	17 / 100	1	**9.777 222**
AC 02	manually operated	2000	160 x 230 x 470	25 / 250	1	**9.777 223**
AC 04	manually operated	4000	160 x 230 x 530	25 / 250	1	**9.777 224**
AZ 02	manually operated	2000	85 x 165 x 65*	8 / 700	1	**9.777 225**
AZ 04	manually operated	4000	85 x 165 x 65*	8 / 700	1	**9.777 226**

*Pump dimensions

E & OE.

1 Accessories for Safety 2 suction systems

Hettich Benelux B.V.

Type	Description	PK	Cat. No.
AL 02	Spare bottle 2 litre, with fast locks in screw cap	1	**9.777 175**
AL 04	Spare bottle 4 litre, with fast locks in screw cap	1	**9.777 176**
AS 02	Safety bottle holder for 2 litre bottle, anosided aluminium	1	**9.777 178**
AS 04	Safety bottle Holder for 4 litre bottle, anosided aluminium	1	**9.777 179**
AW 01	Hose clip, in addition to the spare bottles	1	**9.777 177**
AV 03	Safety filter	1	**9.777 180**
AH 01	Handle with flow rate regulation, with adapter for pasteur pipettes, incl. 90° angled adapter	1	**9.777 181**
AR 40	Suction adapter with pipette tips, only for AH 01	1	**9.777 185**
AR 48	Adapter with suction rake, 8-channel, autoclavable, only for AH 01	1	**9.777 186**
AF 01	Foot-operated switch	1	**9.777 172**

1



BioChem-VacuuCenter BVC basic/control/professional

NEW!

VACUUBRAND

The compact BioChem-VacuuCenter offers the perfect solution for safe, sensitive and efficient aspiration of supernatants or filtration in all application areas.

- The BVC basic is designed for connection to an existing external vacuum source like a diaphragm pump or a vacuum network
- The BVC control and professional serve for efficient and convenient aspiration of supernatants. The vacuum level and thus the suction force is sensitively adjustable by the electronic touch panel and allows a delicate and reproducible operation. The chemically-resistant diaphragm vacuum pump is automatically turned on and off as needed, which is reducing the low noise level even further.
- The BVC professional, with 4L PP bottle with self-closing quick couplings minimises risks in transporting hazardous waste and in contamination of the workplace.
- All systems are available in two complete equipment options with different collection flasks and ready to accept a second aspiration hand controller (VHC) to support two users. The 2L borosilicate glass bottle (all types with "G" in the description) with a protective coating has a very high chemical resistance. For larger amounts of liquids the 4L bottle of unbreakable polypropylene (PP) is used.

Country specific power cable, please order separately.
Supply requirements: 230V 50/ 60Hz

2



9.882 228

3



9.882 229

Type	Pump Model	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
BVC basic	-	200 x 250 x 490	2.8	1	**9.882 225**
BVC basic G	-	180 x 230 x 430	2.8	1	**9.882 226**
BVC control	ME 1C	194 x 408 x 500	7.3	1	**9.882 227**
BVC control G	ME 1C	194 x 408 x 430	7.7	1	**9.882 228** 2
BVC professional	ME 1C	194 x 408 x 500	7.3	1	**9.882 229** 3
BVC professional G	ME 1C	194 x 408 x 430	7.7	1	**9.882 230**
Mains cable UK				1	**9.882 243**
Mains cable CH				1	**9.882 240**

4 Accessories for Biochem-VacuuCenter BVC basic/control/professional

NEW!

VACUUBRAND

Description	PK	Cat. No.
VHCpro VacuuHandControl handset	1	**6.260 677**
Stand for VHCpro suction handset	1	**6.260 678**
VHCpro Adapter for pipette tips with tip ejector	1	**4.652 758**
VHCpro 8-channel tip adapter with ejector	1	**6.266 573**
BVC Shuttle	1	**6.266 574**

4



1



9.867 732

2



9.867 733

CO_2 Incubators INCOmed

Memmert

For cell cultivation and for in-vitro fertilisation, the precision and reliability are of crucial importance. The classification as class IIa medical device confirms that the INCOmed models comply with the basic safety requirements of the European Medical Devices Directive 93/42/EEC.

Standard equipment

Ventilation and Control:
- uniform atmosphere and temperature distribution owing to enclosed non-turbulent ventilation system in working chamber
- adaptive, fuzzy-supported multifunctional digital microprocessor PID-controller
- integral fault diagnostics on temperature, CO_2 and humidity limit control
- 2 x Class A , 4-wire circuit, Pt100 sensors mutually monitoring and maintaining the performance at the same temperature value
- digital 7-day programme timer with real time clock, precise minute setting
- digital display (LED) of all set parameters, such as temperature, weekdays, time, CO_2, humidity and set-up values - language to be chosen in setup
- CO_2 supply via sterile filter
- digital electronic CO_2 control with automatic zeroing (infrared measuring system)
- CO_2-supply being interrupted upon door opening
- digital display of set and actual values (LED 0.1°C resolution) of temperature and CO_2-concentration
- integral humidity limit control (88 to 97%) with digital display of relative humidity - setting accuracy 1%
- non-volatile, programme memory
- chip card (STERICard) for sterilization of working chamber with fixed cycle (4 hours/160°C) without removal of sensors and mountings

Heating Concept:
- large-area multi-function heating system on four sides incl. additional door and back heating to avoid condensation
- incl. works calibration certificate for +37°C

Multiple Overtemperature Protection:
- with audible and visual alarm in case of over-/undertemperature and over-/under-CO_2,open door and empty gas cylinder
- independently working, digitally adjustable electronic overtemperature controller TWW protection class 3.1
- additional adjustable Auto-Safety-Function "ASF" for over- and undertemperature automatically following the set value at a preset tolerance range
- mechanical temperature limiter TB class 1 switching the heating off at approx. 10°C above max. oven temperature

Textured Stainless Steel Casing:
- fully insulated stainless steel door with double locking and 4-point adjustment
- inner glass door with opening (8mm dia.) to take gas samples
- zinc-plated, steel rear panel

Interior:
- easy-to-clean interior, made of stainless steel, reinforced by deep drawn ribbing, material no. 1.4301, hermetically welded

Temperature Range: from +20°C (however at least 8°C above ambient) up to +50°C
Power supply: 230V, 50/60Hz; 115 V, 50/60 Hz no extra cost

Type	Internal dimensions/housing (WxHxD) mm
INCO108med	560 x 480 x 400*/710 x 778 x 550**
INCO153med	480 x 640 x 500*/630 x 938 x 650**
INCO 246med	640 x 640 x 600*/790 x 938 x 750**

* Minus 25 mm for fan
** Depth without door handle, please add 38 mm

Type	Internal volume	Shelf support ribs	Shelves	Stainless steel water dishes	Rating	Weight	PK	Cat. No.
	litres				W	kg		
INCO108med basic model	108	4*	2*	1*	1000	70	1	**9.867 732** 1
INCO53med basic model	153	6*	3*	1*	1500	80	1	**9.867 733** 2
INCO246med basic model	246	6*	3*	2**	2000	110	1	**9.867 734**
INCO108med with Premium-Modul T5	108	4*	2*	1*	1000	70	1	**9.867 703**
INCO153med with Premium-Modul T5	153	6*	3*	1*	1500	80	1	**9.867 704**
INCO246med with Premium-Modul T5	246	6*	3*	2**	2000	110	1	**9.867 705**

*full width
**half width

E & OE.

Accessories for CO_2 Incubators INCOmed

Comfort module:
two gas connections with quick release connectors, automatic switch-over gas cylinders (impossible in combination with O_2 module)
Hygiene module:
electropolished interior, seamlessly welded by laser
Communication module:
USB interface, "Celsius" standard software for the control and logging of temperature, CO_2; O_2 (with O_2 module) and relative humidity; internal log memory 1024 kB as ring memory for all setpoint values, actual values, errors, settings with real time and date: logging approx. 3 months at 1 min. logging interval; parallel printer interface for all PCL3-compatible printers
CO_2 module:
extended CO_2 range from 0 to 20%
Premium module:
includes Comfort, Hygiene, Communication and CO_2 module (impossible in combination with O_2 module)
Humidity module:
active microprocessor control for humidifying and dehumidifying (40 - 97% rh), incl. digital indication and auto-diagnostic system; humidity supply with distilled water (from an external tank), dehumidifying via sterile filter; (standard humidity limit control and water dishes are omitted)
O_2 module:
control of oxygen concentration by N2 inlet, adjustment range 1% bis 20% O_2, setting accuracy 0.1%

Combination O_2 module with Comfort and Premium module impossible

1

Memmert



9.867 702

Type	Description	PK	Cat. No.
B00325 INCO108med	Additional stainless steel shelf, full width	1	**9.867 707**
B00321 INCO153med	Additional stainless steel shelf, full width	1	**9.867 708**
B03813 INCO246med	Additional stainless steel shelf, full width	1	**9.867 748**
B02787 INCO108med	Additional stainless steel shelf, full width	1	**9.867 709**
B02784 INCO153med	Additional water tray, full width	1	**9.867 710**
B02786 INCO246med	Additional water tray, half width	1	**9.867 711**
E02087	CO_2 Pressure reduction valve (DIN 8546), incl. gas-cylinder monitor	1	**9.867 755**
E06162	N_2 Pressure reduction valve (DIN EN ISO 2503) incl. gas-cylinder-bottle monitor, for O_2 module	1	**9.867 712**
B04459	HEPA Interior filter	1	**9.867 731**
E04337	Additional Steri-Card (only for interior-sterilization)	1	**9.867 702** 1
W6	RS232 interface instead of USB	1	**9.867 722**
T1	Comfort module for INCO108/153/246med	1	**9.867 735**
T2	Hygiene module for INCO108med	1	**9.867 736**
T2	Hygiene module for INCO153med	1	**9.867 737**
T2	Hygiene module for INCO246med	1	**9.867 738**
T3	Communication module for INCO108med	1	**9.867 739**
T3	Communication module for INCO153med	1	**9.867 740**
T3	Communication module for INCO246med	1	**9.867 741**
T4	CO_2 module for INCO108med	1	**9.867 742**
T4	CO_2 module for INCO153med	1	**9.867 743**
T4	CO_2 module for INCO246med	1	**9.867 744**
T5	Premium module for INCO108med	1	**9.867 745**
T5	Premium module for INCO153med	1	**9.867 746**
T5	Premium module for INCO246med	1	**9.867 747**
T6	O_2 module for INCO108, 153, 246med	1	**9.867 749**
K7	Active humidity control microprocessor for INCO108/153/246med	1	**9.867 706**
F7	Entry port in the rear, heated, with silicone stopper, 40 mm inner diameter	1	**9.867 750**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

memmert
Experts in Thermostatics

1



1 CO_2 incubators, C Series

BINDER

The BINDER C is the fitting partner for routine applications for cell cultivation, contamination-free due to hot-air sterilisation at 180°C, reliable pH-stable thanks to the drift-free FPI infrared measuring system, high temperature precision with excellent dynamic and no risk of condensation even in high humidity.

Equipment:
- Air jacket system assuring temperature accuracy and excellent cell growth
- Temperature range from 7°C above ambient up to 50°C
- Water pan with built-in condensation control maintains dry interior walls
- Standard-compliant hot air sterilisation at 180°C (DIN 58947)
- Seamless deep-drawn inner chamber made of stainless steel with integrated shelf support system
- Drift-free infrared CO_2 measurement system
- Microprocessor with LED display for temperature and CO_2 concentration
- Independent temperature safety device class 3.1 (DIN 12880) with optical and audible temperature alarm
- Gas mixing head
- Interior volume 150L

Type	Description	Internal dimensions (W x D x H) mm	External dimensions (W x D x H) mm	PK	Cat. No.
C 150	right hinged door	500 x 500 x 600	680 x 815 x 820	1	**9.883 720**
C 150	left hinged door	500 x 500 x 600	680 x 815 x 820	1	**9.883 721**
2 C 150	incl. stacking adapter, right hinged door	500 x 500 x 600	680 x 815 x 1785	1	**9.883 722**
2 C 150	incl. stacking adapter, left hinged door	500 x 500 x 600	680 x 815 x 1785	1	**9.883 723**

2



2 CO_2 incubators, CB series with sterilizable sensor

NEW!

BINDER

- VENTAIR™ air jacket system
- Temperature range: 7°C above room temperature up to 60°C BINDER controller with LCD color display for simultaneous display of all important parameters (temperature, % CO_2, % O_2 concentration, humidity) and user-friendly push button/rotary knob
- Intuitive menu guidance
- Electronic chart recorder
- Variety of options for graphic display of process parameters
- Real-time clock
- **Standard-compliant hot air sterilization at 180°C with sterilizable built-in CO_2 sensor**
- Drift-free infrared CO_2 measurement system
- CO_2 introduction through patented gas mixing nozzle
- ANTI.PLENUM Design to avoid contamination of critical fixtures
- Permadry™, double pan humidification system with defined condensation site for condensate-free interior walls
- Seamless deep-drawn inner chamber made of stainless steel with round corners and integrated shelf support system
- Electronic error self-diagnostic system with visual and audible alarms, as well as potential-free contact for central monitoring
- Independent temperature safety device class 3.1 (DIN 12880) with visual and audible temperature alarm
- Tightly-fitted inner glass door made of safety glass
- Ethernet interface for communication software
- APT-COM™ DataControlSystem
- Three perforated shelves made of stainless steel
- Stackable units with new flat stacking adapter
- Door lock
- BINDER test certificate

Type	Internal volume litres	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
CB 60	53	580 x 550 x 720	400 x 330 x 400	60.00	1	**9.883 738**
CB 160	150	680 x 715 x 920	500 x 500 x 600	107.00	1	**9.883 739**
CB 220	210	740 x 715 x 1070	560 x 500 x 750	121.00	1	**9.883 740**
CB 60 UL	53	580 x 550 x 720	400 x 330 x 400	60.00	1	**9.883 741**
CB 160 UL	150	680 x 715 x 920	500 x 500 x 600	107.00	1	**9.883 742**
CB 220 UL	210	740 x 715 x 1070	560 x 500 x 750	121.00	1	**9.883 743**
CB 60*	53	580 x 550 x 720	400 x 330 x 400	60.00	1	**9.883 744**
CB 160*	150	680 x 715 x 920	500 x 500 x 600	107.00	1	**9.883 745**
CB 220*	210	740 x 715 x 1070	560 x 500 x 750	121.00	1	**9.883 746**
CB 60 UL*	53	580 x 550 x 720	400 x 330 x 400	60.00	1	**9.883 747**
CB 160 UL*	150	680 x 715 x 920	500 x 500 x 600	107.00	1	**9.883 748**
CB 220 UL*	210	740 x 715 x 1070	560 x 500 x 750	121.00	1	**9.883 749**

*gas tight, divided glass blind and divided drawers

E & OE.

1 Laminar Flow Clean Benches, Horizontal and Vertical Type Airstream®

1

Esco



Esco laminar flow clean benches are the premium selection for the discerning researcher, offering a combination of value, high quality construction, low operating noise levels, and a wide product range to suit all budgets, from the industry leader.

- Sentinel-Microprocessor maintains steady blower speed
- Airflow alarms
- Tempered glass side walls
- H14 HEPA filters providing superior product protection
- Pre-filter EU3
- Average Airflow Velocity (adjustable): 0.45m/s
- The air cleanliness within the work zone is better than ISO Class 5
- ISOCIDE™ antimicrobial coating on all painted surfaces minimizes contamination.

Standard equipment:
- 2 Electrical outlets
- Apparatus for UV lamp with timer (UV lamp and protective cover must be ordered separately)

More options, support stands on request.

Type	Size	External dimensions (W x D x H) mm	Description	PK	Cat. No.
Airstream® AHC-2D1	0.6m	730 x 797 x 1105	horizontal	1	**9.536 700**
Airstream® AHC-3D1	0.9m	1035 x 797 x 1105	horizontal	1	**9.536 701**
Airstream® AHC-4D1	1.2m	1340 x 797 x 1105	horizontal	1	**9.536 702**
Airstream® AHC-5D1	1.5m	1645 x 797 x 1105	horizontal	1	**9.536 703**
Airstream® AHC-6D1	1.8m	1950 x 804 x 1175	horizontal	1	**9.536 704**
Airstream® AVC-2D1	0.6m	730 x 770 x 1250	vertical	1	**9.536 705**
Airstream® AVC-3D1	0.9m	1035 x 770 x 1250	vertical	1	**9.536 706**
Airstream® AVC-4D1	1.2m	1340 x 770 x 1250	vertical	1	**9.536 707**
Airstream® AVC-5D1	1.5m	1645 x 770 x 1250	vertical	1	**9.536 708**
Airstream® AVC-6D1	1.8m	1950 x 770 x 1250	vertical	1	**9.536 709**

2 Microbiological Safety Cabinets, Class II, Type eSafe®

2

Esco



The new eSafe® combines all features of the approved Infinity® with the latest technology and design. Class II according to DIN EN 12469.
- Optimized proportion.
- Energy-saving: just 190W in operation, 100W in stand-by mode.
- Low noise emission: 50.05dBA
- Ergonomically angled and motorized front sash for one hand operation
- Tempered glass side panels
- Large display to control all parameters in the field of view
- Esco triple-wall design with negative pressure prevents the possibility of contamination from leaks.
- Dual fan design for guaranteed safety
- The interior sides and back wall are formed from a single piece of stainless steal.
- Multi-piece work surface removal simplifies cleaning
- Esco ISOCIDE™ antimicrobial coating on all painted surfaces minimizes contamination.
- Sentinel-Platinum controller maintains steady blower speed
- Certified according to EN 12469 by TÜV-Nord, Germany
- Connector for HPV decontamination

Standard equipment:
- 4 electrical outlets
- UV lamp with timer

More options, support stands, installation on request.

Type	Size	External dimensions (W x D x H) mm	PK	Cat. No.
eSafe® EC2-4L8	1.2 m	1340 x 790 x 1450	1	**9.536 762**
eSafe® EC2-5L8	1.5 m	1645 x 790 x 1450	1	**9.536 763**
eSafe® EC2-6L8	1.8 m	1950 x 790 x 1450	1	**9.536 764**

1



1 Microbiological Safety Cabinets, Class II, Type NordicSafe®

Esco

One of the silent Biological Safety Solutions from Esco.
Class II according to DIN EN 12469.
- Noise emission <51 dBA.
- Best comfort and safety at a favourable price.
- Esco triple-wall design with negative pressure prevents the possibility of contamination from leaks.
- Ergonomically angled and motorized front sash for one hand operation
- A large easy-to-read digital display and ergonomically sized touchpad.
- Tempered glass side panels
- Sentinel-Gold-controller maintains steady blower speed
- Sleep mode with 50% reduced power to save energy, to maintain safety
- Esco ISOCIDE™ antimicrobial coating on all painted surfaces minimizes contamination.
- Certified according to EN 12469 by TÜV-Nord, Germany

Standard equipment:
- 2 electrical outlets
- UV lamp with timer

More options, support stands, installation on request.

Type	Size	External dimensions (W x D x H) mm	PK	Cat. No.
NordicSafe® NC2-4L8	1.2 m	1200 x 812 x 1410	1	**9.536 760**
NordicSafe® NC2-6L8	1.8 m	1800 x 812 x 1410	1	**9.536 761**

2



2 Microbiological Safety Cabinet, class II Type Airstream®

Esco

The Industry's Most Energy Efficient Class II Cabinet.
Class II according to DIN 12469.

- Ergonomically angled and frameless front sash
- A large easy-to-read digital display and ergonomically sized touchpad.
- Tempered glass side walls
- Esco triple-wall design with negative pressure prevents the possibility of contamination from leaks.
- HEPA filter (H14) for long lifetime
- ISOCIDE™ antimicrobial coating on all painted surfaces minimises contamination.
- Quickstart Mode
- Sentinel-Microprocessor maintains steady blower speed
- RS232 serial interface port
- More options on request, e.g. prefilter at intake socket

Other varieties:
- Airstream G with Dual-Exhaust Filters (2 x HEPA), better protection
- Airstream G with Dual-Exhaust Filters (1 x HEPA, 1 x Activated carbon), for additional chemical protection

Standard equipment:
- 2 Electrical outlets
- UV Lamp with timer

Without support stand.
More options and support stands on request.

Type	Size	External dimensions (W x D x H) mm	PK	Cat. No.
Airstream E AC2-2E8	0.6 m	730 x 810 x 1400	1	**9.536 710**
Airstream E AC2-3E8	0.9 m	1035 x 810 x 1400	1	**9.536 711**
Airstream E AC2-4E8	1.2 m	1340 x 810 x 1400	1	**9.536 712**
Airstream E AC2-5E8	1.5 m	1645 x 810 x 1400	1	**9.536 713**
Airstream E AC2-6E8	1.8 m	1950 x 810 x 1400	1	**9.536 714**
Airstream G AC2-4G8*	1.2 m	1340 x 810 x 1400	1	**7.939 057**
Airstream G AC2-6G8*	1.8 m	1950 x 810 x 1400	1	**7.939 058**

*with additional HEPA exhaust filter, optional with charcoal filter

Microbiological Safety Cabinet, class II, acc. to DIN 12469, Type Airstream® Plus

NEW!

1

Esco

- Certified according to EN 12469 by TÜV-Nord, Germany
- Ergonomically angled and motorized front sash for one hand operation (aerosol tight gasket)
- Dual Energy efficient DC ECM motor
- Sentinel-Gold-controller maintains steady blower speed
- Tempered glass side panels at E-Series, stainless steel side walls at S-Series
- LED lamp
- Esco triple-wall design with negative pressure prevents the possibility of contamination from leaks
- Multi-piece work surface removal simplifies cleaning at E-Series, single piece work surface with sink at S-Series
- HEPA filter (H14) for long lifetime
- Esco ISOCIDE™ antimicrobial coating on all painted surfaces minimizes contamination
- Quickstart Mode
- RS232 serial interface port
- More options on request (prefilter, RS485 serial interface port for using Voyager Software)

Standard equipment:
- 2 Electrical outlets
- UV lamp with timer

Without support stand.
More options, support stands IQ/OQ or KI DISCUS test on request.



9.536 724

Type	Size	External dimensions (W x D x H) mm	PK	Cat. No.
Airstream® Plus E	1.2m	1340 x 823 x 1400	1	**9.536 724** 1
Airstream® Plus S	1.2m	1340 x 823 x 1400	1	**9.536 725**
Airstream® Plus E	1.5m	1645 x 823 x 1400	1	**9.536 726**
Airstream® Plus S	1.5m	1645 x 823 x 1400	1	**9.536 727**
Airstream® Plus E	1.8m	1950 x 823 x 1400	1	**9.536 728**
Airstream® Plus S	1.8m	1950 x 823 x 1400	1	**9.536 729**

2 MSC-Advantage™ Class II Biosafety Cabinets

2

Thermo Scientific

Thermo Scientific biological safety cabinets combine smart design and extraordinary value with best-in-class energy efficiency, reliability and usability. The MSC-Advantage is designed to meet the stringent safety requirements of EN 12469:2000 and EN 61010-1:2001, and carries the NF Mark as well as the test report from the Health Protection Agency (HPA) from Porton Down, UK.
- 60% less energy consumption than competing AC motor-driven cabinets
- 60% less heat emission than competing AC motor-driven cabinets
- Extremely low noise level (54 or 59 dB(A)) for a more comfortable work environment
- Largest work surface area of any cabinet (more workspace for your research)
- Cleaning position of window (patented feature that allows user to clean the entire window)
- Sloped front window for improved ergonomics (more comfortable working position)
- Motor operates at reduced speed when front window is closed (keeps interior cleaner for faster set up each day and eliminates noise into the lab when not in use)
- Low overall height to fit into labs with shorter ceilings
- Supply/exhaust air filter: HEPA H 14 EN 1822, 99.999% at 0.3 µm particle size
- Additional exhaust filter option (AEF): HEPA H 14 EN 1822, 99.999% at 0.3 µm particle size
- Voltage: 230 V, 50/60 Hz



Description	External dimensions (W x D x H) mm	Internal dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
MSC Advantage 0.9	1000 x 800 x 1522	900 x 630 x 780	170	1	**4.010 047**
MSC Advantage 1.2	1300 x 798 x 1550	1200 x 495 x 780	240	1	**6.235 767**
MSC Advantage 1.5	1600 x 800 x 1522	1500 x 630 x 780	230	1	**4.010 048**
MSC Advantage 1.8	1900 x 798 x 1550	1800 x 495 x 780	340	1	**4.010 033**

Accessories for MSC-Advantage Microbiological Safety Cabinets Class II

Thermo Scientific

Description	PK	Cat. No.
Standard floor stand, 750mm height for 1.8M cabinet	1	**4.009 986**
Manual Adjustable stand, 1.2M cabinet, 750-950mm in 50mm increments	1	**4.009 987**
Manual Adjustable stand, 1.8M cabinet, 750-950mm in 50mm increments	1	**4.009 988**
Electric Adjustable stand, 750-950mm height for 1.2M cabinet	1	**4.009 989**
Electric Adjustable stand, 750-950mm height for 1.8M cabinet	1	**4.009 990**
Vacuum tap 3/8 connection	1	**4.009 992**
UV Light Option, Field Installed	1	**4.010 001**
UV Light Option, Factory Installed	1	**4.010 098**
Standard floor stand, 750mm height for 1.2M cabinet	1	**6.241 502**
Solenoid valve for combustable gas tap	1	**9.536 550**
Water tap H2O 3/8 connection	1	**9.536 551**
Non-combustible gas 3/8 tap with long neck for installation in side walls	1	**9.536 552**
Tap for flammable gas cylinders 3/8 connection	1	**9.536 553**

1 Microbiological Safety Cabinet BSC-700II

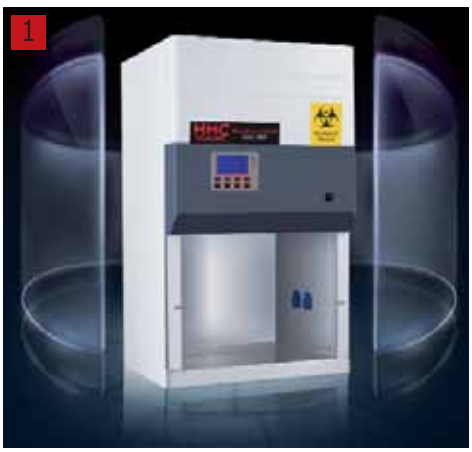
HMC-EUROPE

This miniature Class 2 safety workbench offers security on a minimum of space.
The protection of the user as well as the safety of the samples is ensured by the two HEPA filters with an efficiency of 99.995% at 0.3 microns. An air-flow gauge (velometer) monitors the speed of air at the front and will activate an alarm (audiovisual), if the fan malfunctions. The unit may be placed on a desk without any problems, optional with mobile base frame available.
Standard features:
- Electrical sliding window
- UV light, to be positioned freely
- 2 sockets, can be disconnected from outside
- Electronically controlled air stream
- Automatic readjustment of fan
- Stainless-steel working surface
- Quiet fan drive with low vibration
- Digital air flow indication
- Main switch as key-operated switch
- Option: Stainless steel base frame with 4 castors (2 castors are lockable)

Specifications

External dimensions (WxDxH):	700 x 650 x 1230mm
Working area dimensions (WxDxH):	600 x 500 x 540mm
Material front sash:	Multi-layer toughend glass
Material working area:	SUS 304 stainless steel
Clean level:	Class 10
Noise level:	65dB
Vibration:	≤5µm
Power requirements:	AC 230/V 50Hz
Power consumption:	800W
Light:	>680lux
Safety standard:	EN 12469

Type	PK	Cat. No.
BSC-700II	1	**9.536 800**
Rack on wheels for BSC-700II	1	**7.629 781**



E & OE.

1 LLG-Petri dishes, Soda-lime glass



Ext. diam. mm	Height mm	PK	Cat. No.
40	12	1	**9.170 570**
60	15	1	**9.170 571**
80	15	1	**9.170 572**
90	15	1	**9.170 575**
100	10	1	**9.170 573**
100	15	1	**9.170 574**
100	20	1	**9.170 576**
120	20	1	**9.170 577**
150	25	1	**9.170 578**
180	30	1	**9.170 579**
200	30	1	**9.170 580**
200	50	1	**9.170 581**

2 Petri dishes, Soda-lime glass

NEW!



Steriplan®. Hydrolytical class 3. *DURAN Group*

Ext. diam. mm	Height mm	PK	Cat. No.
40	12	10	**9.170 462**
40	12	1	**9.170 401**
60	15	10	**9.170 463**
60	15	1	**9.170 417**
80	15	10	**9.170 464**
80	15	1	**9.170 432**
100	15	10	**9.170 465**
100	15	1	**9.170 442**
100	20	10	**9.170 466**
100	20	1	**9.170 443**
120	20	10	**9.170 467**
120	20	1	**9.170 448**
150	25	1	**9.170 451**
180	30	1	**9.170 456**
200	30	1	**9.170 460**
200	45	1	**9.170 461**

3 Petri dishes, DUROPLAN®, borosilicate glass 3.3



DURAN®. With lid.Petri dishes are manufactured in a special production process which results in an even media dispersion and a uniform cell growth. Bottom and lid are absolute planar and free from bubbles and cords. *DURAN Group*
Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. DIN 13132.

Ext. diam. mm	Height mm	PK	Cat. No.
60	20	1	**9.170 141**
80	20	1	**9.170 143**
100	15	1	**9.170 146**
100	20	1	**9.170 148**
120	20	1	**9.170 151**
150	30	1	**9.170 153**

4 Petri dishes, PS



Non-sterile. For bacteriology. With or without vents. In light or heavy duty versions. *Greiner Bio-One*

Ext. diam. mm	Height mm	Vents	Version	PK	Cat. No.
35	10	With	Light	740	**9.408 035**
60	15	With	Light	600	**9.408 040**
94	16	Without	Light	480	**9.408 094**
94	16	Without	Heavy	480	**9.408 047**
94	16	With	Light	480	**9.408 095**
94	16	With	Heavy	480	**9.408 045**
100	15	With	Light	420	**6.077 283**
100	20	With	Light	360	**6.510 005**
145	20	With	Light	120	**6.052 085**

Foils please see page 181.



1 Petri Dishes, PS

Thermo Scientific

Suitable for culturing of fungi, bacteria and other microorganisms. Contact dish (with grid) useful for sampling in hospital environments (for research use only), as well as in the food science and the pharmaceutical industry. All dishes perform well in automatic dispensers due to complete flatness and uniform height.
Material: Polystyrene

Ext. diam.	Height	Capacity	Working volume	Culture surface	Sterile	PK	Cat. No.
mm	mm	ml	ml	cm²			
140	20	250.0	35	145.0	yes	80	**4.008 582**
100	15	68.0	12.5	58.0	yes	320	**6.223 201**
67	15*	7.7	6	25.0	yes	396	**6.052 163**

* contact bowl with grid



2 Nutrient pads

Sartorius

Sterile, dehydrated culture media pads in petri dishes. Once they are moistened with 3.0ml to 3.5ml of sterile and demineralised (or distilled) water they are ready-to-use immediately. All Nutrient Pad sets are supplied with the appropriate membrane filters, which are also individually sterile packed. Shelf life of the NPS 18 to 24 months at room temperature. Alternative nutrient media are available on request.

Type	For	Colour	Pore size µm	PK	Cat. No.
Azide	Enterococci	Green / green	0.45	100	**9.055 006**
Endo	E. coli + Coliforms	White / green	0.45	100	**9.055 008**
Caso	Colony count	Green / green	0.45	100	**9.055 017**
Standard TTC	Colony count	Green / green	0.45	100	**9.055 010**
Tergitol TTC	E. coli + Coliforms	White / green	0.45	100	**9.055 011**
Chapman	Staphylococci	White / green	0.45	100	**9.055 032**
Wort	Yeasts and moulds	Grey / white	0.65	100	**9.055 013**
ECD	E. coli	White / green	0.45	100	**9.055 025**
VLB S7-S	Pediococci and Lactobacilli	White / green	0.45	100	**9.055 014**
Caso	Colony count	Green / green	0.45	100	**9.055 018**
Glucose-Tryptone	thermophilic spore formers, mesophilic bacteria	White / green	0.45	100	**9.055 020**
M-FC	E. coli + Coliforms	White / green	0.45	100	**9.055 022**
Tomato juice	Leuconostocoenos	Green / green	0.45	100	**9.055 026**
Lysin	wild yeasts	Grey / white	0.65	100	**9.055 015**
Sabouraud	Yeast + mould	Grey / green	0.65	100	**9.055 023**
Mac Conkey	Enterobacteria	White / green	0.45	100	**9.055 027**
Cetrimide	Pseudomonas	White / green	0.45	100	**9.055 031**
Schaufus Pottinger	Yeast + mould	White / green	0.65	100	**9.055 034**
Yeast extract	Colony count	Green / green	0.45	100	**9.055 037**
*Schaufus Pottinger	Yeasts and moulds	White / green	1.20	100	**9.055 028**
Weman	Mesophilic slime-forming bacteria	Green / green	0.45	100	**9.055 019**
Bismuth sulphite	Salmonellae	Green / green	0.45	100	**9.055 012**

* also available in 1.2µm (white/green), 0.8µm (grey/white) and 0.65µm (white/green) versions.



9.908 127

Petri dish holder

Constructed in steel wire, as outlined below. Suitable for dish diameters of 100mm, Internal diameter approx. 102mm, Internal height approx. 230mm. For approx. 10 petri dishes.

Description	PK	Cat. No.
Electropolished, grade 1.4301 stainless steel	1	**9.908 127**
White nylon-coated	1	**9.908 128**

E & OE.

1 Petri dish stands, adjustable, ABS

This adjustable dispenser neatly and safely holds 15 Petri dishes up to 102mm. Slides open at the base for easy refilling. Rugged ABS plastic. Extends from 127 to 210mm.

Bel-Art Products

Width mm	Length mm	Height mm	PK	Cat. No.
89	210	210	1	**9.170 100**



2 Anaerobic jars, stainless steel

schuett-biotec

For the cultivation of anaerobic and microaerophilic microorganisms in a defined and rapidly generated gas atmosphere.The requested atmosphere may be reached under ideal conditions by two methods. Either by using chemical gas packs (anaerobe systems) or by manually evacuating the jars with a vacuum pump and flushing with gas afterwards (e.g. with nitrogen), in this case no chemical accessories are needed (except anaerobic jar eco). The jars are made of robust stainless steel or transparent PC.The lids are made of UV-resistant plastic or transparent polycarbonate with two corner valves incl. tube clips for vacuum hoses (5 mm i.d.) and with manometer for exact control of the vacuum or overpressure from -1 to 0.2 bar (except anaerobic jar eco). On request, the lids are available as custom-made versions, e.g. made of other material, without valves and manometer or equipped with high-temperature manometer. The optional racks are made of stainless steel providing holders for comfortable operation of the anaerobe systems.

Methods for reaching anaerobic conditions:
3 x times evacuating and filling gas, flushing with gas for 5 minutes and chemical gas production (GasPacks) for Anaerobic jars "small", "standard", "large" and "crystal". For Anaerobic jar "eco" flushing with gas for 5 minutes (Using GasPack-Kits).

Type	To hold dishes quantity	Int. diam. mm	Int. height mm	Capacity litres	Figure	PK	Cat. No.
Anaerobic jar "small"*	10 (60 to 100mm dia.)	120	170	2	a	1	**9.520 051**
Anaerobic jar "standard"*	15 (60 to 100mm dia.)	120	270	3	b	1	**9.520 056**
Anaerobic jar "large"*	15 (up to 150mm dia.)	175	260	6	c	1	**9.520 050**
Anaerobic jar "eco"**	15 (60 to 100mm dia.)	120	270	3	d	1	**9.520 057**
Anaerobic jar "crystal"***	15 (60 to 100mm dia.)	120	270	3	e	1	**9.520 058**
Rack "small" (for all Anaerobic jars)	10 (60 to 100mm dia.)					1	**9.520 059**
Rack "standard" (for "standard", "large", "eco", "crystal")	15 (60 to 100mm dia.)				f	1	**9.520 053**
Rack "150" (for "large")	15 (up to 150mm dia.)					1	**9.520 060**
Rack "3 x 60" (for "large")	45 (60mm dia.)					1	**9.520 061**
Rack "micro" (for "large")	for multiwell plates					1	**9.520 062**
Test tube holder (for all Anaerobic jars)	for 9 test tubes (18mm dia.)					1	**9.520 063**
GAS-Pack-Kit "anaerobic" (1 x 3.5 l)						10	**9.520 064**
GAS-Pack-Kit "CO2" (1 x 2,5 l)						10	**9.520 065**
GAS-Pack-Kit "microaerophil" (1 x 3,5 l)						10	**9.520 066**
Anaerobiose Indicator (test strip)						100	**9.520 067**

*Stainless steel jar with UV-resistant plastic lid (2 valves, 1 manometer)
**Stainless steel jar with UV-resistant plastic lid (ventilation screw)
***Transparent polycarbonate jar and lid (2 valves, 1 manometer)



3 LLG-Dry swabs, sterile

Description	Ext. diam. mm	Length mm	PK	Cat. No.
with Cotton tip and wooden stick, in PP test tube	12	150	400	**9.404 002**
with Rayon tip and plastic stick, in PP test tube	12	150	400	**9.404 003**
with Cotton tip and wooden stick, individually wrapped		150	1000	**9.404 004**
with Rayon tip and plastic stick, in PP test tube, individually wrapped	12	150	150	**9.404 005** 1
with Rayon tip and plastic stick, individually wrapped		150	1000	**9.404 006** 2
with clear Amies medium, Rayon tip and plastic stick, in PP test tube	12	150	150	**9.404 007**
with clear Amies medium with Charcoal, Rayon tip and plastic stick, in PP test tube	12	150	150	**9.404 008**

1



9.404 005

2



9.404 006

3



4



4 Swabs, plain, culture, cotton/wood

Disposable cotton swab on wooden stick. Length 150mm. With labelled outer storage tube. Sterile and individually packed.

Type	PK	Cat. No.
Swabs, plain, culture	300	**9.404 001**

5



5 Cotton Applicator

Ideal for sampling in laboratories

9.413 160: non-sterile, according to EN ISO 13485
9.413 161: sterile, according to EN ISO 13485 and conforming to 93/42/EEC, enclosure V for medical products, sterilised with ETO gas

Material	Wall thickness mm	Length mm	Head size	Sterile	Package	PK	Cat. No.
Wood	2.2	150	4 to 5.5 mm diam.	no	bag	100	**9.413 160**
Wood	2.2	150	Ø 4 to 5.5 mm	yes	single, Peel-Pack	100	**9.413 161**

6



7



6 7 Inoculating needles smartPicks®, wood

Heathrow Scientific

Available in three lengths and two needle sizes to suit a wide range of application needs.
The Mini fits neatly into a 1.5 mL microfuge tube allowing the lid to be closed for full sample transfer/recovery.
- Naturally biodegradable White Birch wood
- Manufactured in an FDA-registered factory and complies with FDA standards for food contact
- Autoclavable and available in semi or needle point styles for delicate operations

Type	Description	PK	Cat. No.
smartPicks® Mini	Semi point, for 1.5ml tubes	2000	**6.257 176**
smartPicks® Mini	Needle point, for 1.5ml tubes	2000	**6.257 177**
smartPicks® Standard	Semi point, single tip	1600	**6.257 178**
smartPicks® Standard	Needle point, single tip	1500	**6.257 179**
smartPicks® Large	Semi point, single tip	500	**6.257 180**
smartPicks® Large	Needle point, single tip	500	**6.257 181**

Absorbent pads - please see page 1071.

E & OE.

1 Picking-Tool schuett PickMaxX II

NEW!

schuett-biotec

The schuett PickMaxX Picking-Tool is a handheld device for manually transferring cell colonies to multiwell plates as well as a manually operated inoculating device. Unerring picking, even for specific individual colonies:
- High working efficiency compared to using toothpicks
- Low-cost version of a picking robot
- Immediate intuitive operation
- Easy, rapid handling

Simultaneously 12 clones may be transferred to the buffer solution (suitable for 96-multiwell plates). Compared to individually picking single colonies (toothpick) from a Petri dish and transferring them to standard multiwell plates, the PickMaxX II may pick up to 12 colonies in a row and transfer them all at the same time to the 96-multiwell plate. This highly increases the efficiency of the process as well as the throughput. Sterile disposable foil combs are used for picking cell colonies (96-size). It takes approx. 5 minutes to inoculate a complete 96-multiwell plate. Quick screens in-between are possible. No setup time required as compared with a picking robot. The PickMaxX II is useful in bridging servicing times of a picking robot.

1



Type	PK	Cat. No.
schuett PickMaxX II Picking-Tool	1	**6.266 801**
schuett PickMaxX II Combs 96-size, sterile (Packs of 8 combs each)	10	**6.266 802**

2 3 4 LLG-spatulas, sterile

NEW!

Ideal for the uniform spreading of cell cultures and liquids
- Smooth , rounded surfaces for uniform spreading without scratching the agar surface
- Ethylene oxide sterilized
- Sterile, 10 per bag or individually packed
- Autoclavable

Description	Material	Length mm	Width mm	Package contents	PK	Cat. No.
LLG - Spatula, L-shaped, blue, sterile	ABS	156	38.0	50 x 10	500	**6.265 638**
LLG - Spatula, L-shaped, blue, sterile	ABS	156	38.0	individually packed	500	**6.265 639**
LLG - Spatula, T-shaped, blue, sterile	ABS	140	34.0	50 x 10	500	**6.265 640**
LLG - Spatula, T-shaped, blue, sterile	ABS	140	34.0	individually packed	500	**6.265 641**
LLG - Spatula, Delta-shaped, blue, sterile	PP	208	30.0	100 x 10	1000	**6.265 642**

2



3

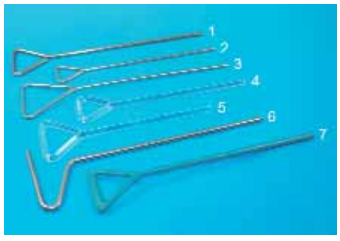


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5 LLG-Drigalski spatulas

5



For easy plating.

Material	Diam. mm	Length mm	Width mm	Figure	PK	Cat. No.
Stainless steel 18/10	4	190	40.0	1	1	**9.197 490**
Wironit, CrNi 18/12, straight	3	150	24.5	2	1	**9.197 496**
Wironit, CrNi 18/12, angular 10°	3	190	45.0	3	1	**9.197 497**
Borosilicate glass 3.3	5	150	30.0	4	1	**9.197 499**
Glass inoculation spreader	5	145	40.5	5	1	**9.520 206**
Stainless steel inoculation spreader	4	185	57.0	6	1	**9.520 205**
PS, sterile	4	174	51.5	7	100	**6.251 768**

6 Inoculating Turntable

NEW!

Bel-Art Products

Manually operated turntable creates virtually concentric circles of uniformly spread out bacterial colonies. This turntable can hold various sizes of Petri dishes 60, 90, 100mm.
Ball bearings provide a steady, even, and prolonged spin time resulting in a rapid inoculation step and extended operating life.
Equally allocate bacteria across Petri Dishes with ease
- Ball bearings assure simple and graceful spinning
- Lightweight, non-skid, durable and portable
- Polypropylene construction

Diameter: 127mm
Height: 50mm
Weight: 0.4 kg

6



Description	PK	Cat. No.
Inoculating Turntable	1	**9.520 530**

1



1 Petri dish turntables, schütt Petriturn

NEW!

For uniform inoculation of petri dishes. Easy-to-use.

schütt petriturn-M
With manually operated, heavy turntable for smooth and long-lasting rotation. Double-sided construction accommodates two sizes of petri dish (90mm or 150mm diameter), by inverting the turntable.

schütt petriturn-E
Electrically driven, infinitely adjustable, constant speed rotation from 10 to 120 rpm. Permanent operation, or optionally a footswitch can be connected. 12V d.c., 5W power supply requiring 100 - 240V 50/60Hz (115V optional).

Type	Dimensions mm	Figure	PK	Cat. No.
schuett petriturn-M, manually driven	(Dia. x H) 160 x 45	1	1	**9.520 201**
schuett petriturn-E, electrically driven	(Dia. x H) 160 x 70	2	1	**9.520 200**
Foot pedal for schuett petriturn-E			1	**9.520 203**
Turntable adapter for Petri dishes up to 150mm diameter			1	**9.520 204**
Glass inoculation spreader	(W x D) 180 x 58	3	1	**9.520 206**
Stainless steel inoculation spreader	(W x D) 145 x 40	4	1	**9.520 205**

2



2 LLG-Inoculation loops, PS, sterile

Inoculation loops "plastic" are made of flexible polystyrene. They have ultra-smooth loops and offer problem free planting and streaking of cultures.
Free of lubricants, oils and electrostatic charges, enabling consistent wetting and complete liquid transfer. Loops do not cut or gouge the agar surface during streaking. Ergonomic design of the loop handle improves grip due to the large handle and assists orientation. When viewed in cross section, the shafts of the loops have a hexagonal shape which creates a handle with six flat surfaces. This design facilitates maximum grip and easy orientation of the loop head. The needle end for colony counting is also a perfect tool for picking off individual isolated colonies. They are also suitable for making stab inoculations into agar slants or tubes of solid culture medium.
Package: 10 bags of 10 pieces

Type	Capacity µl	PK	Cat. No.
Needle / loop	1	100	**9.160 041**
Needle / loop	10	100	**9.160 042**
Loop / loop	1 / 10	100	**9.160 043**

3



3 Inoculation loops Wironit

Wironit. CrNi 18/12. *Hammacher*

Diam. mm	Length mm	PK	Cat. No.
1.5	50	1	**9.160 057**
2.0	50	1	**9.160 056**
2.5	50	1	**9.160 058**
4.0	50	1	**9.160 055**
1.5	60	1	**9.160 061**
2.5	60	1	**9.160 062**
4.0	60	1	**9.160 063**

4



4 Inoculating loops and needles, PS

Radiation-sterilised. Semi-quantitative standard for sample handling, e.g. for diseases of the urinary tract. Surface treated to increase drop adhesion. Reduced contamination risks as product is disposable and does not require flaming. *Thermo Scientific*

Type	Capacity µl	PK	Cat. No.
Blue loop	10	50	**9.405 410**
Colorless loop	1	50	**9.405 401**
Yellow needle	--	50	**9.405 400**

Other colours on request

E & OE.

1 2 3 Inoculation loops "metal" and loop stands

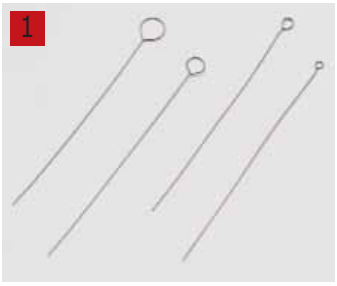
Inoculation loops made from stainless steel, special stainless steel wire or platinum-iridium wire (90/10). Can be heated to red heat. *schuett-biotec*
Length: 60mm. Wire diameter: 0.5mm.

Inoculation loop holder according to Kolle for 0.3 to 0.7mm wire diameter.

Inoculation loop stand robust and sturdy made of plastic (autoclavable). Accomodate up to 6 inoculation loop holders at any one time.

Type	Description	Loop diam. mm	PK	Cat. No.
P-I 1	Platinum-iridium	1	1	**9.520 180**
P-I 2	Platinum-iridium	2	1	**9.520 181**
P-I 3	Platinum-iridium	3	1	**9.520 182**
P-I 5	Platinum-iridium	5	1	**9.520 184**
E 1	Stainless steel, special wire	1	10	**9.520 170**
E 2	Stainless steel, special wire	2	10	**9.520 171**
E 3	Stainless steel, special wire	3	10	**9.520 172**
E 5	Stainless steel, special wire	5	10	**9.520 174**
W-1.5	Stainless steel	1.5	10	**9.520 185**
W-2.5	Stainless steel	2.5	10	**9.520 186**
W-4.0	Stainless steel	4.0	10	**6.233 696**
Inoculation loop holder	160 mm long		1	**9.520 178**
Inoculation loop stand R (round)	(Diam. x H) 80 x 50mm		1	**9.520 190**
Inoculation loop stand L (long)	(L x W x H) 180 x 50 x 50mm		1	**9.520 191**

1



2



3



4 Inoculation loops, platinum-iridium

Platinum-iridium wire 90/10.
0.5mm thick.

Type	Diam. mm	PK	Cat. No.
without glass rod	3	1	**9.160 050**
without glass rod	2	1	**9.160 052**
fused into glass rod	3	1	**9.160 053**
fused into glass rod	2	1	**9.160 054**

4



5 Platinum-iridium wire

Platinum-iridium 90/10 wire available in different diameters.
Sold per cm.

Diam. mm	PK	Cat. No.
0.2	1	**9.160 702**
0.3	1	**9.160 703**
0.4	1	**9.160 704**
0.5	1	**9.160 705**
0.6	1	**9.160 706**
0.8	1	**9.160 708**
1.0	1	**9.160 710**

5



Bunsen burners please see page 130.

1 Loop Sterilizer SteriMax smart

NEW!

WLD-TEC

IR-HotSpot Technology: High-Speed Annealing and Sterilizing the Smart Way.

Smart Infrared Light - Instantly Ready to Work
Specifically focused infrared light generates an IR-HotSpot in which your inoculation loop is sterilized at temperatures from 750 to 1000°C after only 5 to 10 seconds. It is immediately ready to use, without any unnecessary warm-up period. Our highly sophisticated annealing tube is based on many years of experience. It is made of special quartz glass. The tube is closed at one end preventing any risk of contamination with pathogens. The annealing tube can be slid out in a matter of seconds for easy cleaning.

Smart Operation - Touchless Working
Touchless IR-Sensor technology starts each sterilization process automatically. Adjustable timers signal both the completion of sterilization and cooling via the display and an audible signal. Both timers can be adjusted and recalled individually and up to the second for two users by gently touching the panel.

Smart Use of Power - Minimum Heat Dissipation
'Thermocontrol' is the key element for an efficient use of power. It allows for quick softstart of the infrared light, a short heating period and the re-use of residual heat for the next sterilization process. Whenever you pause, your energy consumption and heat dissipation will pause as well.

Smart Design - with Touch panel
SteriMax smart comes in an elegant stainless steel housing with a touch safety glass control panel designed for extreme laboratory environments.

Advantages:
- Instantly ready to work without any unnecessary warm-up
- Auto-Start through touchless IR-Sensor technology
- Adjustable sterilization and cool-down timers for two users
- Touch operation
- Annealing tube made of special quartz glass
- Simple cleaning of the device and the annealing tube

Supplied with: SteriMax smart incl. quartz glass annealing tube, inoculation loop holder with inoculation loop, diam. 3mm, holding device for 3 inoculation loop holders.

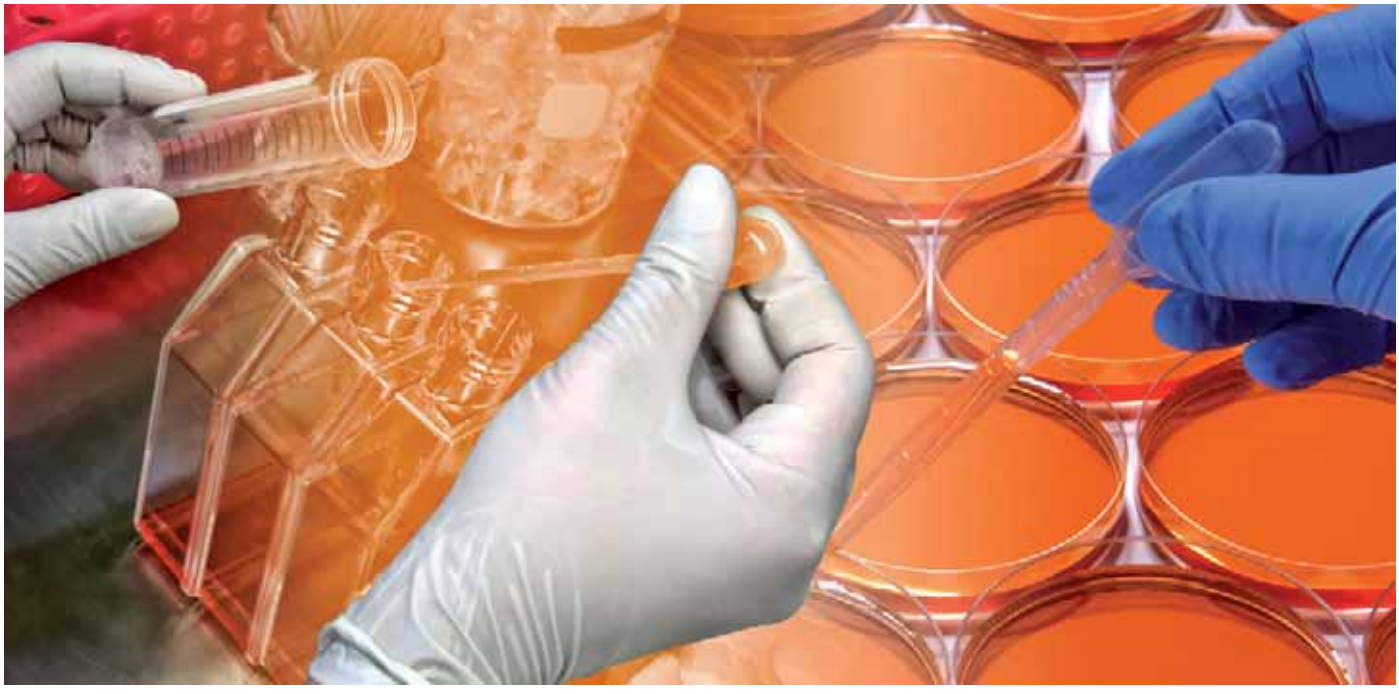
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Specifications

Dimensions (WxDxH):	110 x 170 x 180mm
Power supply:	220 - 240V, 50/60Hz
Protection class:	IP 20

Type	PK	Cat. No.
Loop Sterilizer SteriMax smart	1	**6.261 507**
Quarz glass annealing tube	1	**6.261 508**



E & OE.

Safety Laboratory Gas Burners Fuego SCS series

WLD-TEC

Suitable for all flame related applications in the laboratory. The low profile body facilitates ergonomic operation; the streamlined design reduces air flow disturbances in a clean room workbench. The Fuego SCS series can be operated with foot pedal, button function or touch free IR-Sensor. Made of stainless steel, with fireproof controls.

- SCS Safety Control System with gas safety cut off: Ignition and flame control, temperature monitor, automatic unit switch off, residual heat display, burner head assembly monitor.
- BHC Burner Head Control.
- Removable burner head.
- Tilt mechanism right/left.
- Turbo flame.
- Holding device for 3 inoculation loop holders.
- Nozzles for natural gas, propane/butane gas.
- Approved by DIN-DVGW, approval no. NG2211AS0167.
- Warranty: 2 years.

Fuego SCS basic/ Fuego SCS basic RF: With stainless steel foot pedal. The foot pedal regulates the burning time either by continuous foot pressure or by start-stop function. Instrument with ON/OFF button function. Basic model without IR-Sensor and without graphic display.

Fuego SCS basic RF: Features as Fuego SCS basic but enables wireless operation due to modern radio foot pedal.

Fuego SCS/Fuego SCS pro: with Double-Click IR-sensor, button function and foot pedal operation. (foot pedal optional). Double-Click IR-sensor: This adjustable safety function ensures that the burner can only be ignited by activating the IR-Sensor twice. Adjustable IR-sensor reaction distance: 5mm to 50mm.
Illuminated graphic display: The animated, self-explanatory and language-less symbol display facilitates a rapid selection of all functions. 6 standard-programs with count down display: 1sec to 2hrs selectable.
The first safety laboratory gas burner with comfort package: Cooling time reminder for inoculation loops, temperature regulation for heating media, gas consumption display for gas cartridges, flexible and individual by selecting user account, acoustic signals as operating aids.
Additional safety assistance: Zero-pressure shut off for a pressureless gas hose. Graphical installation instructions facilitate the initial start-up.

Fuego SCS pro: Features as Fuego SCS, plus battery operation (9hrs), 2 rechargeable batteries (Mignon AA), fast charge function (3hrs) and safety tilt sensor.

Additional accessories are available on request.

1



6.232 207

2



6.231 770

Specifications

Dimensions (WxDxH):	103 x 130 x 49mm
Power supply:	100-240V 50/60Hz
Weight:	700g

Type	PK	Cat. No.
Fuego SCS basic	1	**6.232 207** 1
Fuego SCS basic RF	1	**6.255 678**
Fuego SCS	1	**6.231 770** 2
Fuego SCS pro	1	**9.018 584**
Stainless steel foot pedal	1	**9.018 585**



1



1 Culture media bottles DURAN®, glass, cylindrical

Rimless. For use with Kapsenberg caps. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*

Capacity ml	Diam. mm	Height mm	Neck diam. mm	PK	Cat. No.
50	40	107	18	1	**9.010 050**
100	40	150	18	1	**9.010 060**
200	50	175	18	1	**9.010 070**

2



2 Kapsenberg caps

Aluminium. For the closure of culture tubes, bottles and flasks. *DURAN Group*

For neck diam. mm	PK	Cat. No.
16	1	**9.010 116**
18	1	**9.010 118**

3



9.010 153

Bottles, glass, culture medium for metal caps, DURAN®

Rimless. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
100	50	38	125	1	**9.010 150**
300	70	38	170	1	**9.010 151**
500	83	38	208	1	**9.010 152**
1000	105	38	243	1	**9.010 153**

4



4 Bottles, glass, culture medium, DURAN®

Rimless. For glass caps. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
300	71	31	169	1	**9.010 130**
500	83	46	204	1	**9.010 135**
1000	105	46	237	1	**9.010 140**

5



5 Glass caps, DURAN®

Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. *DURAN Group*

For neck diam. mm	PK	Cat. No.
31	1	**9.010 180**
46	1	**9.010 185**

E & OE.

1 Culture media bottles, glass, DURAN®

Beaded rim. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable.

DURAN Group

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
100	50	29	115	1	**9.010 224**
300	70	42	168	1	**9.010 239**
500	83	42	207	1	**9.010 244**
1000	105	46	237	1	**9.010 254**
2500	150	50	315	1	**9.010 266**
5000	185	54	390	1	**9.010 273**



2 Culture flasks, DURAN®, Roux type

DURAN®. Roux type. With fire-polished, offset neck. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable.

DURAN Group

Capacity ml	Width mm	Length mm	Height mm	PK	Cat. No.
1200	123	275	56	1	**9.010 512**



3 Culture flasks, glass DURAN®, straight neck

DURAN®. Erlenmeyer. Straight neck. Suitable for metal caps. Glass Type I/neutral glass as per USP, EP and JP. With retrace code (Batch Identification). Certificate available via the Internet. Autoclavable.

DURAN Group

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
100	64	38	114	1	**9.010 472**
200	79	38	138	1	**9.010 473**
250	85	38	149	1	**9.010 474**
300	87	38	161	1	**9.010 475**
500	105	38	183	1	**9.010 476**
1000	131	38	229	1	**9.010 477**
2000	166	38	302	1	**9.010 478**



4 Erlenmeyer flasks, DURAN®

DURAN®. Straight neck , rimless. For use with Kapsenberg caps. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable.

DURAN Group

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
100	60	18	120	1	**9.010 080**



5 Culture flasks, Pyrex® borosilicate glass

- Manufactured from Pyrex® borosilicate glass
- Erlenmeyer
- Straight neck
- Suitable for metal caps

Scilabware

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
250	148	38	85	10	**9.141 175**
500	183	38	105	5	**9.141 176**
1000	229	38	131	2	**9.141 177**
2000	302	38	166	1	**9.141 178**



Disposable baffled flasks - please see page 1229.



1 Culture flasks, borosilicate glass 3.3

Erlenmeyer. With 3 side baffles. Beaded rim.

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
250	85	34	140	1	**9.010 125**
300	87	34	156	1	**9.010 126**
500	105	34	175	1	**9.010 127**
1000	131	42	220	1	**9.010 128**



2 Culture flasks, borosilicate glass 3.3

NEW!

Erlenmeyer. With 3 side baffles. Straight neck. Suitable for metal caps.

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
100	64	38	112	1	**9.010 120**
250	85	38	145	1	**9.010 121**
500	105	38	183	1	**9.010 122**
1000	131	38	232	1	**9.010 123**
2000	166	38	305	1	**6.236 466**



3 Baffled flasks, Pyrex®borosilicate glass

Scilabware

- Manufactured from Pyrex® borosilicate glass
- Exhibits 4 baffle indents to provide optimal and consistant agitation

Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
250	82	32	138	5	**9.141 171**
500	101	36	186	5	**9.141 172**
1000	129	43	222	2	**9.141 173**
2000	161	49	282	1	**9.141 174**



4 Baffled flasks DURAN®

NEW!

DURAN Group

With GL 45 thread

- Oxygen introduction is often a limiting factor for cell growth.
- Baffled flasks cause a turbulent flow, increase the gas exchange surface and produce a higher oxygen transfer.
- Automated one-step production enables a reproducible and comparable result.
- Complete with membrane screw cap (gas exchange).

Capacity ml	Bottom diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
250	85	30	145	1	**9.141 260**
500	105	30	149	1	**9.141 261**
1000	136	30	221	1	**9.141 263**



9.141 169

Fernbach baffled flasks, Pyrex®

Scilabware

For use in preparation of cultures.

- Large surface area to volume ratio
- Three laterally integrated baffles, to provide optimal and consistant agitation
- Available in 2 versions: with Delong neck, for use with culture flask caps or with PP screw cap, GL45

Description	Capacity ml	Diam. mm	Neck diam. mm	Height mm	PK	Cat. No.
Delong neck	2800	210	38	230	2	**9.141 169** 5
Screw cap	2800	210	45	230	2	**9.141 170**

E & OE.

1 Erlenmeyer flasks with baffles, PC

Transparent. With baffles indented into the base which increases mixing when trypsinizing and aerating in processes such as cell culture and fermentation.
Autoclavable.

Thermo Scientific



Capacity ml	PK	Cat. No.
250	1	**9.140 968**
500	1	**9.140 969**
1000	1	**7.048 662**
2000	1	**7.048 663**

2 LLG- Cellulose stoppers, Steristoppers®

NEW!

Cellulose, 100% biodegradable and fully compostable autoclavable. Steristoppers® have been proved as an excellent sealing for microbiological samples and tissue cultures in test tubes and Erlenmeyer flasks. They are in constant use in many European microbiological laboratories.

- Autoclavable up to 200°C
- Filters bacteria
- Sterilisable
- Air permeable

Type	For inter. diam. mm	Bottom diam. mm	Top diam. mm	Length mm	PK	Cat. No.
No. 5 S	5.5 - 6.5	5.0	7.0	31	1000	**9.231 205**
No. 7	8.5 - 9.5	8.0	9.5	32	1000	**9.231 207**
No. 9	10.5 - 11.5	10.0	12.0	30	2000	**9.231 209**
No. 9 P	9.0 - 10.5	9.0	13.0	29	1000	**6.801 854**
No. 10	9.5 - 11.5	9.0	14.0	30	1000	**9.231 210**
No. 12	11.5 - 13.5	11.0	16.0	32	1000	**9.231 211**
No. 13	12.5 - 14.5	11.0	16.0	35	1000	**9.231 212**
No. 13 H	12.5 - 13.5	8.0	15.0	30	1000	**7.628 015**
No. 13.5	13.5 - 14.5	13.0	19.0	33	1000	**9.231 213**
No. 14	13.0 - 14.5	12.0	16.0	40	1000	**9.231 214**
No. 14,5	14.0 - 16.0	13.0	17.0	35	1000	**9.231 216**
No. 15	13.5 - 15.5	13.0	18.0	39	500	**9.231 215**
No. 15 D	13.5 - 16.0	12.0	19.0	36	5000	**6.258 570**
No. 18	17.5 - 18.5	17.0	22.0	38	500	**9.231 218**
No. 20	20.5 - 22.0	20.0	23.0	42	400	**9.231 220**
No. 22 long	22.0 - 24.0	24.0	26.0	49	500	**9.231 224**
No. 23.5 P	25.0 - 27.0	24.0	30.0	40	500	**9.231 225**
No. 26	26.0 - 27.0	24.0	28.0	42	500	**9.231 226**
No. 27	27.0 - 32.5	25.0	35.0	53	1000	**7.210 063**
No. 29	29.5 - 31.0	28.0	33.0	62	250	**9.231 229**
No. 32	32.5 - 35.0	31.0	36.0	65	100	**9.231 232**
No. 32 P	32.0 - 33.0	31.0	46.0	54	150	**9.231 233**
No. 32 W	32.5 - 35.0	31.0	36.0	65	800	**9.231 231**
No. 34	33.5 - 36.5	33.0	37.0	62	150	**9.231 234**
No. 36	35.5 - 39.5	36.0	40.0	58	600	**7.600 688**
No. 37	37.5 - 41.5	37.0	45.0	59	100	**9.231 237**
No. 38	40.0 - 43.5	37.0	47.0	60	100	**9.231 238**
No. 40 P	42.0 - 46.5	43.0	50.0	53	100	**9.231 240**
No. 45 P	47.0 - 48.0	44.0	57.0	66	75	**9.231 245**

P = correct fit, D = thin, W = soft, S = pointed, H = tougher version



1



1 Sterile stoppers SILICOSEN® and BIO-SILICO®

SILICOSEN® and BIO-SILICO® are specially processed culture plugs in sterile rubber with continuous bubbles for preparation, filling and sterilisation of culture media. Their uniform pore structure and good air permeability make them excellent for the cultivation of aerobic microorganisms.

The choice between SILICOSEN® and BIO-SILICO® culture stoppers depends on the requirements of the application. SILICOSEN® culture stoppers have low water evaporation which makes them particularly suitable for long term cultures. BIO-SILICO® culture stoppers have high air permeability, similar to cotton plugs. Both types are chemically resistant, temperature resistant, liquid repellent and reusable.

2



2 Sterile stoppers SILICOSEN® T- and L-Type

NEW!

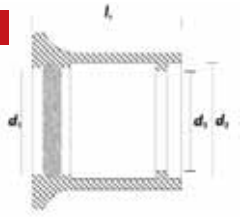
Moisture evaporation is minimal, thus there is less drying of the culture medium. Colour: natural. *Hirschmann*

Type	Joint size (NS)	Cylinder length mm	Cone length mm	PK	Cat. No.
T-10	6/9	13	17	1	**9.231 010**
T-12	9/11	14	17	1	**9.231 012**
T-15	11/14	15	20	1	**9.231 015**
T-17	13/16	10	30	1	**9.231 017**
T-19	15/18	12	30	1	**9.231 019**
T-22	18/21	15	30	1	**9.231 022**
T-24	20/23	21	31	1	**9.231 024**
T-28	20/23	20	35	1	**9.231 028**
T-32	22/30	23	32	1	**9.231 032**
T-38	26/35	30	35	1	**9.231 038**
T-42	30/40	35	50	1	**9.231 042**
T-52	40/50	40	60	1	**9.231 052**
T-66	54/63	40	60	1	**9.231 066**
T-76	64/74	40	60	1	**9.231 076**
L-12	9/11	40	10	1	**9.231 072**
L-17	13/16	30	20	1	**9.231 077**
L-22	18/21	30	30	1	**9.231 082**

3



4



3 4 Sterile stoppers SILICOSEN® C-Type

NEW!

Superb permeability and fits tight onto the media container due to sealing lip, where importance is placed on mounting quality. Suitable for shaking cultures. *Hirschmann*

Type	Joint size (NS)	d1 mm	l1 mm	d2 mm	d3 mm	PK	Cat. No.
C-20	15/20	16	28	12	20	1	**9.231 120**
C-30	20/30	26	28	18	30	1	**9.231 130**
C-40	30/40	36	28	27	40	1	**9.231 140**
C-55	40/50	50	28	34	55	1	**9.231 150**
C-65	42/52	57	42	65	28	1	**9.231 160**

5



5 Sterile stoppers SILICOSEN® S-Type

Superb permeability. Suitable for aerobic bacterium cultures and shaking cultures. *Hirschmann*

Type	Joint size (NS)	Top diam. mm	Bottom diam. mm	Cylinder length mm	Cone length mm	PK	Cat. No.
S-28	17/26	28	17	18	27	1	**9.231 178**
S-35	24/33	35	24	20	30	1	**9.231 185**
S-40	28/38	39	28	20	30	1	**9.231 190**

E & OE.

1 Sterile stoppers BIO-SILICO® N-Type

NEW!

Cell size is uniform, which provides stable and good permeability. Optimum product for shaking cultures-durability and operability are excellent.

Hirschmann



Type	Joint size (NS)	Top diam. mm	Bottom diam. mm	Cylinder length mm	Cone length mm	PK	Cat. No.
N-12	9/11	13	9	13	17	1	**9.231 100**
N-15	11/14	16	11	14	22	1	**9.231 101**
N-17	13/16	19	13	15	25	1	**9.231 102**
N-19	15/18	21	15	16	28	1	**9.231 103**
N-22	18/21	24	18	18	30	1	**9.231 104**
N-24	20/23	26	20	20	32	1	**9.231 105**
N-28	21/26	30	21	20	34	1	**9.231 109**
N-32	22/30	34	22	24	36	1	**9.231 106**
N-42	30/40	44	30	32	46	1	**9.231 107**
N-52	40/50	54	40	36	50	1	**9.231 108**

2 LLG-Test tubes, AR® soda-lime glass

Test tubes with round bottom made out of AR®-Glass. Hydrolytic resistance: Class HGB 3 acc. to ISO 719, Type III acc. to C - USP.



Diam. mm	Height mm	Wall thickness mm	Description	PK	Cat. No.
8	70	0.5	with beaded rim	100	**6.201 034**
10	100	0.5	with beaded rim	100	**6.801 073**
12	100	0.5	with beaded rim	100	**7.607 198**
14	130	0.5	with beaded rim	100	**6.800 620**
16	130	0.6	with beaded rim	100	**6.800 382**
16	160	0.6	with beaded rim	100	**7.600 405**
20	180	0.6	with beaded rim	100	**7.607 778**
25	150	0.9	with beaded rim	50	**6.800 621**
30	200	0.9	with beaded rim	50	**7.600 324**
30	100	1.0	without rim	100	**6.267 806**
15	100	1.0	without rim	100	**7.651 872**
16	120	1.0	without rim	100	**7.651 871**
18	130	1.0	without rim	100	**7.652 552**

3 Culture tubes, soda glass, not graduated

NEW!

Rimless or with PP screw cap and white TPE elastomer seal. Autoclavable at 121°C (2 bar), according to DIN EN 285.

BRAND



Capacity ml	Ext. diam. mm	Height mm	Wall thickness mm	Max. rcf x g	Description	PK	Cat. No.
6.5	12	100	1.00	3000	thread GL 14	100	**9.010 032**
10.0	16	100	1.00	3000	thread GL 18	100	**9.010 036**
20.0	16	160	1.00	1800	thread GL 18	100	**9.010 037**
30.0	18	180	1.00	1100	thread GL 18	100	**7.019 348**
3.0	10	75	0.60	3000	rimless	250	**9.010 040**
5.5	12	75	0.60	3000	rimless	250	**9.010 041**
7.5	12	100	0.60	3000	rimless	250	**9.010 042**
13.0	16	100	0.70	2600	rimless	78	**9.010 043**
18.0	16	125	0.70	1800	rimless	105	**9.010 044**
22.0	16	160	0.70	1500	rimless	100	**9.010 045**
30.0	18	180	0.70	900	rimless	121	**9.010 039**



1 Culture tubes, Pyrex®, PTFE

NEW!

Scilabware

- Ideal for culture work
- Manufactured from Pyrex® borosilicate glass
- High resistance to attack from water reduces leaching of contaminants which can cause pH changes
- Phenolic screwcaps with inert PTFE lined rubber disc
- Cap can withstand repeated dry heat and steam sterilisation cycles (121°C for 2 hours)

Diam. mm	Height mm	Wall thickness mm	Neck thread mm	PK	Cat. No.
14	100	1.5	13	40	**6.226 022**
16	100	1.8	15	40	**6.226 949**
16	125	1.8	15	40	**6.254 027**
16	160	1.8	15	40	**6.253 961**
18	100	1.8	18	40	**6.258 472**
18	180	1.8	18	40	**6.226 619**
20	100	1.8	20	40	**6.236 081**
20	200	1.8	20	40	**6.231 721**
22	200	1.8	22	40	**6.253 139**
26	100	2.0	25	40	**6.226 950**
26	200	2.0	25	40	**6.228 145**

Culture tubes are not recommended for centrifugation.
Do not autoclave with a tightly screwed cap, always slacken off. Failure to adopt this procedure may result in tube breakage.



2 Disposable culture tube, Soda-lime-glass

From Soda-lime-glass. Straight rim.

DURAN Group

Capacity ml	Outer diam. mm	Height mm	Wall thickness mm	PK	Cat. No.
6	12.25	75	0.80	500	**6.235 314**
14	15.50	100	0.80	250	**7.200 457**

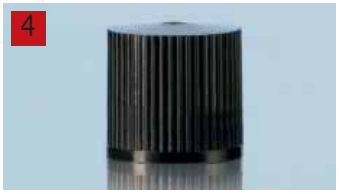


3 Disposable culture tube, soda-lime glass, with screw cap

From Soda-lime glass. With DIN thread and PP1 screw cap

DURAN Group

Capacity ml	Outer diam. mm	Height mm	Wall thickness mm	DIN-Thread GL	PK	Cat. No.
6	12	100	1	14	100	**7.021 547**
12	16	100	1	18	100	**7.021 548**
22	16	160	1	18	100	**7.021 549**
32	18	180	1	18	100	**7.021 550**



4 Screw cap for culture tubes, PP, with seal

With seal from TPE.

DURAN Group

DIN-Thread GL	PK	Cat. No.
14*	100	**6.238 341**
18	100	**6.702 588**

More culture tubes please see page 26.

E & OE.

1 Culture tubes, Borosilicate glass, screw cap

For culture growth, transport and storage. Heavy walled, thickness 1.1mm. Wide neck for easy inoculation and cleaning. Complete with aluminium or plastic screw cap and rubber sealing gasket. The 15ml size is specifically designed for use in centrifuges. Autoclavable.

schuett-biotec

Capacity ml	Diam. mm	Height mm	Screw cap	PK	Cat. No.
15	16	98	Aluminium	100	**9.010 612**
20	16	150	Aluminium	100	**9.190 600**
15	16	98	Plastic	100	**9.010 613**
20	16	150	Plastic	100	**9.190 605**
50	25	150	Plastic	100	**9.010 620**



2 Tubes, glass, DURAN®, culture, screw cap

DIN thread. Complete with red PBT screw cap with PTFE-faced sealing wad. Thus, it is suitable for the cultivation of microorganisms. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable.

DURAN Group

Diam. mm	Height mm	Neck thread GL	PK	Cat. No.
12	100	14	50	**9.010 012**
13	100	14	50	**9.010 013**
16	150	18	50	**9.010 014**
16	160	18	50	**9.010 016**
18	180	18	50	**9.010 018**
20	150	18	50	**9.010 019**



3 Culture tubes, glass DURAN®, small, rimless

To DIN 38411. Rimless. Suitable for use with Kapsenberg caps. Glass Type I/neutral glass as per USP, EP and JP. Autoclavable. Please order cap separately.

DURAN Group

Diam. mm	Height mm	Wall thickness mm	PK	Cat. No.
16	160	1.0 to 1.2	100	**9.010 046**
18	180	1.0 to 1.2	100	**9.010 048**



4 Culture tubes, Durham, soda lime glass

NEW!

Durham culture tubes are mainly used in microbiology to detect gas produced by micro organisms. These special tubes are placed upside down in bigger test tubes.
- Made of soda lime glass
- With straight rim and with round bottom
- Ungraduated

Marienfeld

Diam. mm	Wall thickness mm	Height mm	PK	Cat. No.
6	0.7	35	250	**6.266 183**
6	0.7	50	350	**6.266 184**



Metal caps

For culture flasks and culture medium bottles.

DURAN Group

Material	For neck diam. mm	PK	Cat. No.
Stainless steel	38	1	**9.010 481** 5
Aluminium, anodised blue	38	1	**9.010 482** 6



9.010 481



9.010 482

Kapsenberg caps - please see page 1250.

1



1 Metal caps, Erlenmeyer, Aluminium

Anodised in a choice of colours. *schuett-biotec*
Special caps for sterile, but not hermetically sealing, closure of culture flasks and media bottles with straight, rimmed or rimless necks as indicated. With nichrome steel springs that clamp onto the outer wall of the container.
Cleaning advice available on request.

For neck diam. mm	Colour	With rim	PK	Cat. No.
37/39	silver	no	10	**9.231 456**
37/39	blue	no	10	**9.231 457**
37/39	red	no	10	**9.231 458**

2



2 Metal caps, Labocap without handle

schuett-biotec

For neck diam. mm	Handle	Colour	PK	Cat. No.
9/10	without	blue	100	**9.231 421**
12/13	without	blue	100	**9.231 422**
14/15	without	blue	100	**9.231 423**
15/16	without	blue	100	**9.231 424**
17/18	without	blue	100	**9.231 425**
19/20	without	blue	100	**9.231 426**
21/23	without	blue	100	**9.231 427**
24/26	without	blue	100	**9.231 428**
28/30	without	blue	100	**9.231 429**
9/10	without	red	100	**9.231 441**
12/13	without	red	100	**9.231 442**
14/15	without	red	100	**9.231 443**
15/16	without	red	100	**9.231 444**
17/18	without	red	100	**9.231 445**
19/20	without	red	100	**9.231 446**
21/23	without	red	100	**9.231 447**
24/26	without	red	100	**9.231 448**
28/30	without	red	100	**9.231 449**
12/13	without	yellow	100	**9.231 460**
15/16	without	yellow	100	**9.231 461**
17/18	without	yellow	100	**9.231 462**
19/20	without	yellow	100	**9.231 339**
12/13	without	green	100	**9.231 463**
15/16	without	green	100	**9.231 464**
17/18	without	green	100	**9.231 465**
19/20	without	green	100	**9.231 340**
09/10	without	silver	100	**9.231 369**
12/13	without	silver	100	**9.231 372**
14/15	without	silver	100	**9.231 374**
15/16	without	silver	100	**9.231 375**
17/18	without	silver	100	**9.231 377**
19/20	without	silver	100	**9.231 379**
21/23	without	silver	100	**9.231 381**
24/26	without	silver	100	**9.231 385**
28/30	without	silver	100	**9.231 388**
12/13	without	black	100	**9.231 334**
15/16	without	black	100	**9.231 466**
17/18	without	black	100	**9.231 337**
19/20	without	black	100	**9.231 341**
12/13	without	violet	100	**9.231 335**
15/16	without	violet	100	**9.231 336**
17/18	without	violet	100	**9.231 338**
19/20	without	violet	100	**9.231 342**
12/13	without	brown	100	**9.231 435**
15/16	without	brown	100	**9.231 436**
17/18	without	brown	100	**9.231 437**
19/20	without	brown	100	**9.231 438**



E & OE.

1 Metal caps, Labocap with handle, Aluminium

Anodised in a choice of colours. For sterile, but not hermetically sealing, closure of containers. With nichrome steel springs that clamp onto the outer wall of the container. Autoclavable. Cleaning advice available on request. *schuett-biotec*

For neck diam. mm	Handle	Colour	PK	Cat. No.
15/16	with	silver	100	**9.231 345**
17/18	with	silver	100	**9.231 347**
15/16	with	blue	100	**9.231 403**
17/18	with	blue	100	**9.231 404**
15/16	with	red	100	**9.231 413**
17/18	with	red	100	**9.231 414**
15/16	with	yellow	100	**9.231 326**
17/18	with	yellow	100	**9.231 330**
15/16	with	green	100	**9.231 327**
17/18	with	green	100	**9.231 331**
15/16	with	black	100	**9.231 328**
17/18	with	black	100	**9.231 332**
15/16	with	violet	100	**9.231 329**
17/18	with	violet	100	**9.231 333**

1



2 Aluminium caps, pure aluminium

Matt finish. Without internal clips. Loose-fit caps for sterile, but not hermetically sealing, closure of culture flasks and other containers. Can also be used as open specimen holders. Autoclavable. *schuett-biotec*

Int. diam. mm	Height mm	PK	Cat. No.
11	25	100	**9.230 821**
12	25	100	**9.230 822**
13	25	100	**9.230 823**
14	25	100	**9.230 824**
15	25	100	**9.230 825**
16	30	100	**9.230 826**
17	30	100	**9.230 827**
18	30	100	**9.230 828**
20	30	100	**9.230 829**
22	30	100	**9.230 830**
28	30	100	**9.230 831**
32	30	100	**9.230 832**
39	30	10	**9.230 833**
44	40	10	**9.230 834**
48	40	10	**9.230 835**
55	40	10	**9.230 836**
58	40	10	**9.230 837**

2



We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

schuett-biotec.de

Shaking Incubator's, SI500/SI505/SI600

Stuart

- Digital LED control panel
- Independent control of speed and temperature
- Timer 1 second to 9 days
- Alarm
- Retraceble platform, easier access to the samples

1



9.951 612

Shaking Incubator's, SI500/SI600

Stuart

The SI500 combined shaker and incubator is ideal for scientists doing cell culturing procedures, especially suspension culture applications. It is compact enough to be positioned on the laboratory bench. The platform of both models has a versatile clamping system which secures most sizes and mixtures of flask up to 1 litre capacity for the SI500 and 2 litre capacity for the SI600. Typically, the platform of the SI500 will accommodate the following Erlenmeyer flasks: 12 x 250ml, or 9 x 500ml or 6 x 1000ml. The SI600 will accomodate 6 x 2 l, 9 x 1000 ml or 15 x 500 ml Erlenmeyer flasks.

Specifications

Temperature range:	Amb.+ 5°C to + 60°C
Samples:	adjustable platform or tube racks
Display resolution:	0.1°C
Precision:	±0.5°C at 37°C
Fluctuation:	±0.5°C at 37°C
Variation:	< 0.5°C at 37°C
Speed range:	30 to 300rpm
Timer:	min/sec, hr/min, days/hrs
Platform size	
SI500:	335 x 335mm
SI600:	526 x 390mm
Max. vessel height	
SI500:	250 mm
SI600:	300 mm
Volumen	
SI500:	51 l
SI600:	115 l
Max. load:	10kg
Heater power	
SI500:	250 W
SI600:	400 W
Supply requirements:	230V 50Hz

Type	Amplitude	Internal dimensions (W x D x H)	External dimensions (W x D x H)	Weight	PK	Cat. No.
	mm	mm	mm	kg		
SI500	16.0	422 x 408 x 297	450 x 474 x 522	30.00	1	**9.951 612** 1
SI600	16.0	623 x 465 x 395	675 x 542 x 642	55.00	1	**9.645 351**

2



2 Shaking Incubator, SI505

Stuart

The SI505 has been designed specifically to combine a bench top laboratory incubator with the specific mixing action required for microtitre plates. With a tight orbit of 1.5mm and a high speed shaking action between 250rpm and 1250rpm even the smallest of vessels can be adequately mixed. To minimize sample evaporation the SI505 is supplied with stainless steel water trays, these are strategically placed within the unit to maintain a humidity of up to 80%, thus dramatically reducing sample evaporation over a 24 hour period.

Specifications

Temperature range:	Amb.+7°C to 60°C
Samples:	4 x microplates or 2 x microtube racks
Display resolution:	0.1°C
Precision:	±0.5°C at 37°C
Fluctuation:	±0.5°C at 37°C
Variation:	< 0.6°C at 37°C
Speed range:	250 to1250rpm
Timer:	min/sec, hr/min, days/hrs
Platform size:	220 x 220mm
Max. load:	1kg
Heater power:	200W
Supply requirements:	230V 50Hz

Type	Amplitude	Internal dimensions (W x D x H)	External dimensions (W x D x H)	Weight	PK	Cat. No.
	mm	mm	mm	kg		
SI505	1.5	307 x 300 x 190	361 x 405 x 430	22.50	1	**9.645 350**

E & OE.

LLG-Micropestles, stainless steel

Polished stainless steel, micropestles. Precisely fitted for Eppendorf Safe-Lock Tubes™, manufactured in one-piece, smooth handle sections, can be disinfected easily. Minimum homogenate displacement due to tapered piston.

For Reaction tubes:
For homogenisation of cells, tissues or foodstuffs/feed samples.
- For tubes with 0.5ml, 1.5ml and 2.0ml
- Can be cooled down to -196°C
- Sterilisable in an autoclave or dry heat at +200°C
- Suitable for PCR applications
- Alternative to single-use plastic pestles
- Perfectly suitable for Eppendorf Safe-Lock Tubes

For Sarstedt tubes:
Primarily used with food analysis with highly processed samples in which little DNA, protein or allergen is present.
- For tubes 13ml (Cat. No. 6.239 124)

For bottle ml	Pestle length mm	PK	Cat. No.	
0.5	94	1	**9.314 500**	1
1.5	124	1	**9.314 501**	2
2.0	120	1	**9.314 502**	3
13.0	190	1	**9.314 503**	4



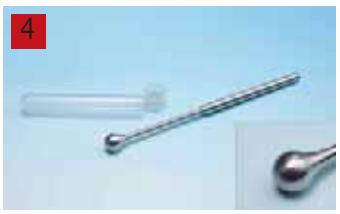
9.314 500



9.314 501



9.314 502



9.314 503

5 Micro pestles, CTFE/stainless steel

Reusable, for 500µl and 1.5ml reaction tubes. Autoclavable CTFE/stainless steel. Suitable for battery-operated drive motor (9.314 496).



For bottle ml	Pestle length mm	PK	Cat. No.
0.5	60	1	**9.314 494**
1.0	140	1	**9.314 495**

6 EPPI pestle, PP

For resuspending pellets and homogenising within tubes (1.5, 2.0ml, exact fit). *schuett-biotec*
Autoclavable. Suitable for homogeniser/motor drive.



For bottle ml	Pestle length mm	PK	Cat. No.
1.5/2.0	70	10	**9.197 689**

Disposable Pellet pestles, PP, with reaction tube

NEW!

Autoclavable polypropylene. Suitable for battery-operated drive motor (9.314 496). Pestle length 7cm. Supplied with reaction tube, except Cat. No. 9.314 492 and 9.314 493.

For bottle ml	Pestle length mm	Description	PK	Cat. No.
0.5	70	with reaction tube	100	**9.314 490**
0.5	70	without reaction tube	100	**9.314 492**
0.5	70	with reaction tube, RNase, DNase and pyrogen free	100	**9.314 498**
1.5	70	with reaction tube	100	**9.314 491**
1.5	70	without reaction tube	100	**9.314 493**
1.5	70	with reaction tube, RNase, DNase and pyrogen free	100	**9.314 499**



1 Micro pestles, PTFE, with stainless steel shaft

PTFE. With stainless steel shaft diam. 3.2mm. For 1.5ml reaction tubes.
Ideal for re-suspending lyophilized products or precipitates, and for homogenizing samples in a microcentrifuge tube.
Overall length 143mm Steam autoclavable at 121ºC. May be hand-held or mounted in a motorized chuck.

For bottle ml	Pestle length mm	Description	PK	Cat. No.
1.5	143	Flat tip	1	**9.315 000**
1.5	143	Round tip	1	**9.315 001**



2 Micro pestles, accessory drive motor

Description	PK	Cat. No.
Complete with two batteries	1	**9.314 496**
Spare pestle adapter	1	**9.314 497**



9.651 051

4 Tissue Grinders System

For safety grinding of any cells by minimal temperature rising. Closed System (CS) for minimizing the risk of personal contact with aerosols and sample overflow while grinding. *Kimble Chase*
Optimal contact of grinder and conical sample tube (15 or 50ml) to grind each cell in the best way.
Each unit is gamma sterilized and comes with a fully assembled pestle , conical sample tube (PP), solid top cap (PE-HD) and label.
Type CS1: Tip from glass-filled PP (30%/70%) for standard grinding
Type CS2: Vitrified tip (cast silica) for harder grinding



For bottle ml	Type	PK	Cat. No.
15	CS 1	10	**9.651 050**
50	CS 1	10	**9.651 051**
15	CS 2	10	**9.651 052**
50	CS 2	10	**9.651 053**



5 General Purpose Homogenisers, Borosilicate glass

NEW!

- Precision Bore Borosilicate glass mortars with a range from 5.0 to 55ml capacity *GPE Scientific Limited*
- Borosilicate glass pestle
- All parts are fully autoclavable

Grinding Clearance Pestle and Mortar: 0.152 to 0.254mm

Capacity ml	Chamber Length mm	Mortar Overall length mm	Pestle Length mm	Pestle Diam. mm	PK	Cat. No.
5	65	95	195	10	1	**6.264 837**
10	75	115	215	13	1	**6.264 838**
15	80	120	220	15	1	**6.264 839**
30	105	150	250	19	1	**6.264 840**
55	125	175	295	25	1	**6.264 841**

E & OE.

1 Homogenisers, Safe-Seal, borosilicate glass 3.3/PTFE

Supplied complete with a PTFE pestle, stainless steel handle and borosilicate glass mortar which is stoppered in PTFE to protect against splash back during the grinding process. Autoclavable.

GPE Scientific Limited



Capacity	Pestle L x o.d.	Mortar L x o.d.	PK	Cat. No.
ml	mm	mm		
5	250 x 10	140 x 15	1	**9.164 501**
10	250 x 13	150 x 17	1	**9.164 502**
15	250 x 15	155 x 19	1	**9.164 503**
30	250 x 19	180 x 23	1	**9.164 504**

2 Potter-elvehjem homogenisers, Borosilicate glass

NEW!

- Potter-elvehjem homogenisers are designed to work with soft tissue
- Precision Bore Borosilicate glass mortars with a range from 5.0 to 55ml capacity
- PTFE Pestle
- Standard stainless steel rod for use with an electric motor
- Optional stainless steel handle for manual grinding
- All parts are fully autoclavable

GPE Scientific Limited



Grinding Clearance Pestle and Mortar: 0.076 to 0.126mm

Capacity	Chamber Length	Mortar Overall length	Pestle Length	Pestle Diam.	PK	Cat. No.
ml	mm	mm	mm	mm		
5	65	95	250	10	1	**6.264 842**
10	75	115	250	13	1	**6.264 843**
15	80	120	250	15	1	**6.264 844**
30	105	150	250	19	1	**6.264 845**
55	125	175	250	25	1	**6.264 846**

Stainless steel handle for Potter-elvehjem homogenisers

Description	PK	Cat. No.
Stainless steel handle for pestles	1	**9.164 515**

3 Homogenisers, Mini series, borosilicate glass 3.3

Manufactured from high quality borosilicate glass this range of mini homogenisers is ideal for micro tissue work. Bodies are clear precision glass. Pestles have ground glass working length. With or without handles. Fully autoclavable.
Grinding clearance pestle and mortar 0.152mm to 0.254mm.

GPE Scientific Limited



Capacity	Pestle L x o.d.	Mortar L x o.d.	Description	PK	Cat. No.
ml	mm	mm			
0.1	75 x 3.65	60 x 9	with handle	1	**9.164 541**
1.0	150 x 5.00	105 x 10	with handle	1	**9.164 542**
3.0	170 x 9.00	115 x 13	with handle	1	**9.164 543**
0.1	75 x 3.65	60 x 9	without handle	1	**9.164 544**
1.0	150 x 5.00	105 x 10	without handle	1	**9.164 545**
3.0	170 x 9.00	115 x 13	without handle	1	**9.164 546**

4 Homogenisers, Griffiths tube, Borosilicate glass 3.3

For grinding bacterial emulsions and tissues. Rounded pestle and mortar ends, ensure perfect grinding. Autoclavable. Large Griffiths tube is ideal for coarse material.

GPE Scientific Limited



Capacity	Pestle L x o.d.	Mortar L x o.d.	Description	PK	Cat. No.
ml	mm	mm			
5	150 x 12	95 x 18	small	1	**9.164 550**
15	305 x 14	220 x 18	large	1	**9.164 551**

1



1 Duall homogenisers, with glass pestle

With conical and cylindrical area for effective tissue for grinding and also for homogenising. Especially suitable for cellular tissue such as muscle, heart and lungs. The pestle is sufficiently stable to be motor driven. The space between the pestle and mortar is between 0.1mm to 0.15mm. Spare components are available and are completely interchangeable.

Capacity	Size	Pestle L x o.d.	Mortar L x o.d.	PK	Cat. No.
ml		mm	mm		
1	20	155 x 6	80 x 13	1	**9.651 637**
3	21	207 x 6	120 x 16	1	**9.651 638**
5	22	220 x 8	150 x 18	1	**9.651 639**
15	23	278 x 10	175 x 25	1	**9.651 641**
30	24	310 x 10	215 x 32	1	**9.651 642**
50	25	345 x 16	225 x 38	1	**9.651 643**

2



2 Duall homogenisers, with PTFE pestle

With conical and cylindrical area for effective tissue for homogenising. The PTFE pestle is ideal for soft tissue such as brain or liver. The pestle is suitable for motor drive. The space between the pestle and mortar is between 0.1mm to 0.15mm. Spare components are available and are completely interchangeable.

Capacity	Size	Pestle L x o.d.	Mortar L x o.d.	PK	Cat. No.
ml		mm	mm		
1	20	155 x 4.5	80 x 13	1	**9.651 656**
3	21	210 x 6	120 x 16	1	**9.651 657**
5	22	228 x 6	150 x 18	1	**9.651 658**
15	23	268 x 6	175 x 25	1	**9.651 659**
30	24	305 x 10	215 x 32	1	**9.651 660**
50	25	330 x 10	225 x 38	1	**9.651 661**

3



3 Homogenisers Potter-Elvehjem, with glass pestle

All-glass. Pestle is suitable for motor drive. The space between the pestle and mortar is between 0.1mm to 0.15mm. Spare components are available and are completely interchangeable.

Capacity	Size	Pestle L x o.d.	Mortar L x o.d.	PK	Cat. No.
ml		mm	mm		
1	19	145 x 5	95 x 13	1	**9.651 674**
5	21	205 x 6	140 x 16	1	**9.651 675**
8	22	215 x 8	150 x 18	1	**9.651 676**
17	23	265 x 10	175 x 25	1	**9.651 677**
45	24	315 x 10	220 x 32	1	**9.651 678**

4



4 Homogenisers Potter-Elvehjem, with PTFE pestle

With PTFE pestle and glass mortar. Sizes 21 and 24 have notches on the bottom edge of the pestle so that particles can be transported up to the cylindrical part of the mortar for extraction. The space between the pestle and mortar is between 0.1mm to 0.15mm. Spare components are available and are completely interchangeable.

Capacity	Size	Pestle L x o.d.	Mortar L x o.d.	PK	Cat. No.
ml		mm	mm		
0.5	18	130 x 3	80 x 12	1	**9.651 689**
1	19	154 x 5	95 x 12	1	**9.651 690**
3	20	154 x 5	115 x 12	1	**9.651 691**
5	21	215 x 6	140 x 15	1	**9.651 692**
8	22	212 x 6	150 x 19	1	**9.651 693**
17	23	266 x 6	175 x 25	1	**9.651 694**
45	24	269 x 6	220 x 32	1	**9.651 695**

E & OE.

1 Homogenisers with PTFE or glass pestles

For use with all homogeniser drive-units or for schuett homgen^{plus}. *schuett-biotec*
Homogenisers and pestles provide a precise shape and are consequently separately exchangeable. Clearance between pestle and homogeniser is between 0.18 and 0.23 mm.

Homogeniser with PTFE pestle
Tapered or cylindrical. Shaft made of stainless steel. Inert. Elastic. With smooth, wax-like, moisture-rejecting surface. Resistant against high temperatures. Also available as glass fiber reinforced model. Highly efficient with especially tough tissue.

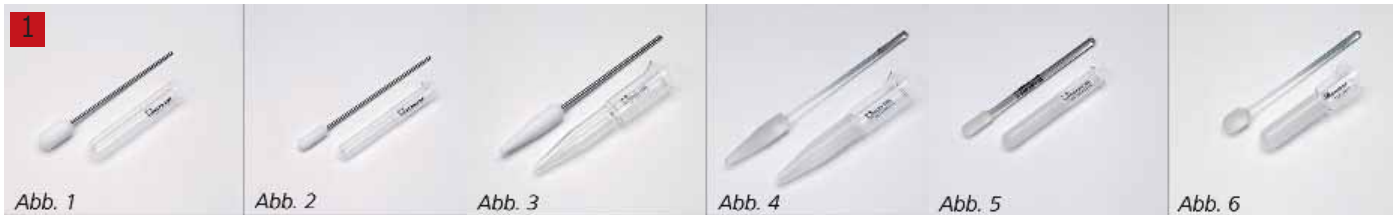
Homogeniser with glass pestle
Tapered or cylindrical. With robust glass shaft. Ground-glass surface in cylindrical/tapered part. Highly efficient with tough tissue.

Homogenizers and pestles also available individually as spare parts.

Glass mortar Type 1: With flared overflow neck and spout, conical
Glass mortar Type 2: Without flared overflow neck, cylindrical
Glass mortar Type 3: With flared overflow neck and spout, cylindrical
Glass mortar Type 4: Round bottom, with flared overflow neck, without spout, cylindrical

Capacity ml	Glass mortar type	Form	Figure	PK	Cat. No.
2	1	PTFE pestle tapered	3	1	**9.651 850**
15	1	PTFE pestle tapered	3	1	**9.651 851**
40	1	PTFE pestle tapered	3	1	**9.651 852**
2	2	PTFE pestle cylindrical	1	1	**9.651 853**
5	2	PTFE pestle cylindrical	1	1	**9.651 854**
10	2	PTFE pestle cylindrical	1	1	**9.651 855**
15	3	PTFE pestle cylindrical	2	1	**9.651 856**
20	2	PTFE pestle cylindrical	1	1	**9.651 857**
30	2	PTFE pestle cylindrical	1	1	**9.651 858**
40	3	PTFE pestle cylindrical	2	1	**9.651 859**
5	2	PTFE pestle cylindrical*	1	1	**9.651 860**
10	2	PTFE pestle cylindrical*	1	1	**9.651 861**
15	3	PTFE pestle cylindrical*	2	1	**9.651 862**
30	2	PTFE pestle cylindrical*	1	1	**9.651 863**
40	3	PTFE pestle cylindrical*	2	1	**9.651 864**
2	1	Glass pestle, tapered	4	1	**9.651 865**
15	1	Glass pestle, tapered	4	1	**9.651 866**
40	1	Glass pestle, tapered	4	1	**9.651 867**
8	4	Glass pestle, cylindrical	5	1	**9.651 868**
15	4	Glass pestle, cylindrical	5	1	**9.651 869**
40	3	Glass pestle, cylindrical	6	1	**9.651 870**

*glass-fibre reinforced



2 Homogenisers, Dounce, glass

For fine particle size reductions without damage to cell nuclei. Supplied with interchangeable pestles ground and polished to large' and small' clearances for use in the same tube. *GPE Scientific Limited*
Includes 2 larges pestle used for sample preparation and 2 tight pestles for final homogenate.

Capacity ml	Pestle L x o.d. mm	Mortar L x o.d. mm	PK	Cat. No.
1	117 x 7.5	82 x 12	2	**9.164 690**
7	175 x 13	125 x 17	2	**9.164 691**
15	210 x 15	160 x 19	2	**9.164 692**
40	285 x 25	210 x 31	2	**9.164 693**



1



1 Homogenisers, Duo-Form, Borosilicate glass 3.3

GPE Scientific Limited

The pestles are conicaly shaped at the tip and cylindrically shaped in the upper part. Thiscombination gives two separate areas, one for initial grinding and a second for final homogenisation.

Capacity ml	Pestle L x o.d. mm	Mortar L x o.d. mm	Mortar	Pestle	PK	Cat. No.
15	250 x 15	155 x 19	ground	with rod	1	**9.164 680**
15	250 x 15	155 x 19	clear glass	with rod	1	**9.164 681**
15	250 x 15	155 x 19	ground	with handle	1	**9.164 682**
15	250 x 15	155 x 19	clear glass	with handle	1	**9.164 683**

2



2 Homogeniser drive unit, schütt homgen^{plus}

schuett-biotec

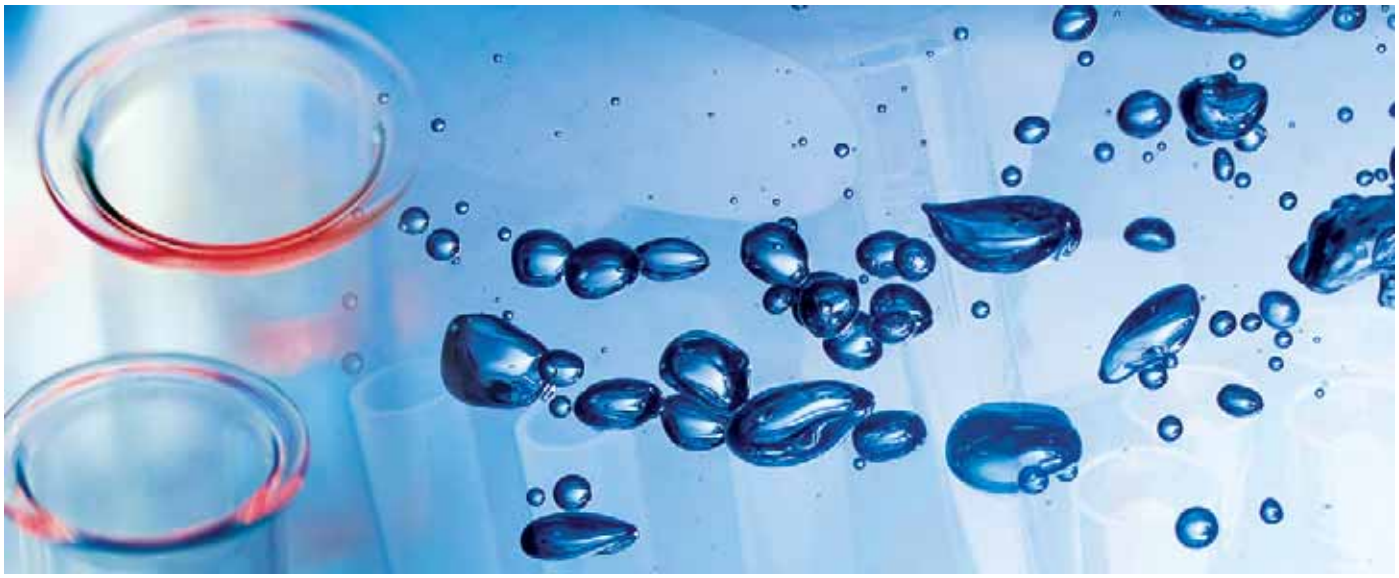
For the gentle homogenisation of biological samples or for grinding tough, rigid material which is difficult to break down. Complete with load-compensating drive unit and universal quick-action chuck, transparent plexiglas cooling jacket and multi-purpose spanner for centering homogenising vessels of varying sizes. Portable, but highly stable and vibration-free due to its triple-post frame construction, and easy to use. Provides high torque, even at the low speed range, ensuring extremely powerful homogenising. Continuously adjustable speed range: 40rpm to 3000rpm. Provides reproducible homogenising by maintaining constant rotational speed, which is shown on an easy to read, 4-digit LED display. The fast-action clamping chuck with hollow shaft permits rapid and easy replacement of the pestle and allows pestles with longer shafts to be used. We highly recommend using a quick-grip chuck for glass pestles to minimise lateral movement (and therefore strain) of the glass shaft. The cooling jacket incorporates a clamping holder suitable for Eppendorf test tubes and homogenising vessels with outside diameters from 10mm to 40mm. Sample cooling is easily achieved using ice, which can be introduced into the cooling jacket through a screw capped opening. The homogenising vessel moves up and down in conjunction with the cooling jacket platform and is raised and lowered using a lever jack. The long lever facilitates thorough homogenising without much effort. For 230V 50/60Hz, 300 W single phase supplies (optionally available for 115V 50/60Hz).

Supplied with: schuett homgen^{plus} homogeniser drive unit with universal keyless chuck, incl. cooling vessel, 1000 ml and universal chuck set (consisting of 6 sizes).

We also offer a sterile alternative for use in a glove box and with infectious material. Details on request.

Type	External dimensions (W x D x H) mm	PK	Cat. No.
schuett homgen^{plus}, 230 V	300 x 350 x 888	1	**9.651 560**
Quick-change chuck for glass pestle	-	1	**9.651 564**

Further Homogenisers please see our chapter 5



E & OE.

Mixer Mills MM 200/400

Retsch

The mixer mills are true laboratory "all-rounders". They have been developed specially for grinding, homogenising and mixing of small amounts of sample in only a few seconds.
They are also perfectly suitable for the disruption of biological cells as well as for DNA/RNA recovery. The MM 400 can also be used for cryogenic and wet grinding.

Features:
- 2 milling stations
- Digital setting of time and vibration intensity
- 9 separate programmes can be stored
- Wide selection of grinding jar sizes and materials
- Self-locking and self-centering, clamping device for grinding jars (MM 400)
- Screw-top grinding jars up to 50ml, especially suitable for wet and cryogenic grinding (MM 400)

Accessories for cryogenic grinding and adapter with centrifuge tubes for cell disruption available on request.
Grinding jars and balls please order separately.

1



9.739 080

Specifications

Feed size*	
MM 200:	up to 6mm
MM 400:	up to 8mm
Ultimate fineness*	
MM 200:	< 10µm
MM 400:	< 5µm
Charge	
MM 200:	max. 2 x 10ml
MM 400:	max. 2 x 20ml
Digital preselection of vibrational frequency	
MM 200:	3 to 25Hz (180 to 1500rpm.)
MM 400:	3 to 30Hz (180 to 1800rpm.)
Power supply:	100 - 240V 50/60Hz

Type	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
MM 200	371 x 461 x 266	25.00	1	**9.739 080** 1
MM 400	371 x 461 x 266	26.00	1	**9.739 091**

*depending on feed material

2 Mixer Mill CryoMill

Retsch

The CryoMill is designed for the cryogenic size reduction of materials which cannot be ground at room temperature or whose composition would be changed by it. The grinding jar is cooled before and during the grinding process with liquid nitrogen through an integrated cooling system. Thus the sample is embrittled and its volatile components are preserved. The size reduction principle is the same as that of the well-proven Mixer Mill MM 400. The CryoMill can also be operated without the cooling system which makes it suitable for a wide range of applications.

Features:
- Powerful cryogenic grinding by impact and friction, up to 30 Hz
- Closed LN_2-system (autofill) for enhanced safety, avoids any contact of the user with LN2
- Screw-top grinding jars for convenient, leak-proof operation
- Clearly structured user interface, memory for 9 SOPs
- Wide range of accessories including LN_2 feeding systems, various jar and ball sizes, adapter racks, materials

2



Specifications

Feed size	up to 8mm
Ultimate fineness	< 5µm
Charge	max. 1 x 20ml
Adjustable frequency range	3 to 30Hz (180 to 1800rpm.)
Dimensions (WxDxH)	385 x 675 x 370mm
Weight	40kg
Power supply:	100 - 240V, 50/60Hz

Type	PK	Cat. No.
CryoMill	1	**9.739 299**

Please order Autofill, grinding jars and grinding balls separately.



1 Filter units, PES membrane

NEW!

These bottle-top filter units are ideally suited for the separation or purification of samples which are contained in large volumes. The units are available with either 0.22µm or 0.45µm pore sizes and 3 different volumes (250, 500 and 1000ml).
Features:
- Bottle-top filter and reservoir bottle are included
- Light weight and stable wall construction
- Large knurls on the reservoir bottle cap for easy screwing
- Wide bottle mouth for efficient pouring out
- Volume graduation
- Hose connector fits multiple diameters
- Non-pyrogenic

Membrane material: Polyethersulfone (PES)

Capacity ml	Pore size µm	Neck thread mm	PK	Cat. No.
250	0.22	45	12	**6.267 180**
250	0.45	45	12	**6.267 181**
500	0.22	45	12	**6.267 182**
500	0.45	45	12	**6.267 183**
1000	0.22	45	12	**6.267 184**
1000	0.45	45	12	**6.267 185**



2 Filter units Nalgene™ Rapid-Flow™, PES Membrane, sterile

Thermo Scientific

Ideal for biological and pharmaceutical sterile filtration. PES membrane features low protein binding, low level of extractables and a high flow rate. Now available in three pore sizes: The best filter units with 0.20µm and 0.45µm pore size and new to the protection of valuable cell cultures from mycoplasma with 0.10µm pore size. Filter top and filtrate bottle are graduated. Blue color-coded collar with cellulosic vent plug side arm and quick-disconnect tubing adapter. Leakproof, sterile screw closure included for storage of sterile filtrate. Sterile, single packed. Certificate of Quality included in each full case. Lot number, catalogue number, membrane type, pore size and expiration date are printed on filter units, bottle tops and receivers for easy identification and lot traceability.

Type	Volume upper/lower part ml	Thread GL	Pore size µm	Membrane diam. mm	PK	Cat. No.
565	150/150	45	0.10	50	1	**9.046 022**
568	250/250	45	0.10	50	1	**9.046 024**
566	500/500	45	0.10	75	1	**9.046 023**
565	150/150	45	0.20	50	1	**6.302 336**
568	250/250	45	0.20	50	1	**6.228 218**
566	500/500	45	0.20	75	1	**6.227 381**
569	500/500	45	0.20	90	1	**6.225 298**
567	1000/1000	45	0.20	90	1	**6.229 041**
165	150/150	45	0.45	50	1	**7.047 785**
168	250/250	45	0.45	50	1	**7.047 791**
166	500/500	45	0.45	75	1	**7.047 787**
169	500/500	45	0.45	90	1	**7.047 793**
167	1000/1000	45	0.45	90	1	**7.047 789**

Further filter units please see page 691.



E & OE.

1 LLG-Analytical funnels, sterile

NEW!



LLG-Analytical funnels are an all in one system used for the filtration of microbiological liquid samples. After filtration, the nitrocellulose membrane can be removed and transferred to a Petri dish for further analysis. No need for flaming or sterilization reduces the testing time up to 70%. These 100ml units are suited for monitoring contaminants in all types of samples, from raw materials to finished products. Adapter for use with a manifold is included.

Capacity ml	Diam. mm	Pore size µm	Colour Filter / Grid	PK	Cat. No.
100	47	0.45	white / black	50	**6.268 176**
100	47	0.45	white / black*	50	**6.268 177**
100	47	0.20	white / black	50	**6.268 178**
100	47	0.20	white / black*	50	**6.268 181**
100	47	0.45	black / white	50	**6.268 179**
100	47	0.45	black / white*	50	**6.268 180**

*single packed

2 LLG-Microbiological Monitors, sterile

NEW!



LLG-Microbiological monitors provide a ready-to-use solution for the filtration of liquid samples. The nitrocellulose membrane is fixed to the unit. No need for flaming or sterilization reduces the testing time up to 70%. These 100ml units are suited for monitoring contaminants in all types of samples, from raw materials to finished products. The filtration unit easily converts to a Petri dish, which can be labeled and incubated for further analysis. Adapter for use with a manifold is included.

Capacity ml	Diam. mm	Pore size µm	Colour Filter / Grid	PK	Cat. No.
100	56	0.45	white / black	50	**6.268 182**
100	56	0.45	black / white	50	**6.268 183**
100	56	0.80	black / white	50	**6.268 184**
100	56	0.20	white / black	50	**6.268 185**
100	47	0.45	white / black	50	**6.268 186**
100	47	0.45	white / black*	50	**6.268 187**
100	47	0.45	black / white	50	**6.268 188**
100	47	0.80	black / white	50	**6.268 189**

*single packed

3 Biosart®100 monitors



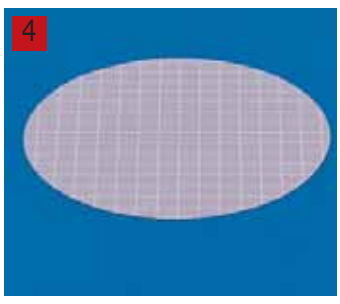
Sartorius

Filtration unit for use with a Sartorius vacuum manifold or direct attachment to a special vacuum pump. Biosart® 100 Monitors have been specifically designed for the microbiological testing of pharmaceuticals, food, beverages, water and other liquids. These sterile disposable units with built-in membrane filter and cellulose pad are ready to use. After filtration, just remove the 100ml funnel to convert the monitor into a petri dish. Culture media for wetting the pad are available in individually sterilised, convenient plastic ampoules. Biosart® 100 Monitors are ready to use filter units designed to fit onto the receivers of a vacuum manifold. For use with Biosart® 100 culture media.

Type	Diam. mm	Pore size µm	Colour Filter / Grid	PK	Cat. No.
K	47	0.45	White / Black	48	**9.049 300**
K	47	0.45	Grey / White	48	**9.049 315**
ACK	47	0.20	White / Black	48	**9.049 311**
ACK	47	0.45	White / Black	48	**9.049 312**
ACK	47	0.45	Green / Dark green	48	**9.049 313**
ACK	47	0.45	Grey / White	48	**9.049 304**
Adapter for BioSart	55		-	1	**9.049 320**

ACK= individually sterile packed. K= sterile.

4 Membrane filters Type 13005/13006, series



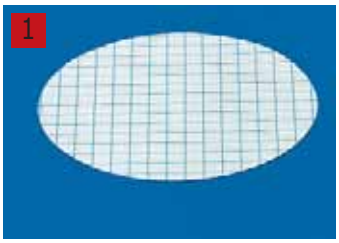
Sartorius

Cellulose nitrate. Grey membranes (black after wetting) with white grid. For detection of yeasts and moulds, particle analysis and microscopy.

Type	Pore size µm	Diam. mm	Description	PK	Cat. No.
13005	0.65	47	sterile	100	**9.054 122**
13006	0.45	47	sterile	100	**9.054 132**
13006	0.45	50	sterile	100	**9.054 133**
13006	0.45	50	non-sterile	100	**9.054 139**

Other types available on request.

1



1 Membrane filters, gridded Type 13806

Cellulose nitrate. Sterile, individually packed. Green with dark green grid. Optimal contrast to light or white bacteria colonies when colony counting. *Sartorius*

Type	Pore size µm	Diam. mm	PK	Cat. No.
13806	0.45	47	100	**9.054 202**
13806	0.45	50	100	**9.054 203**

2

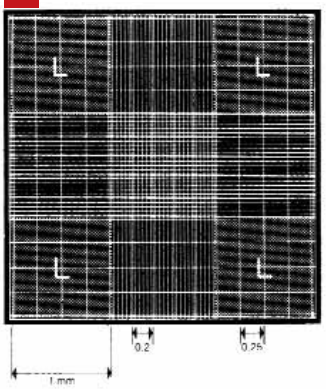


2 Filter funnel, Biosart®250

For microbiological and analytical quality assurance in industry. 250ml sterile plastic funnels reduce process time in colony and particle analysis. For use with Sartorius membrane filters and Sartorius cardboard culture plates. *Sartorius*
Note: BioSart 250 funnels can also be adapted to fit single filter holders or filtration manifolds.

Type	PK	Cat. No.
BioSart 250 disposable funnel, sterile	50	**9.049 340**
BioSart 250 disposable funnel, sterile, individually packed	50	**9.049 341**

3



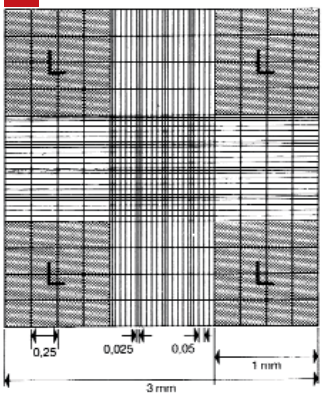
3 Counting chamber, Improved Neubauer, bright line

NEW!

Bright line. With double ruling. Calibratable. Same counting grid as the Improved Neubauer cell, but with rhodium coated chamber base. Rulings are engraved into the Rhodium layer and appear bright under normal microscope settings. By altering the contrast it is possible to reverse the image under the microscope to make the rulings appear brighter or darker as required. CE-marked according to IVD 98/79 EG. *BRAND*

Description	PK	Cat. No.
Without snap-on clips	1	**9.161 079**

4



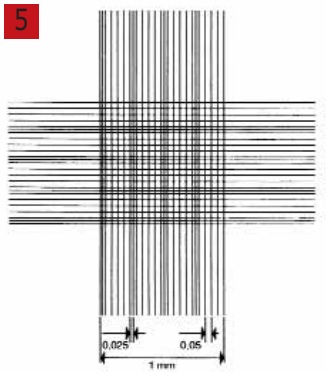
4 Counting chamber, Neubauer

NEW!

With double ruling. Without snap-on clips. Calibratable. *BRAND*
Cell depth 0.1mm. Same ruling as Improved Neubauer, but the large square in the centre is divided into 16 squares each with a side length of 0.25mm. Unlike the more modern Improved Neubauer counting chambers, the counting area of each group square is limited by the outermost of the triple border lines. CE-marked according to IVD 98/79 EG.

Type	PK	Cat. No.
With snap-on clips	1	**7.020 278**
Without snap-on clips	1	**9.161 086**

5



5 Counting chamber, Thoma ruling

Double ruling. Without snap-on clips. Calibratable. Cell depth 0.1mm. Grid is the same as the grid in the centre of large square in the Neubauer chamber. The area of the small square is 0.0025mm². Since the large outer squares are not included, the Thoma system is only used to count thrombocytes and erythrocytes.
CE-marked according to IVD 98/79 EG.

Type	PK	Cat. No.
Counting chamber, Thoma ruling	1	**9.161 080**

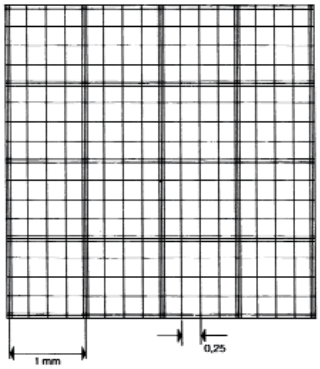
E & OE.

1 Counting chamber, Fuchs-Rosenthal

With double ruling. Without snap-on clips. Calibratable.
Cell depth 0.2mm. Grid has 16 x large 1 mm² squares. Each square is divided into 16 smaller squares each with a side length of 0.25mm and an area of 0.0625mm². These counting chambers are commonly used to count cells in cerebrospinal fluid. CE-marked according to IVD 98/79 EG.

Type	PK	Cat. No.
Counting chamber, Fuchs-Rosenthal	1	**9.161 098**

1



2 Hand tally counter

Use for counting blood cells, bacterial colonies, drops of liquid, or any repetitive event. Tallies up to 9999. Features a quick-reset knob, lens window for easy reading, and finger ring for a secure grip. Sturdy, chrome-finished, metal housing.
Dimensions: 46mm diameter x 41mm W.

Description	PK	Cat. No.
Hand tally counter	1	**6.237 971**

2



3 Tally counter, digital

NEW!

Isolab

Effective and practical counter with a sturdy, chrome finished housing. Ideal for counting blood cells, bacterial colonies, drops of liquid or any other repetitive step with a tally level up to 9999. TALLY COUNTER - "handy" Features a quick-reset knob, lens window for easy reading, and a finger ring for a secure grip.

Description	PK	Cat. No.
Tally counter	1	**6.267 411**

3



4 Colony counter eCount™

Heathrow Scientific

Multi-function electronic counter with a Sharpie® pen for marking Petri dishes to prevent missing or double-counting colonies. Light, ergonomic body is balanced for easy manipulation. For easy counting of bacteria and mould fungus colonies.
Counting contol via membrane keys.
- Incl. thumb button which allows you to use the eCount as a digital tally counter
- Count up, then count down verification
- Display the total and keep in the memory up to 32 separate counts
- Disable the counter so you can write totals and notes
- Verify each count with either a bleep or LED Flash

Type	PK	Cat. No.
Colony counter eCount™ incl. Sharpie® pen black, fine-point and stand	1	**9.521 783**
Replacement pens Sharpie® pen, black fine-point	12	**9.521 787**

4



1



1 Colony counter, ColonyCount V

Gerber

Features:
- ergonomically optimised design
- unique Light Dispose Grating (LDG)
- adjustable background and side lighting
- multifunctional graphical display
- acoustical and optical count signal
- data storage and data management
- great variety of optional accessories

Advantages:
- stressless counting of petri dishes
- consistent illumination of the counting area
- glare-free work
- user-friendly menu guided operation
- intelligent, safe and accurate counting
- complete documentation (GMP)
- adaptable to your needs

Included in delivery: ColonyCount V, high quality magnifying glass with holder, standard marker black, Wolffhügel disc grid 1cm² and 1/9 cm², user guide on CD, adapter for petri dishes ø 90mm, external power supply, Quick Guide.

Optional accessories: Thermo printer for ColonyCount V, Printercable RS232, Memory card 2GB, External counting marker, Adapting elements for different Petri dishes ø 50/60/80/90 mm, Software and cable.

Specification

Display:	Graphic-display with membrane keyboard
Standard magnifier glass:	2x magnification
Lighting:	LED side and from below (LDG)
Petri dishes:	ø up to 120mm
Nominal voltage:	100-240VAC - 50/60 Hz
Weight:	4.5kg
Warranty:	2 years

Type	PK	Cat. No.
ColonyCount V	1	**9.112 651**

2



2 Colony Counter SC6+

Stuart

- Pressure sensitive counting
- Pressure can be adjusted
- Average count facility
- Bright white energy saving LED lighting
- With BioCote antimicrobial protection
- Audible confirmation
- Choice of light or dark background
- Connectivity to printer or computer

Supplied with two Wolffhuegel graticules and dish centering adapters to facilitate use with 50mm to 90mm dishes.
A choice of magnifiers and a printer are available as optional accessories.

Please note this does not include magnifier or printer.

Specification

Lighting:	White LED array
Digital display:	3 digit LED
Count:	0 to 999
Dimensions (w x d x h):	310mm x 300mm x 140mm
Mass:	1.5kg
Electrical supply:	120 to 230V, 50/60Hz, 70W

Type	PK	Cat. No.
SC6+	1	**9.645 280**

Accessories for Colony Counter SC6+

Stuart

Description	PK	Cat. No.
Accessory printer with power supply	1	**9.950 399**
Magnifiers 1.7x	1	**9.645 281**
Magnifiers 3x	1	**6.223 318**
Wolffhuegel graticule/segmentation discs for colony counter	10	**6.238 272**
Centering adapter	2	**6.242 195**
Protective discs	5	**6.241 644**

E & OE.

1 Schuett Count Colony Counter



schuett-biotec

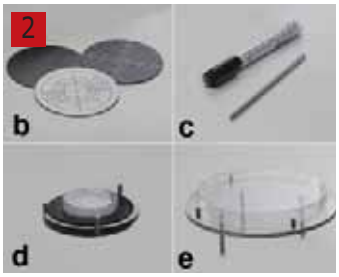
Designed for reliable and efficient counting of bacterial colonies and bacteriophage plaques growing on nutrient agar or nutrient discs/filter disks in Petri dishes. Provides ergonomic, relaxed and comfortable operation. For Petri dishes of 60, 90 or 150mm diameter. State-of-the-art, LEDlight, for absolutely glarefree illumination without blinding or stray light. No eyestrain. A so far unknown level of transparency and contrast differentiation with natural colour reproduction of the colonies is obtained. Contrast-disk is provided for counting colonies in light and dark fields when using clear or dark agar. No heating of the samples occurs. The counting impulse is triggered by marking the colonies with an ordinary felt-tip marker pen. The device is equipped with a penholder as well as a 4-digit LED-display (0 to 9999 counts) and a clearly arranged foil keypad for all controls. Average count calculation, data transfer via USB to PC, light intensity, pressure sensitivity and buzzer are adjustable as counting controls.
Items supplied: For 90mm dia. Petri dishes: adapter (transparent) for illumination from below, adapter (black/white) for illumination from side, contrast disc (black), USB-cable, marker-pen with holder.
Overall dimensions (WxDxH): 260 x 250 x 130mm
Height with integral support stand approx. 300mm

For enumeration of more than 50 Petri dishes per day, we recommend: schütt colonyQuant automatic colony counter (sample chamber, PC/laptop, software)

The schuett colonyQuant is equipped with a high-resolution auto focus/auto-zoom color camera. Evaluation of Petri dishes with agar Petri film, filters or nutrient pads, spiral plating or Hemmhof analysis. Storage of counting methods, documentation of results.

Type	PK	Cat. No.
schuett count colony counter, 100-240 V (Fig. a)	1	**9.521 940**

2 Accessories for schuett count Colony counter



schuett-biotec

Type	PK	Cat. No.
Magnifier 3 x (100mm dia.)	1	**9.521 941**
Magnifier 6-8 x (60mm dia.)	1	**9.521 942**
LED overhead lamp	1	**9.521 943**
Adapter for Petri dishes, 50 to 60mm dia. (Fig. d)	1	**9.521 944**
Adapter for Petri dishes, 140 to 150mm dia. (Fig. e)	1	**9.521 945**
Spiral-Plater Disc, black/white (Fig. b)	1	**9.521 946**
Wolffhügel Disc, black/white (Fig. b)	1	**9.521 947**
Counting needle (Fig. c)	1	**9.521 948**

3 LLG histology cassettes with detachable lid

NEW!



LLG histology cassettes with detachable lid (unassembled) for routine tissue and biopsy processing and embedding. The special design enables frequent opening and closing of the lid, as well as the easy and safe lid removal/insertion without any danger of specimen loss. The cassettes are made of Polyoxymethylene (POM) and are 100 % resistant to the chemical action of histological solvents. The cassettes have two large labeling areas on the cassette sides and a standard 45°C front writing area adaptable to most cassette labelers. The cassettes have fine square pores (0.9 x 0.9 mm) which allow an optimal fluid exchange and ensure proper drainage.

Colour	PK	Cat. No.
blue	500	**9.160 841**
green	500	**9.160 842**
pink	500	**9.160 843**
white	500	**9.160 844**
yellow	500	**9.160 845**

4 Disposable razor

NEW!



1 blade, incl. protective cap.

Heinz Herenz

Type	PK	Cat. No.
Disposable razor	100	**6.265 281**

1



1 Scalpels, disposable Cutfix®

Sterile. For cleaner, smoother, more accurate incisions. *B. Braun*

Type	PK	Cat. No.
10	10	**9.409 804**
11	10	**9.409 805**
12	10	**9.409 806**
15	10	**9.409 807**
20	10	**9.409 808**
21	10	**9.409 809**
22	10	**9.409 810**
23	10	**9.409 813**
24	10	**9.409 814**

Scalpel handles, stainless steel

NEW!

For interchangeable, disposable blades using the BAYHA interlocking system. Blades insert into the side of the handle. Scalpel handle (Cat. No. 9.409 846) and safety cap (Cat. No. 9.409 850) not suitable for sterile processing. *Bayha*

Type	Length mm	PK	Cat. No.
1, Scalpel handle	130	1	**9.409 841** 2
4, Scalpel handle	160	1	**9.409 844**
5, Scalpel with hollow handle	150	1	**9.409 845** 3
6, Scalpel handle with plastic grip	160	1	**9.409 846** 4
Safety cap		1	**9.409 850** 5

2



9.409 841

3



9.409 845

4



9.409 846

5



9.409 850

6



7



9.409 930

6 Scalpel blades, non-sterile

For scalpel handles using the BAYHA interlocking system. Sterile scalpel blades are available on request, except Cat. No. 9.409 930. *Bayha*

Type	PK	Cat. No.
11	12	**9.409 911**
15	12	**9.409 915**
16	12	**9.409 916**
18	12	**9.409 918**
19	12	**9.409 919**
20	12	**9.409 920**
21	12	**9.409 921**
22	12	**9.409 922**
23	12	**9.409 923**
24	12	**9.409 924**
26	12	**9.409 926**
27	12	**9.409 927**
28	12	**9.409 928**
29	12	**9.409 929**
Special scalpel blade acuate	12	**9.409 930** 7

8



8 Dissecting knives

Wironit CrNi 18/12. Fine pattern. With metal handle. *Hammacher*

Type	Length mm	Blade length mm	PK	Cat. No.
Rounded	135	30	1	**9.160 534**
Pointed	135	30	1	**9.160 535**
Rounded	150	20	1	**9.160 536**
Pointed	150	20	1	**9.160 537**
Rounded	130	15	1	**9.160 533**
Pointed	130	15	1	**9.160 543**

E & OE.

1 Dissecting needles

Wironit. CrNi 18/12. Length 50mm. *Hammacher*

Description	PK	Cat. No.
Lancet-shaped	1	**9.160 040**
Straight, sharp	1	**9.160 030**
Curved, sharp	1	**9.160 035**
Semi-lancet	10	**9.160 036**
Spatula	10	**9.160 037**

1



2 Dissecting needles

With plastic or metal handle.
Length 140mm. *Hammacher*

Type	Description	PK	Cat. No.
Plastic	Pointed, straight	1	**9.160 070**
Plastic	Pointed, curved	1	**9.160 072**
Plastic	Lancet shaped	1	**9.160 075**
Metal	Pointed, straight	1	**9.160 090**
Metal	Pointed, curved	1	**9.160 092**
Metal	Lancet shaped	1	**9.160 095**

2



Dissecting needle holder

Wironit CrNi 18/12. For specimen loops and dissecting needles up to max. diam. 1.0mm. *Hammacher*

Type	Length mm	PK	Cat. No.
Wironit shaft with plastic handle	240	1	**9.160 020** 3
Aluminium shaft with plastic handle	240	1	**9.160 022**
Wironit shaft with aluminium handle	170	1	**9.160 025**

3



9.160 020

4 Blood lancets Solofix®, sterile

For single use. Sharp, flexible lancet made of V2A supra steel.
Optimal insertion depth 3.8mm. *B. Braun*

Type	PK	Cat. No.
Solofix®	200	**9.409 820**

4



5 Dissecting set No. 1, small

Corrosion-free instruments with satin finish, enclosed in an imitation leather case.
Dissecting set comprises of the following:

Scalpel, pointed 35mm long
Dissecting needle
Lancet
Forceps 105mm long
Scissors, straight 115mm long
Section lifter

Type	PK	Cat. No.
Dissecting set I, small	1	**9.160 014**

5



6 Microscopic set, large

Corrosion-free instruments with satin finish, enclosed in an imitation leather case.
Dissecting set comprises of the following:

Metal scalpel, sharp 35mm long
Razor knife
Section lifter 45 x 8mm
Dissecting needle pointed
Dissecting needle lancet
Dissecting probe curved
Splinter forceps 105mm long
Microscope scissors, straight 110mm long
Microscope scissors, curved 110mm long

Type	PK	Cat. No.
Microscopic set, large	1	**9.160 012**

6



Disposal Container please see page 246.

Forceps and scissors please see page 124.

1



1 Dissecting set No. III

Corrosion-free instruments with satin finish, enclosed in an imitation leather case.
Dissecting set comprises of the following:

Incision scissors 130mm long	Metal scalpel 35mm long
Scissors pointed 110mm long	Cartilage knife
Splinter forceps 130mm long	Double-ended button probe 1mm diameter
Dissecting forceps 130mm long	Double-ended button probe 2mm diameter
Metal scalpel 30mm long	Dissecting needle pointed
	Dissecting needle lancet
Metal scalpel 40mm long	Dissecting probe curved

Type	PK	Cat. No.
Dissecting set II - large	1	**9.160 013**

2



2 Dissecting set for students

Hammacher

Comprises:
1 x scalpel handle No. 3
5 x sterile, disposable scalpel blades for above
1 pair of preparation scissors
1 pair of fine, sharp forceps
1 x lancet needle
1 x dissection needle

Type	PK	Cat. No.
HSO 130-00	1	**9.160 200**

3



3 Water bath/Tissue Float Bath 1052

GFL

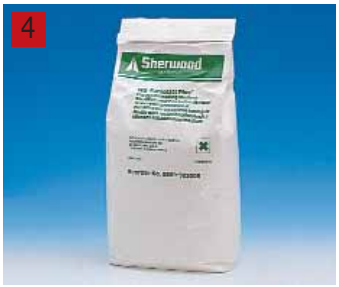
Special bath to stretch and dry cut tissue samples embedded in wax, in histological, chemical, clinical and bacteriological laboratories. Temperature range from approx. 5°C above ambient to approx. +80°C. Precise temperature regulation, consistently ±0.5°C, ensures evenly stretched cuttings which are clearly visible in the black anodized bath. The cuttings are carefully dried on the warmed rim of the bath which is also black anodized. Comfortable and safe working due to low bath height of 100mm.
Bath interior made of black anodised aluminium. Housing in powder-coated aluminium. A control thermometer is fixed to rim of the bath within a stainless steel holder. Tested according to the German Equipment Safety Law, with CE mark.

Specification

Temperature range:	up to +80°C
Interior dimensions (Dia. x H):	200 x 60mm
Exterior dimensions (Dia. x H):	280 x 100mm
Supply requirement:	230V 50/60Hz, 0.3 kW (alternative voltages are available - details on request)
Weight:	2kg

Type	PK	Cat. No.
Tissue Float Bath 1052	1	**9.905 952**
Black anodised aluminium dust cover, 1950	1	**9.905 951**

4



4 Tissue-embedding wax, PARAPLAST®

Klinika Medical

Granules for embedding tissue. PARAPLAST® PLUS additionally contains dimethyl sulphoxide which improves speed and penetration into tissue samples.
Melting point: 55 - 57°C

Type	Capacity kg	PK	Cat. No.
PARAPLAST®	1	1	**9.170 015**
PARAPLAST® PLUS	1	1	**9.170 020**

E & OE.

1 Histofluid mounting medium

Marienfeld



Histofluid is a water-clear adhesive of acrylic resins dissolved in xylene. It hardens fast and due to its optical properties suits perfectly well for embedding microscopic preparations.
Shortly after having covered a preparation it can already be examined and filed. Histofluid may also be used to firmly lock and seal bottle caps.
Further advantages are:

- long storing or temperature changes do not cause fissures or deformations in Histofluid layers
- does not turn yellowish when being exposed to UV-radiation
- does not fluoresce
- does not form bubbles
- even sensitive colorations are preserved due to its acid number = 0
- refractive index of 1.5 (nD 20°C) is adjusted to the microscope slide and cover glass
- water-repellent and dissolves in, for example, xylene, acetone, chloroform, dioxan and toluol
- can be stored in sealed bottles for an unlimited period
- filled into special bottles designed for hazardous materials and bearing the UN code

Due to its solvent contents Histofluid is flammable and, therefore, considered as hazardous. So it has to be specially packed and shipped according to the international transport regulations. Before ordering please carefully check your country's import regulations and ensure a smooth transport according to the IMO (International Maritime Organization). Any cost that might arise additionally for documents, reloading, returns etc. will be at your expense.

Description	Capacity ml	PK	Cat. No.
Histofluid mounting medium	500	1	**9.160 899**

2 Microscope slide drying bench, MH 6616

Electrothermal



Accepts up to 50 slides 26mm x 76mm. With built-in energy regulator for temperatures up to 100°C. Speeds up slide preparation. Slides can be placed in any position:
- On storage bars
- Against storage bars
- Flat

Heating area: 702cm²
Dimensions (WxDxH): 180 x 390 x 95mm
Supply requirement: 220V, 150W

Type	PK	Cat. No.
Microscope slide drying bench, MH 6616	1	**9.770 106**
Spare heating element	1	**9.770 108**

Reaction tubes, PP

Ratiolab

Translucent polypropylene (PP), natural colour
- tight sealing cap
- safe and easy to be opened and closed
- for centrifugation up to 30.000g

Capacity ml	PK	Cat. No.
0.5	1000	**6.085 184**
1.5	1000	**9.409 310** 3
2.0	1000	**6.510 856** 4

3



9.409 310

4

6.510 856

Reaction tubes, with attached lid

BRAND

PP. High clarity. Frosted marking area and approximate graduations. Tight fitting attached lid provides rak-free seal, yet reopens easily. Uniform lid-thickness ensures trouble-free piercing.
Can be centrifuged up to 20000 xg rcf. at 20°C for max. 20min.
Autoclavable at 121°C (2bar), acc. DIN EN 285.
BIO-CERT® products are sterile, free of endotoxins, DNA, RNase and ATP.

Capacity ml	Diam. mm	Height mm	Description	PK	Cat. No.
1.5	10.75	40.80		500	**9.409 301** 5
2.0	10.70	41.15		500	**9.409 303** 6
1.5	10.75	40.80	BIO-CERT®	450	**7.200 414**

5



9.409 301

6



9.409 303

1



1 LLG-Reaction tubes, PP

NEW!

LLG-Reaction tubes are ideally suitable for all test performances. Innovative and modern. They are available in 0.5ml, 1.5ml and 2.0ml volumes. These standard microtubes withstand high centrifugal forces, are temperature and chemical-resistant and guaranteed against leaks. An innovative and modern new generation of microtubes with new features. Perfect sealing qualities, excellent chemical stability and optimal construction materials guarantee even better resistance to centrifugal and chemical forces. Easy to open and close thanks to the improved lid geometry. For visual volume control the 1.5ml tubes are equipped with graduations at 0.5ml, 1.0ml and 1.5ml. The 2.0ml tubes have graduations at 0.5ml, 1.0ml, 1.5ml and 2.0ml. The 0.5ml tubes are without graduations.
Certified DNase-, RNase- and pyrogen free.

Non sterile, clear, in bags. Certified free of DNase, RNase, suitable for microbiology. Guaranteed metal-free.

Specifications
Autoclavability

Temperature:	121°C (250°F)
Pressure:	1.05 bar or 15 psig (pounds)
Time:	20 min or less

Centrifugation

Fixed angle rotor:	25000xg
Swing out rotor:	70000xg

Volume ml	Form	PK	Cat. No.
0.5	conical	1000	**9.409 023**
1.5	conical	1000	**9.409 024**
2.0	round	1000	**9.409 025**

2



2 Reaction tubes CapLock®, PP

Treff AG

The new CapLock® cap closure guarantees optimum tube sealing for all applications. CapLock® tubes provide enhanced sample security and stay safely closed, even in boiling water baths.

- Pyrogen-/RNase-/DNase-free, non-sterile and cleanroom-manufactured ISO Class 8
- moulded in transparent, medical grade, PP
- can be centrifuged up to 30000 x g
- autoclavable: at 1bar, 121°C for 15min
- with labelling area on cap and tube
- high chemical resistance
- graduation for an easy volume identification

Certificate of Conformity according to DIN EN 10204 2.1

Capacity ml	PK	Cat. No.
1.5	1000	**9.407 700**

3



3 Microcentrifuge tubes, PP, with lid closure

NEW!

BRAND

These new 0.5, 1.5 and 2.0ml microcentrifuge tubes are available with an additional lid closure to achieve especially effective sealing and prevent accidental opening.
- Autoclavable at 121°C (2 bar), acc. to DIN EN 285
- Centrifugeable up to 30.000xg
- Free of RNase, DNase, DNA and endotoxins
- Produced under cleanroom conditions, ISO 14 644-1, Class 8
- Made from high-quality medical-grade polypropylene
- Subdivisions for reading the approximate volume
- Frosted labelling surfaces on the lid and tube

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
0.5	10.00	30.00	500	**6.266 733**
1.5	10.75	40.80	1000	**6.257 318**
2.0	12.80	40.00	500	**6.266 734**

E & OE.

Micro tubes with screw caps

Screw cap micro tubes are ideal for storage of serums and blood samples, and for boiling, centrifugation, etc. *BRAND*

Quality features:
- Available in different formats, designs and quality grades.
- Micro tubes of PP and screw caps of PE or PP are precisely matched to ensure a secure seal. Available screw caps: screw cap with sealing cone, screw cap with silicone seal or tamper-evident screw cap with silicone seal.
- Cap inserts for coding, available in a variety of colors.
- Fast opening and closing with 1¼ turn of cap.
- Micro tubes with ring stands (self-standing) can be placed in suitable racks without the use of both hands.
- Micro tubes without ring stand (round bottom) withstands RCF up to 17 000g at 20°C, for 20min.
- Dimensions: outer Ø 11mm, height 47mm.

1 Micro tubes, PP, with attached screw cap, PE, with sealing cone

NEW!

PP, ungraduated, screw cap PE. Operating range: -90°C to +100°C. *BRAND*
Available separately: colored cap inserts (PP) for identification.



Capacity ml	Description	PK	Cat. No.
0.5	self-standing	1000	**6.701 485**
1.5	self-standing	1000	**7.079 677**
1.5	round-bottom	1000	**7.300 156**
2.0	self-standing	1000	**7.300 197**
2.0	round-bottom	1000	**7.510 076**

2 Micro tubes, PP, with attached screw cap, PP, with silicone seal

NEW!

PP, graduated, screw cap PP. Frosted marking area. Operating range: -196°C to +121°C. *BRAND*
Autoclavable at 121°C (2 bar), acc. DIN EN 285.
Available separately: colored cap inserts (PP) for identification.



Capacity ml	Grad. ml	Description	PK	Cat. No.
0.5		self-standing	1000	**6.802 474**
1.5	1.00	self-standing	1000	**7.070 048**
1.5	1.00	round-bottom	1000	**7.076 849**
2.0	1.20	self-standing	1000	**7.300 124**
2.0	1.40	round-bottom	1000	**7.300 580**

3 Colored cap inserts (PP) for reaction tubes

NEW!

BRAND



Colour	PK	Cat. No.
white	500	**7.079 716**
blue	500	**7.059 689**
red	500	**7.079 676**
green	500	**7.059 690**
yellow	500	**7.059 691**



1



1 Micro tubes, PP, bulk screw cap, with silicone seal

NEW!

PP, graduated, screw cap PP. Frosted marking area. Operating range: -196°C to +121°C. Autoclavable at 121°C (2 bar), acc. DIN EN 285. Sterile: DNA, DNase and RNase-free, endotoxin-free, non-mutagenic, non-toxic. Available separately: colored screw caps and colored cap.

BRAND

Capacity ml	Description	Type	PK	Cat. No.
0.5	self-standing, with lid, transparent	sterile	500	**6.401 078**
1.5	self-standing, with lid, transparent	sterile	500	**4.000 236**
1.5	round-bottom, with lid, transparent	sterile	500	**7.300 006**
2.0	self-standing, with lid, transparent	sterile	500	**7.602 492**
2.0	round-bottom, with lid, transparent	sterile	500	**7.612 290**
0.5	self-standing, without lid	sterile	1000	**4.000 234**
1.5	self-standing, without lid	non-sterile	1000	**6.801 871**
1.5	round-bottom, without lid	non-sterile	1000	**6.802 032**
2.0	self-standing, without lid	non-sterile	1000	**6.401 135**
2.0	round-bottom, without lid	non-sterile	1000	**6.401 081**
	lid, white	non-sterile	1000	**6.901 915**
	lid, blue	non-sterile	1000	**4.000 235**
	lid, red	non-sterile	1000	**6.801 872**
	lid, green	non-sterile	1000	**6.401 082**
	lid, yellow	non-sterile	1000	**6.401 134**

2



3



2 3 Microtubes, PP, detached screw-cap, PP

NEW!

Graduated, sterile (SAL 10-6) or non-sterile with tamper-evident screw cap as indicated. With frosted marking area. Operating range: -196°C to +121°C. Autoclavable at 121°C (2 bar), acc. to DIN EN 285. Sterile: DNA, DNase, and RNase-free, endotoxin-free, non-mutagenic, non-toxic.

BRAND

Capacity ml	Description	Type	PK	Cat. No.
0.5	self-standing, with cap, transparent	sterile	500	**9.284 164**
1.5	self-standing, with cap, transparent	sterile	500	**6.251 643**
1.5	round bottom, with cap, transparent	sterile	500	**6.251 644**
2.0	self-standing, with cap, transparent	sterile	500	**9.284 165**
2.0	round bottom, with cap, transparent	sterile	500	**9.284 166**
0.5	self-standing, without cap	non-sterile	1000	**9.284 167**
1.5	self-standing, without cap	non-sterile	1000	**9.284 168**
1.5	round bottom, without cap	non-sterile	1000	**9.284 169**
2.0	self-standing, without cap	non-sterile	1000	**6.251 980**
2.0	round bottom, without cap	non-sterile	1000	**9.284 170**
	Lid, transparent	non-sterile	1000	**6.266 735**
	Lid, blue	non-sterile	1000	**6.266 736**
	Lid, green	non-sterile	1000	**6.266 737**
	Lid, red	non-sterile	1000	**6.266 739**
	Lid, yellow	non-sterile	1000	**6.266 740**

We can supply this manufacturer's whole product range !

partner of the LLG Lab Logistics Group

BRAND

E & OE.

1 2 Safe-lock reaction tubes, PP

Eppendorf

- A small clasp on the patented cap locking device clips onto the rim of the tube
- Autoclavable when open (121°C, 20min.)
- Can be opened and closed easily with one hand
- With frosted labelling area.
- The clasp on the cap prevents the lid springing open accidentally (e.g. when heating)
- Excellent mechanical stability for centrifugation
- Graduated
- Safe-lock reaction vessels are also available in Eppendorf Biopur® Quality
- 0.5ml and 1.5ml capacity Safe-lock reaction vessels can be centrifuged up to 30 000 x g





Capacity ml	Colour	PK	Cat. No.
0.5	Transparent	500	**9.409 320**
0.5	Yellow	500	**9.409 354**
0.5	Red	500	**9.409 355**
0.5	Blue	500	**9.409 352**
0.5	Green	500	**9.409 353**
0.5	Amber	500	**9.409 356**
1.5	Transparent	1000	**9.409 331**
1.5	Yellow	1000	**9.409 332**
1.5	Red	1000	**9.409 333**
1.5	Blue	1000	**9.409 334**
1.5	Green	1000	**9.409 335**
1.5	Amber	1000	**9.409 336**
2.0	Transparent	1000	**9.409 341**
2.0	Yellow	1000	**9.409 342**
2.0	Red	1000	**9.409 343**
2.0	Blue	1000	**9.409 344**
2.0	Green	1000	**9.409 345**
2.0	Amber	1000	**9.409 346**
0.5	Assorted colours	500	**9.409 357**
1.5	Assorted colours	1000	**9.409 358**
2.0	Assorted colours	1000	**9.409 359**

Eppendorf Tubes® 5.0 ml

NEW!

Eppendorf

- Ergonomic operation: Simple, practical and ergonomic single-hand operation. Large labelling area.
- Lid design: Hinged lid for minimized sample evaporation during storage and incubation in a wide range of temperatures from -86°C to 80°C
- Material: Exceptionally high-quality, transparent polypropylene, free of plasticizers, biocides or mold release agents, for reliable test results
- Certified purity: Available in lot-tested and certified Eppendorf Quality, PCR clean, Sterile and Eppendorf Biopur® purity levels
- Centrifugation safety: Maximum safety and stability for centrifugation up to 25 000 × g and fast and efficient protocols.
- Conical shape: Compatible with accessories for conical 15 mL tubes - many existing adapters and racks can be used.
- Sample recovery: Available in Eppendorf LoBind® material for maximum recovery of valuable samples

From 80°C on, please use the Tube Clip opener Cat. No. 9.409 294

Description	Package contents	PK	Cat. No.
Eppendorf Tubes® 5.0 mL, Eppendorf Quality™	2 bags of 100	200	**9.409 277** 3
Eppendorf Tubes® 5.0 mL, PCR clean	2 bags of 100	200	**9.409 278**
Eppendorf Tubes® 5.0 mL, Sterile	10 bags of 20	200	**9.409 279**
Eppendorf Tubes® 5.0 mL, Biopur®	bag of 50, single packed	50	**9.409 288**
Eppendorf Protein LoBind Tube, PCR clean	2 bags of 50	100	**9.409 289**
Eppendorf DNA LoBind Tube, PCR clean	4 bags of 50	200	**9.409 290**
Eppendorf Tubes® 5.0 mL, Eppendorf Quality™, amber (light protection)	2 bags of 100	200	**6.265 214** 4
Tube Clip, Eppendorf Quality™		10	**9.409 294** 5

3



9.409 277

4



6.265 214

5



9.409 294

1



1 Eppendorf Tubes® 5.0 mL Starter Pack, PCR clean

NEW!

Eppendorf

Eppendorf Tubes 5.0 mL are the perfect option for convenient and safe processing of medium sample volumes between 2.0 mL and 5.0 mL. The tubes offer great advantages for many applications, and thanks to comprehensive accessory components, they may be easily integrated as a complete system into your lab routine.

The Starter Pack comprises:
- 400 Eppendorf Tubes 5.0 mL, PCR clean (Certified purity grade)
- 8 universal adapters for rotors with bores for 15 mL conical tubes
- 2 Tube Racks 5.0 mL (16 spaces; white)
- free of human DNA, free of DNase and RNase, free of PCR inhibiting agents.
- For PCR preparations or any reactions where DNase or RNase could interfere with the reaction or analysis.

Description	PK	Cat. No.
5.0 mL Starter Pack, PCR clean	1	**9.409 291**

2



2 Standard reaction tubes, 3810 X, PP

Eppendorf

- Flat, frosted cap and marking patch on the body of the tube provide generous space for labelling
- Simplified opening and closing due to improved neck/cap geometry
- Graduated from 0.1 to 1.5ml on the tube body
- Autoclavable when open (at 121°C for 20mins.)
- Can be centrifuged up to 30000 xg in fixed angle rotors (up to 70000 xg in swing-out rotors)
- Compatible with Micropestle

Capacity ml	Colour	PK	Cat. No.
1.5	transparent	1000	**9.409 317**
1.5	blue	1000	**9.409 337**
1.5	yellow	1000	**9.409 338**
1.5	green	1000	**9.409 339**
1.5	red	1000	**9.409 347**

3



3 DNA LoBind Tubes

Eppendorf

- less than 1% loss of DNA/RNA at low concentrations and critical conditions (high salt, short DNA-fragments)
- no surface coating, e.g. silicone
- free of DNA, DNase, RNase and PCR inhibitors (PCR clean)
- novel PP, manufactured under optimized conditions
- available as 0.5ml, 1.5ml and 2.0ml Safe-Lock tubes
- highly transparent
- excellent centrifugation durability (up to 18000xg)

Capacity ml	PK	Cat. No.
0.5	250	**9.409 324**
1.5	250	**9.409 326**
2.0	250	**9.409 327**

4



4 Protein LoBind Tubes

Eppendorf

- minimum protein loss (less than 3%, BSA 1µg/ml)
- no surface coating, e.g. silicone
- free of DNA, DNase, RNase and PCR inhibitors (PCR clean)
- novel PP manufactured under optimized conditions
- available as 0.5ml, 1.5ml and 2.0ml Safe-Lock tubes
- highly transparent
- excellent centrifugation durability (up to 18000xg)

Capacity ml	PK	Cat. No.
0.5	100	**9.409 328**
1.5	100	**9.409 329**
2.0	100	**9.409 330**

E & OE.

1 2 Safe-lock reaction tubes, Biopur®, sterile

Eppendorf

Comply with the exacting requirements set by the medical, pharmaceutical and food industries, molecular biology and cell technology.
- Sterile
- Free from pyrogens, RNase, DNA and ATP
- Independently checked and certified by an external laboratory.
- Individually blister-packed



2

Capacity ml	PK	Cat. No.
0.5	50	**9.283 516**
1.5	100	**9.283 517**
2.0	100	**9.283 518**

3 Micro test tubes and racks, PP, 1.2 ml

BRAND

Suitable for biological examination, e.g. PCR, cell uptake studies, RIA, EIA, etc.
Functional design for storing, freezing and transporting reagents and samples.
Compatible with standard microtitre plates and suitable for work with multi-channel pipettes.

Properties:
- 8 x 12 configuration
- Alphanumeric identification system
- Tubes and rack are autoclavable at 121°C (2 bar), according to DIN EN 285
- Tube dimensions:8.8mm external Ø, height 45mm
- Suitable for storage up to -80°C
- Test tube capacity 1.2ml (1.1ml when capped)
- Individual tube or 8-tube strips available
- With PE cap (not autoclavable)



Type	PK	Cat. No.
Rack with 96 single test tubes, non-sterile, PP	10	**9.407 605**
Rack with 12 x 8-tube strips, non-sterile, PP	10	**9.407 606**
Test tubes, single, non-sterile, loose, PP	960	**9.407 607**
8-tube strips, non-sterile, loose, PP	120	**9.407 608**
Lid, single, non-sterile, loose, PE	960	**9.407 609**
8-cap strip, non-sterile, loose, PE	120	**9.407 610**
Rack with grid, non-sterile (empty), PP	10	**9.407 611**

4 96-tube Racks and accessories, for use with robots

BRAND

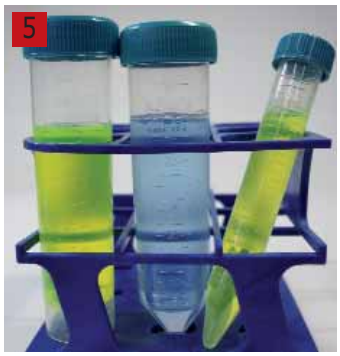
Tubes and rack are autoclavable at 121°C (2 bar), acc. DIN EN 285. Cover mat/strips (TPE) not autoclavable. Tubes, racks, and lids can withstand temperatures as low as -80°C.
The seal of the tubes is pressure-tested. Thanks to the stable connection between the mounting plate and the racks, the stackable ANSI/SLAS racks are especially well-suited for use with robots and other automated dispensing systems. Coded tubes (A1 - H12) and rack sides suitable for barcode labels simplify sample organization.



Description	Material	PK	Cat. No.
Rack with lid for 0.65 ml tubes, empty	PP	50	**4.007 903**
Rack with lid for 1.2 ml tubes, empty	PP	50	**6.240 089**
Rack with lid with 96 coded 0.65 ml tubes	PP	50	**4.007 904**
Rack with lid with 96 coded 1.2 ml tubes	PP	50	**4.007 905**
Refill unit of 96 coded 0.65 ml tubes	PP	50	**4.007 906**
Refill unit of 96 coded 1.2 ml tubes	PP	50	**4.007 907**
Single 0.65 ml tube without coding	PP	5000	**4.007 908**
Single 1.2 ml tube without coding	PP	5000	**6.237 017**
Strip of 8 lids, piercable	TPE	1000	**6.237 016**
Cover mat for 96 tubes, piercable	TPE	100	**4.007 909**

5 LLG-Centrifuge tubes, PP

Polypropylene tubes with very good thermal, mechanical and chemical stability. Sterile tubes fitted with screw-on closure. Packed in boxes or bags. With graduations and labelling area. Cytotoxicity-free, DNase/RNase- and human DNA-free.
Centrifugation capacitiy (Max. RCF): 6000 x g



Capacity ml	Diam. mm	Height mm	Form	Description	PK	Cat. No.
15	17.0	120	conical	sterile, single packed	50	**9.316 062**
15	17.0	120	conical	non-sterile	500	**9.316 063**
50	30.0	120	conical	sterile, single packed	50	**9.316 064**
50	30.0	120	conical	non-sterile	500	**9.316 065**
50	30.0	120	with rim	sterile, single packed	50	**9.316 067**
50	30.0	120	with rim	non-sterile	50	**4.008 506**

Further Centrifuge tubes - please see page 644.

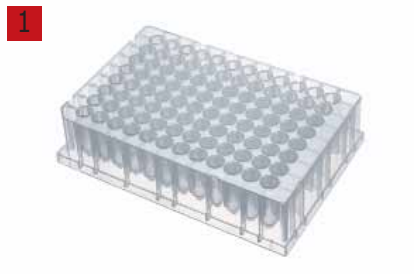
LLG Deep well plates, 96 well, PP

NEW!

- Cut-away corner for orientation
- Resistant to DMSO and low temperatures (-196°C)
- Autoclavable (121°C)
- Virgin polypropylene, certified RNase, DNase and endotoxin free

Description	Capacity µl	Colour	PK	Cat. No.	
96 Well Storage Plate, round caps, with V-Bottom	800	transparent	50	**9.407 508**	1
96 Deep Well Storage Plate, round caps, with U-Bottom	1200	transparent	50	**9.407 509**	2
96 Deep Well Storage Plate, square caps, with V-Bottom	2200	transparent	50	**6.263 838**	
96 Deep Well Storage Plate, square caps, with U-Bottom	1200	transparent	50	**7.608 837**	
96 Deep Well Storage Plate, square caps, with U-Bottom	2200	transparent	50	**9.407 511**	3

1



9.407 508

2



9.407 509

3



9.407 511

4



4 LLG-Deep well plates, 384-well, PP

- 384 square wells
- pyramidal well bottom for optimal sample retrieval
- raised rims for optimal sealing and reduced risk of cross-contamination
- raised rims on the corners to protect edges of seals
- chemical resistant (e.g. against DMSO, Phenol, Chloroform)
- autoclavable (121°C)
- Virgin polypropylene, certified RNase, DNase and endotoxin free

Description	Capacity µl	PK	Cat. No.
384 Well Storage Plate, with V Bottom	120	50	**9.407 510**
384 Well Storage Plate, with V Bottom	300	50	**9.407 512**

5



5 Deep well plates

NEW!

BRAND

Developed for a range of uses, e.g. High-Throughput Screening (HTS), general analysis which requires a master reservoir plate, cell and tissue culture, sample storage, etc.
Deep well plates can be used with all leading robotic systems and other autosampling devices.

Properties:
- Capacities: 96 well: 0.5ml, 1.1ml, (1ml with lid), 1.2ml or 2.2ml (2ml with lid), 384 well: 0.3ml
- U-bottom wells
- Low Profile and Standard
- 96 well: 12 x 8 array, 384 well: 24 x 16 array
- High chemically-resistant polypropylene (e.g.: against DMSO, phenol, chloroform)
- ANSI/SLAS format
- Alphanumeric well coding
- Plates suitable for freezing down to -80°C (PP) or -20°C (PS)
- One notched corner ensures correct orientation.
- Stackable
- DNA-, RNase-, DNAse -free

Description	PK	Cat. No.
Deep well plate, 1.2 ml, 96 well, PP, non-sterile, low profile	50	**4.007 852**
Deep well plate, 1.2 ml, 96 well, PP, non-sterile, high wells	32	**9.407 624**
Deep well plate, 0.3 ml, 384 well, PP, non-sterile, standard	48	**9.407 622**
Deep well plate, 0.5 ml, 96 well, PP, non-sterile, standard	48	**9.407 618**
Deep well plate, 1.1 ml, 96 well, PP, non-sterile, standard	24	**9.407 614**
Deep well plate, 1.1 ml, 96 well, PS, non-sterile, standard	32	**9.407 619**
Deep well plate, 2.2 ml, 96 well, PP, non-sterile, standard	24	**9.407 615**

E & OE.

Deep-well plate system, riplate®

NEW!

Ritter GmbH

riplate® round wells - Standard in Multifunction
Raised wells reduce the risk of cross-contamination and increase the security of hot sealing or sealing with adhesive foils. Riplate® 1ml is ideal for use in a thermocycler or for defrosting of samples in a hot-water bath. The U-shaped well bottom reduces the death-volume.

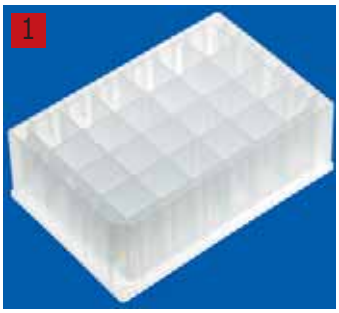
riplate® square wells - For a Maximum in Capacity
riplate® SW have been developed for optimal use of capacity when it comes to sample storage. Due to the SBS-format the outside dimensions of Riplate® are given. Form follows function: the construction of cavities is crucial for a maximum absorption of liquids.

riplate® medio - Saves 50% of Storage Capacity
Due to the compact construction of Riplate® medio less than 50% stacking size is needed. Higher well rims allow an airtight closure or sealing of Riplate® medio. The alphanumeric marking allows registration and identification of single assays.

riplate® 384 - Optimized for Smaller Volumes
Available in PS and PP for automated screening and storage systems. Alphanumeric marking for identification of samples. Round cavities for reduced capillary forces. With flat well-bottom - ideal for microscopic and optical applications.

Field of application: screening, sample storage et al. Ritter Riplate® systems are in line with the SBS-standard and are suitalbe for automation systems with corresponding closing- and sealing-mechanism.

1



7.635 031

2



9.284 259

Type	PK	Cat. No.	
Round well 96, PS - 1ml, U-shaped well-bottom	20	**9.284 250**	
Round well 96, PP - 1ml, U-shaped well-bottom	20	**9.284 251**	
Round well 96, PP - 2ml, U-shaped well-bottom	20	**9.284 300**	
Square-well 96, PP - 2ml, U-shaped well-bottom	20	**9.284 252**	
Cap mat for Square well 96, 2ml	100	**9.284 209**	
Square-well 48, PP - 5ml, V-shaped well-bottom	20	**9.284 260**	
Cap mat for Square well 48, 5ml	100	**9.284 228**	
Square-well 24, PP - 10ml, V-shaped well-bottom	20	**7.635 031**	1
384-well Plate PP	100	**9.284 256**	
384-well Plate PS, clear	100	**9.284 257**	
384-well Plate PS, white	100	**9.284 258**	
384-well Plate PS, black	100	**9.284 259**	2
Deep-well 96, PP - 1.0ml medio	32	**9.284 295**	
Deep-well 96, PP - 0.5ml medio	20	**9.284 296**	
Square-well 96, PP - 2ml, sterile	10	**9.284 297**	
Square-well 48, PP - 5ml, sterile	10	**9.284 298**	
Square-well 24, PP - 10ml, sterile	10	**9.284 299**	

3 LLG-Sealing mats for Deep well plates, 96-well

NEW!

- for sample storage
- not DMSO resistant
- alphanumeric grid
- thermoplastic elastomer
- flexible with end tabs
- with round or angled nodules

3



Description	For	PK	Cat. No.
with round nodules, not piercable, autoclavable	9.407 508 / 9.407 509	50	**9.407 513**
with angled nodules, not piercable, autoclavable	9.407 511 / 7.608 837 / 6.263 838	50	**9.407 517**
with angled nodules, piercable, not autoclavable	9.407 511 / 7.608 837 / 6.263 838	50	**7.659 384**

4 Sealing mats

BRAND

Cover mats reduce the maximum volume of wells, but improve sealing and reduce sample evaporation. Adhesive sealing films can also be used.

4



Description	PK	Cat. No.
Cover mat for 0.3 ml 384-well plates (standard), silicone, non-sterile	50	**9.407 623**
Cover mat for 0.5 ml 96-well plates (standard), PP, non-sterile	50	**9.407 621**
Cover mat for 1.1 ml 96-well plates (standard), mod. PE, non-sterile	24	**9.407 616**
Cover mat for 1.2 ml 96-well plates (low profile), TPE, non-sterile	50	**4.007 853**
Cover mat for 2.2 ml 96-well plates (standard), EVA, non-sterile	24	**9.407 617**
Sealing foil, gas-permeable, non-sterile	100	**9.407 620**



1 LLG-Disposable plastic cells, PS

The new generation of cuvettes with clearly improved, photometric properties. The new optimized shape and narrow wall thickness of the cuvettes provides increased heat transfer resulting in more constant sample temperatures during photometric measurements.

- Cavity sorted
- Glass clear polystyrene (PS)
- Applicable wavelength range 340nm to 900nm
- Very low variation of extinction values
- Excellent optical transmission range
- Path length 10mm
- Overall dimensions 12.5mm x 12.5mm x 45mm
- Styrofoam racks: 100 cuvettes in a styrofoam box with cover

Description	Capacity ml	Path length mm	Material	Operating range nm	PK	Cat. No.
Macro	4.0	10.0	PS	340 to 900	100	**9.406 011**
Semi-micro	1.6	10.0	PS	340 to 900	100	**9.406 012**



2 Disposable cuvettes

Kartell

Disposable cuvettes for spectroscopy, in optical-quality PS and UV grade PMMA with optical windows for optimum transmittance when using wavelengths from 340nm to 800nm (PS) and from 280nm to 800nm (PMMA). Moulding and quality control determine the reproducibility of cuvettes. Kartell cuvettes are strictly controlled and varations should be within the range ±1% absorption. This is the vital when batch analysis is being undertaken. Dust proof packaging: 100 pcs in expanded polystrene box with lid, 5 boxes in inner carton and 12 inner cartons (60 boxes) per case.

Description	Path length mm	Material	Capacity ml	PK	Cat. No.
Standard cuvettes	10.0	PS	4.5	100	**9.406 431**
Semi-micro cuvettes, low form	10.0	PS	1.5	100	**9.406 432**
Semi-micro cuvettes, high form	10.0	PS	2.5	100	**9.406 433**
Standard cuvettes, 4 clear faces	10.0	PS	4.5	100	**9.406 434**
Standard cuvettes	10.0	PMMA	4.5	100	**9.406 435**
Semi-micro cuvettes, high form	10.0	PMMA	2.5	100	**9.406 436**
Semi-micro cuvettes, low form	10.0	PMMA	1.5	100	**9.406 437**
Standard cuvettes, 4 clear faces	10.0	PMMA	4.5	100	**9.406 438**



3 Macro and semi micro cuvettes

BRAND

Sorted by mould cavity number. PMMA or PS.
What does "sorted by mould cavity number" mean? Injection moulds which produce 8 cells in one cycle have 8 cavities. For serial analysis only cells with the same cavity number should be used, to minimise cell-to-cell variation.
Quality characteristics:
- Minimal extinction value variation.
- Optically perfect transmission range
- Recessed window, to protect against scratches
- Arrow head marking shows the direction of transmission.

Advantages to user:
- Ideal for kinetics measurements
- 1000 cells from the same cavity in each pack
- Practical packaging: clear, re-closable.

Polymethylmethacrylate (PMMA) cuvettes
Typical operating range: from 300nm to 900nm.
Standard deviation at 320nm ±0.004 extinction units.

Polystyrene (PS) cuvettes
Typical operative range: from 340nm to 900nm.
Standard deviation at 360nm ≤ ±0.005 extinction units.

Dimensions: 12.5mm x 12.5mm x 45mm
Window: Macro cell 10mm x 35mm
Semi micro cell 4.5mm x 23mm

Description	Path length mm	Material	Volume ml	Operating range nm	PK	Cat. No.
Macro	10.0	PMMA	2.5 to 4.5	300 to 900	100	**9.406 111**
Semi-micro	10.0	PMMA	1.5 to 3.0	300 to 900	100	**9.406 115**
Macro	10.0	PS	2.5 to 4.5	340 to 900	100	**9.406 110**
Semi-micro	10.0	PS	1.5 to 3.0	340 to 900	100	**9.406 114**

E & OE.

1 Accessories for standard and semi-micro cuvettes

Kartell

Description	Material	PK	Cat. No.
Disposable stirrer	PS	100	**9.406 439**
Caps for cuvettes	PE-LD	1000	**9.406 440**
Cuvette holder for 12 cuvettes	PE	1	**9.406 441**



2 Plastic disposable UV-Cuvettes for the UV/VIS range

BRAND

UV-transparent plastic Brand cuvettes replace fragile glass or quartz cuvettes in many applications that were previously beyond the range of plastic cuvettes. Designed for single use, they eliminate time-consuming washing, and the cross-contamination risk associated with washing and re-using cuvettes. Their very high chemical resistance allows use with most polar solvents, acids and alkalis (e.g. Acetone, Butanone, DMF, hydrochloric acid). The UV-uvette micro has a working range from 230nm - sample volumes as small as 70 µl are sufficient.
The UV-Cuvette is also available in macro and semi-macro sizes for applications from 230nm to 900nm.

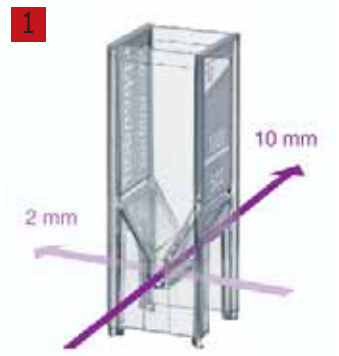
- Specially designed for photometric determination of proteins, ssDNA, dsDNA, TNA and oligonucleotides in the UV range.
- Ideally suited for measurements at 260 nm, 280 nm and in the visible range.
- Two different centre heights (8.5 mm and 15 mm) allow use in most commercial spectrophotometers without adapters (for more information please visit the Brand website, www.brand.de).
- Round caps provide a tight seal and allow storage of samples at -20°C.
- Coloured caps are available for easy sample identification.
- Grouped by mould cavity number to minimize extinction value variation.
- Recessed windows protect against scratching.
- Arrow indicates optical path orientation.



Description	Path length	Capacity	Operating range	PK	Cat. No.
	mm	µl	nm		
UV micro cuvette (centre height 8.5 mm)	10,0	70 to 850	230 to 900	100	**9.406 120**
UV micro cuvette (centre height 8.5 mm)	10,0	70 to 850	230 to 900	500	**9.406 121**
UV micro cuvette (centre height 15 mm)	10,0	70 to 550	230 to 900	100	**9.406 122**
UV micro cuvette (centre height 15 mm)	10,0	70 to 550	230 to 900	500	**9.406 123**
Cap for UV micro cuvette, blue				100	**9.406 124**
Cap for UV micro cuvette, yellow				100	**9.406 125**
Cap for UV micro cuvette, green				100	**9.406 126**
Cap for UV micro cuvette, orange				100	**9.406 127**
UV macro cuvette	10,0	2.5ml to 4.5ml	230 to 900	100	**9.406 119**
UV semi-micro cuvette	10,0	1.5 to 3.0ml	230 to 900	100	**9.406 118**



1



2



1 2 UV cuvette UVette®

Eppendorf

The plastic material of the UVettes® provides a transparency range of 220nm to 1600nm. It is possible to carry out measurements in the UV range as well as the entire VIS range. Pipetting can be monitored clearly through the crystal-clear plastic and is always completely bubble-free, even the minute 50µl sample volume. The design of the cuvette incorporates a funnel-shaped base, which prevents the capillary effect, and ensures that the liquids constantly remain in the centre of the measuring area.

Product features:
- Suitable for measuring small volumes, min. 50µl
- Individually blister-packed for sterile work
- DNA-/RNase- and protein-free
- Choice of two optical path lengths: 2mm and 10mm
- UV- and VIS-transparent between 220nm and 1600nm
- Volume markings at 500µl and 1000µl
- Total transparent material with outstanding surface properties
- Optimal filling guaranteed by tapered cuvette base
- Recessed optical window prevents scratches
- Self-standing design
- Marking possible on frosted gripping surface
- Optimal use in BioPhotometer and in most common spectrophotometers, using adapters.

Description	PK	Cat. No.
UVettes® , 80 x individually wrapped, disposable cells for direct use in BioPhotometer, path length 2 and 10mm	80	**9.409 392**
UVette® routine pack, Eppendorf Quality, path length 2 and 10mm	200	**9.409 398**
Starter kit, 80 x UVettes® + 1 universal adapter for photometers/spectrophotometers with beam centre height of 15 mm, convertible	1	**9.409 397**

3



6.265 212

4



6.265 213

VIS cuvettes Eppendorf®, PMMA

NEW!

Eppendorf

The Eppendorf® Vis Cuvettes are disposable cuvettes made of clear plastic with a light transmission of 300 nm to 900 nm. They are the perfect tool for applications outside of the UV range, for example, colorimetric protein assays (Bradford, Lowry, etc.), determining of the optical density of bacterial cultures (OD600 methods), kinetic and fluorescence measurements. Based on the volume you would like to measure, you can select semi-micro or macro cuvette.

Description	Path length mm	Capacity µl	Material	Operating range nm	PK	Cat. No.
Macro	10	4500	PMMA	300 -900	1000	**6.265 212** 3
Semi-micro	10	3000	PMMA	300 -900	1000	**6.265 213** 4

5



5 Cuvette rack

BRAND

Grey. PP. 16 numbered positions.
Autoclavable (121°C).

Width mm	Length mm	Height mm	PK	Cat. No.
70	210	38	1	**9.145 020**



1 HELLMANEX® III liquid



Cleaning: *Hellma Analytics*
HELLMANEX® III is an alkaline liquid concentrate used for the highly effective cleaning of glass or silica cells and other sensitive optical components. Laboratory equipment made of glass, quartz, sapphire and porcelain can also be cleaned using the solution.

Characteristics:
Hellmanex® III significantly reduces the surface tension of water. The removal of dirt particles is also assured by the good wetting action of a Hellmanex® III aqueous solution, whilst its high emulsifying and dispersing capabilities prevent the re-deposition of the loosened particles. Special surface-active substances facilitate the residue-free rinsing of the optical components once they have been cleaned.

Cleaning and Dilution:
The optimal dilution depends on several factors, such as the hardness of the water, the degree and type of contamination, the temperature, etc. The use of demineralised water improves the cleaning characteristics.

Available in 1.3kg PE-bottle.

The following treatments have been proven at a **concentration (vol%) 0.5 to 2** in practice:

Temperature°C	**Time minutes**
20-25	120-180
30-35	30-40
50-60 (quarz only)	10-15
70-80 (quarz only)	< 5

Type	Capacity Litres	PK	Cat. No.
HELLMANEX® III	1	1	**9.190 985**

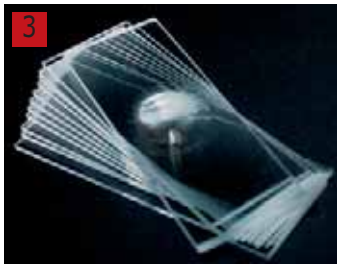
2 Microscope slides



According to ISO 8037/I. Prewashed and polished. Nominal thickness 1mm. Size 76 x 26mm. *Menzel*
Also available with 20mm, frosted, writing patch at one end.

Description	Edge finish	Type	PK	Cat. No.
Extra white	Cut	Without frosted end	50	**9.161 110**
Extra white	Cut	With frosted end	50	**9.161 145**
Extra white	Ground 45°	Without frosted end	50	**9.161 120**
Pure white	Cut	Without frosted end	50	**9.161 130**
Pure white	Ground 45°	Without frosted end	50	**9.161 140**
Pure white	Ground 90°	Without frosted end	50	**9.161 141**

3 Microscope slides with cavities



Dimensions: 76mm x 26mm x 1.2mm to 1.5 mm, with cavities approx. 15mm to 18mm diameter and approx. 0.6 to 0.8 depth. *Menzel*

Number of cavities	Colour	Edge finish	PK	Cat. No.
1	extra white glass	90° ground edges	1	**9.161 151**

4 Superfrost® Plus adhesive microscope slides



Size: 75mm x 25mm x 1.0mm. Ground edges 90°, white SuperFrost marking area. *Menzel*
A new application method provides the surface of a slide with a permanent positive charge.
Electrostatic attraction binds fresh frozen tissue sections and cytology preparations. Also available with blue, yellow or green SuperFrost marking area.

Type	Colour	PK	Cat. No.
SuperFrost® Plus	White	72	**9.161 155**

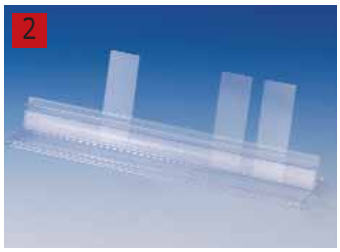


1 Superfrost® slides

Menzel

According to ISO 8037/I. With colour-coded writing patch as outlined below.
Size 76mm x 26mm. Nominal thickness 1.0mm. With cut or ground edges. With approx. 0.013mm thick coating which prevents slides sticking together and being scratched.

Edge finish	Colour	PK	Cat. No.
Cut	white	50	**9.161 161**
Cut	blue	50	**9.161 162**
Cut	pink	50	**9.161 163**
Cut	yellow	50	**9.161 164**
Cut	green	50	**9.161 165**
Ground 45°	white	50	**9.161 171**
Ground 45°	blue	50	**9.161 172**
Ground 45°	pink	50	**9.161 173**
Ground 45°	yellow	50	**9.161 174**
Ground 45°	green	50	**9.161 175**



2 Microscope slide or paper strip holder, PS

Bel-Art Products

This slide holder has a sloped groove that accepts up to 10 single or double slides standing on end. Front ledge serves as a place to dry slides. Made of durable polystyrene.

Internal dimensions (W x D x H) mm	PK	Cat. No.
250 x 50 x 30	1	**9.161 208**



3 Diagnostic slides without adhesion coating

Menzel

Material	No. of chambers	Diam. mm	Colour	PK	Cat. No.
Epoxy	1	8.0	Blue	100	**9.161 181**
Epoxy	3	14.0	Black	100	**9.161 182**
Epoxy	8	6.0	Black	100	**9.161 183**
Epoxy	10	6.7	Black	100	**9.161 184**
Epoxy	12	5.0	White	100	**9.161 185**
PTFE	1	8.0	Blue	100	**9.161 186**
PTFE	3	14.0	Black	100	**9.161 187**
PTFE	8	6.0	Black	100	**9.161 188**
PTFE	10	6.7	Black	100	**9.161 189**
PTFE	12	5.0	White	100	**9.161 190**



4 Diagnostic slides

Menzel

Material	No. of chambers	Diam. mm	Colour	PK	Cat. No.
PTFE	12	5	White	100	**9.161 200**



5 Prepared Slides

Prepared microscope slides for education and studies.
Sets of 10 slides.

Type	PK	Cat. No.
Fishes, frogs and other ambhibians	1	**9.151 850**
Lizard snakes and birds	1	**9.151 851**
Animal reproduction	1	**9.151 852**
Bacteria simple organisms	1	**9.151 854**
Plant reproduction and propagation	1	**9.151 856**
Structure of vegetable plants	1	**9.151 857**
Cell development and reproduction	1	**9.151 858**
Nanoplankton	1	**9.151 859**
Human body, normal tissues Part 1	1	**9.151 860**
Human body, normal tissues Part 2	1	**9.151 861**
The human body pathological tissues part 1	1	**9.151 862**
The human body pathological tissues Part 2	1	**9.151 863**
Animal and human parasites	1	**9.151 864**
Life in the ground	1	**9.151 866**
Animals and plants damaged by the environment	1	**9.151 868**
Set for teaching science	1	**9.151 869**
Set for teaching biology part 1	1	**9.151 870**
Set for teaching biology part 2	1	**9.151 871**

E & OE.

1 Square cover slips

Made of clear white glass. Accurate cutting free of flaws and blisters. Further thicknesses are available on request. *Menzel*

Width mm	Length mm	Thickness mm	PK	Cat. No.
15	15	0.13-0.16	200	**9.161 015**
18	18	0.13-0.16	200	**9.161 018**
20	20	0.13-0.16	200	**9.161 020**
22	22	0.13-0.16	200	**9.161 022**
24	24	0.13-0.16	200	**9.161 024**
26	21	0.13-0.16	100	**9.161 021**
32	24	0.13-0.16	100	**9.161 032**
40	24	0.13-0.16	100	**9.161 040**
50	24	0.13-0.16	100	**9.161 050**
60	24	0.13-0.16	100	**9.161 060**



2 Circular cover slips

Made of clear white glass. Accurate cutting free of flaws and blisters. Diameters as indicated. Further sizes and thicknesses are available on request. *Menzel*

Diam. mm	Thickness mm	PK	Cat. No.
10	0.13-0.16	100	**9.161 063**
12	0.13-0.16	100	**9.161 064**
13	0.13-0.16	100	**9.161 065**
14	0.13-0.16	100	**9.161 066**
15	0.13-0.16	100	**9.161 061**
18	0.13-0.16	100	**9.161 062**



3 Haemacytometer cover glasses

Officially calibrated, optically parallel cut. CE-marked. *Menzel*

Width mm	Length mm	Thickness mm	PK	Cat. No.
26	20	0.4	10	**9.161 070**
22	22	0.4	10	**9.161 072**
24	24	0.4	10	**9.161 074**



4 LLG-Cover glass forceps, self-locking

NEW!

Stainless steel 4301

Length mm	Form	PK	Cat. No.
105	Straight	1	**9.160 380**
105	Curved	1	**9.160 381**



5 LLG-Cover glass forceps, acc. to Kühne, stainless steel

NEW!

Stainless steel 4301

Length mm	Form	PK	Cat. No.
115	curved	1	**9.160 386**
130	curved	1	**9.160 387**
145	curved	1	**9.160 388**
115	straight	1	**9.160 391**
130	straight	1	**9.160 392**
145	straight	1	**9.160 393**



6 Microscope slide boxes

PP. For storing or shipping 5 thick or 10 thin slides. Sturdy design. Screw cap with fitting for sealing wire tag. When cap is open the slides protrude approximately 10mm so they can be removed easily. *Kartell*

Int. diam. mm	Height mm	PK	Cat. No.
45	90	1	**9.161 395**





1 LLG-Cavity tiles, porcelain

NEW!

Rectangular, white, glazed, with cavities as outlined below.

Number of cavities	Int. bore diam. mm	Cavity depth mm	Width mm	Length mm	Height mm	PK	Cat. No.
6	25	4	81	112	25.0	1	**6.232 575**
12	17	2	91	115	17.0	1	**6.265 001**



2 Cavity tiles, porcelain

Rectangular, white, glazed, with cavities as outlined below. *Haldenwanger*

Number of cavities	Int. bore diam. mm	Cavity depth mm	Width mm	Length mm	Height mm	PK	Cat. No.
6	36	11	80	115	12.0	1	**9.253 406**
12	20	3	85	119	6.0	1	**9.253 412**



3 LLG-Staining jars, soda-lime-glass

The Schiefferdecker Staining Jar is suitable for holding 76mm x 26mm slides horizontally. This staining jar has 10 grooves which can accommodate 20 slides back-to-back.
The Hellendahl Staining Jar is suitable for holding 76mm x 26mm slides vertically. This staining jar has 8 grooves which can accommodate 18 slides back-to-back.
The "Macro" Staining Jar is suitable for holding 20 slides with 76mm x 26mm (please order rack separately).
This Stainless Steel rack for "Macro" has 20 grooves which can accommodate 20 single slides.
Each staining jar is supplied with a glass lid.

Type	Width mm	Length mm	Height mm	PK	Cat. No.
Schiefferdecker Staining Jar	68	88	50.15 (with lid)	1	**9.163 250**
Hellendahl Staining Jar	61	63	102 (with lid)	1	**9.163 251**
"Macro" Staining Jar	88	105	78 (with lid)	1	**9.163 252**
Rack, Stainless Steel, for "Macro" jar				1	**9.163 253**



4 Staining rack, Glass

Glass. Holds microscope slides 76mm x 26mm to 50mm. (Fits trough 9.163 281 not supplied).
An accessory wire lifting handle is available.

Type	Width mm	Length mm	Height mm	PK	Cat. No.
Staining rack	30	85	45	1	**9.163 280**
Wire handle				1	**9.163 284**



5 Trough

Glass. Accepts one staining rack 9.163 280 (not supplied).

Width mm	Length mm	Height mm	PK	Cat. No.
85	105	70	1	**9.163 281**

E & OE.

1 Staining trough with rack, POM

Accepts 25 slides 76mm x 26mm. *BRAND*
Tightly fitting lid provides good protection against evaporation. Insert rack with folding handle.

To hold microscope slides	Width mm	Length mm	Height mm	PK	Cat. No.
25	88	98	52	1	**9.161 370**



2 Disposable Staining Slide Tray

Stain, rinse, and dry your slides on a single working tray. Made of a polypropylene and polyethylene blend, this rugged staining tray is an economical alternative to metal versions offering a clean and fresh working surface area every time. Up to eight slides fit comfortably onto the base and the deep well holds liquid waste up to 38ml. Two convenient pour spouts make it easy to dispose of unwanted liquid waste. Unique dark lid protects slides when used with light sensitive applications. *Heathrow Scientific*
Supplied with 4 Base Trays and 1 Lid.

To hold microscope slides	Length mm	Width mm	Height mm	PK	Cat. No.
8	305	127	29.5	1	**9.161 400**



3 Staining jar, PMP (TPX®)

Supplied with 2 lids, one complete lid for use providing evaporation-free storage of staining liquids, the other lid with an opening to allow the handle of accessory staining rack 9.161 341 to be inserted. *Kartell*
Note: Xylene can cause etching after 2 days at room temperature.

Width mm	Length mm	Height mm	PK	Cat. No.
80	100	70	1	**9.161 340**



4 Staining rack, PP

For use with staining jar 9.161 340. PP, with horizontal tray, holds 20 slides. *Kartell*

Width mm	Length mm	Height mm	PK	Cat. No.
20	86	700	1	**9.161 341**



5 Staining jar, PMP (TPX®), Schiefferdecker pattern

Accepts 20 slides 76mm x 26mm (10 pairs back to back). Transparent. *Kartell*
Complete with lid.
Note: Xylene can cause etching after 2 days at room temperature.

Width mm	Length mm	Height mm	PK	Cat. No.
70	86	51	1	**9.161 352**



6 Staining jar, PMP (TPX®), Hellendahl pattern

Accepts 16 slides 76mm x 26mm (8 pairs back to back). Transparent, with grooves. *Kartell*
Complete with lid.
Note: Xylene can cause etching after 2 days at room temperature.

Width mm	Length mm	Height mm	PK	Cat. No.
57	57	90	1	**9.161 350**



1



1 Staining jar, glass, Coplin

Coplin pattern. Glass.

Diam. mm	Height mm	PK	Cat. No.
45	105	1	**9.163 283**

2



2 Staining cylinders

Soda lime glass. With drop-on cover.

Type	Diam. mm	Width mm	Length mm	Height mm	PK	Cat. No.
Round	40			85	1	**9.163 273**
Oval		25	40	85	1	**9.163 274**
Rectangular		20	40	85	1	**9.163 275**

3



3 Staining jar, PP

Coplin pattern. With screw cap. For batch staining of 10 microscope slides, 76mm x 26mm. *VITLAB*

Height mm	Diam. mm	PK	Cat. No.
94	50	1	**9.161 386**

4



4 LLG-Microtitre shaker uni*PLATESHAKER* 1

NEW!

The LLG-uni*PLATESHAKER* 1 has been designed for accommodating and mixing a single micro plate. Due to its small footprint it can be used in working areas with limited space such as fume hoods and bio safety cabinets. It can also be used inside a cold-room. 3-years warranty.

- Digital Display with Speed and Time settings
- Variable speed from 300 to 1800rpm
- Maintenance free brushless DC motor
- Orbital Diameter of 2mm for thorough mixing
- Timer setting from 1 to 99min and continuous mode
- Universal fit, comes with interchangeable clamps for different micro plate sizes
- Comes with foam attachment for 20 x 1.5/2ml microtubes

Specifications

Type of movement:	orbital
Orbital diameter:	2mm
Speed range:	300 to 1800rpm
Motor:	Brushless DC motor
Timer:	1 to 99min, continuous
Power consumption:	15 W
Permissible ambient temperature:	4 to 40°C
Dimensions (WxDxH):	127 x 85 x 86mm
Weight:	1.4kg
Power supply:	100-230V, 50/60Hz

Type	PK	Cat. No.
uni*PLATESHAKER* 1 with EU-plug	1	**6.263 488**
uni*PLATESHAKER* 1 with UK-plug	1	**6.263 489**

E & OE.

1 Microtitre shaker PMS-1000i

1

Grant



Reliable, regulated shaking for two or four microplates. Simple screw attachments allow quick and easy fitting of any standard depth 96 or 384 well plates, holding the plate securely in place.
- direct drive
- brushless motor
- RPM set and display
- variable speed: 150rpm to 1200rpm
- orbit: 2mm
- continuous or timed operation
- integral timer: 1 min to 24 hours
- standard option for two microplates
- optional platform MPP-4 for four microplates
- ambient 4°C to 40°C

Type	Description	PK	Cat. No.
PMS-1000i	Microplate shaker	1	**9.721 074**
MPP-4	Platform for 4 micro plates	1	**9.721 026**

2 Microtitre shakers Microplate Genie®

NEW!

Scientific Industries

- Aggressive mixing speed for complete and uniform mixing in any microplate format.
- Suitable for standard SBS footprint
- Small vortexing orbit of 1.0mm for thorough mixing regardless of sample viscosity, even in 384-well plates.
- Speed and orbit combine to offer true vortexing action in each well of a microplate.
- Analog models are ideal for high speed mixing. Digital Pulse models are ideal for precise speed and time control.
- All models may be used in cold rooms and incubators for temperature sensitive applications.
- All models accept optional holders for PCR plates utilizing accessory kit (Cat. No. 6.265 696).

Specifications

Orbit:	1mm
Capacity Microplate Genie®:	1 microplate
Capacity Multi-Microplate Genie®:	up to 4 microplates or 8 with optional tray (Cat. No. 6.265 965)
Speed (Multi-)Microplate Genie® analog:	750 - 2700rpm
Speed (Multi-)Microplate Genie® digital:	500 - 2850rpm
Timer (Multi-)Microplate Genie® analog:	1 - 60 minutes/continuous
Timer (Multi-)Microplate Genie® digital:	0-99 minutes/continuous
Dimensions (WxDxH) Microplate Genie® analog:	165 x 165 x 165mm
Dimensions (WxDxH) Multi-Microplate Genie®:	335 x 240 x 165mm
Weight Microplate Genie®:	2.75kg
Weight Multi-Microplate Genie®:	3.7kg
Supply requirements:	230V 50/60Hz

Type	Connector	PK	Cat. No.
Microplate Genie® analog	EU	1	**6.265 233**
Microplate Genie® analog	UK	1	**6.265 234**
Microplate Genie® analog	CH	1	**6.265 235**
Multi-MicroPlate Genie® analog	EU	1	**6.265 237**
Multi-MicroPlate Genie® analog	UK	1	**6.265 238**
Multi-MicroPlate Genie® analog	CH	1	**6.265 239**
Microplate Genie® digital pulse	EU	1	**6.265 241**
Microplate Genie® digital pulse	UK	1	**6.265 242**
Microplate Genie® digital pulse	CH	1	**6.265 243**
Multi-MicroPlate Genie® digital pulse	EU	1	**6.263 864**
Multi-MicroPlate Genie® digital pulse	UK	1	**6.265 245**
Multi-MicroPlate Genie® digital pulse	CH	1	**6.265 246**
Accessory tray for Multi MicroPlate Genie® to enlarge capacity up to 8 microplates		1	**6.265 695**
Kit for PCR Platten for MicroPlate Genie® and Multi MicroPlate Genie®		1	**6.265 696**

2



1



1 Microtitre shaker MTS 2/4 digital

Dedicated shaker for two or four microtitre plates. Orbital movement. *IKA*

- Electronic speed regulation
- Digital timer
- Acoustic signal at end of timed period
- With attachment but without plates

Specifications

Motor rating input/output:	35/13.2W
Orbit:	3mm
Capacity:	two or four microtitre plates
Speed range:	0rpm to 1100rpm
Speed range:	Analogue scale
Timer:	1 to 99 min/ continuous
Dimensions (WxDxH):	185 x 320 x 105mm
Weight:	2.7kg
Housing IP rating to DIN EN 60529:	IP 21
Supply requirements:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
MTS 2/4 digital with EU-plug	1	**9.838 195**
Mains cable with CH plug	1	**6.229 999**
Mains cable with UK plug	1	**6.240 684**

2



3

BioCote

2 3 Shaker, microtitre plate, SSM5/SSL5

NEW!

- Vibrational mixing action - ideal for microtitre plates *Stuart*
- Digital selection of mixing speed
- Built-in digital timer or continuous operation
- Optional tube holders available for mixing microcentrifuge tubes

Designed for use with microtitre plates and microcentrifuge tubes. The aluminium tray is fitted with a specially designed mat that securely holds in place up to four wellplates. High speed combined with a tiny orbit creates the vibrational shaking action required for mixing the very small volumes contained in the wells or in microcentrifuge tubes. Speed is variable from 250 to 1250 rpm and is easily set via the digital display. Shaking times can be set from 1second to 9999 minutes on the built in digital timer. The unit can also be set for continuous operation. Tube holders are available as optional accessories. They fit securely onto the platform turning the unit into an effective tube mixer.
With BioCote, silver-based, antimicrobial protection.

Specifications

	SSM5 // **SSL5**
Platform dimensions (W x D):	220 x 220mm // 306 x 306mm
Number of plate positions:	4 // 8
Speed range:	250 to 1250rpm
Orbit diameter:	1.5mm // 1.5mm
Maximum load:	1kg // 2kg
Overall dimensions (WxDxH):	240 x 300 x 160mm // 360 x 420 x 160mm
Supply requirements:	230V 50 Hz, 50W // 230V 50Hz, 50W

Description	PK	Cat. No.
SSM5, shaker, microtitre	1	**9.728 850**
SSL5, shaker, microtitre	1	**9.728 853**
SSM5/1, tube holder for 1.5 ml tubes	1	**9.728 851**
SSM5/2, tube holder for 0.5 ml tubes	1	**9.728 852**
SSM5/3, tube holder for 0.2 ml tubes	1	**9.728 854**

Incubator- and Thermo shaker please see page 1308.

E & OE.

1 Mixer MixMate®

NEW!

Eppendorf

The MixMate is a compact and versatile mixer, specially designed for mixing small volumes (5 ìl to 2 ml) in numerous plate and tube formats. The fast and precisely controlled mixing movements (2DMix-Control) enable efficient and homogeneous mixing of samples in all vessel formats, allowing MixMate to be used for virtually any application. It accommodates micro test tubes, PCR plates, PCR strips, deepwell plates and MTPs. The integrated touch vortex function, with minimal hand/arm vibration transfer (Eppendorf PhysioCare Concept), completes this unique product profile. The innovative additional 2 second run timer allows vortexing of your next sample without restarting.


1

Specifications

Mixing frequency:	300 to 3000rpm
Touch vortexing frequency:	3500rpm
Adjustable mixing time:	15s to 99.5h; continuous
Mixing and vortexing radius:	1.5mm (3 mm mixing stroke)
Noise level:	< 50dB(A)
Power supply:	230V 50/60Hz

Type	Description	Dimensions (W x D x H) mm	Weight kg	Power W	PK	Cat. No.
MixMate®	incl. 3 tube holders: PCR 96; 0.5 ml; 1.5/2.0 ml	170 x 230 x 130	4.2	40	1	**9.776 660**

2 Microplate thermoshaker PHMP/PHMP-4

Grant

For 96- and 384-well plates. The PHMP is a variable speed, variable temperature microplate shaker incubator with excellent temperature uniformity across the microplate. The patented heated lid and base which completely cover the plate produce a controlled micro-environment. This is combined with powerful orbital shaking to produce the maximum yield from your incubations.
- Stability ±0.1ºC, uniformity ±0.25ºC
- Rapid heat-up
- Choice of two models with capacity for 2 microplates (PHMP) or 4 microplates (PHMP-4)
- variable speed: 250rpm to 1200rpm
- 2mm shaking orbit for effective mixing
- temperature range: amb. + 5 to 60°C
- timed operation: 1 min to 96 hours
- for 2 standard 96 or 384-well plates (max. 14mm height)


2

Type	PK	Cat. No.
PHMP	1	**9.721 033**
PHMP-4	1	**6.227 761**

LLG-Temperature block "exact", aluminium

NEW!

Suitable for both cooling and heating, universally usable, uniform temperature distribution within the block, ideal for all temperature-sensitive applications.

Aluminum blocks with conical compartments and closed bottom for easy and precise tempering of reaction tubes and PCR tubes. The precisely adapted shape of the borings and the closed bottom offer advantages compared with cylindrical drilled blocks with open bottom, such as much better heat transfer and temperature accuracy. Made of a special aluminum alloy with high thermal conductivity. Identical temperature conditions for all samples. Compact size, requiring little space. Suitable for 96-well plates, 8 or 12 strips and single tubes. Ideal for working with 8- or 12-channel pipettes. Blocks for different tube sizes and combinations of tube sizes as indicated, all working steps in one block, holes closed at the bottom and tapered to fit perfectly the respective tube sizes and offer an optimum heat exchange.



3

9.409 015



4

9.409 017

Description	PK	Cat. No.
LLG-aluminum block, 96 x 0.2 ml PCR tubes + 6 x 1.5 ml tubes	1	**9.409 015** 3
LLG-aluminum block, 36 x 0.5 ml tubes + 11 x 1.5 ml tubes	1	**9.409 016**
LLG-aluminum block, 24 x 1.5 ml tubes	1	**9.409 017** 4
LLG-aluminum block, 24 x 2.0 ml tubes	1	**9.409 018**
LLG-aluminum block, 25 x 2.0ml Cryogenic tubes with round bottom	1	**9.409 006**
LLG-aluminum block, 12 x 15.0ml Centrifuge tubes	1	**9.409 008**

1 Digital Dry Bath AccuBlock™ Mini

Labnet

AccuBlock Mini combines digital control, a fast heating microtube block and a convenient AccuRack transfer system, all in an ultra compact footprint. With a temperature range to 100°C which can be set in increments of 0.1°C, AccuBlock Mini is suitable for a range of uses in life science, molecular biology, environmental and industrial laboratories and a variety of applications including incubation, enzyme reactions, immunoassays.
- accepts up to 12 x 1.5ml tapered microcentrifuge tubes
- with thermometer well for temperature confirmation and calibration
- microprocessor controlled heating element
- easy to read 4 digit LCD display
- built in calibration mode allows end users to calibrate the bath as needed

The included AccuRack allows quick loading or unloading of all sample tubes simultaneously. It is self standing and can be used to hold samples while they are prepared for loading. Samples can also be loaded directly into the AccuBlock™ Mini without the AccuRack.

1



Specifications:

Temperature range:	Ambient +5°C to 100°C, resolution 0.1°C
Temperature uniformity:	±0.2ºC
Temperature accuracy:	±0.1ºC
Timer:	0 - 19h 59min or continuous
Block material:	Anodized aluminum
Block capacity:	12 x 1.5ml tubes
Dimensions (WxDxH):	140 x 120 x 60mm
Weight:	1.3kg
Supply requirements:	230V 50/60Hz, or 120V 50/60Hz

Type	PK	Cat. No.
AccuBlock™ Mini	1	**9.945 780**

2 Microtube block thermostat DB-4S for strips

Grant

Designed for maintaining constant temperature of samples in tube strips. Aluminium dry block offers excellent stability and uniformity, LCD screen for actual and set time and temperatures. Ideal for PCR analysis.
- Dry block holds 32 x 0.2 ml microtubes or 4 x 0.2 ml strips
- Dry temperature control system maintains clean and aerosol-free environment
- 2-line LCD display clearly indicates both set and actual values for temperature and time

2



Specifications

Temperature range:	+25 to 100°C
Stability at 37°C:	±0.03°C
Uniformity at 37°C:	±0.12°C
Heat-up times:	25ºC to 100ºC in 40min 25ºC to 60ºC in 10min 25ºC to 37ºC in 4min
Timer:	1min to 96h
Power supply:	230V, 50/60Hz

Type	Dimensions (W x D x H) mm	PK	Cat. No.
DB-4S	140 x 120 x 70	1	**9.721 059**

E & OE.

1 AccuBlock™ Digital Dry Baths

1

Labnet

The user calibration function allows for easy calibration of in-house standards when required. The dry bath is available as a single or dual block model. Interchangeable blocks are available to accommodate a wide variety of tubes, plates and slides. Each dry bath is supplied with a block lifter that enables the user to exchange blocks easily, even when the block is hot.
- precise microprocessor control
- broad temperature range, to 150°C
- large digital display
- easy user calibration
- single and dual block models

Supplied with user manual, line cord and block lifter. Please order blocks separately



Specifications

Temperature range:	Ambient +5 to +150°C
Temperature uniformity:	±0.2°C
Temperature resolution:	±0.1°C
Temperature accuracy:	±0.3°C
Temperature control:	Microprocessor
Block material:	Stainless steel
Dimensions (WxDxH):	200mm x 265mm x 83mm
Weight:	2.2kg
Supply requirements:	230V 50/60Hz, or 120V 50/60Hz

Type	PK	Cat. No.
AccuBlock Digital Dry Bath, single block	1	**6.224 190**
AccuBlock Digital Dry Bath, dual block	1	**6.225 737**

2 Accessories for Digital Dry Baths AccuBlock™

2



Labnet

Type	PK	Cat. No.
Block, 24 x 1.5ml tubes	1	**6.224 191**
Block, 20 x 2.0ml tubes	1	**6.233 664**
Block, 24 x 0.5ml tubes	1	**6.235 417**
Block, 48 x 0.2ml PCR tubes or 6 x 0.2ml strips	1	**9.945 763**
Block 12 x 15ml centrifuge tubes	1	**9.945 764**
Block 5 x 50ml centrifuge tubes	1	**9.945 765**

3 Block thermostats PCH-1/PCH-2/PCH-3

3



Grant

Personal benchtop cooling/heating dry block for microcentrifuge tubes. The ingenious block construction, combined with the powerful Peltier module, produces very rapid cooling and heating.

Temperature range:	-10 to +100°C
Heat up, amb. to 100°C:	15 min
Cool down, 100°C to amb.:	15 min
Cool down, amb. to -10°C:	21 min

Type	Type	PK	Cat. No.
PCH-1	20 x 0.5ml and 12 x 1.5ml microtubes	1	**9.721 009**
PCH-2	20 x 1.5ml microtubes	1	**9.721 010**
PCH-3	20 x 2.0ml microtubes	1	**9.721 066**

Incubators please see page 815.

1



1 Microtube block thermostat BTD

Grant´s block heating system BTD with fixed block is designed for rapid and precise heating of microtubes up to 100ºC. *Grant*

- Digital temperature control for optimum precision
- Heating block holds combinations of four microtube sizes simultaneously - up to a total of 49 tubes: 24 x 1.5/2.0 ml, 15 x 0.5 ml, 10 x 0.2 ml
- Flexible tube sizes and rapid heat-up time enables swift change of application
- Convenient integral timer for time-sensitive incubations
- Sturdy, durable, easy-to-clean plastic construction; compact design with small footprint
- 2-line display for simple and precise setting of temperature/time and for monitoring current status during operation

Specifications

Temperature range:	+5 to 100°C
Stability at 37°C:	±0.1°C
Uniformity:	±0.1°C
Heat-up times:	25ºC to 100ºC in 15 min
	25ºC to 37ºC in 4 min
Timer:	1 min to 96 h
Power supply:	230V, 50/60Hz

Type	Power W	Dimensions (W x D x H) mm	PK	Cat. No.
BTD	200	210 x 230 x 110	1	**6.223 310**

2



3



2 3 Block thermostats, QBA, QBD and QBH series

For controlled dry heating of test tubes, microplates and Eppendorf tubes in interchangeable aluminium blocks. The following models are available: *Grant*

QBA
- Analogue dial temperature setting
- Two models with 1 or 2 removable/interchangeable blocks
- Robustly constructed in streamlined coolwall aluminium and chemical-resistant plastic

QBD/QBH2
- Choose from three digital systems with 1, 2 or 4 interchangeable blocks (QBD models) and one digital high-temperature system (QBH2) with 2 blocks
- Fast heat-up time and in-block temperature sensing capability using external sensor probe. Please order Cat. No. 6.228 714 separately.
- Built-in timer, programmable delayed start and RS232 output for data monitoring
- **Requires but does not include interchangeable QB-series blocks**

Specifications	**Models QBA1/QBA2**
Temperature range:	+5 to 100°C
Stability at 37°C:	±1.0°C
Uniformity	
within the block at 37°C:	±1.0°C
across similar blocks at 37°C:	±1.0°C
Supply requirements:	230V, 50/60Hz, single phase
	Models QBD1/QBD2/QBD4/QBH2
Temperature range:	+5 to 130°C, QBH2: +5 to 200°C
Stability at 37°C:	±0.1°C
Uniformity	
within the block at 37°C:	±0.1°C
across similar blocks at 37°C:	±0.2°C
Supply requirements:	230V, 50/60Hz, single phase

Type	Blocks accepted	Power W	Length mm	Width mm	Height mm	PK	Cat. No.
QBA1	1	150	230	200	100	1	**9.852 305**
QBA2	2	300	280	200	100	1	**9.852 306**
QBD1	1	150	230	200	100	1	**9.852 307**
QBD2	2	300	280	200	100	1	**9.852 308**
QBD4	4	600	380	200	100	1	**9.852 309**
QBH2	2	300	280	200	100	1	**9.852 310**

Block thermostats, QBA, QBD, QBH series, accessory covers

Not required with QDP-FL mictrotiter blocks *Grant*

Type	Description	PK	Cat. No.
QBL1	Cover for QBA1 and QBD1	1	**9.852 311**
QBL4	Cover for QBD4	1	**9.852 312**
QBL2	Cover for QBA2, QBD2 and QBH2	1	**9.852 314**

E & OE.

1 Digital block thermostats QB, for QBA, QBD, QBH series

NEW!

Accessory blocks for QB series only. Interchangeable.
Machined aluminium, (L x W x H) 140 x 50 x 63mm. Holes drilled as indicated.

Grant



Type	For tubes diam. mm	No.of holes	PK	Cat. No.
QB-10	10 mm	24	1	**9.951 661**
QB-12	12 mm	24	1	**9.951 662**
QB-16	16 mm	12	1	**9.951 663**
QB-18	18 mm	12	1	**9.951 664**
QB-24	24 mm	5	1	**9.951 665**
QB-50	50 ml	4	1	**6.075 814**
QB-H	0.2 ml	56	1	**9.951 666**
QB-E0	0.5 ml	24	1	**9.951 667**
QB-E1	1.5 ml	24	1	**9.951 668**
QB-E2	2.0 ml	24	1	**9.951 669**
QB-E5	5.0 ml	12	1	**6.266 809**

Further blocks available on request.

BlockThermostats TH 21/TK 23

The Block Thermostats are used for tempering of solutions in closed reaction tubes and plates. They stand out due to their high temperature accuracy as well as their various fields of application thanks to over 30 different exchangeable blocks.

Hettich Benelux B.V.

Specifications Thermostats:	**HeatingBlock TH 21 // Heating/CoolingBlock TK 23**
Temperature operation range:	Amb. +3°C to +130°C // Amb. -16°C to +90°C
Temperature adjustable range:	0°C to +137°C // -10°C to +105°C
Accuracy/ resolution:	±0.1°C/0.1°C // ±0.3°C/0.1°C
Max. heating time:	9.5°C/min // 4°C/min
Max. cooling time:	-- // 7°C/min
Dimensions (WxDxH):	220 x 330 x 109mm // 220 x 330 x 144mm
Capacity:	2 exchangeable blocks (not included)
Weight (with block/blocks):	approx. 3.5kg // approx. 7.5kg
Electrical heating/ cooling power:	350W // 130W
Supply requirements:	230V, 50Hz
Easy Control // Smart Control:	Timer 19h 59min // 30 program steps

Description	PK	Cat. No.
HeatingBlockThermostat TH 21	1	**9.777 214**
HeatingBlockThermostat TH 21 CH	1	**9.777 286**
CoolingBlockThermostat TK 23	1	**9.777 212** 2
CoolingBlockThermostat TK 23 CH	1	**9.777 284**

Further power connectors on request.



9.777 212

Suitable exchangeable blocks and accessories - please see page 1306.

4 Block Heaters, analogue and digital, SBH series

Stuart

- choice of either analogue or digital models
- digital models available with either 130°C or 200°C maximum temperature
- three block model for extra capacity
- dual control models have two blocks with independent temperature control
- uniform and stable block temperatures

Designed for the precise heating of test-tubes, microcentrifuge tubes, cuvettes and microplates.
Range compromises an economical analogue model with easy to use, dial setting and advanced digital models with bright, easy to read, LED display which facilitates setting of the required temperature and also accurate monitoring of the actual temperature.
Excellent temperature stability and uniformity is maintained via sensitive, microprocessor control.
Heats to 100°C in <12 mins.
Supplied complete with block extraction tool but without aluminium blocks which must be ordered separately.
With BioCote, silver-based, antimicrobial protection.

1



9.852 300

2



9.852 303

3



6.207 050

4

BioCote

Specifications

Temperature stability at 37°C:	±0.1°C
Uniformity within block at 37°C:	±0.1°C
Uniformity within block at 130°C:	±1°C
Electrical supply:	230V 50Hz
	SBH130 // SBH130D // SBH200D
Number of blocks:	2
Temp. range (Ambient):	Amb.+8°C to +130°C // Amb.+8°C to +130°C // Amb.+8°C to +200°C
Display type:	Calibrated knob // LED // LED
Display resolution:	10°C // 0.1°C // 0.1°C
Dimensions (WxDxH) mm:	235 x 280 x 115mm
Net weight:	2.1kg // 2.3kg // 2.3kg
Heater power:	300W
	SBH130D/3 // SBH200D/3
Number of blocks:	3
Temp. range (Ambient):	Amb.+8°C to +130°C // Amb.+8°C to +200°C
Display type:	LED
Display resolution:	0.1°C
Dimensions (WxDxH) mm:	310 x 280 x 115mm
Net weight:	3.2kg
Heater power:	450W
	SBH130DC // SBH200DC
Number of blocks:	2 (independent control)
Temp. range (Ambient):	Amb.+8°C to +130°C // +50°C to +200°C
Display type:	LED
Display resolution:	0.1°C
Dimensions (WxDxH) mm:	310 x 280 x 115mm
Net weight:	2.9kg
Heater power:	300W

Type	Description	PK	Cat. No.	
SBH130	Block heater, 2 block, analogue, 130°C	1	**9.852 300**	1
SBH130D	Block heater, 2 block, digital, 130°C	1	**9.852 301**	
SBH200D	Block heater, 2 block, digital, 200°C	1	**9.852 302**	
SBH130D/3	Block heater, 3 block, digital, 130°C	1	**7.624 685**	
SBH200D/3	Block heater, 3 block, digital, 200°C	1	**9.852 303**	2
SBH130DC	Block heater, 2 block, digital, dual control, 130°C	1	**6.207 050**	3
SBH200DC	Block heater, 2 block, digital, dual control, 200°C	1	**9.852 315**	

Aluminium blocks SHT for block heaters Stuart SBH series

Stuart

Description	PK	Cat. No.
Aluminium block for 20 x 10.5mm Ø tubes	1	**9.951 617**
Aluminium block for 20 x 12.5 mm Ø tubes	1	**9.951 618**
Aluminium block for 12 x 16.5 mm Ø tubes	1	**9.951 619**
Aluminium block for 8 x 19.5 mm Ø tubes	1	**9.951 620**
Aluminium block, solid, for user to drill as required	1	**9.951 621**
Aluminium block for 48 x 0.2 ml centrifuge tubes	1	**9.951 622**
Aluminium block for 20 x 1.5 ml Eppendorf Tubes®	1	**9.951 623**
Aluminium block for 20 x 2.0 ml Eppendorf Tubes®	1	**9.951 624**
Aluminium block for 15 x 10 mm cuvettes.	1	**9.951 625**

*Separations can be removed to take larger cells

E & OE.

Dry Block Heater

IKA

Digital block heaters for 1, 2, 3 or 4 aluminium blocks provides precise temperature control in small vessels. Included PT 1000 temperature sensor allows temperature control directly in the sample vessel. It is used with PCR tubes, PCR strips, Greiner tubes, microplates and cuvettes. The block heater is ideal for melting and boiling point determination, enzyme reactions, incubation and activation of cultures, immunoassays, DNA denaturation, culture media tests, coagulation tests, blood-urea-nitrogen determinations and in situ hybridizations.

- Stepless adjustable temperature up to 120°C
- Timer: Countdown, adjustable from 1min to 99h 59min
- Counter: Display of heating time
- Highly versatile with a large number of blocks
- Error code display
- Fixed safety circuit
- Acoustic signal at end of test

Without blocks. Please order separately.

Specifications

Temperature range	RT to +120°C
Display:	LED
Heat control accuracy:	±1K
Connection for ext. temperature sensor:	DIN 12878
Control accuracy with sensor:	±1K
Temperature constancy in medium:	±1K
Temperature stability within the blocks at 37°C:	±0.2°C
Temperature stability within the blocks at 60°C	±0.4°C
Fixed safety circuit:	+150°C
Protection class acc. to DIN EN 60529:	IP 21
Power supply:	220-240V, 50760Hz

Type	Heating power W	Dimensions Set-up plate (W x D) mm	Dimensions (W x D x H) mm	PK	Cat. No.
Dry Block Heater 1	165	95 x 76	151 x 228 x 73	1	**9.816 801** 1
Dry Block Heater 1 UK	165	95 x 76	151 x 228 x 73	1	**9.816 802**
Dry Block Heater 1 CH	165	95 x 76	151 x 228 x 73	1	**9.816 803**
Dry Block Heater 2	250	95 x 152	151 x 304 x 73	1	**9.816 804**
Dry Block Heater 2 UK	250	95 x 152	151 x 304 x 73	1	**9.816 805**
Dry Block Heater 2 CH	250	95 x 152	151 x 304 x 73	1	**9.816 806**
Dry Block Heater 3	330	95 x 228	151 x 380 x 73	1	**9.816 807** 2
Dry Block Heater 3 UK	330	95 x 228	151 x 380 x 73	1	**9.816 808**
Dry Block Heater 3 CH	330	95 x 228	151 x 380 x 73	1	**9.816 809**
Dry Block Heater 4	412	95 x 304	151 x 456 x 73	1	**9.816 810**
Dry Block Heater 4 UK	412	95 x 304	151 x 456 x 73	1	**9.816 811**
Dry Block Heater 4 CH	412	95 x 304	151 x 456 x 73	1	**9.816 812**

1



9.816 801

2



9.816 807

Aluminium blocks for Dry Block Heater

NEW!

IKA

Type	Description	PK	Cat. No.
DB 1.1	Single block for PCR tubes (0.5ml), holes (diam. x D): 7.9 x 27.6mm	1	**9.816 813**
DB 1.2	Single block for Eppendorf® microtubes (1.5ml), holes (diam. x D): 11.5 x 36.9mm	1	**9.816 814**
DB 3.1	Single block for centrifuge tube combination 0.5ml, 15ml, 50ml	1	**9.816 815**
DB 3.2	Single block for microtube combination 1.5ml, 15ml, 50ml	1	**9.816 816**
DB 6.3	Double block for 1 x 96 well plates (0.2ml), holes (diam. x D): 6.4 x 15.5mm	1	**9.816 817**
DB 7.1	Double block for 96 or 384 wellplates, depth: 13.5mm	1	**9.816 818**

Further blocks available on request.

1



1 Heating block Eppendorf ThermoStat C

NEW!

Eppendorf

The ideal device to accurately set and maintain temperatures. Precise temperature control is achieved using optimally balanced heating and cooling elements (peltier technology). The temperature keys provide quick access to five important experimental temperatures (4°C, 16°C, 37°C, 56°C and 95°C). You can also individually store 15 programs.

- Excellent temperature accuracy
- Precise temperature control from -10 to +110°C (+110°C can be set when using 12mm and cryo SmartBlocks™)
- Prevent condensation and improve temperature homogeneity with the new ThermoTop
- Comprehensive range of program functions

Specifications

Temperature operation range:	min: +3°C below RT, max: +100°C
Temperature adjustable range:	+10 to +110°C (+110°C can be set when using 12mm and cryo SmartBlocks™)
Accuracy/ resolution:	±0.5°C at +20 to +45°C
Max. heating time:	5.5°C/min
Max. cooling time:	5°C/min between +110°C and RT
Dimensions (WxDxH):	206 x 304 x 131mm
Capacity:	dependent on Eppendorf SmartBlock™
Weight:	4.3kg
Power consumption:	200W (max.)
Power supply:	220 - 240V ±10%, 50/60Hz

Type	Description	PK	Cat. No.
Eppendorf ThermoStat C		1	**9.776 903**

Thermo Shakers

Hettich Benelux B.V.

The Thermo Shakers are used for tempering and mixing of solutions in closed reaction tubes and plates. They possess a very large temperature application range as well as manifold programming options.

2



9.777 202

CoolingThermomixer MKR 13/MKR 23

For cooling, heating and mixing of samples. *Hettich Benelux B.V.*

Specifications	**MKR 13 // MKR 23**
Temperature operation range:	Amb. -16°C to +100°C // Amb. -11°C to +70°C
Temperature adjustable range:	-10°C to +105°C // 0°C to +80°C
Accuracy/resolution:	±0.1°C/0.1°C // ±0.3°C/0.1°C
Max. heating time:	6°C/min // 3.5°C/min
Max. cooling time:	12°C/min // 6.5°C/min
Shaking frequency:	200 to 1500rpm // 200 to 1200rpm
Orbit:	3mm orbital
Dimensions (WxDxH):	220 x 330 x 144mm
Capacity:	1 exchangeable block // 2 exchangeable blocks (not included)
Weight (with block/blocks):	9kg // approx. 9.5kg
Electrical heating/cooling power:	130W // 200W
Supply requirements:	230V, 50Hz
Smart Control:	30 program steps, short mix, interval shaking

Description	PK	Cat. No.
CoolingThermoMixer MKR 13	1	**9.777 200**
CoolingThermoMixer MKR 13 CH	1	**9.777 272**
CoolingThermomixer MKR 23	1	**9.777 202** 2
CoolingThermomixer MKR 23 CH	1	**9.777 274**

Further power connectors on request.

Exchangeable blocks - please see page 1307.

E & OE.

HeatingThermoMixer MHR 11/MHR 13

Extremely short heating rate.
Highest accuracy: max. 0.1°C deviation.

Hettich Benelux B.V.

Specifications:

Temperature operation range:	Amb. +3°C to +130°C
Temperature adjustable range:	0°C to +137°C
Accuracy/ resolution:	±0.1°C/0.1°C
Max. heating time:	11.5°C/min
Shaking frequency MHR 11:	80rpm to 1500rpm
Shaking frequency MHR 13:	200rpm to 1500rpm
Orbit:	3mm orbital
Dimensions (WxDxH):	220 x 330 x 109mm
Capacity:	1 exchangeable block (not included)
Weight:	6.5kg
Electrical heating power:	200W
Supply requirements:	230V, 50Hz
Easy Control MHR 11:	Timer 19h 59min, slider for shaking frequency
Smart Control MHR 13:	30 program steps, short mix, interval shaking

Description	PK	Cat. No.
HeatingThermomixer MHR 11	1	**9.777 208**
HeatingThermomixer MHR 11 CH	1	**9.777 280**
HeatingThermomixer MHR 13	1	**9.777 204** 1
HeatingThermomixer MHR 13 CH	1	**9.777 276**

Further power connectors on request.

HeatingThermoMixer MHR 23/MHL 23

Our bestseller: universally applicable
Double capacity.

Hettich Benelux B.V.

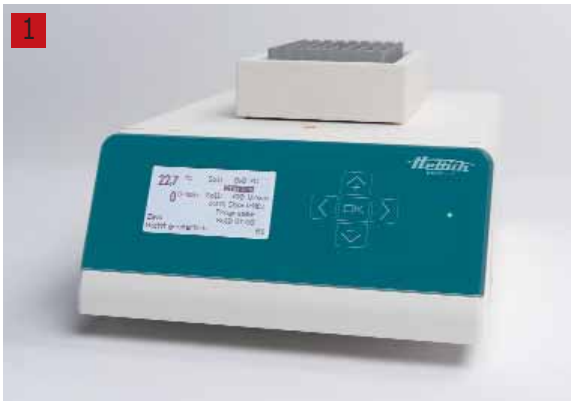
Specifications:

Temperature operation range:	Amb. +3°C to +130°C
Temperature adjustable range:	0°C to +137°C
Accuracy/ resolution:	±0.1°C/0.1°C
Max. heating time:	9.5°C/min
Shaking frequency MHR 23:	200rpm to 1500rpm
Shaking frequency MHL 23:	200rpm to 1300rpm
Orbit MHR 23:	3mm orbital
Orbit MHL 23:	3mm linear
Dimensions (WxDxH):	220 x 330 x 109mm
Capacity:	2 exchangeable blocks (not included)
Weight:	7.0kg
Electrical heating power:	350W
Supply requirements:	230V, 50Hz
Smart Control:	30 program steps, short mix, interval shaking

Description	PK	Cat. No.
HeatingThermomixer MHR 23, orbital movement	1	**9.777 206** 2
HeatingThermomixer MHR 23 CH, orbital movement	1	**9.777 278**
HeatingThermomixer MHL 23, linear movement	1	**9.777 210**
HeatingThermomixer MHL 23 CH, linear movement	1	**9.777 282**

Further power connectors on request.

1



9.777 204

2



9.777 206

1

9.777 121

2

9.777 127

Exchangeable blocks for Thermomixers and BlockThermostats

NEW!

Hettich Benelux B.V.

The right physical weight and fitting is important for high temperature accuracy inside the sample. All blocks are made out of temperature conductible aluminium. Customized blocks on request. All blocks are autoclavable.

Type	For	PK	Cat. No.	
BM 02	micro tubes, 96 x 0.2ml, conical and 8 tube strips	1	**9.777 120**	
BM 05	micro tubes, 38 x 0.5ml, conical	1	**9.777 121**	1
BM 15	micro tubes, 24 x 1.5ml, conical	1	**9.777 122**	
BM 20	micro tubes, 24 x 2.0ml, cylindrical	1	**9.777 123**	
BP 12	test tubes, 24 x Ø 12mm, flat bottom, drill depth 20mm	1	**9.777 125**	
BP 16	test tubes, 24 x Ø 16.5mm, round bottom, drill depth 51mm, with insulating cover	1	**9.777 127**	2
BZ 15	"Falcon"-tubes, 14 x 15ml, with insulating lid, drill depth 51mm	1	**9.777 128**	
BZ 50	"Falcon"-tubes, 6 x 50ml, with insulating lid, drill depth 51mm	1	**9.777 129**	
BC 96	PCR plates, 96 well, V bottom	1	**9.777 130**	
BV 96	microtiter plates, 96 well, round or V bottom	1	**9.777 132**	
BF 96	microtiter plates, 96 well, flat bottom	1	**9.777 133**	
BD 96	deep well plates, 96 well, round bottom	1	**9.777 134**	
BM 13	cryo vials, 1.5-2.0ml	1	**9.777 149**	

3 Eppendorf ThermoMixer™ F1.5/Eppendorf ThermoMixer™ FP

NEW!

Eppendorf

To simplify your lab routines. Whether you regularly work with 1.5 mL reaction vessels or microplates (MTP and DWP), our customized systems offer you the perfect solution for your special applications. From 4°C above RT to 100°C, there are no limits to the application possibilities. The ThermoMixer F1.5 is equipped with block for 1.5 mL reaction vessels and the ThermoMixer FP has a block for microplates

- Efficient mixing thanks to 2DMix-Control and anti-spill technology
- Simple and intuitive operation using predefined temperature keys (37°C, 42°C, 56°C and 95°C)
- Improved temperature homogeneity with the new ThermoTop

Specifications

Temperature operation range:	min: +4°C above RT, max: +100°C
Temperature adjustable range:	+1°C/+100°C
Accuracy/Resolution ThermoMixer™ F1.5:	±0.5°C at +20 to +45°C
Accuracy/Resolution ThermoMixer™ FP:	±1.0°C at +20 to +45°C
Max. heating time ThermoMixer™ F1.5:	11°C/min
Max. heating time ThermoMixer™ FP:	18°C/min
Shaking frequency ThermoMixer™ F1.5:	300 to 1500rpm
Shaking frequency ThermoMixer™ FP:	300 to 2000rpm
Orbit:	3mm orbital
Dimensions (WxDxH):	206 x 304 x 131mm
Capacity ThermoMixer™ F1.5:	24 tubes 1.5 ml
Capacity ThermoMixer™ FP:	Microplates/Deepwell plates
Weight ThermoMixer™ F1.5:	6.0kg
Weight ThermoMixer™ FP:	5.8kg
Electrical heating power:	200W (max.)
Power supply:	220 - 240V ±10%, 50/60Hz

Type	PK	Cat. No.
ThermoMixer™ F1.5	1	**9.776 904**
ThermoMixer™ FP	1	**9.776 905**

3


E & OE.

1 Eppendorf ThermoMixer C

NEW!

Eppendorf



The Eppendorf ThermoMixer C combines unique mixing performance with excellent temperature control to consistently guarantee complete, dependable and reproducible test results. Improve your assay results by mixing and incubating samples at the same time.

- Excellent mixing performance due to unique 2DMix-Control technology
- Prevent condensation and improve temperature homogeneity with the new ThermoTop
- Ergonomic design
- Eppendorf QuickRelease™ Technology for fast and simple block exchange of Eppendorf SmartBlocks™
- Highest flexibility thanks to broad choice of exchangeable SmartBlocks™
- Heating, mixing and cooling of all common tubes and microplates with a volume range of 5µl to 50ml

Now you can control the temperature of your samples with ease: The ThermoTop, with unique condensation protection technology, reliably prevents condensation formation on the tube lid and wall. It also improves temperature homogeneity. The Eppendorf ThermoTop does not have a cable connection. It is detected by the device as soon as it is positioned, via inductive signal transmission, and thermo-regulation starts automatically. The sample temperature is not affected: optimal sample protection with optimal reaction conditions produce optimal results.

Specifications

Temperature operation range:	min: 15°C below RT, max: +100°C
Temperature adjustable range:	+1 to +100°C
Accuracy/Resolution:	±0.5°C at +20 to +45°C
Max. heating time:	6°C/min
Max. cooling time:	2.5°C/min between +100°C and RT
Shaking frequency:	300 to 3000rpm
Orbit:	3mm
Dimensions (WxDxH):	206 x 304 x 131mm
Capacity:	dependent on Eppendorf SmartBlock™
Weight:	6.2kg
Electrical heating power:	200W (max.)
Power supply:	220 - 240V ±10%, 50/60Hz

Type	PK	Cat. No.
Eppendorf ThermoMixer™ C	1	**9.776 902**

2 Exchangeable blocks Eppendorf SmartBlocks™ for Eppendorf ThemoMixer™ C and ThermoStat C

NEW!

Eppendorf



Flexibility has never been this easy. Eppendorf offers a variety of SmartBlocks for tubes from 5ml to 50ml.

- Fast and simple block exchange due to Eppendorf QuickRelease
- Optimized block design guarantees maximum temperature transfer to the sample

Type	Description	PK	Cat. No.
Eppendorf SmartBlock™ 0.5 mL	24 tubes, 0.5ml	1	**9.776 906**
Eppendorf SmartBlock™ 1.5 mL	24 tubes, 1.5ml	1	**9.776 907**
Eppendorf SmartBlock™ 2.0 mL	24 tubes, 2.0ml	1	**9.776 908**
Eppendorf SmartBlock™ 5.0 mL	8 Eppendorf Tubes®, 5.0ml	1	**9.776 909**
Eppendorf SmartBlock™ 15 mL	8 conical tubes, 15ml	1	**9.776 910**
Eppendorf SmartBlock™ 50 mL	4 conical tubes, 50ml	1	**9.776 911**
Eppendorf SmartBlock™ 12 mm	24 tubes, diam. 11 to 11.9mm	1	**9.776 912**
Eppendorf SmartBlock™ cryo	24 cryogenic tubes, 1.5 to 2.0ml, all bottom forms	1	**9.776 913**
Eppendorf SmartBlock™ plates	For micro plates and Deepwell plates, incl. lid	1	**9.776 914**
Eppendorf SmartBlock™ PCR 96	PCR plates 96, incl. lid	1	**9.776 915**
Eppendorf SmartBlock™ PCR 384	PCR plates 384, incl. lid	1	**9.776 916**

3 Accessories for Eppendorf Thermomixer ™

NEW!

Eppendorf



Eppendorf ThermoTop® with condens.protect® technology avoids condensation and improves temperature uniformity.
Lid for Eppendorf Thermomixer ™ F1.5 and FP, for Eppendorf Smart Blocks ™ 0.5-2.0 mL, plates, PCR 96 and PCR 384

Type	PK	Cat. No.
Eppendorf ThermoTop®	1	**9.776 918**
Lid	1	**9.776 917**

1



1 Thermoshaker PCMT for microtubes and PCR plates

Grant

Variable speed, variable temperature heating and cooling thermoshaker with a choice of blocks for microtubes and microplates. The PMCT can cool down to 15°C below ambient temperature.
- Fast heat-up and cooling times
- Temperature setting range +4°C to +100°C
- Temperature control range 15°C below ambient to +100°C
- Shaking speed: 250 to 1400 rpm
- Temperature uniformity at 37°C: ±0.1°C

Choice of 5 interchangable blocks:
- HC18 20 (20 x 0.5ml and 12 x 1.5ml microtubes)
- HC32 (20 x 0.2ml and 12 x 1.5ml microtubes)
- HC24 (24 x 2ml microtubes)
- HC96 (96-well microplate for PCR, 0.2ml)

Block is required and not included in delivery. Please order separately.

Applications:
- Genetic analyses, extraction of DNA, RNA and further sample preparation
- Biochemical studies of enzymatic reactions and processes
- Extraction of metabolites from cellular material

Type	PK	Cat. No.
PCMT	1	**9.721 050**

2



9.721 052

Accessory blocks for Thermoshaker PCMT

Grant

Type	PK	Cat. No.
Block HC24N for 24 x 1.5ml microtubes	1	**9.721 073**
Block HC18 for 20 x 0.5 + 12 x 1.5ml microtubes	1	**9.721 052** 2
Block HC24 for 24 x 2.0ml microtubes	1	**9.721 053**
Block HC32 for 20 x 0.2 + 12 x 1.5ml microtubes	1	**9.721 054**
Block HC96 for 96-well microplates (0.2ml)	1	**9.721 055**

3



6.234 725

Microtube thermoshaker PHMT

Grant

The PHMT is a compact and versatile thermoshaker, ideal for applications requiring heating and shaking in microtubes and suitable for use in cold rooms and incubators (operating temperature range 4 to 40°C). It is effectively three instruments in one: a microtube thermoshaker, a compact benchtop incubator without shaking, a microtube shaker without temperature control. By combining the mixing operation with the incubation phase, reaction process times and operator workload are reduced and efficiency of many procedures is increased, resulting in a higher throughput.
- temperature range: ambient +5 to 100°C
- uniformity at 37°C: ±0.1°C
- shaking speed: 250rpm to 1400rpm
- timed shaking operation: 1 min to 96 hours
- rapid heat-up
- continuous or timed operation, with alarm buzzer and automatic switch-off facility
- incl. interchangeable block

4



9.721 079

Type	For	PK	Cat. No.
PHMT-PSC18	20 x 0.5 ml + 12 x 1.5 ml	1	**6.234 725** 3
PHMT-PSC32	20 x 0.2 ml + 12 x 1.5 ml	1	**9.721 079** 4
PHMT-PSC24	24 x 2.0 ml	1	**9.721 041**
PHMT-PSC24N	24 x 1.5 ml	1	**9.721 072**
PHMT-PSC96	1 x 96 well	1	**9.721 080**

E & OE.

1 Accessory blocks for Microtube thermoshaker PHMT

Grant

Type	PK	Cat. No.
Block PSC18 for 20 x 0.5 + 12 x 1.5 microtubes	1	**9.721 036**
Block PSC24 for 24 x 2.0ml microtubes	1	**9.721 042**
Block PSC24N for 24 x 1.5ml microtubes	1	**9.721 071**
Block PSC32 for 20 x 0.2 + 12 x 1.5ml microtubes	1	**9.721 043**
Block PSC96 for 96-well plates (0.2ml)	1	**9.721 044**

1



Thermo shaker AccuTherm

NEW!

Labnet

The AccuTherm is a temperature controlled mixer that uses peltier technology to rapidly heat and cool precious samples. The combination of heating/cooling with mixing makes the AccuTherm ideal for many life science research applications in the fields of molecular biology, biochemistry and clinical chemistry. It's compact footprint incorporates an intuitive control panel with a large multicolor display, which allows users to easily program and view temperature, time and speed settings. Eight interchangeable aluminum blocks accommodate PCR plates and tubes ranging in size from 0.2ml to 15ml.

Specifications

Temperature operation range:	Amb. -14°C to +100°C
Temperature adjustable range:	0°C to +105°C
Accuracy/resolution:	±0.5°C/0.5°C
Max. heating time:	6.5°C/min
Max. cooling time:	1.5°C/min
Shaking frequency:	300 to 1500rpm
Orbit:	3mm
Dimensions (WxDxH):	330 x 166 x 240mm
Capacity:	1 exchangeable block*
Weight:	8.5kg
Electrical heating/cooling power:	150W
Supply requirements:	230V, 50/60Hz

Description	PK	Cat. No.
Shaking incubator AccuTherm	1	**6.261 411** 2
Block A for 40 x 1.5ml reaction tubes	1	**6.261 695**
Block B for 54 x 0.5ml reaction tubes	1	**6.261 696**
Block C for 96 x 0.2ml reaction tubes	1	**6.261 697** 3
Block D for 24 x 15ml reaction tubes	1	**6.261 698**
Block E, water bath (115 x 73 x 38mm)	1	**6.261 699**
Block G for 26 x 0.5ml and 24 x 1.5ml reaction tubes	1	**6.261 706**
Block H for 40 x 2.0ml reaction tubes	1	**6.261 707**
Block J for 96 well Elisa plates	1	**6.261 708** 4

*Exchangeable blocks are not included in delivery.

2



6.261 411

3



6.261 697

4



6.261 708

1 Shaking Incubators VorTemp™ 56/ 1550

Labnet

VorTemp 56 is supplied with interchangeable platforms for microtubes (56 x 1.5ml tubes, or small tubes with adapters) or microplates (accepts standard and deepwell plates, up to 2.0ml). VorTemp 1550 includes platforms for 8 x 50ml and 18 x 15ml tubes.
The shaker in the VorTemp 56 may be turned off, allowing the unit to be used as a static incubator.
- shake and incubate samples simultaneously
- interchangeable platforms
- broad temperature and speed range
- intelligent control with digital LED display

1





Specifications

Temperature range	Ambient + 5°C to 99°C
Temperature accuracy	±0.5°C
Speed range:	
Vortemp 56	200 to 1200rpm
VorTemp 1550	200 to 900rpm
Motion/orbit	Circular/3mm
Timer	1 to 99 minutes or continuous
Capacity:	
Vortemp 56	56 x 1.5/2.0ml tubes, 4 standard or 2 deep well microplates
VorTemp 1550	18 x 15ml, 8 x 50ml tubes
Dimensions (WxDxH):	
VorTemp 56	23 x 31 x 23cm
VorTemp 1550	26 x 31 x 31cm
Weight:	
VorTemp 56	11kg
VorTemp 1550	12kg
Electrical	230V 50Hz or 120V 60Hz

Description	PK	Cat. No.
VorTemp 56	1	**9.945 760**
VorTemp 1550	1	**9.945 761**
Additional platform for microtubes	1	**9.945 762**



E & OE.

Shakers, Disruptor Genie® analog/digital

Scientific Industries

For cell disruption and homogenisation. The patented Disruptor Genie® provides a multi-directional action, which simultaneously agitates and vortexes at high speed, dramatically increasing cell disruption or sample resuspension efficiency.

- Digital model for accurate, repeatable and reproducible results
- Dramatically increased sample disruption efficiency. Ideal for difficult glass bead procedures (Glass beads - please order separately), cell disruption/homogenisation of yeast, bacteria, plant and animal tissues and pellet resuspensions or anything that requires extremely violent, high-speed agitation.
- Patented multi-directional action simultaneously agitates and vortexes at high-speed producing greater yields in less time
- Hands-Free disruption of up to twelve 1.5ml or 2.0ml microtubes with timer from 0 to 15 minutes (Disruptor Genie® analog), 0 to 99 minutes (Disruptor Genie® digital) or continuous operation
- Performance comparable to expensive ultrasonic cell disruptors/homogenisers.
- Suitable for use in cold rooms or incubators
- Remove the microtube holder and attach the supplied pop-off cup for high-speed vortexing of single test tubes

Supplied with: Disruptor Genie + Tube holder for 12 tubes

Specifications

Speed	
Disruptor Genie® analog:	2850rpm
Disruptor Genie® digital:	1000 to 2850rpm
Dimensions (WxDxH):	122 x 165 x 190mm
Weight:	4.3kg
Supply requirements:	220V 50Hz, 250mA

Type	Connector	PK	Cat. No.	
Disruptor Genie® analog	EU	1	**9.730 115**	1
Disruptor Genie® analog	UK	1	**9.730 116**	
Disruptor Genie® analog	CH	1	**9.730 117**	
Disruptor Genie® digital	EU	1	**6.253 276**	2
Disruptor Genie® digital	UK	1	**9.730 118**	
Disruptor Genie® digital	CH	1	**9.730 119**	

1



9.730 115

2



6.253 276

Accessories for Disruptor Genie®

Description	PK	Cat. No.	
Microtube Holder for 12 x 1.5 or 2.0ml tubes	1	**6.253 281**	3
0.1mm Disruptor Beads, 375g	1	**9.730 100**	
0.5mm Disruptor Beads, 375g	1	**9.730 101**	

3



6.253 281

Tubes please see page 1279.

Cell disruption please see page 1262.

1



1 Homogeniser, POLYTRON® PT 1200 E

KINEMATICA GmbH

This handheld homogeniser is ideal for quick processing of small sample quantities and volumes, for example in Life science or genetic.

Application volume: 0.05 to 250ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 12 m/s
- Ergonomic design and various models of dispersing aggregates in Easy-to-Clean design

Applications:
- General homogenisation applications (dispersion and emulsification)
- Sample preparation for subsequent extraction of pharmaceutical agents (API)
- Cell disruption, RNA/DNA isolation from tissue
- Dispersion of small quantities from plants, animals or human tissue

Please order tools separately.

Specifications

Application volume:	0.05 to 250ml
Motor input power:	100W
Aggregates:	dia. 3, 5, 7 and 12mm and dia. 20mm X EC-E116 Aggregat
Speed range:	Stepless up to 25.000min^{-1}
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	220 x 44 x 55 mm
Weight drive:	440g
Tested to:	EN/IEC 61010, 61326-1

Type	PK	Cat. No.
PT 1200 E, 230V (with EU-plug)	1	**9.571 492**

2



2 Homogeniser, POLYTRON® PT 2500 E

NEW!

KINEMATICA GmbH

The PT2500 E is the ideal solution for cost-conscious laboratories. It is able to perform a lot of applications.

- Application volume 0.05 to 2500ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 32 m/s
- Speed remains constant even when viscosity changes
- Various models of dispersing aggregates in Easy-to-Clean design

Applications:
- General homogenisation applications (dispersion and emulsification)
- Formulation of lotions, creams and food
- Production of oil-water emulsions

Please order tools separately.

Specifications

Application volume:	0.05 to 2500ml
Motor input power:	500W
Aggregates:	dia. 3, 5, 7 and 12mm and dia. 20mm and 25mm
Speed range:	Stepless 500 to 30.000min^{-1}
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	157 x 76 x 236mm
Tested to:	IEC/EN61326-1/IEC/EN 61000-6-2/EN 61000-6-4 IEC/EN 61010-2-51

Type	PK	Cat. No.
POLYTRON® PT 2500 E	1	**4.013 108**

Suitable tools please see page 549.

E & OE.

1 2 Spectrophotometer Genova Plus, for Life Science

Jenway

The Genova Plus is a UV/visible spectrophotometer dedicated to life science analysis. This spectrophotometer allows the measurement of DNA concentration dsDNA, ssDNA, RNA, Oligonucleotides, 260/ 280, 260/ 230, Variable ratio., with an optional correction at 320nm.The Genova Plus is pre-programmed with Bradford, Lowry, Biuret, BCA and Direct UV methods for protein analysis. The Genova Plus has an OD measurement mode enabling users to measure optical density at 600nm for cell harvesting. The purity scan across the entire wavelength range from 198nm to 1000nm displays any distorted peaks enabling impurities to be easily identified. With the touch of a button the Genova plus can be converted to a standard spectrophotometer for basic scanning, quantification, kinetics and multi-wavelength operations. 2 in 1 Spectrophotometer.

- Improved navigation system for easy and intuitive usability
- Improved optics
- Pre-programmed for DNA/RNA analysis
- DNA purity scan across entire wavelength range
- Protein methods pre-loaded
- Standard spectrophotometer functions
- Press to read xenon lamp
- Icon driven software
- Small footprint
- Save methods and results to USB memory stick
- 3 year warranty including xenon lamp

Supplied with: Single micro-cuvette holder, 4GB USB memory stick, instruction manual and universal power supply.

1



2



Specifications

Wavelength	
Range:	198 to 1000nm
Wavelength repeatability:	±0.5nm
Resolution:	1nm
Accuracy:	±2nm
Spectral bandwidth:	5nm
Scan interval:	1, 2 and 5nm
Photometrics	
Absorbance Range:	-0.300 to 2.500A
Transmittance Range:	0 to 199.9%T
Photometric Accuracy:	±1%T, ±0.01A at 1.000 Absorbance
Concentration/Quantitation	
Range:	0 to 9999
Resolution:	Selectable 1/0.1/0.01/0.001
Outputs:	USB, Analogue, RS-232, internal printer (optional)
Dimensions (WxDxH):	275mm x 400mm x 220mm
Weight:	6kg

Type	PK	Cat. No.
Life Science Analyser Genova Plus	1	**9.775 160**

Accessories for Spectrophotometer Genova Plus

NEW!

Jenway

Description	PK	Cat. No.
Internal printer	1	**9.775 434**
TrayCell for ultra-micro sample volumes	1	**9.775 438**
Micro-cuvette holder with reduced aperture	1	**9.775 437**
10x10mm path length cuvette holder	1	**9.775 161** 3
10x100mm path length cuvette holder	1	**9.775 430** 4
16/24mm test tube holder	1	**9.775 436**
Water heated 10x10mm path length cuvette holder	1	**9.775 162**
8 cell automatic turret	1	**6.254 445** 5
Sipper pump	1	**9.775 163**
Peltier pump	1	**6.254 430**
Combined Sipper/Peltier	1	**9.775 164** 6
Dust cover	1	**9.775 165**
4GB USB memory stick	1	**9.775 166**
Paper roll for printer	1	**9.775 167**

3



9.775 161

4



9.775 430

5



6254 445

6



9.775 164

Further spectrophotometer please see page 1041.

1



2



1 2 Spectrophotometer Genova Nano

Jenway

The Genova Nano micro-volume spectrophotometer measures small sample volumes as low as 0.5µl with a high degree of accuracy, reproducibility and speed. It has the ability to measure small sample volumes, conserves precious samples, reduces the need for dilutions and eliminates the requirement for cuvettes. Cleaning is quick and simple; wiping the read heads with a microfiber cloth removes all trace of the sample, allowing faster change over between samples and therefore increasing sample throughput.

3 in 1 Spectrophotometer
Standard Spectrophotometer with all the functions of the 7315. With measurement modes for photometrics, concentration, multi-wavelength, spectrum scanning, quantitation and kinetics.
Life Science Spectrophotometer with all the functions of the Genova plus. Additional measurement modes for the measurement of nucleic acid purity, protein assays, nucleic acid concentration and optical density of cell cultures add to the flexibility of the Genova Nano.
Micro-volume Spectrophotometer: Making measurements easier, quicker and less strenuous for 0.2 to 0.5 µl samples.

- Micro-volume, life science and standard spectrophotometer in one
- Ideal for DNA, RNA and Protein measurements
- Only 0.5µl sample volume required
- Purity scan over entire wavelength range, 198 to 1000nm
- Detects DNA concentrations as low as 2ng/µl
- Easy and quick to clean
- Results are reproducible, accurate and easily obtained
- Method and result saving to USB memory stick
- 3 year warranty including Xenon lamp

Specifications

Wavelength	
Range:	198 to 1000nm
Accuracy:	±2nm
Spectral Bandwidth:	5nm
Path Length:	0.2 or 0.5mm (auto-ranging)
Photometrics	
Absorbance Range:	15 to 125A (10mm equivalent)
Absorbance Accuracy:	±2% at 260nm
Absorbance Precision:	<0.005A between 0 and 1A (at 260nm and 0.5mm)
Concentration/Quantitation	
Maximum Concentration:	6000ng/µl (dsDNA) (at 0.2mm)
Detection Limit:	2ng/µl (dsDNA) (at 0.5mm)
Measurement Time:	<6.5 seconds
Minimum Sample Size:	0.5µl (at 0.2mm) 1.0µl (at 0.5mm)
Maximum Sample Size:	5µl (in Nano mode)
DNA measurement modes:	dsDNA, ssDNA, RNA, Oligonucleotides, 260/280, 260/230, Variable ratio
Protein measurement modes:	BCA, Bradford, Lowry, Biuret, Direct UV
Dimensions (WxDxH):	275 x 400 x 220mm
Weight:	7.7kg

Type	PK	Cat. No.
Genova Nano	1	**9.775 171**

3



3 Micro Volume Analysis TrayCell

Hellma Analytics

Fibre-Optic Micro Measuring Cell. Accessory for standard spectrophotometer for droplet analysis.
Sample volume 0.7µl to 10µl.

Typical applications are:
- nucleic acid analysis.
- determination of the incorporation frequency of fluorescent dye labels (FOI).
- protein analysis (A280, BCA, Lowry etc.).
- all UV/Vis analysis utilising wavelength range 190nm to 1100nm.
- material: SUPRASIL® quartz.

Please state the required cell centre height (8.5mm, 15mm or 20mm) when placing your order! TrayCell is supplied as standard with caps for both 0.2mm and 1mm light path. Additional light path of 0.1mm and 2mm are available.

Path length	Capacity	Height	Centre height	PK	Cat. No.
mm	µl	mm	mm		
0,2 / 1	0,5 to 10	68.5 / 75 / 80	8.5 / 15 / 20	1	**6.224 913**
0,2 / 1	0,5 to 10	53 / 59.5 / 64.5	8.5 / 15 / 20	1	**6.230 433**

E & OE.

Densitometer DEN-1/DEN-1B

1

Compact and efficient benchtop densitometers for measuring turbidity of cell suspensions in a variety of life science applications. The densitometers are designed and factory calibrated to measure turbidity in the range of 0.3 to 5.0 McFarland units (DEN-1) 0.00 to 6.00 McFarland units (DEN-1B) with a small standard deviation. If required, they can deliver a wider measurement range (up to 15.00 McFarland units), but with a greater standard deviation.

Grant

Specifications

Light source:	light diode
Wavelength:	565nm ±15nm
Measuring range DEN-1:	0.3 to 5.0McF
Measuring range DEN-1B:	0.0 to 6.00McF
Standard deviation at 3.00 McF units:	±0.1McF
Precision:	±3%
Measurement time:	1sec
Tubes diameter, external:	18mm
Tube diameter with D16 adapter (included):	16mm
Sample volume:	≥2ml
Dimensions (WxDxH):	165 x 115 x 75mm
Power supply:	12V (DEN-1B additionally 3 x AAA batteries)



9.721 057

Type	Description	PK	Cat. No.
DEN-1		1	**6.234 576**
DEN-1B		1	**9.721 057** 1
DEN MCF STDS	Set of 5 reference standards (0.5/1.0/2.0/3.0/4.0)	1	**6.237 141**
DEN MCF 18 STDS	Set of 5 reference standards (diam. 18mm)	1	**9.721 068**

3 Cell density meter DSM

NEW!

2

For measurement of E. Coli, yeast cells and other biological agents in suspension at 600nm wavelength

Laxco, Inc.

- Determination of McFarland units,% transmission (% T) and absorption (Abs)
- Portable, light-weight and battery-powered instruments
- Easy-to-use and easy-to-clean touch panel
- Small, space saving footprints
- Interval-mode for time-lapse recording

The single cuvette model DSM-Cuvette accepts 10mm path length semi-micro and macro cuvettes or 14 to 17 mm round tubes. The DSM-Micro model can work with volumes down to 20 micro litres saving reagents and allowing a high number of experiments e.g. when working with small volume samples. The multiple channel model DSM-Dual combines the features of DSM-Cuvette and DSM-Micro and therefore allows multiple samples to be tested at once increasing sample through-put and reducing labour overhead. All models are equipped with a drain channel under the sample site.



6.266 312

Further Features:

- One button operation, extremely easy workflow to allow quick testing
- USB 2.0 port for data collection, support automated data collection
- Direct results viewing on the instrument's screen
- LED light source for no maintenance and extended instrument life
- Fully built-in controls, no PC or software required
- Sofware for saving data as excel files available (please order separately)

3



Specifications

Wavelegth:	600nm
Bandwidth:	10nm
Reproducibility:	±0.02Abs at 1Abs
Absorbency Accuracy:	±0.05Abs at 1Abs
Absorbency Range:	-0.3 to 2.99 Abs
Stray light:	<1% T
Path length:	10mm
Memory:	2000 data points
Display:	LCD/3.5"
Dimensions (WxDxH):	173 x 194 x 84mm
Power requirements:	NiMH battery or power supply 100-240V

Type	PK	Cat. No.
DSM-Micro	1	**6.266 310**
DSM-Cuvette	1	**6.266 311**
DSM-Dual	1	**6.266 312** 2
Software for Density meters DSM	1	**6.266 313**

Vials 1318

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General information about vials and caps

Technical Information – Vials

In chromatography a broad variety of glass or plastic vials are used as sample containers for analysis usage. As they are mainly used within autosamplers or any other automatic instrument, strict obedience of all dimensions is crucial for a trouble-free run. Besides these physical properties the vials also have to fulfill requirements regarding inertness and cleanliness, as otherwise analysis results may be incorrect.
LLG Labware consider the physical and chemical demands in their production process by various implementations:

Almost all vials are made out of 1st hydrolytic class glass. First hydrolytic class glass is very hard and has a low expansion coefficient even at high temperature variations. It shows an excellent chemical resistance to acidic and neutral solutions, and even to alkaline solutions due to its relatively low Alkali content. Higher density of the glass surface offers a higher hydrolytic resistance. Clear Glass of 1st hydrolytic class is differentiated by 33 expansion (Type 1, Class A) and 51 expansion glass (Type 1, Class B), whereas amber is generally worldwide only available as 51 expansion glass. The indicated lower expansion coefficient of 33 implies that this harder clear glass has to be processed at higher temperatures. These amount to approx. 1,200°C for 33 expansion glass in comparison to only approx. 1,000°C for glass of 51 expansion. In the USA typically clear glass in 33 expansion and amber glass in 51 expansion is used, whereas in Europe solely 51 expansion glass is processed. From a quality point of view both types of glass are equally suitable for usage in chromatography, as they both are glasses of 1st hydrolytic class.

Technical Information – Seals

Seals are the assembled combination of a cap and a septa. To carry out a correct analysis, it is important that besides the vial the seal is also inert and uncontaminated The closures sold by LLG Labware are automatically assembled and packed according to internally defined conditions of the supplier. Photocells check the side-orientation of the liner, so that it is ensured that the PTFE lamination is always directed towards the sample to build an inert barrier between sample and carrier material of the septa. A gauge control ensures that not more or less than one septa is installed. The final seals are automatically counted – and not weighed – by automates to guarantee quantity obedience. They are packed in tamper-proof evident zip-lock bags that allow easy identification of the content due to the transparent PE material. The zip-lock enables resealing of the bag to avoid any contamination of the closures during consumption. The batch number of the manufactured seal is printed on each PE-bag for traceability.

Technical Information – Septa

The right choice of septa depends on the application. Almost all septa are laminated on one side with PTFE, which has a high chemical resistance and forms an inert barrier between sample and carrier material of the septa. The carrier materials have different physical and chemical properties, such as temperature resistance, resealability properties, cleanliness, hardness, thickness, etc.

The individual conditions of the customer's application aim at the specific characteristics of the carrier material, e.g.:

Multiple injection?	Temperature?			Thin, fragile needle?	Blunt, thick needle?	Critical analysis?	Low coring?
↓ good resealability properties necessary ↓ Natural Rubber/TEF	-40°C up to 120°C ↓ Natural Rubber/ TEF; Butyl/ PTFE	-40°C up to 110°C ↓ Red Rubber/ PTFE	-60°C up to 200°C ↓ Silicone/ PTFE	↓ soft and thin septa required ↓ e.g. Silicone/PTFE	↓ Slitted/pre-cut liner as penetration aid (HPLC) ↓ e.g. 08 02 0039	↓ very clean liner required ↓ Silicone/ PTFE septa	↓ Both sided PTFE laminated liners required ↓ PTFE/Silicone/PTFE PTFE/Butyl/PTFE

E & OE.

LLG - Vials and autosamplers: compatibility chart

Agilent

Alternative LLG Labware products for use on Agilent GC, HPLC and Headspace instruments.

Agilent GC Products

	Crimp Neck ND 8	Agilent Art.-No.	Screw Neck ND9	Agilent Art.-No.	Crimp Neck ND11	Agilent Art.-No.
Vials	4.001 554	5180-0841	9.003 448	5182-0714	7.086 520	5181-3375
	6.235 006	5180-0844	6.803 174	5182-0715	7.608 160	5182-0543
			6.088 871	5182-0716	7.620 828	5181-3376
			4.008 249	5183-2030	6.233 918	9301-1388
			6.266 869			
			6.260 742			
			6.260 743			
Micro-Inserts			7.401 744	5183-2085	7.401 744	5183-2085
			6.093 247	5181-1270	6.093 247	5181-1270
			4.008 196	5181-3377	4.008 196	5181-3377
Seals	9.003 444	5180-0842	4.008 228	5182-0717	4.008 243	5181-1210
			9.003 451	5182-0720	9.003 446	5182-0552
			4.008 218	5182-0723	7.050 759	5181-1211
			4.008 216	5182-0717	4.001 564	5188-5386
			4.008 214	5185-5823	4.008 239	5181-1210

Agilent HPLC Products

	Screw Neck ND9	Agilent Art.-No.	Crimp Neck ND11	Agilent Art.-No.	Snap Ring ND11	Agilent Art.-No.
Vials	9.003 448	5182-0714	7.086 520	5181-3375	6.073 833	5182-0544
	6.803 174	5182-0715	7.608 160	5182-0543	7.622 228	5182-0546
	6.088 871	5182-0716	7.620 828	5181-3376	7.613 330	5182-0545
	6.266 869					
	6.260 742					
	6.260 743					
	4.008 249	5183-2030	6.233 918	9301-1388	4.008 255	5188-6593
Micro-Inserts	7.401 744	5183-2085	7.401 744	5183-2085	7.401 744	5183-2085
	6.093 247	5181-1270	6.093 247	5181-1270	6.093 247	5181-1270
	4.008 196	5181-3377	4.008 196	5181-3377	4.008 196	5181-3377
Seals	4.008 228	5182-0717	4.008 243	5181-1210	4.008 257	5182-3458
	9.003 451	5182-0720	9.003 446	5182-0552	4.008 258	5182-0541
	4,008 218	5182-0723	7.050 759	5181-1211	4.008 259	5182-0566
	4.008 216	5182-0717	4.001 564	5188-5386	4.008 256	5183-4511
	4.008 214	5185-5823	4.008 239	5181-1210		
	4.008 215	5185-5824	4.001 555			
	4.001 521	5183-2076				

Agilent Headspace Products

	Headspace Screw ND 18 (Combi Pal + G 1888A)	Agilent Art.-No.	Headspace Crimp Neck ND 20	Agilent Art.-No.
Vials	9.003 466	5188-5392	7.050 285	5182-0838
	6.227 874	5188-6538	9.003 452	5182-0837
	4.008 270	5188-2753	7.401 840	5183-4474
	6.237 909	5188-6537		
	7.401 840	5183-4474		
Seals	4.008 268	5188-2759	4.001 557	5183-4479
			9.003 460	5183-4477
			9.003 453	5183-4474

Autosampler compatibility chart

The autosampler compatibility chart generally shows the most typical LLG-Labware vials and closures for usage on instruments of different manufacturers. Additionally the corresponding part number of the manufacturer is indicated. Beside these there also may be further products in our catalogue which may technically and functionally be suitable. We will gladly recommend other suitable products.

If applicable for a manufacturer, each table has been divided by the application HPLC, GC and Headspace. We generally recommend asking for cost-free samples for testing purposes.

We kindly ask for your understanding that we do not take any guarantee for the correctness nor for the completeness of the data indicated here.

E & OE.

LLG - Vials and autosamplers: compatibility chart

C T C Analytics

Alternative LLG Labware products for use on CTC Analytics GC, HPLC and Headspace instruments.

CTC Analytics GC Products

	Crimp Neck ND 8	C T C Art.-No.	Screw Neck ND9	C T C Art.-No.	Crimp Neck ND11	C T C Art.-No.
Vials	4.001 554		9.003 448		7.086 520	
	6.235 606		6.803 174		7.608 160	
	4.001 515		6.088 871		7.620 828	
	6.902 044		4.008 249		6.233 918	
	4.008 202		6.266 869			
	4.008 203		6.260 742			
			6.260 743			
Micro-Inserts			7.401 744		7.401 744	
			6.093 247		6.093 247	
			4.008 196		4.008 196	
Seals	9.003 444		4.008 228		4.001 564	GC PAL
	4.008 198		9.003 451		9.003 446	
			4.001 521		7.050 759	
			4,008 218			
			4.008 215			
			4,008 218			
			4.008 215			

CTC Analytics HPLC Products

	Crimp Neck ND 8	C T C Art.-No.	Screw Neck ND9	C T C Art.-No.	Crimp Neck ND11	C T C Art.-No.	Snap Ring ND11	C T C Art.-No.
Vials	4.001 554		9.003 448		7.086 520		6.073 833	
	6.235 606		6.803 174		7.608 160		7.622 228	
	4.001 515		6.088 871		7.620 828		7.613 330	
	6.902 044		4.008 249		6.233 918		4.008 255	
	4.008 202		6.266 869					
	4.008 203		6.260 742					
			6.260 743					
Micro-Inserts			7.401 744		7.401 744		7.401 744	
			6.093 247		6.093 247		6.093 247	
			4.008 196		4.008 196		4.008 196	
Seals	9.003 444		4.008 228		4.008 243		4.008 258	
	4.008 198		9.003 451		9.003 446		4.008 259	
			4.001 521		7.050 759			
			4,008 218					
			4.008 215					
			4,008 218					
			4.008 215					

CTC Analytics Headspace Products

	Headspace Screw Neck ND 18 (Combi Pal)	C T C Art.-No.	Headspace Crimp Neck ND 20 (Combi Pal)	C T C Art.-No.
Vials	9.003 466		7.850 009	
	6.227 874		9.003 453	
	4.008 270			
	6.237 909			
Seals	4.008 268		7.850 010	
	6.241 111		6.234 541	

E & OE.

LLG - Vials and autosamplers: compatibility chart

Dionex

Alternative LLG Labware products for use on Dionex HPLC instruments.

Dionex HPLC Products

	Crimp Neck ND 8	Dionex Art.-No.	Screw Neck ND8	Dionex Art.-No.	Screw Neck ND9	Dionex Art.-No.	Crimp Neck ND11	Dionex Art.-No.	Snap Ring ND11	Dionex Art.-No.
Vials	4.008 206		9.003 481		9.003 448		7.086 520		6.073 833	
	6.235 606		7.613 087		6.803 174		7.608 160		7.622 228	
	4.001 554		9.003 480		6.088 871		7.620 828		7.613 330	
			7.613 388		4.008 249		6.233 918		4.008 255	
					6.266 869					
					6.260 742					
					6.260 743					
Micro-Inserts			7.401 066		7.401 744		7.401 744		7.401 744	
			4.001 556		6.093 247		6.093 247		6.093 247	
			4.008 194		4.008 196		4.008 196		4.008 196	
Seals	4.008 200		4.008 209		4.008 228		4.008 243		4.008 257	
	9.003 444		9.003 484		9.003 451		9.003 446		4.008 258	
			6.232 178		4.001 521		7.050 759		4.008 259	
					4.008 214		4.001 555		4.008 256	
					4.008 215					

Autosampler compatibility chart

The autosampler compatibility chart generally shows the most typical LLG-Labware vials and closures for usage on instruments of different manufacturers. Additionally the corresponding part number of the manufacturer is indicated. Beside these there also may be further products in our catalogue which may technically and functionally be suitable. We will gladly recommend other suitable products.

If applicable for a manufacturer, each table has been divided by the application HPLC, GC and Headspace. We generally recommend asking for cost-free samples for testing purposes.

We kindly ask for your understanding that we do not take any guarantee for the correctness nor for the completeness of the data indicated here.

LLG - Vials and autosamplers: compatibility chart

PerkinElmer

Alternative LLG Labware products for use on Agilent GC, HPLC and Headspace instruments.

PerkinElmer GC Products

	Crimp Neck ND 8	PerkinElmer Art.-No.	Screw Neck ND9	PerkinElmer Art.-No.	Screw Neck ND10	PerkinElmer Art.-No.	Crimp Neck ND11	PerkinElmer Art.-No.
Vials	6.235 606	N9302136	9.003 448	N9306201	6.242 103		7.086 520	N9301385
	9.003 427	N9301069	6.803 174	N9306201	7.615 715		7.608 160	N9301385
			4.008 247	N9306220	6.238 867		7.620 828	N9302680
			6.088 871	N9306220				
			6.266 869					
			6.260 742					
			6.260 743					
Micro-Inserts			6.093 247	N9300703	6.093 247	N9300703	6.093 247	N9300703
			4.008 196	N9300704	4.008 196	N9300704	4.008 196	N9300704
Seals	4.001 558	N9302140	4.008 228	N9306200	4.008 234	N9306205	7.060 469	N9306230
	9.003 443	03300806	9.003 451	N9306202	4.008 235	N9306205	4.008 243	N9306015
	4.008 200	03300806	4.008 214	N9306202			4.001 522	N9302684
							7.300 348	N9302685
							6.900 233	N9302686
							9.003 446	N9306228
							7.050 759	N9306229

PerkinElmer HPLC Products

	Crimp Neck ND 8	PerkinElmer Art.-No.	Screw Neck ND9	PerkinElmer Art.-No.	Screw Neck ND10	PerkinElmer Art.-No.	Crimp Neck ND11	PerkinElmer Art.-No.	Snap Ring ND11	PerkinElmer Art.-No.
Vials	6.235 606	N9302136	9.003 448	N9306201	6.242 103		7.086 520	N9301385	6.073 833	N9303418
			6.803 174	N9306201	7.615 715		7.608 160	N9301385	7.622 228	
			4.008 247	N9306220	6.238 867		7.620 828	N9302680	7.613 330	
			6.088 871	N9306220						
			6.266 869							
			6.260 742							
			6.260 743							
Micro-Inserts			6.093 247	N9300703	6.093 247	N9300703	6.093 247	N9300703	6.093 247	N9300703
			4.008 196	N9300704	4.008 196	N9300704	4.008 196	N9300704	4.008 196	N9300704
Seals	9.003 443	03300806	4.008 228	N9306200	4.008 234	N9306205	7.060 469	N9306230	6.073 555	N9303417
	4.008 200	03300806	9.003 451	N9306202	4.008 235	N9306205	4.008 243	N9306015	4.001 544	N9303419
			4.008 214	N9306202	4.008 237	N9306052	4.001 522	N9302684	4.008 256	N9303416
			4.001 521	N9306203			7.300 348	N9302685		
							6.900 233	N9302686		
							9.003 446	N9306228		
							7.050 759	N9306229		
							4.001 555			

PerkinElmer Headspace Products

	Headspace Screw Neck ND 18 CTC Combi Pal + Turbo Matrix™ HS16+40	PerkinElmer Art.-No.	Headspace Crimp Neck ND20 CTC Combi PAL	PerkinElmer Art.-No.	Headspace Crimp Neck ND20 Turbo Matrix™ HS 16, 40 + 110 *** not suitable for TurboMatrix™ 110	PerkinElmer Art.-No.
Vials	9.003 466	N6356479	7.850 009	N6356478	7.052 186 ***	N9302134
	6.227 874		9.003 453	N6356471	7.060 463	N9306079
	4.008 270	N9306075			4.008 281	N9303349
	6.237 909					
Seals	4.008 268	N9306077	7.850 010	N6356559	4.001 557	N9306266
	6.241 111	N6356475	6.234 541	N6356566	9.003 455	N9306266
			6.902 419	N6356562	4.008 276	N9306266
			6.229 635	N6356560	9.003 456	B0104241
			4.001 548	N6356560	7.050 286	B0104242
					7.060 477	B0110728
					7.060 433	B0038137

E & OE.

LLG - Vials and autosamplers: compatibility chart

Shimadzu

Alternative LLG Labware products for use on Shimadzu GC, HPLC and Headspace instruments.

Shimadzu GC Products

	Crimp Neck ND 8	Shimadzu Art.-No.	Screw Neck ND9	Shimadzu Art.-No.	Screw Neck ND10	Shimadzu Art.-No.	Crimp Neck ND11	Shimadzu Art.-No.	Screw Neck ND13	Shimadzu Art.-No.
Vials	4.001 554		9.003 448		6.242 103		7.086 520	980-01705	9.003 482	
	6.235 006		4.008 247				7.608 160		7.058 142	
	4.001 515		4.008 249				7.620 828			
	6.902 044		6.266 869				6.233 918			
	4.008 202		6.260 742							
	4.008 203		6.260 743							
Micro-Inserts			7.401 744	980-04987	7.401 744	980-04987	7.401 744	980-04987	7.055 4856	
			6.093 247	980-01707	6.093 247	980-01707	6.093 247	980-01707		
			4.008 196		4.008 196		4.008 196			
Seals	9.003 444		9.003 451		4.008 234		4.001 564	0980-01706	7.510 053	
	4.008 198		4.008 218		4.008 235		9.003 446			
			4.008 214		4.008 236		7.050 759			

Shimadzu HPLC Products

	Crimp Neck ND 8	Shimadzu Art.-No.	Screw Neck ND9	Shimadzu Art.-No.	Screw Neck ND10	Shimadzu Art.-No.	Crimp Neck ND11	Shimadzu Art.-No.	Snap Ring ND 11	Shimadzu Art.-No.
Vials	4.001 554		9.003 448		6.242 103		7.086 520	980-01705	6.073 833	
	6.235 006		4.008 247				4.001 565		6.224 358	
			4.008 249				4.001 516			
			6.266 869							
			6.260 742							
			6.260 743							
Micro-Inserts			7.401 744	980-04987	7.401 744	980-04987	7.401 744	980-04987	7.401 744	980-04987
			6.093 247	980-01707	6.093 247	980-01707	6.093 247	980-01707	6.093 247	980-01707
			4.008 196		4.008 196		4.008 196		4.008 196	
Seals	9.003 444		9.003 451		4.008 234		4.008 243	0980-01706	4.008 256	
	4.008 198		4.008 222		4.008 235		9.003 446		4.008 260	
	4.008 200		4.008 224		4.008 237		4.001 555		4.001 544	
			4.008 225						4.008 258	
			4.008 214							
			4.001 521							
			4.008 223							
			4.008 226							
			4.008 215							
			4.008 221							

Shimadzu Headspace Products

	Screw Neck ND 18 (AOC 5000)	Shimadzu Art.-No.	Headspace ND 18 (AOC 5000)	Shimadzu Art.-No.	Headspace ND 18 (HTA200H)	Shimadzu Art.-No.
Vials	9.003 466	980-00247	7.850 009	980-00664	7.050 285	
	4.003 270	961-00915	9.003.453	980-00111	9.003 453	980-00111
Seals	4.008 268	961-00914	7.850 010	961-01256	9.003 447	
	6.241 111	980-01708	6.234 541	980-03372	4.001 553	
			6.229 635	980-00112		
			4.001 548	980-00112		

Autosampler compatibility chart

The autosampler compatibility chart generally shows the most typical LLG-Labware vials and closures for usage on instruments of different manufacturers. Additionally the corresponding part number of the manufacturer is indicated. Beside these there also may be further products in our catalogue which may technically and functionally be suitable. We will gladly recommend other suitable products.

If applicable for a manufacturer, each table has been divided by the application HPLC, GC and Headspace. We generally recommend asking for cost-free samples for testing purposes.

We kindly ask for your understanding that we do not take any guarantee for the correctness nor for the completeness of the data indicated here.

LLG - Vials and autosamplers: compatibility chart

Thermo Scientific

Alternative LLG Labware products for use on Thermo Scientific GC, HPLC and Headspace instruments.

Thermo Scientific GC Products

	Crimp Neck ND 8	Thermo Scientific Art.-No.	Screw Neck ND8	Thermo Scientific Art.-No.	Screw Neck ND9	Thermo Scientific Art.-No.	Crimp Neck ND11	Thermo Scientific Art.-No.
Vials	9.003 427	60180-707	9.003 481	60180-508	9.003 448	60180-723	7.086 520	60180-701
	4.001 554		7.613 087		6.803 174	60180-509	7.608 160	60180-502
	6.235 606		9.003 480	60180-560	4.008 247	60180-724	7.089 998	60180-702
	4.008 206	60180-505	7.613 388		6.088 871	60180-561	7.620 828	
	4.001 515				6.266 869			
	6.902 044				6.260 742			
	4.008 202				6.260 743			
	4.008 203							
Micro-Inserts			7.401 066	60180-265	7.401 744		7.401 744	
			9.003 435		6.093 247	60180-734	6.093 247	60180-734
			4.001 556	60180-721	4.008 196	60180-735	4.008 196	60180-735
			4.008 194	60180-722	4.001 547	60180-266	4.001 547	60180-266
Seals	9.003 443		4.008 209		4.008 228	60180-728	4.001 564	GC PAL
	4.008 200		9.003 484	60180-719	9.003 451	60180-729	4.008 239	
	9.003 444	60180-525	4.008 207		4.008 218		7.060 469	
	4.008 198				4.008 214		4.008 243	60180-705
							9.003 446	60180-706
							7.050 759	

Thermo Scientific HPLC Products

	Crimp Neck ND 8	Thermo Scientific Art.-No.	Screw Neck ND8	Thermo Scientific Art.-No.	Screw Neck ND9	Thermo Scientific Art.-No.	Crimp Neck ND11	Thermo Scientific Art.-No.	Snap Ring ND 11	Thermo Scientific Art.-No.
Vials	4.001 554		9.003 481	60180-508	9.003 448	60180-723	7.086 520		6.073 833	60180-740
	6.235 006		7.613 087		6.803 174	60180-509	7.608 160	60180-502	7.622 228	
	4.008 206	60180-505	9.003 480	60180-560	4.008 247	60180-724	7.089 998		7.613 330	60180-711
	4.001 515		7.613 388		6.088 871	60180-561	7.620 828			
	6.902 044				6.266 869					
	4.008 202				6.260 742					
	4.008 203				6.260 743					
Micro-Inserts			7.401 066	60180-265	7.401 744		7.401 744		7.401 744	
			9.003 435		6.093 247	60180-734	6.093 247	60180-734	6.093 247	60180-734
			4.001 556	60180-721	4.008 196	60180-735	4.008 196	60180-735	4.008 196	60180-735
			4.008 194	60180-722	4.001 547	60180-266	4.001 547	60180-266	4.001 547	60180-266
Seals	9.003 443	60180-708	4.008 209		4.008 228	60180-728	4.008 239		4.008 256	
	4.008 200		9.003 484	60180-719	9.003 451	60180-729	7.060 469		4.008 260	
	9.003 444	60180-525	4.008 207		4.008 218		4.008 243	60180-705	4.001 544	
	4.008 198				4.008 214		9.003 446	60180-706	4.008 258	60180-713
							7.050 759		4.008 261	
									4.008 257	60180-712

Thermo Scientific Headspace Products

	Headspace Screw Neck ND 18 (Combi Pal)	Thermo Scientific Art.-No.	Headspace Crimp Neck ND 20 (Combi Pal)	Thermo Scientific Art.-No.	Headspace Crimp Neck ND 20 (HS850/HS2	Thermo Scientific Art.-No.
Vials	9.003 466		7.850 009	60180-740	7.850 009	60180-504
	6.227 874		9.003.453	60180-506	9.003 453	60180-506
	4.008 270					
	6.237 909					
Seals	4.008 268		7.850 010		4.001 553	60180-511
	6.241 111		6.234 541	60180-520	9.003 454	60180-513
			6.229 635		4.001 549	60180-513
			4.001 548			

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LLG - Vials and autosamplers: compatibility chart

VWR (Merck / Hitachi)

Alternative LLG Labware products for use on VWR (Merck / Hitachi) HPLC instruments.

VWR (Merck / Hitachi) HPLC Products

	Crimp Neck ND 8	VWR (Merck) Art.-No.	Screw Neck ND8	VWR (Merck) Art.-No.	Screw Neck ND9	VWR (Merck) Art.-No.	Crimp Neck ND11	VWR (Merck) Art.-No.	Snap Ring ND11	VWR (Merck) Art.-No.	Screw Neck ND13	VWR (Merck) Art.-No.
Vials	6.235 606	548-0078	9.003 481	548-0018	9.003 448	548-0028	7.086 520	548-0003	6.073 833	548-0011	9.003 0482	548-0051
	4.001 554	548-0080	7.613 087	548-0420	6.803 174	548-0029	7.608 160	548-0004	7.622 228	548-0422	13 09 1335	548-0509
			9.003 480	548-0448	6.088 871	548-0030	7.620 828	548-0005	7.613 330	548-0012	9.003 549	548-0052
			7.613 388	548-0019	4.008 249	548-0081	6.233 918	548-1442	4.008 255	548-1442	13 09 1336	548-0510
					6.266 869	548-1523						
					6.260 742	548-1524						
					6.260 743	548-1525						
Micro-Inserts			7.401 066	548-0020	7.401 744	548-0006	7.401 744	548-0006	7.401 744	548-0006	7.055 486	548-0093
			9.003 435	548-0308	6.093 247	548-0002	6.093 247	548-0002	6.093 247	548-0002	4.001 567	548-0094
			4.001 556	548-0083	4.008 196	548-0001	4.008 196	548-0001	4.008 196	548-0001		
			4.008 194	548-0780								
Seals	9.003 444	548-0040	4.008 209	548-3322	4.008 228	548-0896	4.008 243	548-3272	4.008 258	548-0432	7.510 053	548-0054
	4.008 198	548-0038	9.003 484	548-0024	9.003 451	548-0085	9.003 446	548-0009	4.008 259	548-0434		
			6.232 178	548-0834	4.001 521	548-0088	7.050 759	548-0007				
					4,008 218	548-0087						
					4.008 215	548-0373						

Waters

Alternative LLG Labware products for use on Waters HPLC instruments.

Waters HPLC Products

	Screw Neck ND9	Waters Art.-No.	Screw Neck ND10	Waters Art.-No.	Snap Ring ND11	Waters Art.-No.	Screw Neck ND13	Waters Art.-No.	Shell Vials ND8	Waters Art.-No.
Vials	9.003 448		6.242 103	WAT063300	6.073 833		9.003 482	186000840	7.300 174	WAT025054C
	6.803 174	186000273	7.615 715		7.622 228	WAT094219	9.003 549	186001135	4.008 205	WAT025053C
	6.088 871	186000848	6.238 867		7.613 330	WAT094220				
	4.008 249				4.008 255					
	4.008 250									
	4.008 252									
	6.266 869									
	6.260 742									
	6.260 743									
Micro-Inserts	7.401 744		7.401 744		7.401 744		7.055 486	WAT015199		
	6.093 247	WAT094170	6.093 247	WAT094170	6.093 247	WAT094170	4.001 567	WAT072708		
	4.008 196		4.008 196		4.008 196					
Seals	4.008 214	186000274	4.008 243	WAT058874	4.008 258	186000303	7.510 053	186000841		
	4.008 215	186000305	9.003 446		6.242 212	186000304				
			7.050 759							

Autosampler compatibility chart

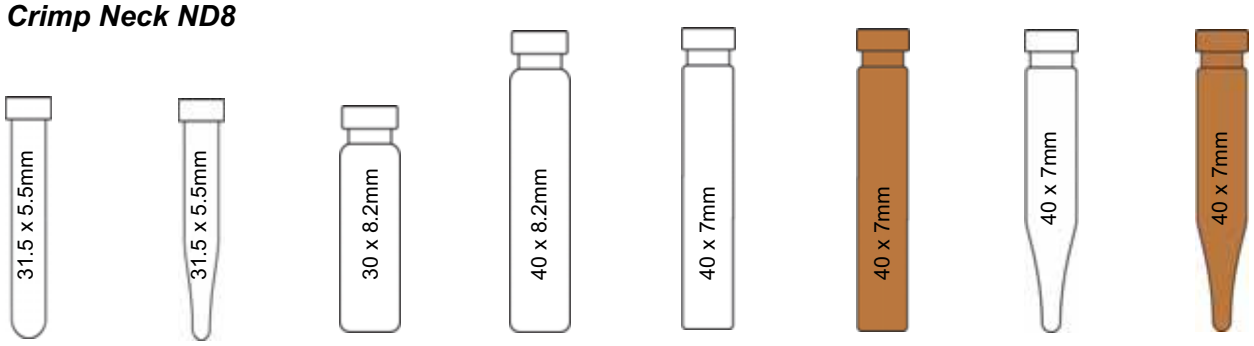
The autosampler compatibility chart generally shows the most typical LLG-Labware vials and closures for usage on instruments of different manufacturers. Additionally the corresponding part number of the manufacturer is indicated. Beside these there also may be further products in our catalogue which may technically and functionally be suitable. We will gladly recommend other suitable products.

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LLG - Flasks types

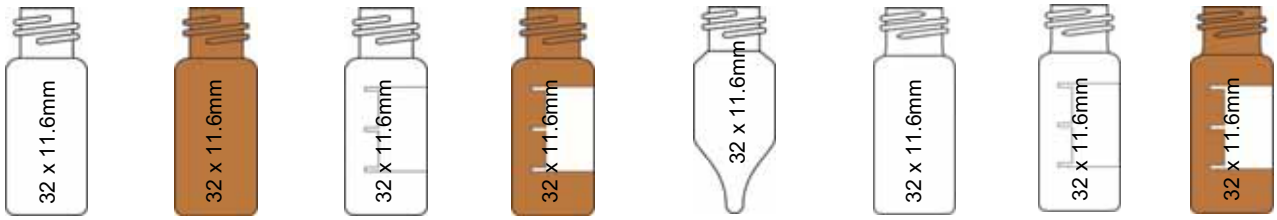
Crimp Neck ND8



4.001 554	6.235 606	9.003 427	4.008 206	4.008 202	4.008 203	4.001 515	6.902 044

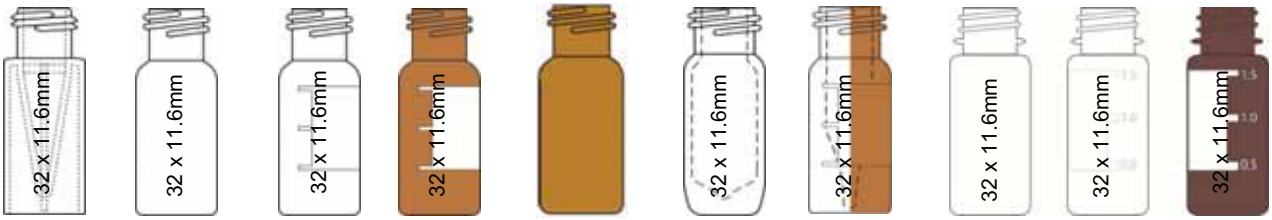
Screw Neck ND8, small opening

Screw Neck ND10, wide opening



9.003 481	9.003 480	7. 613 087	7.613 388	4.001 563	6.242 103	7.615 715	6.238 867

Short Thread ND9



4.008 262	9.003 448	6.803 174	6.088 871	4.008 247	4.008 249	4.008 250 4.008 252	6.266 869	6.260 742	7.260 743

Crimp / Snap Neck ND11

small opening **small opening**

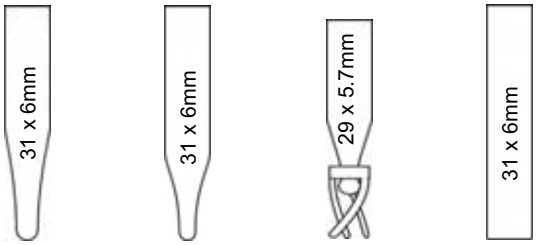


7.086 520	7.608 160	7.620 828	4.001 516	6.224 358	4.001 565	4.008 251 6.233 918	7.085 511	7.089 998

E & OE.

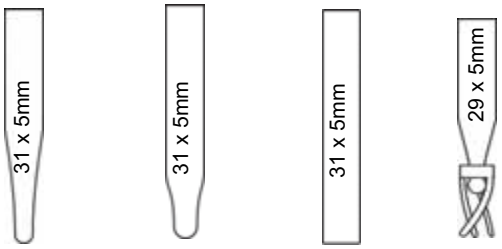
LLG - Flasks types

Micro-Inserts for wide opening



7.401 744	4.001 547	6.093 247	4.008 196

Micro-Inserts for small opening



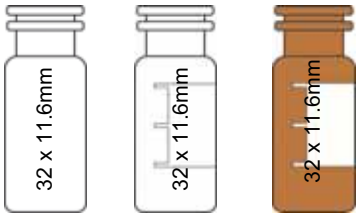
7.401 066	9.003 435	4.008 194	4.001 556

Screw Neck ND13



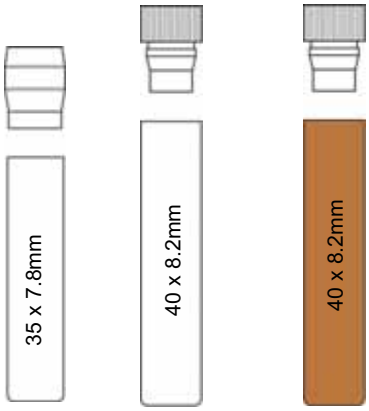
9.003 482	7.058 142	6.267 117	9.003 549	7.055 486

Schnappring ND11



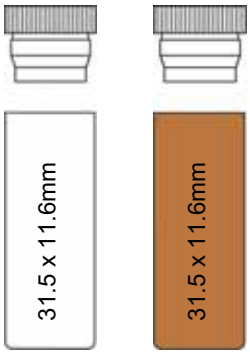
6.073 833	7.622 228	7.613 330

Shell Vials, 1ml (Insert)



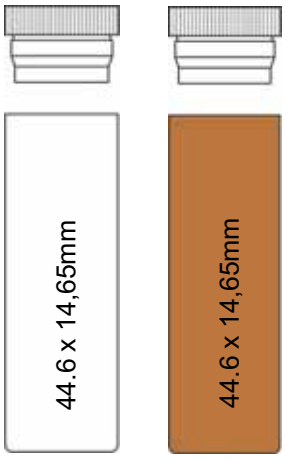
7.612 017	7.300 174	4.008 205

Shell Vials, 2ml



4.008 248	6.226 501

Shell Vials, 4ml (Insert)



7.632 226	6.227 544

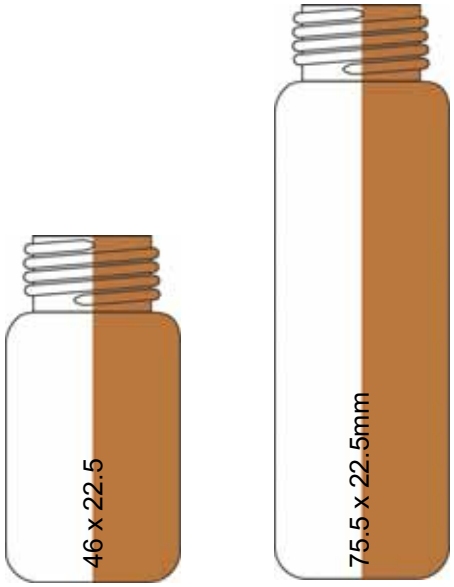
LLG - Flasks types

Storage Vials ND13, ND 15, ND18



7.613 421	7.616 898	7.616 655	6.239 037

Headspace ND 18



9.003 466 6.227 874	4.008 270 6.237 909

Snap Cap Vials

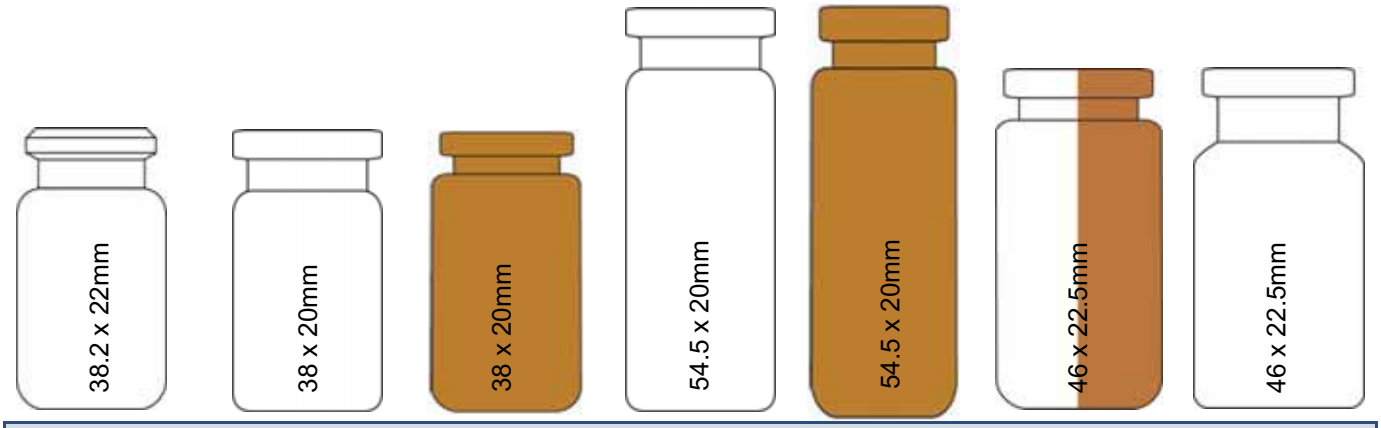


7.051 404	6.803 717	4.008 282	7.090 616

E & OE.

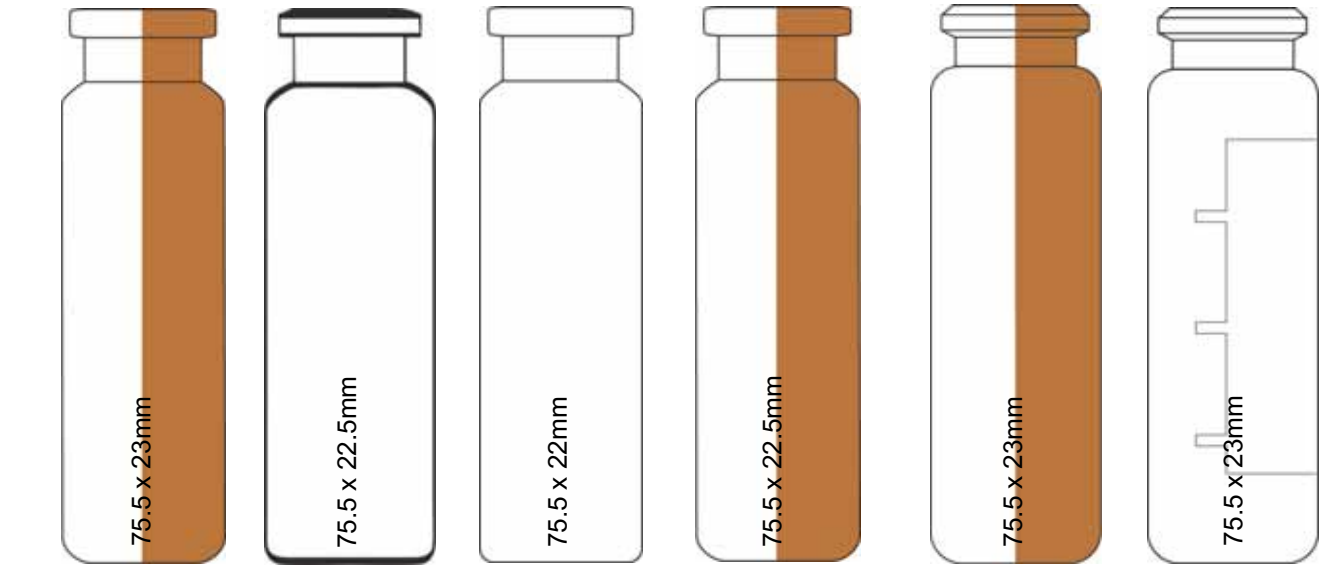
LLG - Flasks types

Headspace ND 20



7.052 186	9.003 425	7.060 457	9.003 426	7.080 947	7.850 009 6.227 875	7.050 285

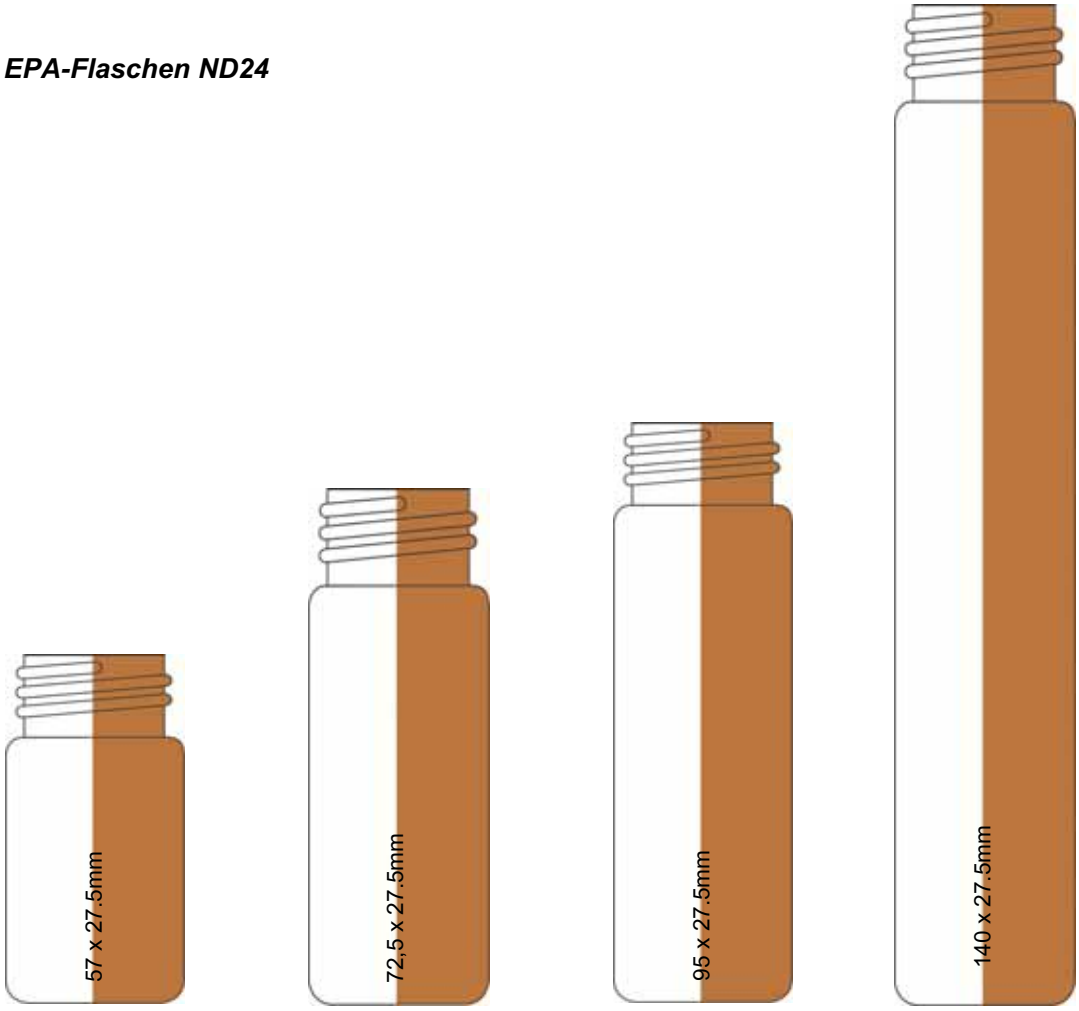
Headspace ND 20



7.080 450	7.401 840	9.003 452	9.003 453 6.231 485	7.060 463	4.008 281

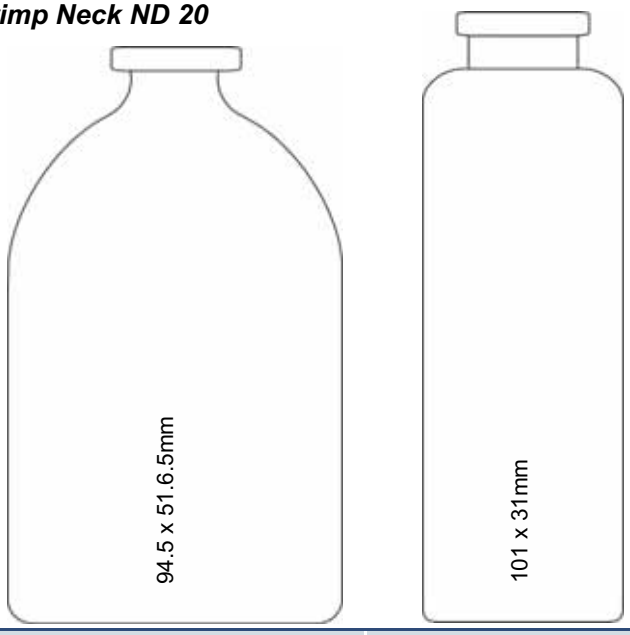
LLG - Flasks types

EPA-Flaschen ND24



4.008 204 4.008 298	6.267 124 6.267 125	4.008 297 4.008 299	6.267 126 6.267 127

Crimp Neck ND 20



7.060 465	7.060 459

E & OE.

LLG - Cap types

Aluminum Crimp Caps, centre hole

				
Size	**8mm**	**11mm**	**13mm**	**20mm**
Size centre hole Material Lacquer	4mm centre hole Aluminum clear	5.5mm centre hole Aluminum clear, red, blue, green, gold	6mm centre hole Aluminum clear, red, blue, green, gold	10mm centre hole Aluminum plain, red, blue, green, gold

Special Aluminum Crimp Caps

						
Size	**11mm**	**13mm**	**13mm**	**20mm**	**20mm**	**20mm**
Type of Cap Material Lacqer Special features	Centre hole Cap Aluminum cear with roll grove	Centre Tear Off Cap Aluminum clear, red, blue, green, gold	Complete Tear Off Cap Aluminum clear, red, blue, green, gold	Centre Tear Off Cap Aluminum clear, red, blue, green, gold	Complete Tear Off Cap Aluminum clear, red, blue, green, gold	Headspace Cap* Aluminum clear

Headspace Cap:* This cap has the function of a pressure release cap and is designed with special scorelines whose bridges break open at an internal vial pressure of 3.0 ± 0.5 bar to let the excess pressure escape. It is comparable with the three component PerkinElmer Headspace Closure (Aluminum Crimp Cap with slits, metal star washer, liner with ears) which offers the same effect with a different technical design.

Magnetic Caps, centre hole

							
Size	**9mm Screw Cap**	**11mm Crimp Cap**	**20mm Crimp Cap**	**20mm Crimp Cap**	**20mm Bimetal Crimp Cap**	**18mm Screw Cap**	**18mm Screw Cap**
Size centre hole Application Material Lacquer	6mm centre hole (GC) PP Screw Cap blue/ magn. overcap gold GC PAL Thermo Scientific TriPlus	5mm centre hole (GC) magnetic gold GC PAL, Thermo Scientific Tri Plus	5mm centre hole (HS) magnetic gold CE HS250/500/HS800, CTC 500 Fisons HS250/500 HS800	8mm centre hole (HS) magnetic Gold CTC Combi PAL	8mm centre hole (HS) Alu/magnetic red CTC Combi PAL	8mm centre hole (Universal) (Headspace/SPME) magnetic silver CTC Combi PAL PerkinElmer Agilent G1888A	Closed top Universal Screw Cap silver

PE-Caps for Crimp Necks

						
Size	**8mm**	**9mm**	**11mm**	**13mm**	**22mm**	**22mm**
Approp. Vial Size Cap Size centre hole Material, colour	For Crimp Neck ND8 8mm with thinned penetration point PE, blue	For Crimp Neck ND8 9 x 5.9mm 4mm centre hole PE, transparent	For Crimp Neck and Snap Ring ND11 11mm with thinned penetration point PE, blue	For Crimp Neck ND11 13 x 7.5mm 4.5mm centre hole PE, transparent	For HS Neck ND20 22 x 8.4mm 4.3mm centre hole PE, transparent Only for bevelled tops	For Crimp Neck ND20 22 x 9.1mm 4.3 centre hole or 6mm centre hole PE, transparent only for flat DIN Crimp Necks!

The drawings of the caps are not actual size. They should only visualize the special features of certain types of caps.

LLG - Cap types

Screw Caps

				
Size	**8mm**	**9mm**	**10mm**	**13mm**
Approp. Vial Thread Cap Design Size centre hole Material, colour	Screw Neck Vials ND8 8-425 thread Closed or open top 5.5mm centre hole PP, black or white	Short Thread Vials ND9 short thread, Closed or open top 6mm centre hole PP, black, transparent, blue, red, yellow, green	Screw Neck Vials ND10 10-425 thread, Closed or open top 7mm centre hole PP, black	Screw Neck Vials ND13 13-425 thread, Closed or open top 8.5mm centre hole PP, black, white

				
Size	**15mm**	**18mm**	**20mm**	**24mm**
Approp. Vial Thread Cap Design Size centre hole Material, colour	Screw Neck Vials ND15 15-425 thread, Closed or open top, 9mm centre hole PP, black, white	Screw Neck Vials ND18 18-400 thread, Closed or open top 12mm centre hole PP, black	Screw Neck Vials ND20 20-400 thread, Closed or open top, PP, white	Screw Neck Vials ND24 24-400 thread, Closed or open top 12.5mm centre hole PP, white

PE-Plugs for Shell Vials

						
Size	**8mm**	**8mm**	**8mm**	**8mm**	**12mm**	**15mm**
Vial/Plug combination Plug Size Material, colour Special Features	Plug 6mm PE, transparent	Plug 8mm PE, blue	Plug 8mm PE, transparent wth insertion barrier for Micro-Inserts	Plug 8mm PE, transparent without insertion barrier for Micro-Inserts	Plug 12mm PE, transparent	Plug 15mm PE, transparen

Snap Ring Caps

	
Size	**11mm**
Approp. Vial Cap Design Size centre hole Material Colour	Snap Ring Vials ND11 open top 6mm centre hole PE transparent*, blue*, red, yellow, green

Snap Caps

			
Size	**18mm**	**22mm**	**28mm**
Approp. Vial Cap Design Size Cap Material Colour	Snap Cap Vials ND18 closed top 19.8 x 5.2mm PE transparent	Snap Cap Vials ND22 closed top 23.5 x 5.5mm PE transparent	Snap Cap Vials ND28 closed top 29.7 x 5.6mm PE transparent

- available as a hard or soft PE Caps
- Hard Cap: tighter, but not so easy to push on or to remove
- Soft Cap: convenient in handling, but not as tight

The drawings of the caps are not actual size. They should only visualize the special features of certain types of caps.

Product Information – Sample Requests – Price Enquiries?
Our Customer Service Team is always at your disposal for further questions.

E & OE.

LLG-Crimp Neck Micro-Vials ND8








Capacity	ml	0.20	0.30	0.60	0.60	1.20	1.20
o.d. x Height	mm	5.5 x 31.5	5.5 x 31.5	7 x 40	7 x 40	8.2 x 40	8.2 x 40
Colour		clear	clear	clear	amber	clear	amber
Form		conical	round bottom	conical	conical	flat bottom	flat bottom
PK		100	100	100	100	100	100
Cat. No.		**6.235 606**	**4.001 554**	**4.001 515**	**6.902 044**	**4.008 206**	**6.266 864**

LLG-Aluminium Crimp Caps ND8, ready assembled







	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	Aluminium, silver, center hole	Natural rubber, red-orange / TEF transparent	60° shore A	1.00	100	**9.003 443**
	Aluminium, silver, center hole	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 200**
	Aluminium, silver, center hole	Silicone white / PTFE red	45° shore A	1.30	100	**9.003 444**
	Aluminium, silver, center hole	PTFE red / Silicone white, slit	45° shore A	1.30	100	**6.266 865**
	Aluminium, silver, center hole	PTFE red / Silicone white / PTFE red	45° shore A	1.00	100	**4.008 198**

LLG-Screw Neck Vials ND8, small opening







Capacity	ml	1.50	1.50	1.50	1.50	1.10
o.d. x Height	mm	11.6 x 32	11.6 x 32	11.6 x 32	11.6 x 32	11.6 x 32
Colour		clear	clear, labeling field	amber	amber, labeling field	clear
Form		flat bottom	flat bottom	flat bottom	flat bottom	conical
PK		100	1000	100	1000	100
Cat. No.		**9.003 481**	**7.613 087**	**9.003 480**	**7.613 388**	**4.001 563**

LLG-Micro-Inserts for Screw Vials ND8, small opening






Capacity	ml	0.10	0.10	0.10	0.20
o.d. x Height	mm	5 x 31	5 x 31	5 x 29	5 x 31
Colour		clear	clear	clear	clear
Form		conical, 15mm tip	conical, 9mm tip	with plastic spring	flat bottom
PK		100	100	100	100
Cat. No.		**7.401 066**	**9.003 435**	**4.001 556**	**4.008 194**

LLG-PP Screw Seals ND8, ready assembled, and empty Screw Caps ND8

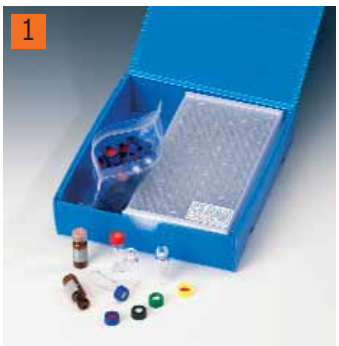
NEW!

		Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
		black, centre hole	Natural rubber red-orange / TEF transparent	60° shore A	1.30	100	**6.266 866**
		black, closed	Natural rubber red-orange / TEF transparent	60° shore A	1.30	100	**6.266 867**
		black, centre hole	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 209**
		black, closed	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 210**
		black, centre hole	Silicone white / PTFE red	45° shore A	1.30	100	**9.003 484**
		black, centre hole	Silicone white / PTFE red, slit	45° shore A	1.30	100	**6.232 178**
		black, centre hole	PTFE red / Silicone white / PTFE red	45° shore A	1.00	100	**4.008 207**
		black, centre hole	no liner	-		100	**7.060 421**
		black, closed	no liner	-		100	**7.075 960**

LLG Septa for Screw Caps ND8

	Septa	Hardness	Thickness mm	PK	Cat. No.
	PTFE virginal, white	53° shore D	0.25	100	**7.085 238**
	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 197**
	Silicone white / PTFE red	45° shore A	1.30	100	**7.060 419**
	Silicone white / PTFE blue, slit	55° shore A	0.90	100	**7.085 892**

1



1

LLG - 2in1 and 3in1 Kits with Screw Neck Vials ND8 (small opening)

NEW!

2in1 KITs contain 100 vials and 100 closures in a blue PP-Box. As both components are always required at the same time, 2in1 KITs are a convenient way to obtain and store all required items for analysis. 2in1 KITs are available for any type of 1.5ml (32 x 11.6mm), 4ml (45 x 14.75mm) or 20ml Headspace Vial (75.5 x 23mm) with an appropriate seal. All advantages of the individual components (cleanroom packaging of the vials, recloseability of the packaging, etc.) remain unchanged.

Any other combination of vial and seal as a 2in1 KIT available.

Type	Capacity ml	Description	Cover type	PK	Cat. No.
2in1 Kit	1.50	clear	Screw Cap, black, hole, Silicon white / PTFE red	100	**6.238 965**
2in1 Kit	1.50	amber	Screw Cap, black, hole, Silicon white / PTFE red	100	**9.003 557**
2in1 Kit	1.50	amber, labelling field	Screw Cap, black, hole, Silicon white / PTFE red	100	**9.003 558**
2in1 Kit	1.50	clear, labelling field	Screw Cap, black, hole, Silicon white / PTFE red	100	**9.003 559**
3in1 Kit	1.50	clear	Screw Cap, black, hole, Silicon white /PTFE blue, slitted (Septa unassembled)	100	**6.223 506**

Storage Boxes - please see page 1349.

E & OE.

LLG-Short Thread Vials ND9, wide opening

					
Capacity	ml	1.50	1.50	1.50	1.50
o.d. x Height	mm	11.6 x 32	11.6 x 32	11.6 x 32	11.6 x 32
Colour		clear	clear, labelling field	amber	amber, labelling field
Form		flat bottom	flat bottom	flat bottom	flat bottom
PK		100	1000	100	1000
Cat. No.		**9.003 448**	**6.803 174**	**4.008 247**	**6.088 871**

LLG-Short Thread Vials ND9, wide opening, Micro-Vials and inserts

NEW!

								
Capacity	ml	1.10	0.20	0.20	0.30	0.10	0.10	0.10
o.d. x Height	mm	11.6 x 32	11.6 x 32	11.6 x 32	11.6 x 32	6 x 31	6 x 31	5.7 x 29
Colour		clear	clear	clear	transparent	clear	clear	clear
Form		flat bottom, 15µl funnel in solid glas bottom	flat bottom with integrated 0.2mL insert	TPX®, flat bottom with integrated 0.2mL insert	PP, with inner cone	conical 15mm tip	conical 12mm tip	with plastic spring
PK		100	100	100	100	100	100	100
Cat. No.		**4.008 249**	**4.008 250**	**6.266 868**	**4.008 262**	**7.401 744**	**4.001 547**	**6.093 247**

LLG-Short Thread Vials ND9, wide opening, SureStop™

NEW!

The short thread vials ND9 SureStop™ are the best available on the market in terms of seal tightness and reliability. The vials have an additional stopper ring at the end of the thread which clearly marks the end point in the screwing-in process. This ensures that the tightness of the seal is independent of the touch or feel of the user screwing the stopper in. This ensures the lowest possible number of standard deviations and high reproducibility of analysis results.

- Stopper ring as protection against over-tightening
- 1st hydrolytic class glass
- In clear and amber glass
- Wide opening requires matching micro-inserts

				
Capacity	ml	1.50	1.50	1.50
o.d. x Height	mm	11.6 x 32	11.6 x 32	11.6 x 32
Colour		clear	clear, labeling field	amber, labeling field
Form		flat bottom	flat bottom	flat bottom
PK		100	100	100
Cat. No.		**6.266 869**	**6.260 742**	**6.260 743**

LLG-Short thread screw caps ND9, magnetic

NEW!

These short thread screw seals have a magnetic sleeve and are more convenient and secure to handle than 11mm magnetic crimp seals. They have been officially tested and approved for CTC.

- Screw cap with short thread and 6mm hole
- Mounted magnetic metal sleeve (gold colour)
- Temperature resistant from -60°C to 200°C
- Very low particle formation during penetration

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	Gold / blue, with center hole	Silicone white / PTFE red, UltraBond	55° shore A	1.00	100	**6.266 870**

LLG-PP Short Thread Seals ND9, ready assembled

		Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
		transparent, centre hole	Natural rubber, red-orange / TEF transparent	60° shore A	1.00	100	**6.266 872**
		blue, centre hole	Natural rubber, red-orange / TEF transparent	60° shore A	1.00	100	**6.266 883**
		transparent, centre hole	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 229**
		blue, centre hole	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 228**
		blue closed	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 230**
		transparent, centre hole	Silicone white / PTFE red	55° shore A	1.00	100	**7.076 778**
		blue, centre hole	Silicone white / PTFE red	55° shore A	1.00	100	**9.003 451**
		black, centre hole	Silicone white / PTFE red	55° shore A	1.00	100	**4.008 225**
		green, centre hole	Silicone white / PTFE red	55° shore A	1.00	100	**4.008 224**
		blue closed	Silicone white / PTFE red	55° shore A	1.00	100	**4.008 227**
		transparent, centre hole	Silicone white / PTFE blue, slit	55° shore A	1.00	100	**7.200 809**
		blue, centre hole	Silicone white / PTFE blue, slit	55° shore A	1.00	100	**4.001 521**
		black, center hole	Silicone white / PTFE blue, slit	55° shore A	1.00	100	**4.008 226**
		blue, centre hole	PTFE red / Silicone white / PTFE red	45° shore A	1.00	100	**4.008 218**
		blue, centre hole	PTFE virginal, white	53° shore D	0.25	100	**4.008 221**
		blue closed	PTFE virginal, white	53° shore D	0.25	100	**7.930 366**

LLG-Septa for Thread Screw Caps ND9

	Septa	Hardness	Thickness mm	PK	Cat. No.
	Silicone white / PTFE red	55° shore A	1.00	100	**4.008 212**
	PTFE virginal, white	53° shore D	0.25	100	**4.008 211**

E & OE.

LLG-PP UltraBond*Short Thread Seals ND9

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	Ultrabond* Seal blue, center hole	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 216**
	Ultrabond* Seal blue, center hole	Silicone beige / PTFE white	45° shore A	1.30	100	**4.008 214**
	Ultrabond* Seal blue, center hole	Silicone beige / PTFE white, slit	45° shore A	1.30	100	**4.008 215**

*Cap+Liner form an inseparable unit, so that the liner cannot be pushed into the vial even with a blunt needle

1 LLG - 2in1 Kits with Short Thread Vials ND9 (wide opening)

2in1 KITs contain 100 vials and 100 closures in a blue PP-Box. As both components are always required at the same time, 2in1 KITs are a convenient way to obtain and store all required items for analysis. All advantages of the individual components (cleanroom packaging of the vials, recloseability of the packaging, etc.) remain unchanged.

Any other combination of vial and seal as a 2in1 KIT available.



Description	Volume ml	Cover type	PK	Cat. No.
clear	1.5	Short Thread Cap, transparent, hole, natural rubber / PP red-orange	100	**7.620 724**
clear	1.5	Short Thread Cap, blue, hole, Silicon white / PTFE red	100	**9.003 560**
clear	1.5	Short Thread Cap, blue, hole, Silicon white / PFE blue, slitted	100	**7.621 765**
clear	1.5	Short Thread Cap, transparent, hole, Silicon white / PTFE red	100	**9.003 561**
clear, labelling field	1.5	Short Thread Cap, blue, hole, Silicon white / PFE blue, slitted	100	**9.003 562**
clear, labelling field	1.5	UltraClean Short Thread Cap, blue, hole, Silicon white / PFE red	100	**7.970 892**
amber, labelling field	1.5	UltraBond Short Thread Cap, blue, hole, Silicon beige / PTFE white, slitted	100	**9.003 563**
amber, labelling field	1.5	UltraClean Short Thread Cap, blue, hole, Silicon white / PFE red	100	**6.266 871**

LLG-Screw Neck Vials ND10, wide opening and Micro-Inserts

							
Capacity	ml	1.50	1.50	1.50	0.10	0.10	0.20
o.d. x Height	mm	11,6 x 32	11,6 x 32	11,6 x 32	6 x 31	5,7 x 29	6 x 31
Colour		clear	clear, labeling field	amber, labeling field	clear	clear	clear
Form		flat bottom	flat bottom	flat bottom	conical, 15mm tip	with plastic spring	flat bottom
PK		100	1000	1000	100	100	100
Cat. No.		**6.242 103**	**7.615 715**	**6.238 867**	**7.401 744**	**6.093 247**	**4.008 196**

Storage Boxes - please see page 1349.

LLG-PP Screw Seals ND10

NEW!

		Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
		black, center hole	Natural Rubber red-orange / TEF transparent	60° shore A	1.30	100	**6.267 111**
		black, closed	Natural Rubber red-orange / TEF transparent	60° shore A	1.30	100	**6.267 112**
		black, center hole	Red rubber / PTFE beige	45° shore A	1.00	100	**6.242 104**
		black, center hole	Silicone white / PTFE beige	45° shore A	1.50	100	**4.008 234**
		black, center hole	Silicone white / PTFE red	45° shore A	1.30	100	**4.008 235**
		black, center hole	Silicone white / PTFE blue, slit	55° shore A	1.50	100	**4.008 237**
		black, center hole	PTFE red / Silicone white / PTFE red	45° shore A	1.00	100	**4.008 236**

LLG Crimp Neck Vials ND11, small and wide opening (flat bottom)

						
Capacity	ml	1.50	1.50	1.50	1.50	1.50
o.d. x Height	mm	11.6 x 32	11.6 x 32	11.6 x 32	11.6 x 32	11.6 x 32
Colour		clear	amber	clear	clear, labeling field	amber, labeling field
Form		small opening	small opening	wide opening	wide opening	wide opening
PK		100	100	100	1000	1000
Cat. No.		**7.085 511**	**7.089 998**	**7.086 520**	**7.608 160**	**7.620 828**

LLG-Micro Inserts for Crimp Neck Vials ND11

NEW!

									
Capacity	ml	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.20
o.d. x Height	mm	5 x 31	5 x 31	5 x 29	5 x 31	6 x 31	6 x 31	5,7 x 29	6 x 31
Colour		clear	clear	clear	clear	clear	clear	clear	clear
Form		for small opening, conical, 15mm tip	for small opening, conical, 9mm tip	for small opening, with plastic spring	for small opening, flat bottom	for wide opening, conical, 15mm tip	for wide opening, conical, 12mm tip	for wide opening, with plastic spring	for wide opening, flat bottom
PK		100	100	100	100	100	100	100	100
Cat. No.		**7.401 066**	**9.003 435**	**4.001 556**	**4.008 194**	**7.401 744**	**4.001 547**	**6.093 247**	**4.008 196**

E & OE.

LLG-Micro Crimp Neck Vials ND11

							
Capacity	ml	1.10	1.10	1.10	1.10	0.20	0.20
o.d. x Height	mm	11,6 x 32	11,6 x 32	11,6 x 32	11,6 x 32	11,6 x 32	11,6 x 32
Colour		clear	clear	clear	amber	clear	amber
Form		flat bottom, 15 µl funnel in solid glass bottom	conical	conical with a round pedestal glass plate	conical with a round pedestal glass plate	flat bottom, with integrated 0.2 mL insert	flat bottom, with integrated 0.2 mL insert
PK		100	100	100	100	100	100
Cat. No.		**4.001 565**	**4.001 516**	**4.008 253**	**4.008 254**	**6.233 918**	**4.008 251**

LLG-Aluminium Crimp Seals ND11, ready assembled

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	aluminium, silver, centre hole	Natural rubber red-orange / TEF transparent	60° shore A	1.30	100	**9.003 441**
	aluminium, silver, centre hole	Natural rubber red-orange / TEF transparent (corresponds to Agilent quality)	60° shore A	1.00	100	**4.008 239**
	aluminium, silver, centre hole	Natural rubber / Butyl red-orange / TEF transparent	45° shore A	1.00	100	**7.060 469**
	aluminium, green, centre hole	Natural rubber / Butyl red-orange / TEF transparent	45° shore A	1.00	100	**4.001 522**
	aluminium, blue, centre hole	Natural rubber / Butyl red-orange / TEF transparent	45° shore A	1.00	100	**6.900 233**
	aluminium, silver, centre hole	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 243**
	aluminium, silver, centre hole	Silicone white / PTFE red	45° shore A	1.30	100	**9.003 446**
	aluminium, silver, centre hole	Silicone white / PTFE blue, cross-slit	55° shore A	1.50	100	**4.001 555**
	**magnetic**, gold, centre hole	Silicone white / PTFE red	45° shore A	1.30	100	**4.001 564**
	aluminium, silver, centre hole	PTFE virginal, white	53° shore D	0.25	100	**4.001 559**
	aluminium, silver, centre hole	PTFE red / Silicone white / PTFE red	45° shore A	1.00	100	**7.050 759**

Crimping Tools - please see page 1348.

Storage Boxes - please see page 1349.

LLG-Aluminium Crimp Seals ND11, ready assembled

Crimp seals ND11 with aluminium septa
Septa made from aluminium are suitable for storing standards or reactive substances that can attack normal septum materials. There is also no risk of contamination of the samples with plasticisers, silicone or butyl rubbers or by PTFE, FEP or TEF components. A ring placed above the aluminium septum achieves an excellent seal on the stopper system.
Properties
- Plain lacquered cap with 5.5 mm hole
- Elastomer- and halogen-free
- Excellent seal tightness thanks to additional ring
- Packaged in plasticiser-free packaging (glass container)

Application areas
- Elastomer and plastomer analysis
- Phthalate analysis
- Analysis of fluorinated/halogenated organic compounds
- VOC analysis (volatile organic compounds)
- Analysis of polymerisation catalysts

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	Aluminium, clear lacquered, center hole	Aluminium liner	-	0.06	100	**6.267 113**
	Aluminium, clear lacquered, center hole	PTFE virginal	53° shore D	0.25	100	**6.267 114**



1 LLG - 2in1 Kits with Crimp Neck Vials ND11 (wide opening)

2in1 KITs contain 100 vials and 100 closures in a blue PP-Box. As both components are always required at the same time, 2in1 KITs are a convenient way to obtain and store all required items for analysis. 2in1 KITs are available for any type of 1.5ml (32 x 11.6mm), 4ml (45 x 14.75mm) or 20ml Headspace Vial (75.5 x 23mm) with an appropriate seal. All advantages of the individual components (cleanroom packaging of the vials, recloseability of the packaging, etc.) remain unchanged.

Any other combination of vial and seal as a 2in1 KIT available.

Description	Cover type	PK	Cat. No.
clear	Crimp Cap, silver, hole, Natural Rubber red-orange / TEF transparent	100	**6.257 139**
clear	Crimp Cap, silver, hole, Natural Rubber / Butyl red-orange / TEF transparent	100	**9.003 564**
clear, labelling field	Crimp Cap, silver, hole, Natural Rubber / Butyl red-orange / TEF transparent	100	**9.003 565**
amber, labelling field	Crimp Cap, silver, hole, Naturual Rubber red-orange / TEF transparent	100	**9.003 566**
clear	Crimp Cap, silver, hole, Silicon white / PTFE red	100	**6.238 979**

LLG-Snap Ring Vials ND11, wide opening and Micro-Inserts

As an alternative to snap ring seals, snap ring vials and micro-vials ND11 can also be sealed with crimp seals ND11 since the two snap ring lips have the same height as a crimp neck.

									
Capacity	ml	1.50	1.50	1.50	0.30	0.30	0.10	0.10	0.10
o.d. x Height	mm	11.6 x 32	11.6 x 32	11.6 x 32	11.6 x 32	11.6 x 32	6 x 31	5.7 x 29	6 x 31
Colour		clear	clear, labeling field	amber, labeling field	clear	clear, PP	clear	clear	clear
Form		flat bottom	flat bottom	flat bottom	flat bottom, integrated 0.3mL insert	flat bottom, integrated 0.3mL insert	conical, 15mm tip	with plastic spring	flat bottom
PK		100	1000	1000	100	100	100	100	100
Cat. No.		**6.073 833**	**7.622 228**	**7.613 330**	**4.008 255**	**6.267 115**	**7.401 744**	**6.093 247**	**4.008 196**

E & OE.

LLG-PE Snap Ring Seals ND11,ready assembled

NEW!

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	transparent, PE centre hole	Naturual Rubber red-orange / TEF transparent	60° shore A	1.00	100	**6.267 116**
	transparent, centre hole	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 261**
	blue, centre hole	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 257**
	transparent, centre hole	Silicone white / PTFE red	45° shore A	1.30	100	**4.001 544**
	transparent, centre hole	Silicone white / PTFE blue, cross-slit	55° shore A	1.00	100	**4.008 256**
	snap ring cap, blue, centre hole	Silicone white / PTFE blue, cross-slit	55° shore A	1.00	100	**6.242 212**
	transparent, centre hole	PTFE red / Silicone white / PTFE red	45° shore A	1.00	100	**6.073 555**
	blue, centre hole	PTFE red / Silicone white / PTFE red	45° shore A	1.00	100	**4.008 259**

LLG Crimp neck vials ND13

NEW!

			
Capacity	ml	2.00	4.00
o.d. x Height	mm	16 x 32	14,7 x 45
Colour		clear	clear
Form		flat bottom	flat bottom
PK		1000	1000
Cat. No.		**6.228 969**	**9.003 535**

LLG-Aluminium Crimp Seals ND13, ready assembled and empty Crimp Caps ND13

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	aluminium crimp cap, silver, centre hole	Pharma-Fix-Septa (Butyl/PTFE)	50° shore A	2.00	100	**7.060 475**
	aluminium centre tear off cap, silver	Butyl dark grey / Pharma-Fix-Septa (Butyl/PTFE)	50° shore A	2.00	100	**9.003 442**
	aluminium complete tear off cap, silver	Butyl dark grey / Pharma-Fix-Septa (Butyl/PTFE)	50° shore A	2.00	1000	**9.003 548**
	aluminium crimp cap, silver, centre hole (no liner)	-			100	**6.801 727**

LLG-Screw Neck Vials and appropriate Micro-Insert

Capacity	ml	4.00	4.00	4.00	4.00	0.30	
o.d. x Height	mm	14.7 x 45	14.7 x 45	14.7 x 45	14.7 x 45	6 x 40	7.5 x 50
Colour		clear	clear, labelling field	amber	amber, labelling field	clear	
Form		flat bottom	flat bottom	flat bottom	flat bottom	conical, metal spring necessary (6.267 118)	metal spring
PK		100	100	100	1000	100	100
Cat. No.		**9.003 482**	**6.267 117**	**7.058 142**	**9.003 549**	**7.055 486**	**6.267 118**

LLG-PP Screw Seals ND13, ready assembled and empty Screw Caps ND13

		Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
		black, closed top	Butyl red / PTFE grey	55° shore A	1.30	1000	**6.240 135**
		black, centre hole	Red Rubber / PTFE beige	45° shore A	1.00	100	**6.242 468**
		black, closed top	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 267**
		black, centre hole	Silicone creme / PTFE red	55° shore A	1.50	100	**7.510 053**
		black, closed top	Silicone creme / PTFE red	55° shore A	1.50	100	**6.242 267**
		black, centre hole	Silicone white / PTFE blue, cross-slitted	55° shore A	1.50	100	**6.267 119**
		black, centre hole	PTFE red / Silicone white / PTFE red	45° shore A	1.00	100	**6.267 120**
		black, centre hole				100	**7.071 151**
		black, closed top				100	**7.060 437**

LLG-Septa for Screw Caps ND13

	Septa	Hardness	Thickness mm	PK	Cat. No.
	Butyl red / PTFE grey	55° shore A	1.30	1000	**9.003 536**
	Red Rubber / PTFE beige	45° shore A	1.00	100	**4.008 264**
	Silicone creme / PTFE red	55° shore A	1.50	100	**4.008 263**
	PTFE virginal, white	53° shore D	0.25	100	**7.058 143**

LLG-Screw Neck Vials for Storage Purposes ND 15, ND 18

NEW!

				
Capacity	ml	8.00	12.00	16.00
o.d. x Height	mm	16,6 x 61	18,5 x 66	20,6 x 71
Colour		clear	clear	clear
Form		ND15, flat bottom	ND15, flat bottom	ND18, flat bottom
PK		1000	1000	1000
Cat. No.		**7.616 898**	**7.616 655**	**6.239 037**

LLG-Screw Seals for Screw Neck Vials ND 15, ND 18

NEW!

		Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
		15mm cap, black, closed top	Butyl red / PTFE grey	55° shore A	1.60	1000	**7.616 653**
		18mm cap, black, closed top	Butyl red / PTFE grey	55° shore A	1.60	1000	**7.910 125**

LLG-Replacement Septa for Screw Caps ND15, ND18

NEW!

	Description	Hardness	Thickness mm	PK	Cat. No.
	15mm, Butyl red / PTFE grey	55° shore A	1.60	1000	**9.003 537**
	18mm, Butyl red / PTFE grey	55° shore A	1.60	1000	**9.003 538**

LLG-Shell Vials with PE cap (fire-polished neck) ND8 and ND12

						
Capacity	ml	1.00	1.00	2.00	4.00	4.00
o.d. x Height	mm	8,2 x 40	8,2 x 40	11,6 x 31,5	14,65 x 44,60	14,65 x 44,60
Colour		clear	amber	clear	clear	clear
Form		ND8, flat bottom	ND8, flat bottom	ND12, flat bottom	ND8, flat bottom	ND8, flat bottom
PK		100	100	100	1000	1000
Cat. No.		**7.300 174**	**4.008 205**	**4.008 248**	**7.632 226**	**6.227 544**

LLG Plugs, PE

	For	PK	Cat. No.
	ND8	100	**7.300 175**
	ND12	100	**4.008 265**
	ND15	1000	**9.003 540**

LLG-Snap Cap Vials ND18 and ND22, without lid

					
Capacity	ml	5.00	10.00	15.00	25.00
o.d. x Height	mm	20 x 40	22 x 50	26 x 48	26 x 65
Colour		clear	clear	clear	clear
Form		ND18, flat bottom	ND18, flat bottom	ND22, flat bottom	ND22, flat bottom
PK		100	100	100	100
Cat. No.		**7.051 404**	**6.803 717**	**4.008 282**	**7.090 616**

LLG-Snap Caps, PE, ND18 and ND22

	For	PK	Cat. No.
	ND18	100	**6.051 403**
	ND22	100	**7.090 617**

LLG-Headspace-Precision Thread Vials ND18

					
Capacity	ml	10.00	10.00	20.00	20.00
o.d. x Height	mm	22,5 x 46	22,5 x 46	22,5 x 75,5	22,5 x 75,5
Colour		clear	amber	clear	amber
Form		rounded bottom	rounded bottom	rounded bottom	rounded bottom
PK		100	1000	100	1000
Cat. No.		**9.003 466**	**6.227 874**	**4.008 270**	**6.237 909**

LLG-Magnetic Universal Screw Seals ND18 for Precision Thread Vials ND18

NEW!

		Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
		silver, center hole	Butyl red / PTFE grey	55° shore A	1.60	100	**4.008 269**
		silver, center hole	Silicone blue transparent/ PTFE white	45° shore A	1.30	100	**6.241 111**
		silver, center hole	Silicone white / PTFE blue	55° shore A	1.50	100	**4.008 268**
		silver , without hole	Butyl red / PTFE grey	55° shore A	1.60	100	**6.262 513**
		silver , without hole	Silicone white / PTFE red UltraClean	45° shore A	1.30	100	**6.267 122**

LLG-Headspace-Vials ND20 (5ml and 10ml)



Capacity	ml	5.00	5.00	6.00	5.00	10.00	10.00	10.00	10.00
o.d. x Height	mm	20 x 38	20 x 38	22 x 38,20	21,7 x 38,20	20,0 x 54,5	20,0 x 54,5	22,5 x 46	22,5 x 46
Colour		clear	amber	clear	clear	clear	amber	clear	clear
Form		flat bottom flat DIN crimp neck	flat bottom flat DIN crimp neck	rounded bottom bevelled HS crimp neck	flat bottom bevelled HS crimp neck	flat bottom flat DIN crimp neck	flat bottom flat DIN crimp neck	flat bottom flat DIN crimp neck	rounded bottom bevelled HS crimp neck
For		Varian	Varian	PerkinElmer	Metrohm	Varian	Varian	DANI, Agilent	CTC, Varian
PK		100	100	100	100	100	100	100	100
Cat. No.		**9.003 425**	**7.060 457**	**7.052 186**	**4.008 285**	**9.003 426**	**7.080 947**	**7.050 285**	**7.850 009**

LLG-Headspace-Vials ND20 (20ml and 50 ml)



Capacity	ml	20.00	20.00	20.00	20.00	20.00	20.00	50.00
o.d. x Height	mm	23.25 x 75.5	23.25 x 75.5	22.5 x 75.5	22.5 x 75.5	23 x 75.5	23 x 75.5	31 x 101
Colour		clear	amber	clear	clear	clear	clear, with label	clear
Form		flat bottom flat DIN crimp neck	flat bottom flat DIN crimp neck	flat bottom flat DIN crimp neck	rounded bottom flat DIN crimp neck	rounded bottom bevelled HS crimp neck	rounded bottom bevelled HS crimp neck	flat bottom flat DIN crimp neck
For				DANI, Agilent	CTC, Varian	PerkinElmer	PerkinElmer	
PK		100	100	100	100	100	100	100
Cat. No.		**7.401 840**	**7.080 450**	**9.003 452**	**9.003 453**	**7.060 463**	**4.008 281**	**7.060 459**

LLG-Crimp Seals ND20, Aluminium, ready assembled

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	silver, center hole	Butyl red / PTFE grey	50° shore A	3.00	100	**9.003 454**
	silver, center hole	Butyl grey / PTFE grey	50° shore A	3.00	100	**4.001 549**
	silver, center hole	Pharma-Fix-Septa Butyl/PTFE	50° shore A	3.00	100	**9.003 430**
	gold, center hole	Pharma-Fix-Septa Butyl/PTFE	50° shore A	3.00	100	**4.008 275**
	silver, center hole	Silicone blue / PTFE colourless	45° shore A	3.00	100	**9.003 434**
	silver, center hole	Silicone white / PTFE beige	45° shore A	3.20	100	**9.003 460**
	silver, center hole				100	**7.060 477**

LLG-Crimp Seals ND20 (Center Tead Off Caps), Aluminium, ready assembled

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	gold	Pharma-Fix-Septa Butyl/PTFE	50° shore A	3.00	100	**9.003 445**
	silver	Butyl stopper, grey only unassembled	37° shore A		100	**7.087 863**

LLG-Headspace Seals ND20 (Pressure Release Caps), Aluminium, ready assembled

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	silver, centre hole	Butyl red / PTFE grey	50° shore A	3.00	100	**9.003 455**
	silver, centre hole	Butyl grey / PTFE grey	50° shore A	3.00	100	**4.001 557**
	silver, centre hole	Pharma-Fix-Septa Butyl/PTFE	50° shore A	3.00	100	**4.008 276**
	silver, centre hole	Silicone blue transp. / PTFE transparent	45° shore A	3.00	100	**7.050 286**
	silver, centre hole	Silicone white / PTFE beige	45° shore A	3.20	100	**9.003 456**
	silver, centre hole (no liner)				100	**4.008 271**

LLG-Crimp Seals ND20 (Complete Tear Off Caps), Aluminium, ready assembled

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	silver	Pharma-Fix-Septa Butyl/PTFE	50° shore A	3.00	100	**7.060 471**
	silver	Butyl stopper, grey only unassembled	37° shore A		100	**7.060 479**
	silver (no liner)				100	**7.056 751**

LLG-Bimetal Crimp Seals ND20, ready assembled, magnetic

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	red/silver, centre hole	Butyl grey / PTFE grey	50° shore A	3.00	100	**9.003 457**
	red/silver, centre hole	Silicone blue transp. / PTFE transparent	45° shore A	3.00	100	**6.234 541**
	red/silver, centre hole	Silicone white / PTFE beige	45° shore A	3.20	100	**9.003 458**
	red/silver, centre hole (no liner)				100	**4.008 272**

LLG-Steel Crimp Seals ND20, ready assembled, magnetic

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	gold, center hole 8 mm	Butyl grey / PTFE grey	50° shore A	3.00	100	**6.229 635**
	gold, center hole 8 mm	Pharma-Fix-Septa Butyl/PTFE	50° shore A	3.00	100	**6.902 419**
	gold, center hole 8 mm	Silicone blue transp./ PTFE transparent	45° shore A	3.00	100	**7.850 010**
	gold, center hole 8 mm (no liner)				100	**7.625 012**

LLG-PE Caps ND20, transparent and appropriate Septa ND19

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	PE cap, transparent 22.00 x 8.40mm for HS crimp neck 4.3mm centre hole	Natural rubber red-orange/ TEF transparent	60° shore A	1.30	1000	**9.003 543**
	PE cap, transparent 22.00 x 9.10mm for DIN crimp neck 4.3mm centre hole	Natural rubber red-orange/ TEF transparent	60° shore A	1.30	1000	**6.234 902**
	PE cap, transparent 22.00 x 8.40mm for HS crimp neck 4.3mm centre hole	Butyl red / PTFE grey	55° shore A	1.30	1000	**9.003 544**
	PE cap, transparent 22.00 x 9.10mm for DIN crimp neck 4.3mm centre hole	Butyl red / PTFE grey	55° shore A	1.30	1000	**9.003 545**
	height 8.4mm, for HS crimp neck, 4.3mm centre hole (no liner)				100	**6.227 768**
	height 9.1mm, for DIN crimp neck, 4.3mm centre hole (no liner)				100	**7.052 184**
		Butyl red / PTFE grey	55° shore A	1.30	100	**7.060 425**
		Natural rubber red-orange/ TEF transparent	45° shore A	1.30	100	**7.051 039**

LLG-Septa for Crimp Caps ND20

	Septa	Hardness	Thickness mm	PK	Cat. No.
	Butyl red / PTFE grey	50° shore A	3.00	100	**7.060 427**
	Butyl grey / PTFE grey	50° shore A	3.00	100	**4.008 273**
	Pharma-Fix-Septa Butyl/PTFE	50° shore A	3.00	100	**7.071 063**
	Silicone blue transp./ PTFE transparent	45° shore A	3.00	100	**4.008 274**
	Silicone white / PTFE beige	45° shore A	3.20	100	**7.050 202**
	Silicone white / Aluminium foil silver	50° shore A	3.00	100	**4.001 550**

LLG Stoppers ND20

	Description	PK	Cat. No.
	butyl grey	100	**7.060 433**
	bromine butyl red	100	**6.900 963**

1 LLG-Crimp Neck Vial ND20

NEW!

100 mL crimp neck vial, 51.6 x 94.5mm, clear, flat bottom, flat DIN crimp neck

Description	PK	Cat. No.
Vials only	88	**6.231 858**
Cap	100	**7.060 471**

1



LLG-Screw Neck Vials ND24 (EPA Vials)





Capacity	ml	20.00	20.00	30.00	30.00	40.00	40.00	60.00	60.00
o.d. x Height	mm	27.5 x 57	27.5 x 57	27.5 x 72.5	27.5 x 72.5	27.5 x 95	27.5 x 95	27.5 x 140	27.5 x 140
Colour		clear	amber	clear	amber	clear	amber	clear	amber
Form		flat bottom	flat bottom	flat bottom	flat bottom	flat bottom	flat bottom	flat bottom	flat bottom
PK		100	100	100	100	100	100	100	100
Cat. No.		**4.008 204**	**4.008 298**	**6.267 124**	**6.267 125**	**4.008 297**	**4.008 299**	**6.267 126**	**6.267 127**

LLG-PP Screw Seals ND24 (UltraBond Seals and ready assembled Seals ND24), PP Screw Caps ND24 (empty) and Septa ND22

	Caps	Septa	Hardness	Thickness mm	PK	Cat. No.
	white, perforated	Butyl red / PTFE gray (mounted)	55° shore A	2.50	1000	**7.633 064**
	white, closed	Butyl red / PTFE gray (mounted)	55° shore A	2.50	1000	**7.615 156**
	Ultrabond*, white, center hole	Silicone white / PTFE beige	45° shore A	3.20	100	**4.008 293**
	Ultrabond*, white, closed top	Silicone white / PTFE beige	45° shore A	3.20	100	**4.008 292**
	white, perforated	Silicone white / PTFE beige (mounted)	45° shore A	3.20	1000	**6.233 339**
	white, closed	Silicone white / PTFE beige (mounted)	45° shore A	3.20	1000	**9.003 541**
	white, center hole	no liner			100	**4.008 295**
	white, closed top	no liner			100	**4.008 296**
		Silicone white / PTFE beige	45° shore A	3.20	100	**4.008 291**
		Butyl red / PTFE gray	55° shore A	2.50	1000	**9.003 542**

*Cap+Liner form an inseparable unit, so that the liner cannot be pushed into the vial even with a blunt needle



1 LLG-Crimping Tools ND8/ND11/ND13/ND20

Stainless steel crimping Tools ND11, ND13, ND20 for cleanroom use available on request.

Description	Size	PK	Cat. No.
Manual crimper for 8 mm aluminium caps	ND8	1	**9.003 470**
Manual decapper for 8 mm aluminium caps	ND8	1	**9.003 511**
Manual crimper, height adjustable, for 11 mm aluminium crimp caps	ND11	1	**9.003 471**
Manual decapper for 11 mm aluminium crimp caps	ND11	1	**9.003 367**
Manual crimper, height adjustable, for 13 mm aluminium crimp caps	ND13	1	**9.003 473**
Manual crimper, height adjustable, for 13 mm flip top/flip off caps	ND13	1	**4.008 266**
Manual decapper for 13 mm aluminium crimp caps	ND13	1	**9.003 368**
Manual crimper, height adjustable, for 20mm aluminium crimp caps	ND20	1	**9.003 475**
Manual crimper, height adjustable, for 20mm flip top/flip off caps	ND20	1	**4.008 278**
Manual decapper for 20mm aluminium crimp caps	ND20	1	**9.003 369**

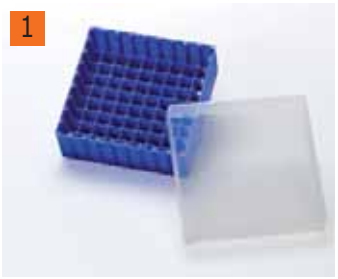
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LLG-Storage Boxes, PP

9.405 750-751-753-754-756: With alphanumeric coding on the edge and the bottom of each cavity. Suitable for storage in the fridge.

Dimensions (l x w x h) mm	Colour	Array	For	Bottle size ml	PK	Cat. No.
130 x 130 x 45	blue	9 x 9	ND8, 9, 10, 11	1.5	1	**9.405 750** 1
130 x 130 x 45	orange	9 x 9	ND8, 9, 10, 11	1.5	1	**9.405 751**
130 x 130 x 45	yellow	9 x 9	ND8, 9, 10, 11	1.5	1	**9.405 753**
130 x 130 x 45	green	9 x 9	ND8, 9, 10, 11	1.5	1	**9.405 754**
130 x 130 x 52	red	7 x 7	ND13	4.0	1	**9.405 756**
130 x 130 x 102	blue	5 x 5	ND20	5 / 10 / 20 ml	1	**4.001 528**
67 x 67	neon-green	4 x 4	ND8, 9, 10, 11	1.5 / 2.0	1	**9.405 760**
67 x 67	neon-pink	4 x 4	ND8, 9, 10, 11	1.5 / 2.0	1	**9.405 761**
67 x 67	blue	4 x 4	ND8, 9, 10, 11	1.5 / 2.0	1	**9.405 762**

1



9.405 750

2 NMR tubes, 5mm borosilicate glass 3.3, standard

Hilgenberg

The NMR tubes have precise tolerances for consistent high accuracy. Most suitable for autosampling NMR systems and high-throughput NMR.
- Borosilicate glass 3.3
- Economy quality
- One end closed, rim fire polished
- Applicable until 600MHz

Please order closing caps separately.

Outer diam. mm	Int. diam. mm	Wall thickness mm	Length mm	PK	Cat. No.
4.95 ± 0.05	4.19 ± 0.05	0.38	178	100	**9.400 310**
4.95 ± 0.05	4.19 ± 0.05	0.38	203	100	**9.400 311**

2



3 Closing caps for 5mm NMR tubes

Hilgenberg

Description	Colour	PK	Cat. No.
NMR closing caps for 5mm tubes	red	100	**9.400 312**
NMR closing caps for 5mm tubes	green	100	**9.400 313**
NMR closing caps for 5mm tubes	yellow	100	**9.400 314**
NMR closing caps for 5mm tubes	black	100	**9.400 315**
NMR closing caps for 5mm tubes	blue	100	**9.400 316**

3



4 NMR tubes, 5mm, DURAN®, three accuracy classes

DURAN Group

NMR tubes are available, according to requirement, in three accuracy classes. The correct tube can be selected depending on magnetic field and spin. The tubes are noteworthy for their close tolerances and accuracy, especially to their straightness, wall thickness and wall thickness distribution. Consequently, quick and accurate test results are achievable.

Type Economic:
The disposable for economical use in fully automatic sample dispensers or where high throughputs are involved.
- Applicable until 300 MHz

Type Professional:
For professional use in industry and research in the medium and high resolution area of NMR spectroscopy.
- Applicable until 400 MHz

Type Scientific:
For scientific use with high value samples and optimum substance exploitation in the highest resolution range of NMR spectroscopy.
- Applicable until 500 MHz

Please order closing caps separately.

4



Type	Outer diam. mm	Int. diam. mm	Length mm	PK	Cat. No.
Economic	4,95 +/- 0,05	4,20 +/- 0,05	178	1	**7.083 596**
Professional	4,97 +/- 0,025	4,20 +/- 0,025	178	1	**7.083 595**
Scientific	4,97 +/- 0,013	4,20 +/- 0,025	178	1	**7.084 720**

1



1 NMR tubes, 3 and 5mm, borosilicate glass 3.3, KIMAX®-HQ

NEW!

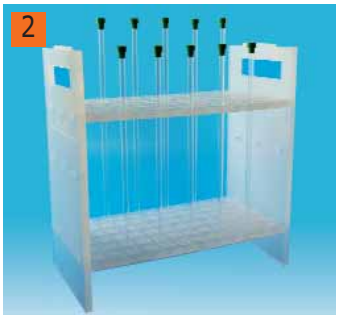
Kimble Kontes

Our KIMAX®-HQ NMR tubes are our highest quality NMR tubes and are 100% gauged for wall thickness, concentricity and camber specifications.
- High-Quality NMR tubes
- Attached polyethylene caps
- Sandblasted marking spot
- Manufactured from 33 expansion, low extractable borosilicate glass conforming to USP Type I and ASTM E438, Type I, Class A requirements

External diameter
at 3mm: 3.0124 (+0.00/-0.013) mm
at 5mm: 4.97 (+0.00/-0.013) mm
Inner diameter
at 3mm: 2.4003 (+0.013/+0.00) mm
at 5mm: 4.20 (+0.013/+0.000) mm
Wall thickness
at 3mm: 0.284mm
at 5mm: 0.375mm

Type	Diam. mm	Length mm	PK	Cat. No.
600-700 MHz	5	178	5	**9.400 317**
600-700 MHz	5	203	5	**9.400 318**
900 MHz	5	178	5	**9.400 319**
900 MHz	5	203	5	**9.400 320**
100 MHz	3	178	5	**9.400 321**
300 MHz	3	203	5	**9.400 322**
200 MHz	3	178	5	**9.400 323**
400 MHz	3	178	5	**9.400 324**
500 MHz	3	178	5	**9.400 325**
500 MHz	3	203	5	**9.400 326**
600-800 MHz	3	178	5	**9.400 327**
600-800 MHz	3	203	5	**9.400 328**

2



2 NMR Tube Rack, polypropylene

NEW!

Polypropylene rack with carrying handles features an upper deck with holes and a lower deck support for tube ends. Stackable. For 72 tubes with 3 or 5mm diameter. Dimensions: 213x115x222mm (LxWxH)

Type	PK	Cat. No.
NMR Tube Rack	1	**9.301 065**

partner of the LLG Lab Logistics Group

We can supply this manufacturer's whole product range !

HAMILTON

E & OE.

1 Syringe Terminations

Hamilton

Syringe terminations are offered in a number of different configurations designed to accommodate a broad range of applications. From cemented to removable needles, and luer taper /PTFE luer-lock to special syringe fittings, syringe barrel terminations serve a key function at the interface of a syringe and its mating connection.

N, NR (Cemented Needle, Rheodyne)
Needles are cemented into the glass syringe barrel at a point corresponding to the zero graduation mark. NR stands for syringes with Rheodyne specified needles.

LTN (Luer Tip Cemented Needle)
Needles are cemented into the conical glass luer tip of the barrel at a point corresponding to the zero graduation mark.

SN (Special Needle)
Hamilton offers customized syringes with special needles. State the following details: needle length, gauge, point style, and whether electro-tapered. Example of a correct specification: 701 SN, 70mm, gauge 25, point style 3, not electrotapered. Without these details the corresponding standard syringe 701 N will be supplied.

RN (Removable Needle)
Removable needles seat precisely to the zero graduation mark of the syringe. Allows the use of different specification needles on the same syringe barrel.

LT (Luer Tip)
Ground glass syringe barrel with a male luer taper accepts most hypodermic needles. Use Kel-F hub needles and connectors for a tight seal.

KH (Knurled Hub)
Knurled hub is used on 7000 Series syringes. The attachment of a spacer enables repeatable depth injections.

C (ChemSeal)
1/4"-28 UNF, male fitting. Used in low volume applications where system dead volumes need to be minimized.

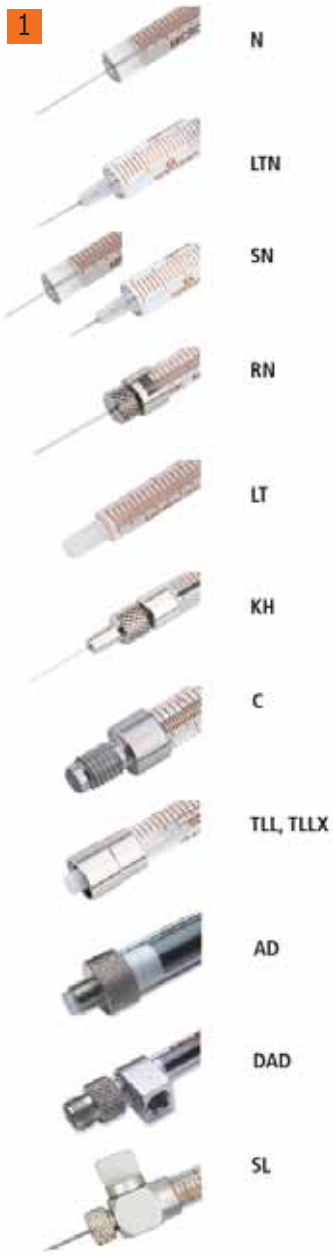
TLL, TLLX (PTFE Luer-Lock)
Male luer taper with nickel-plated brass hub accepts, and locks in place, luer hub needles and connectors. The X-style plunger stop incorporates a 6-32 UNC female thread on the end of the stop to allow attachment to drive arm mechanisms, such as on the Microlab 500 Series diluters/dispensers.

AD (AccuDil®)
M8 x 0.75, male fitting. Used with Microlab 1000 PLUS diluter/dispenser.

DAD (Diluter AccuDil®)
M8 x 0.75 male fitting with M6 x 1 side port. Used with Microlab 1000 Plus diluter/dispenser.

SL (SampleLock)
On/Off syringe valve with RN needle is cemented to a syringe barrel. Used for headspace, environmental sample collection and storage, pre-pressurization of gaseous samples for GC analysis, and sample spiking.

1



2 Microlitre syringes, Needle Types

Hamilton

Point Style 2 (pst2): 12° bevelled non-coring needle point recommended for septum penetration. Ideal for gas chromatographic applications.

Point Style 3 (pst3): Blunt needle point (90°) for use with HPLC injection valves. Also recommended for applications where exact dosing is required (e.g. thin layer chromatographs).

Point Style 4 (pst4): 10-12° bevelled needle point recommended for life science applications; sharp point for animal injection.

Point Style 5 (pst5): Conical needle with side port for penetration of septa, thin-gauged vinyls and plastics without coring; minimizes septum damage

Point Style AS (pstAS): Special conical style needle point (8° taper) designed to withstand the demands of multiple injections; exclusively used on GC autosampler syringes

2



1



1 Microlitre syringes, 700 series, with fixed needle

With fixed needle (N, NR). NR stands for syringes with Rheodyne specified needles. Plungers are individually fitted, therefore cannot be interchanged and are not available as replacement parts. Needles are electro-tapered.

Hamilton

Needle length 51mm

Type	Capacity µl	Gauge	Point style	PK	Cat. No.
75 N	5	26s	2 (GC)	1	**9.221 001**
701 N	10	26s	2 (GC)	1	**9.221 002**
701 N	10	26s	2 (GC)	6	**9.221 010**
702 N	25	22s	2 (GC)	1	**9.221 003**
705 N	50	22s	2 (GC)	1	**9.221 004**
710 N	100	22s	2 (GC)	1	**9.221 005**
725 N	250	22s	2 (GC)	1	**9.221 006**
750 N	500	22s	2 (GC)	1	**9.221 007**
75 N	5	26s	3 (HPLC)	1	**9.221 011**
701 N	10	26s	3 (HPLC)	1	**9.221 012**
702 NR	25	22s	3 (HPLC)	1	**9.221 013**
705 NR	50	22s	3 (HPLC)	1	**9.221 014**
710 NR	100	22s	3 (HPLC)	1	**9.221 015**
725 NR	250	22s	3 (HPLC)	1	**9.221 016**
750 N	500	22s	3 (HPLC)	1	**6.055 335**

2



9.221 081

Microlitre syringes, 700 series, for removable needles

- 5µl - 500µl
- For use with liquids
- Removable needles (RN9, or luer tip (LT)
- Plungers and Syringe barrels are not interchangeable or replaceable
- Tight tolerances between the plunger and the barrel

Hamilton

Needle length 51mm
Point style 2 (GC)

Type	Capacity µl	Gauge	Point style	PK	Cat. No.
75 RN	5	26s	2 (GC)	1	**9.221 080**
701 RN	10	26s	2 (GC)	1	**9.221 081** 2
701 RN	10	26s	2 (GC)	6	**6.059 899**
702 RN	25	22s	2 (GC)	1	**9.221 082**
705 RN	50	22s	2 (GC)	1	**9.221 083**
710 RN	100	22s	2 (GC)	1	**9.221 084**
725 RN	250	22s	2 (GC)	1	**9.221 085**
750 RN	500	22s	2 (GC)	1	**9.221 086**
701 LT*	10			1	**9.221 021** 3
702 LT*	25			1	**9.221 022**
705 LT*	50			1	**9.221 023**
710 LT*	100			1	**9.221 024**
725 LT*	250			1	**9.221 025**
750 LT*	500			1	**9.221 026**

* Needle - please order separately.

3



9.221 021

4



4 Needles for RN syringes

Removable. Not for use in HPLC applications.

Hamilton

Length 51mm
Point style 2

Type	Ext. diam. mm	Int. diam. mm	Gauge	Volume	PK	Cat. No.
7758-02	0.5	0.13	26s	2,5 µl - 100 µl	6	**9.221 692**
7758-03	0.7	0.15	22s	2,5 µl - 100 µl	6	**9.221 693**
7779-01	0.7	0.41	22s	250 µl - 10 ml	6	**9.221 694**
7779-03	0.7	0.15	22s	250 µl - 10 ml	6	**9.221 695**

E & OE.

1 Microlitre syringes, 800 series, with cemented/ removable needles

Hamilton

With cemented-in, standard needles (N).
With metal handle. Plungers are individually fitted, therefore cannot be interchanged and are not available as replacement parts. Needles are electro-tapered.

With removable needle (RN).
Type RN complete with metal plunger handles.
Type RN B/P are syringes only without metal plunger (replacement syringes).
Needle length 51mm
Point style 2 (GC)


1

Type	Capacity µl	Gauge	Point style	PK	Cat. No.
85 N		26s	2	1	**9.221 105**
801 N	10	26s	2	1	**9.221 110**
802 N	25	22s	2	1	**9.221 111**
805 N	50	22s	2	1	**9.221 112**
810 N	100	22s	2	1	**9.221 113**
85 RN	5	26s	2	1	**9.221 115**
801 RN	10	26s	2	1	**9.221 116**
802 RN	25	22s	2	1	**9.221 117**
805 RN	50	22s	2	1	**9.221 118**
810 RN	100	22s	2	1	**9.221 119**
825 RN	250	22s	2	1	**9.221 120**
85 RN	5	26s		1	**6.803 384**
801 RN	10	26s		1	**6.222 013**
810 RN	100	22s		1	**6.231 153**
801 RN B/P	10			1	**9.221 172**

Microlitre syringes, 1700/1000 series, with LT and gas-tight

Hamilton

Glass barrel with PTFE-coated plunger, seal and with Luer Tip (LT).
Gas-tight microlitre syringe without needle.
MS = Plunger stop fitted to prevent damage to the PTFE seal. Prevents the plunger tip from reaching the end of the syringe.


2

9.221 210


3

9.221 251

Type	Capacity µl	Grad. µl	PK	Cat. No.
1710 LT	100	1	1	**9.221 210** 2
1725 LT	250	5	1	**9.221 225**
1750 LT	500	10	1	**9.221 250**
1001 LT	1000	10	1	**9.221 251** 3
1002 LT	2500	50	1	**9.221 252**
1005 LT	5000	100	1	**9.221 255**

Microlitre syringes, 1700/1000 series, with TLL/ TLLX and gas tight

Hamilton

Glass barrel with PTFE-coated plunger and seal, and Luer lock outlet (TLL). TLLX with 6-32 UNC female thread. Allows attachment to drive arm mechanisms, e.g. Microlab 500 Series diluters/dispensers.
Gas-tight microlitre syringe without needle. TLLX= Plunger stop fitted to prevent damage to the PTFE seal. Prevents the plunger tip from reaching the end of the syringe.


4

9.221 300


5

9.221 348

Type	Capacity µl	Grad. µl	PK	Cat. No.
1702 TLLX, TLL with stop	25	0,25	1	**9.221 300** 4
1705 TLLX, TLL with stop	50	0,5	1	**9.221 305**
1710 TLLX, TLL with stop	100	1	1	**9.221 310**
1725 TLLX, TLL with stop	250	5	1	**9.221 315**
1750 TLLX, TLL with stop	500	10	1	**9.221 320**
1001 TLL	1000	10	1	**9.221 348** 5
1001 TLLX	1000	20	1	**9.221 325**
1001 TLLX	1000	0,01	1	**9.221 328**
1002 TLL	2500	50	1	**9.221 330**
1005 TLL	5000	100	1	**9.221 335**
1010 TLL	10000	200	1	**9.221 340**
1025 TLL	25000	500	1	**9.221 347**
1025 TLL	25000	500	1	**9.221 345**

1



1 Needles for LT/TLL/TLLX syringes

Hamilton

Removable. With Luer tip made of Kel-F. All hypodermic needles available according to specification in 10mm to max. 1000mm lengths. Further point styles available on request.

Needle length 51mm

Type	Ext. diam. mm	Int. diam. mm	Gauge	Point style	PK	Cat. No.
KF 726s pst2	0.47	0.13	26s	2 (GC)	6	**9.221 609**
KF 726 pst2	0.46	0.26	26s	2 (GC)	6	**9.221 626**
KF 725 pst2	0.51	0.26	25s	2 (GC)	6	**9.221 625**
KF 724 pst2	0.57	0.31	24s	2 (GC)	6	**9.221 624**
KF 723 pst2	0.64	0.34	23s	2 (GC)	6	**9.221 623**
KF 722s pst2	0.72	0.15	22s	2 (GC)	6	**9.221 607**
KF 722 pst2	0.72	0.41	22s	2 (GC)	6	**9.221 622**
KF 721 pst2	0.82	0.51	21s	2 (GC)	6	**9.221 621**
KF 720 pst2	0.91	0.60	20s	2 (GC)	6	**9.221 620**
KF 726s pst3	0.47	0.13	26s	3 (HPLC)	6	**9.221 709**
KF 726 pst3	0.46	0.26	26s	3 (HPLC)	6	**9.221 726**
KF 725 pst3	0.51	0.26	25s	3 (HPLC)	6	**9.221 735**
KF 724 pst3	0.57	0.31	24s	3 (HPLC)	6	**9.221 724**
KF 723 pst3	0.64	0.34	23s	3 (HPLC)	6	**9.221 723**
KF 722s pst3	0.72	0.15	22s	3 (HPLC)	6	**9.221 707**
KF 722 pst3	0.72	0.41	22s	3 (HPLC)	6	**9.221 722**
KF 721 pst3	0.82	0.51	21s	3 (HPLC)	6	**9.221 721**
KF 720 pst3	0.91	0.60	20s	3 (HPLC)	6	**9.221 720**

2



9.221 487

Microlitre syringes, 1700/1000 series, with removable needle

Hamilton

Gas-tight microlitre syringes with removable needle (RN).

Needle length 51mm
Point style 2 (GC)

Type	Capacity µl	Gauge	Point style	PK	Cat. No.
1701 RN	10	26s	2 (GC)	1	**9.221 487** 2
1702 RN	25	22s	2 (GC)	1	**9.221 488**
1702 RN	50	22s	2 (GC)	1	**9.221 489**
1710 RN	100	22s	2 (GC)	1	**9.221 490**
1725 RN	250	22s	2 (GC)	1	**9.221 491**
1750 RN	500	22s	2 (GC)	1	**9.221 492**
1001 RN	1000	22s	2 (GC)	1	**9.221 493** 3
1002 RN	2500	22s	2 (GC)	1	**9.221 494**

3



9.221 493

4



9.221 448

Microlitre syringes, 1700/1000 series, with cemented needle

Hamilton

With PTFE plunger seal.
Gastight microlitre syringes with cemented-in needles (N).
Needles are electro-tapered (LTN).

Needle length 51mm
Point style 2 (GC)

Type	Capacity µl	Gauge	Point style	PK	Cat. No.
1701 N	10	26s	2 (GC)	1	**9.221 448** 4
1702 N	25	22s	2 (GC)	1	**9.221 449**
1705 N	50	22s	2 (GC)	1	**9.221 450**
1710 N	100	22s	2 (GC)	1	**9.221 455**
1725 N	250	22s	2 (GC)	1	**9.221 460**
1750 LTN	500	22s	2 (GC)	1	**9.221 465**
1001 LTN	1000	22	2 (GC)	1	**9.221 470** 5
1002 LTN	2500	22	2 (GC)	1	**9.221 475**
1005 LTN	5000	22	2 (GC)	1	**9.221 480**
1010 LTN	10000	22	2 (GC)	1	**9.221 485**

5



9.221 470

E & OE.

1 Microlitre syringes, 1800 series, with cemeted or removable needle

10µl to 250µl *Hamilton*
- for use with gases and liquids
- removable needles (RN) or cemented needles (N)
- precision-machined PTFE-tipped plungers
- reinforced plungers
- plunger assemblies and glass barrels are replaceable


1

Type	Capacity µl	Gauge	Point style	PK	Cat. No.
1801 N	10	26s	2	1	**9.221 836**
1802 N	25	22s	2	1	**9.221 837**
1805 N	50	22s	2	1	**9.221 838**
1810 N	100	22s	2	1	**9.221 839**
1825 N	250	22s	2	1	**9.221 840**
1801 RN	10	26s	2	1	**9.221 831**
1802 RN	25	22s	2	1	**9.221 832**
1805 RN	50	22s	2	1	**9.221 833**
1810 RN	100	22s	2	1	**9.221 834**
1825 RN	250	22s	2	1	**9.221 835**

2 Microlitre syringes, 7000 series

For dispensing minute liquid volumes and features a Modified Microliter design. The end of the plunger has a tungsten wire extension that fits the entire length of the needle all the way to the tip, resulting in a zero dead volume syringe. *Hamilton*

Needle length 70mm


2

Type	Capacity µl	Gauge	Point style	PK	Cat. No.
7000.5 KH	0.5	25	2	1	**6.700 111**
7001 KH	1.0	25	2	1	**9.221 121**
7101 KH	1.0	22	2	1	**6.802 391**
7002 KH	2.0	25	2	1	**6.204 624**
7102 KH	2.0	23	2	1	**6.801 037**
7105 KH	5.0	24	2	1	**9.221 125**
7000.5OC KH	0.5	32	3	1	**9.221 590**
7000.5 KH	0.5	25	3	1	**9.221 126**
7001 KH	1.0	25	3	1	**6.802 598**
7101 KH	1.0	22	3	1	**9.221 131**
7002 KH	2.0	25	3	1	**9.221 122**
7102 KH	2.0	23	3	1	**9.221 132**
7105 KH	5.0	24	3	1	**6.050 160**

3 Microlitre syringe needles for HPLC

Removable. For use with Rheodyne valves and Valco system VSF 2. Fit Hamilton syringes from 5 to 100µl or 250 to 1000µl capacity. *Hamilton*

Needle length 51mm
Point style 3 (HPLC)


3

Type	Volume	Gauge	Point style	PK	Cat. No.
7780-04	250 µl - 1000 µl	22s	3 (HPLC)	6	**6.203 934**
7770-01	2,5 µl - 100 µl	22s	3 (HPLC)	6	**9.221 603**

Microlitre syringes for GC-autosamplers A

NEW!

With cemented-in needles (N) for GC-autosamplers Agilent 7670 A, 7671 A, 7672 A. With fixed needle for CTC GC PAL autosamplers. *Hamilton*

Syringe types with Special needle (SN) available on request.

Needle length 51mm


4

9.221 002

Type	Capacity µl	Gauge	Point style	PK	Cat. No.
1701 N	10.0	26s	2 (GC)	1	**9.221 448**
701 N	10.0	26s	2 (GC)	1	**9.221 002** 4
75 FN CTC	5.0	26s	AS	1	**6.304 828**
701 FN CTC	10.0	26s	2 (GC)	1	**6.301 578**
701 FN CTC	10.0	26s	AS	1	**6.303 229**
7701.2 CTC	1.2	26s	AS	1	**6.900 991**
1702 FN CTC Slim Line	25.0	26s	AS	1	**9.221 040**
1702 FN CTC	25.0	26s	AS	1	**6.239 337**
1710 FN CTC	100.0	26s	AS	1	**6.206 124**
1725 FN CTC	250.0	26s	AS	1	**6.239 360** 5
1750 FN CTC	500.0	26s	AS	1	**9.221 041**


5

6.239 360

Microlitre syringes for GC-autosamplers please see page 1386.

1



9.221 196

2



7.636 288

Microlitre syringe for GC-Autosampler

With cemented-in needles (N). For autosamplers Agilent 7673 - 7683, 6850 ALS and CTC GC PAL instruments. *Hamilton*

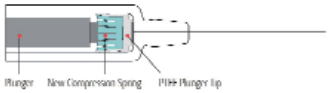
Syringe types with Special needle (SN) available on request.

Type	Capacity µl	Gauge	Point style	Needle length	PK	Cat. No.
701 N CTC	10	23s	2	51	1	**9.221 063**
701 N CTC	10	23s	AS	51	1	**7.636 288** 2
701 ASN	10	23s	AS	43	1	**9.221 196** 1

3



4



3 4 GC-Syringes CTC Headspace®

The new High Dynamic (HD-) plunger has been optimised for higher throughput in the headspace technique. This headspace syringe has been designed for the CTC PAL autosampler system. Modern GC Headspace analysis requires injecting over large temperature ranges. Traditional headspace syringes are composed of rubber O-ring sealed plungers which have a limited sealing performance at high temperatures. *Hamilton*

Advantages:

- New sealing system based on a novel metal spring allows working with enhanced tightness
- Excellent performance over a large temperature range and temperature gradients
- Increased life-time compared to traditional headspace syringes
- Increased accuracy and reproducibility of headspace GC analysis

Type	Capacity µl	Gauge	Point style	PK	Cat. No.
1001	1000	23	5	1	**6.200 515**
1001	1000	26	5	1	**6.303 926**
1002	2500	23	5	1	**6.201 089**
1002	2500	26	5	1	**6.801 137**
1005	5000	23	5	1	**6.235 326**
1005	5000	26	5	1	**9.221 065**

5



5 Microlitre syringe C-Line for HPLC autosamplers

With fixed needles (FN). *Hamilton*

Needle length 51mm

Point style 3 (HPLC)

Type	Capacity µl	Gauge	PK	Cat. No.
700 Slim Line	10	22s	1	**6.200 686**
1700 Slim Line	10	22s	1	**9.221 052**
1700	25	22s	1	**6.200 903**
1700 Slim Line	25	22s	1	**6.236 085**
1700 Slim Line	100	22s	1	**7.200 498**
1700	250	22s	1	**6.803 417**
1700	500	22s	1	**9.221 051**
1000	1000	22s	1	**7.210 113**
1000	2500	22s	1	**7.210 114**
1000	5000	22s	1	**9.221 053**

6



6 Microlitre syringe x-type for HPLC autosamplers

NEW!

With deactivated needle and glass barrel for inert liquid path and enhanced lifetime. Near zero carryover. *Hamilton*

Type	Capacity µl	Gauge	PK	Cat. No.
1702	25	22s	1	**6.256 766**
1705	50	22s	1	**9.221 061**
1710	100	22	1	**9.221 062**
1710	100	22s	1	**6.260 430**

7



7 Repeat dispensing device PB600-1 for Microlitre syringes

For syringes 25µl to 2.5ml. Dispenses 2% of total syringe volume each time the plunger is depressed. *Hamilton*

Type	PK	Cat. No.
PB 600-1	1	**9.221 650**

E & OE.

Gas syringes, FORTUNA®, Borosilicate glass

Borosilicate glass. Transparent calibrated barrel.
With chemically-resistant, diffused amber stain graduations.

Poulten & Graf

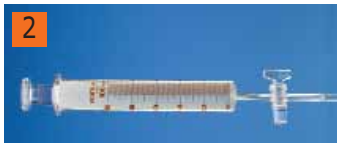
Capacity ml	Grad. ml	Type	PK	Cat. No.
25	0.5	Without stopcock	1	**9.143 055**
50	0.5	Without stopcock	1	**9.143 056**
100	1.0	Without stopcock	1	**9.143 057** 1
50	0.5	With capillary stopcock	1	**9.143 066**
100	1.0	With capillary stopcock	1	**9.143 067** 2

1



9.143 057

2



9.143 067

3 4 Syringes, FORTUNA OPTIMA®, Glass

Made of Durobax® glass. With centre glass or metal luer nozzle (Luer or Luer-Lock). Interchangeable plungers and barrels (between identical capacity syringes). Autoclavable up to +134°C. The amber graduation is acid and alkali resistant. With CE marking.

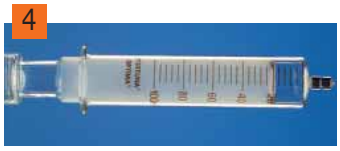
Poulten & Graf

Capacity ml	Material Cone	Nozzle type	PK	Cat. No.
1	Glass	Luer	1	**9.222 021**
2	Glass	Luer	1	**9.222 022**
5	Glass	Luer	1	**9.222 025**
10	Glass	Luer	1	**9.222 030**
20	Glass	Luer	1	**9.222 032**
50	Glass	Luer	1	**9.222 035**
1	Metal	Luer-Lock	1	**9.222 061**
2	Metal	Luer-Lock	1	**9.222 062**
5	Metal	Luer-Lock	1	**9.222 065**
10	Metal	Luer-Lock	1	**9.222 070**
20	Metal	Luer-Lock	1	**9.222 072**
50	Metal	Luer-Lock	1	**9.222 075**

3



4



5 All-glass syringes Dosys™ ganzglas 155, borosilicate glass 3.3

NEW!

Socorex

The reusable borosilicate glass syringes stand for superior chemical heat and shock resistance in various application fields. A precious, low cost alternative to disposable plastic syringes for easy infusing, diluting, aspirating and sampling.

Product advantages
- Precision-machined plunger and barrel
- Excellent fitting and liquid tightness (not gas tight)
- Permanent, high visibility graduations
- Glass Luer and metal Luer Lock nozzle
- Sterilisation up to 160°C/320°F
- Very easy to disassemble and clean

5



Capacity ml	Grad. ml	Material Cone	Nozzle type	PK	Cat. No.
0.1 - 1	0.05	Glass	Luer	3	**6.253 931**
0.2 - 5	0.2	Glass	Luer	3	**6.261 028**
1 - 10	0.2	Glass	Luer	3	**6.261 029**
1 - 20	1	Glass	Luer	2	**6.235 425**
1 - 30	2	Glass	Luer	2	**7.658 119**
10 - 100	10	Glass	Luer	1	**6.254 727**
0.1 - 1	0.05	Metal	Luer-Lock	3	**6.902 600**
0.5 - 2	0.1	Metal	Luer-Lock	3	**6.902 601**
0.2 - 5	0.2	Metal	Luer-Lock	3	**6.902 602**
1 - 10	0.2	Metal	Luer-Lock	3	**6.902 603**
1 - 20	1	Metal	Luer-Lock	2	**6.902 604**
1 - 30	2	Metal	Luer-Lock	2	**7.658 120**
1 - 50	2	Metal	Luer-Lock	1	**6.902 605**
10 - 100	10	Metal	Luer-Lock	1	**6.241 758**
10 - 150	10	Metal	Luer-Lock	1	**6.261 030**
10 - 200	10	Metal	Luer-Lock	1	**6.261 031**
10 - 250	10	Metal	Luer-Lock	1	**6.241 759**





1 2 Syringes, Glass-metal

With calibrated glass cylinder and plunger made of stainless steel. Plungers and cylinders interchangeable. With central metal cone. Graduated. Sterilisable up to +134°C. *Poulten & Graf*

Capacity ml	Nozzle type	PK	Cat. No.
1	Luer	1	**9.222 221**
2	Luer	1	**9.222 222**
5	Luer	1	**9.222 225**
10	Luer	1	**9.222 230**
20	Luer	1	**9.222 232**
50	Luer	1	**9.222 235**
1	Luer-Lock	1	**6.401 380**
2	Luer-Lock	1	**9.222 242**
5	Luer-Lock	1	**9.222 245**
10	Luer-Lock	1	**9.222 250**
20	Luer-Lock	1	**9.222 252**
50	Luer-Lock	1	**9.222 255**



3 LLG-Disposable syringes, 3-parts, PP, non-sterile, bulk

NEW!

- Barrel: PP, Plunger: PP and Polyisoprene rubber
- Luer tip
- Smooth flow, tight, high transparency barrel
- Latex-free, pyrogen-free, DEHP-free, non-toxic
- Non-sterile, bulk packed in box of 500
- Defined safety stop to avoid accidental pull-out of plunger

Capacity ml	PK	Cat. No.
2	500	**6.267 267**
5	500	**6.267 268**
10	500	**6.267 269**
20	500	**6.267 270**



4 Disposable syringes HSW NORM-JECT®, 2-part, PP/PE, sterile

- PP barrel, with PE piston *Henke-Sass Wolf*
- smooth flow, tight, high transparency barrel
- no rubber, styrene or DEHP, latex- and silicone-oil-free
- pyrogen-free, PVC-free, non-toxic
- sterile, individually blister strip packed
- defined position of the plunger at volume "0" to feel when plunger is completely inserted
- extended graduation for wider range of application
- tested for use in HPLC
- defined safety stop to avoid accidental pull-out of plunger and loss of medicine

Capacity ml	PK	Cat. No.
1 : 1/100 (Tuberculin)	100	**9.410 000**
2 (3)	100	**9.410 002**
5 (6)	100	**9.410 005**
10 (12)	100	**9.410 010**
20 (24)	100	**9.410 020**
30	50	**9.410 025**
50 (60)	30	**9.410 050**



5 Disposable syringes HSW SOFT-JECT®, 3-part, PP, sterile

- Barrel: PP, Plunger: PP and polyisoprene rubber *Henke-Sass Wolf*
- Luer tip
- smooth flow, tight, high transparency barrel
- gliding of plunger supported by added slipping agent
- latex-free, pyrogen-free, DEHP-free, non-toxic
- sterile, individually blister strip packed
- defined safety stop to avoid accidental pull-out of plunger and loss of medicine

Capacity ml	PK	Cat. No.
1 (Tuberculin)	100	**9.410 061**
3	100	**9.410 062**
5	100	**9.410 063**
10	100	**9.410 064**
20	100	**9.410 065**
50 (60)	50	**9.410 066**

1 Syringes BD Discardit™ II, disposable, 2-piece, PP/PE, sterile



Becton Dickinson

Clear barrel for perfect visualisaion of syringe contents.
- 2-piece syringes with Luer-Tip
- Smooth plunger movement, reduced sliding force
- Retaining ring: prevents accidential plunger rod withdrawal
- Leak-tight: Tested in compliance with ISO 7886-1
- Scale marking: accurate graduation suited to user's needs
- Design of finger grip flanges ensure stability and comfort during injection
- Ergonomically designed plunger for single-handed operation
- Barrel material: Polypropylene
- Plunger material: Polyethylene
- Plunger lubricant: Oleamide
- Colour-coded packing units
- Sterilization method: Ethylene oxide
- Silicone oil-free
- Sterile single packing, single use, latex-free, PVC-free

For pressure applications we recommend three-part syringes.

Capacity ml	Nozzle type	Grad. ml	PK	Cat. No.
2	Concentric	0.10	100	**6.052 153**
5	Eccentric	0.20	100	**7.619 784**
10	Eccentric	0.50	100	**9.410 403**
20	Eccentric	1.00	80	**6.052 157**

2 Disposable syringes, 3-piece, PP, sterile



Polypropylene with two-piece plunger and Luer nozzle. Without needle. Supplied sterile, individually pouch-sealed in outer boxes.

Capacity ml	PK	Cat. No.
1	100	**9.950 296**
2	100	**9.950 297**
5	100	**9.950 298**
10	100	**9.950 299**
20	120	**9.950 300**
50	60	**9.950 301**

3 Disposable syringes HSW FINE-JECT®, PP/stainless steel, sterile



Henke-Sass Wolf

Sterile. Individually wrapped.
Disposable. Luer fitting with plastic sheath.

Type	Diam. mm	Length mm	Colour	PK	Cat. No.
Pravaz 1	0.9	40	yellow	100	**9.410 101**
Pravaz 2	0.8	40	green	100	**9.410 102**
Pravaz 12	0.7	30	black	100	**9.410 112**
Pravaz 14	0.6	30	blue	100	**9.410 114**
Pravaz 16	0.6	25	blue	100	**9.410 116**
Pravaz 18	0.5	25	brown	100	**9.410 118**
Pravaz 20	0.4	20	grey	100	**9.410 120**

4 Disposable needles, PP/Stainless steel, sterile

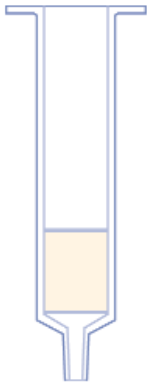


With Luer push-on fitting for use with disposable syringes. Supplied sterile in boxes of 100.

Gauge	Diam. mm	Length mm	PK	Cat. No.
18G x 1½ inch*	1.2	40	100	**9.950 302**
19G x 1½ inch	1.1	40	100	**9.950 303**
20G x 1 inch**	0.9	25	100	**9.950 304**
21G x 1½ inch**	0.8	40	100	**9.950 305**
23G x 1 inch	0.6	25	100	**9.950 306**
25G x ⅝ inch	0.5	16	100	**9.950 307**

* is a thin wall needle with a short bevel.
**are intravenous thin wall needles.

1



1 CHROMABOND® C_{18}

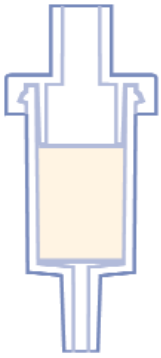
Octadecyl modified silica phase for SPE, not endcapped *MACHEREY-NAGEL*

Base material silica, pore size 60Å, particle size 45µm for C_{18}, specific surface 500m²/g, pH stability 2 to 8 octadecyl phases, not endcapped, carbon content 14% possesses more free silanols (SiOH), which allow secondary interactions with polar groups of the analytes.

Recommended applications: non-polar compounds, pesticides.

Capacity ml	Capacity mg	PK	Cat. No.
1	100	100	**6.226 798**
3	200	50	**9.003 487**
3	500	50	**9.003 488**
6	500	30	**6.902 222**
6	2000	30	**4.003 512**
6	1000	30	**6.234 031**
15	2000	20	**4.003 464**
45	5000	20	**6.700 747**
70	10000	10	**4.003 561**
3	500	250	**4.003 433**
6	500	250	**4.003 435**
6	1000	250	**4.003 437**

2



2 CHROMAFIX® C_{18}

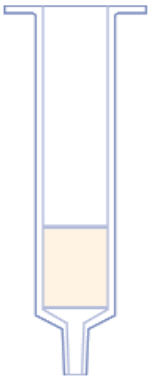
Octadecyl modified silica phase for SPE, not endcapped *MACHEREY-NAGEL*

Base material silica, pore size 60Å, particle size 45µm for C_{18}, specific surface 500m²/g, pH stability 2 to 8 octadecyl phases, not endcapped, carbon content 14% possesses more free silanols (SiOH), which allow secondary interactions with polar groups of the analytes.

Recommended applications: non-polar compounds, pesticides.

Size	Capacity mg	PK	Cat. No.
S	270	50	**7.083 665**
M	530	50	**7.079 617**
L	950	50	**4.003 838**

3



3 CHROMABOND® C_{18} Hydra

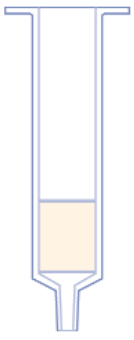
Octadecyl modified silica phase for SPE of polar analytes *MACHEREY-NAGEL*

Base material silica, pore size 60Å, particle size 45µm, specific surface 500m²/g, pH stability 2 to 8, special octadecyl phase for polar analytes, not endcapped, carbon content 15%.

Recommended applications: more polar compounds like pesticides and their polar degradation products, phenols, phenoxycarboxylic acids, nitroaromatics, pharmaceuticals.

Capacity ml	Capacity mg	PK	Cat. No.
1	50	100	**4.003 565**
1	100	100	**4.003 566**
3	200	50	**4.003 567**
3	500	50	**4.003 569**
6	500	30	**4.003 573**
3	1000	50	**4.003 571**
6	1000	30	**4.003 575**
6	2000	30	**4.003 576**
6	3000	30	**4.003 577**

4



4 CHROMABOND® CN/SiOH

Combination phase for SPE analysis of PAH *MACHEREY-NAGEL*

Special combination phase, cyanopropyl phase for selective adsorption of polycyclic aromatics via Π-Π interactions, unmodified silica phase for removal of polar compounds.

Recommended applications: Extraction of the 16 PAHs according to EPA from soil samples.

Capacity ml	Capacity ml / mg	PK	Cat. No.
3	500 / 1000	50	**4.003 507**
6	500 / 1000	30	**6.233 128**
6	500 / 1000	250	**4.003 514**

BIGpack: 4.003 514

E & OE.

1 CHROMABOND® HR-X

Spherical, hydrophobic polystyrene-divinylbenzene resin for SPE *MACHEREY-NAGEL*



Hydrophobic polystyrene-divinylbenzene copolymer pH stability 1 to14. High-purity material with highest reproducibility and lowest blank values due to a novel manufacturing process, spherical particles 85mm; pore size 55 to 60Å. Very high surface 1000m²/g; capacity 390mg/g (caffeine in water). Excellent recovery rates especially for the enrichment of pharmaceuticals/active ingredients due to the spherical structure of the particles, very homogeneous surface, and optimised pore structure.

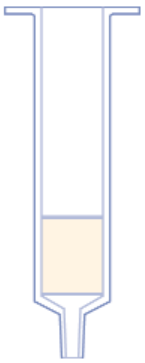
Recommended applications: pharmaceuticals/active ingredients from tablets, creams and water/waste water, drugs and pharmaceuticals from urine, blood, serum and plasma trace analysis of pesticides.

Capacity ml	Capacity mg	PK	Cat. No.
1	30	30	**4.003 808**
3	60	30	**4.003 811**
1	100	30	**4.003 809**
6	200	30	**4.003 814**
3	500	30	**4.003 813**
15	500	20	**4.003 819**
15	1000	20	**4.003 820**
3	200	250	**4.003 806**
6	200	250	**4.003 815**

BIGpacks: 4.003 806/4.003 815
Cartridges in further sizes and phases of the HR-X poduct range available on request.

2 CHROMABOND® NH_2

Aminopropyl modified silica phase for SPE *MACHEREY-NAGEL*



Base material silica, pore size 60Å, particle size 45µm, specific surface 500m²/g, pH stability 2 to 8, aminopropyl phase, carbon content 3.5%, polar, weak anion exchanger.

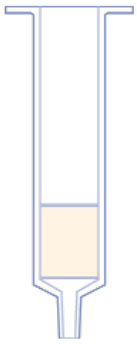
Recommended applications: trace elements, lipids.

Volume ml	Capacity mg	PK	Cat. No.
1	100	100	**4.003 465**
3	200	50	**4.003 609**
3	500	50	**6.228 063**
3	500	250	**4.003 466**
6	500	30	**6.224 868**
6	1000	30	**6.224 845**

BIGpacks: 4.003 466

3 CHROMABOND® SiOH

Unmodified silica phase for SPE *MACHEREY-NAGEL*



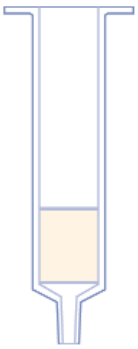
Unmodified, weakly acidic silica, pore size 60Å, particle size 45µm, specific surface 500m²/g, pH stability 2 to 8, very polar, adsorbs humidity from air, for this reason it should be kept well closed and if necessary dried before use due to its high affinity for polar compounds it should not be conditioned with polar (e.g. methanol) or water-containing solvents.

Recommended applications: aflatoxins, chloramphenicol, pesticides, steroids, vitamins.

Capacity ml	Capacity mg	PK	Cat. No.
1	100	100	**6.225 223**
3	200	50	**4.003 547**
3	500	50	**7.085 047**
6	500	30	**6.801 894**
6	1000	30	**4.003 481**
6	2000	30	**4.003 498**
15	2000	20	**4.003 550**
45	5000	20	**4.003 605**
70	10000	10	**6.202 850**
150	50000	10	**4.003 630**
3	500	250	**4.003 477**
6	1000	250	**4.003 482**
6	2000	250	**4.003 499**

BIGpacks: 4.003 477/4.003 482/4.003 499

1



1 CHROMABOND® Florisil®

Magnesium silicate for SPE *MACHEREY-NAGEL*

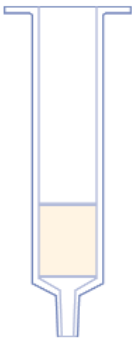
Matrix magnesium silicate (MgO to SiOH 15:85), high purity, particle size 150 to 250µm.

Recommended application: organic tin compounds, aliphatic carboxylic acids, PCB, PAH.

Volume ml	Capacity mg	PK	Cat. No.
3	200	50	**4.003 624**
3	500	50	**4.003 488**
6	500	30	**4.003 557**
6	1000	30	**6.224 842**
6	1000	250	**4.003 489**
6*	1000	30	**4.003 490**

BIGpacks: 4.003 489
*Glass columns

2



2 CHROMABOND® PA

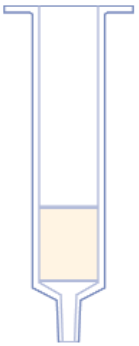
Polyamide 6 for SPE *MACHEREY-NAGEL*

Matrix polyamide 6, unmodified, high purity, particle size 40 to 80µm.

Recommended application: flavonoids, PAH.

Capacity ml	Capacity mg	PK	Cat. No.
3	200	50	**4.003 595**
3	500	50	**4.003 511**
6	500	30	**7.089 089**
6	1000	30	**7.400 537**

3



3 CHROMABOND® SA

Benzenesulphonic acid modified silica cation exchanger for SPE (SCX) *MACHEREY-NAGEL*

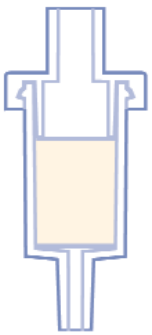
Base material silica, pore size 60Å, particle size 45µm, specific surface 500m²/g, pH stability 2 to 8, benzenesulphonic acid modified silica, strongly acidic cation exchanger (capacity ~ 0.5meq/g). Adsorbent with hydrophobic and Π-Π interactions (benzene ring). Ion exchange of organic compounds from aqueous matrix. Elution of interesting compounds with solvent systems, which compensate the ionic and nonpolar interactions, e.g. methanolic HCl.

Recommended application: amino acids, amines, chlorophyll, PCB.

Capacity ml	Capacity mg	PK	Cat. No.
1	100	100	**6.314 563**
3	200	50	**4.003 563**
3	500	50	**7.051 056**
6	500	30	**4.003 613**
6	1000	30	**6.224 846**
3	500	250	**4.003 485**

BIGpack: 4.003 485

4



4 CHROMAFIX® PS

MACHEREY-NAGEL

Phase	Size	Capacity mg	PK	Cat. No.
PS-RP	S	200	50	**4.003 869**
PS-OH-	S	200	50	**4.003 867**
PS-H+	S	230	50	**4.003 866**
PS-Ag+	S	240	50	**4.003 865**
PS-Ba2+	S	280	50	**4.003 868**
PS-RP	M	320	50	**6.228 258**
PS-OH-	M	380	50	**4.003 861**
PS-H+	M	430	50	**7.401 474**
PS-Ag+	M	480	50	**4.003 864**
PS-Ba2+	M	550	50	**7.402 218**
PS-OH	L	800	50	**4.003 862**
PS-H+	L	900	50	**4.003 863**

E & OE.

1 CHROMABOND® vacuum manifolds and accessories

For simultaneous preparation of up to 12, 16 or 24 samples, replacement parts and accessories for special applications

MACHEREY-NAGEL

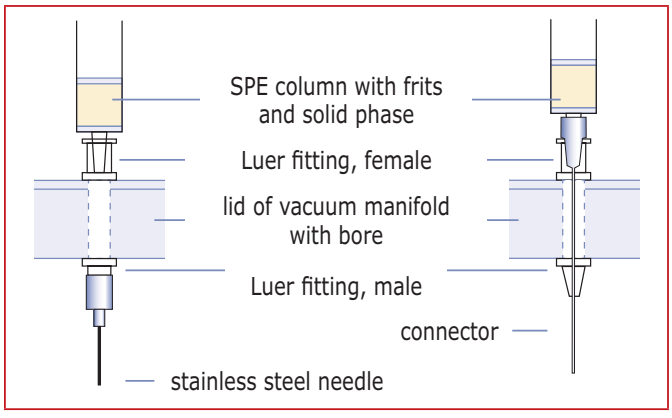
Vacuum manifold complete consists of: glass cabinet with lid and lid gasket, removable needles on lower side of lid, vacuum gauge, control valve, valves and caps, variable rack.



Description	PK	Cat. No.
Vacuum manifold complete for up to 12 columns or cartridges (incl. reservoir tank)	1	**9.003 479**
Vacuum manifold complete for up to 16 columns or cartridges	1	**4.003 586**
Vacuum manifold complete for up to 24 columns or cartridges	1	**7.056 914**
Lids with gaskets for 12 columns (incl. Luer fittings and valves), plastic	1	**4.003 530**
Gaskets for lid with 12 positions (4.003 530, 9.003 479)	2	**6.801 608**
Luer fittings for lid, female	12	**4.003 534**
Luer fittings for lid, male	12	**4.003 535**
Valves, plastic	12	**7.089 161**
Stainless steel needles	12	**7.079 432**
Drying attachment for 12 columns	1	**4.003 536**
Products for protection from cross contamination valve, brass, tarnished	1	**4.003 538**
Products for protection from cross contamination valve as above	12	**7.089 162**
Products for protection from cross contamination stainless steel connectors	12	**7.079 431**
Tubing adaptor for 1,3 and 6 ml polypropylene columns (PTFE)	4	**6.900 713**

Protection from cross contamination

For special applications, which require maximum protection from cross contamination we supply chrome-plated brass valves and stainless steel or PTFE connectors, the application of which is shown below. These special connectors are fitted through the lid; thus the sample only has contact with the inert connector and not with the lid, directly flowing into the receptacle.



Drying attachment

If the eluate has to be evaporated, this can be performed with the so-called drying attachment (**11**, see below). This special lid has a gas connector on one side (**12**), from which the gas is fed simultaneously to the 12 or 24 stations (**13**). Thus 12 or 24 eluates can be evaporated simultaneously by just changing the lid and applying a stream of inert gas, e. g. nitrogen.



1



1 SPE phases for food analysis

QuEChERS method and pre-mixes *MACHEREY-NAGEL*

Within a few years after its devleopment by Anastassiades et al. the QuEChERS method has gained a leading position for determination of pesticide residues in food by GC-MS or LC-MS allowing rapid and cheap clean-up of strong matrix-contaminated samples.

Standard clean-up of food samples

10 g sample are homogenised with 10 ml acetonitrile. After adding the internal standard the sample is shaken with 4 g $MgSO_4$ and 1 g NaCI and afterwards centrifuged. 1 ml of the supernantant is spiked with 25 mg CHROMABOND® Diamino and 150 mg $MgSO_4$ and shaken again. After centrifugation the supernatant is injected into the GC/MS.

For optimising the extraction of pH-dependent compounds, for minimising decomposition of sensitive substances and for broadening the matrix spectrum, different modifications of the QuEChERS method have been elaborated.

2



2 CHROMABOND® QuEChERS extraction buffer mixes/clean-up mixes

NEW!

Extraction mixtures for sample preparation for determination of pesticides in food samples. *MACHEREY-NAGEL*

MACHEREY-NAGEL offers a number of individually weighed and pre-mixed buffers and extraction mixtures, specially composed for different sample matrices.
Mix I and Mix II are extraction mixtures, Mix III to Mix VI are clean-up mixtures.

The food samples will be extracted with either Mix I or Mix II.
Afterwards they will be purified with one of the following mixtures:
- Mix III (samples with low fat content; e.g. apples, strawberries),
- Mix IV (moderate content of chlorophyll and carotinoids; e. g. carrots, lettuce),
- Mix V (high content of chlorophyll and carotinoids; e. g. bell peppers, spinach),
- Mix VI (high fat content; e. g. avocados).

Every mix is prepacked in a 15 ml centrifuge tube. Pack of 50 pieces.

Capacity ml	Description	Composition	PK	Cat. No.
15	Mix I Citrat-Extraction-Mix	4g $MgSO_4$, 1g NaCl, 0.5g Na_2H citrate; 1.5 H_2O, 1g Na_4 citrate; 2 H_2O	50	**4.003 824**
15	Mix II Acetat-Extraction-Mix	6g $MgSO_4$, 1.5g Na acetate	50	**4.003 825**
15	Mix III Diamino Clean-up Mix	0.15g CHROMABOND® Diamino with 0.9g $MgSO_4$	50	**4.003 826**
15	Mix IV Diamino/Carbon Clean-up Mix	0.15g CHROMABOND® Diamino with 0.9g $MgSO_4$ and 15mg Carbon	50	**4.003 827**
15	Mix V Diamino/Carbon Clean-up Mix	0.15g CHROMABOND® Diamino with 0.9g $MgSO_4$ and 45mg Carbon	50	**4.003 829**
15	Mix VI Diamino/C_{18} ec Clean-up Mix	0.15g CHROMABOND® Diamino with 0.9g $MgSO_4$ and 45mg Carbon	50	**4.003 828**

3



3 Accessories CHROMABOND® QuEchERS

Empty PP centrifuge tube with screw cap, 50 ml, without QuEchERS mixtures. *MACHEREY-NAGEL*

Type	PK	Cat. No.
50ml PP-centrifuge tube with crew cap	50	**4.003 552**

For more centrifuge tubes, please see page 646.

E & OE.

Chemical compatibility of filter materials

The following table lists the chemical compatibility of our CHROMAFIL® materials. The chemical compatibility depends on several parameters such as time, pressure, temperature and concentration.

In most cases, CHROMAFIL® filters will have only short contact with a solvent. In these cases they may be used despite of limited compatibility.

For example, a PTFE filter with PP housing does not liberate any UV-detectable substances during filtration of 5 ml THF, although PP shows only limited resistance towards THF.

Solvent	Material									
	MV	CA	RC	PA	PTFE	PVDF	PES	PET	GF	PP
Acetaldehyde	⊖	⊖	⊕	○	⊕	⊕		⊕	⊕	○
Acetic acid, 100 %	⊖	⊖	⊖	⊖	⊕	⊕	⊕	⊕	⊕	⊕
Acetone	⊖	⊖	⊕	⊕	⊕	⊖	⊖	⊕	⊕	⊕
Acetonitrile	⊖	⊖	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Ammonia, 25 %	⊖	⊖	○	⊖	⊕	⊕	⊕	○	⊕	⊕
Benzene	⊕	⊕	⊕	⊕	⊕	○		⊕	⊕	○
n–Butanol	⊕	⊕	⊕	○	⊕	⊕	⊕	⊕	⊕	⊕
Cyclohexane	⊕	⊕	⊕	○	⊕	⊕	⊕	⊕	⊕	⊕
Dichloromethane	⊕	⊖	⊕	⊖	⊕	⊕	⊖	⊕	⊕	⊖
Diethyl ether	○	○	⊕	⊕	⊕	⊕	⊕	⊕	⊕	○
Dimethylformamide	⊖	⊖	○	⊕	⊕	⊖	⊖	⊕	⊕	⊕
1,4–Dioxane	⊖	⊖	⊕	⊕	⊕	○	⊖	⊕	⊕	○
Ethanol	⊖	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Ethyl acetate	⊖	⊖	⊕	⊕	⊕	⊕	⊕	⊕	⊕	○
Ethylene glycol	○	○	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Formic acid, 100 %	⊕	⊖	○	⊖	⊕	⊕	⊕	○	⊕	⊕
Hydrochloric acid, 30 %	⊖	⊖	⊖	⊖	⊕	⊕	⊕	⊖	⊕	⊕
Methanol	⊖	⊖	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Nitric acid, 65 %	⊖	⊖	⊖	⊖	○	○		○	⊕	⊖
Oxalic acid, 10 % aqueous	⊕	⊖	⊕	⊖	⊕	⊕		⊕	⊕	⊕
Petroleum ether	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Phosphoric acid, 80 %	⊖	⊖	○	⊖	⊕	○		⊕	⊕	⊕
Potassium hydroxide, 1 mol/l	⊖	⊖	○	⊕	⊕	○	⊕	○	⊕	⊕
2–Propanol	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Sodium hydroxide, 1 mol/l	⊖	⊖	○	⊕	⊕	○	○	○	○	⊕
Tetrachloromethane	⊕	⊖	⊕	⊕	⊕	○		⊕	⊕	○
Tetrahydrofuran	⊖	⊖	⊕	○	⊕	⊕	⊖	⊕	⊕	○
Toluene	⊕	⊖	⊕	⊕	⊕	⊕	⊕	⊕	⊕	○
Trichloroethene	⊕	⊕	⊕	○	⊕	⊕		⊕	⊕	○
Trichloromethane	⊕	⊖	⊕	⊖	⊕	⊕	⊖	⊕	⊕	⊖
Urea	⊕	⊕	⊕	⊕	⊕	⊕		⊕	⊕	⊕
Water	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Xylene	⊕	⊕	⊕	⊕	⊕	○		⊕	⊕	○

Data not guaranteed. ⊕ resistant, ⊖ not resistant, ○ limited resistance

MV = cellulose mixed esters, CA = cellulose acetate, RC = regenerated cellulose, PA = polyamide, PTFE = polytetrafluoroethylene (Teflon), PVDF = polyvinylidene difluoride, PES = polyethersulfone, PET = polyester, GF = glass fibre, PP = polypropylene (housing material)

LLG-Syringe Filters

We offer a line of syringe filters especially designed to provide efficient filtration of a broad variety of fluids, solvents, aqueous or inorganic solutions.
Our syringe filters cover most applications in HPLC, pharmaceutical, environmental, biotechnology and food and beverage testing laboratories.

- Housing injected in Polypropylene or MABS
- Multifunctional Syringe filters equipped with Female Luer-Lock/Male Luer Lock or Male Luer Slip connections for different applications
- Pre-sterilised or non-sterile
- Sterile products in individual hard blister
- Superior pressure stability
- Easy to identify because of colour code and printed description

1



9.055 500

2



9.055 503

LLG Syringe Filter CA, Cellulose acetate

NEW!

Hydrophilic membrane for filtration of aqueous solutions
This membrane features excellent shape stability in aqueous solutions and a very low binding capacity for proteins (21µg per 25 mm Filter).
Ideal for use with biological macromolecules, water soluble oligomers and polymers. With Luer-Lock-outlet.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.	
13	0.20	Acrylic, blue	non sterile	500	**9.055 500**	1
13	0.45	Acrylic, yellow	non sterile	500	**9.055 502**	
13	0.80	Acrylic, green	non sterile	500	**9.055 504**	
25	0.20	Acrylic, blue	non sterile	500	**9.055 501**	
25	0.45	Acrylic, yellow	non sterile	500	**9.055 503**	2
25	0.80	Acrylic, green	non sterile	500	**7.970 389**	
13	0.20	Acrylic, blue	sterile	50	**9.055 510**	
13	0.45	Acrylic, yellow	sterile	50	**9.055 512**	
25	0.20	Acrylic, blue	sterile	50	**9.055 511**	
25	0.45	Acrylic, yellow	sterile	50	**9.055 513**	

3



9.055 520

LLG Syringe Filter NY, Nylon/Polyamide

NEW!

This is a rather hydrophilic membrane; it is recommended for filtration of aqueous and organic/aqueous medium polar liquids.
Excellent chemical compatibility with esters, bases and alcohols.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.	
13	0.20	PP	non sterile	500	**9.055 520**	3
13	0.45	PP	non sterile	500	**9.055 522**	
25	0.20	PP	non sterile	500	**9.055 521**	
25	0.45	PP	non sterile	500	**9.055 523**	

4



9.055 541

LLG Syringe Filter PE, Polyethylene

NEW!

Universal Filter membrane for all analytical requirements. For aqueous and aggressive organic solvent filtration.
Wide application in sample preparation, Ion chromatography.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.	
13	0.20	PP	non sterile	500	**9.055 540**	
13	0.50	PP	non sterile	500	**9.055 542**	
25	0.20	PP	non sterile	500	**9.055 541**	4
25	0.50	PP	non sterile	500	**9.055 543**	

5



9.055 530

LLG Syringe Filter RC, Regenerated cellulose

NEW!

Hydrophilic membrane features very low adsorption. It is recommended for filtration of aqueous and organic/aqueous liquids.
For filtration of polar and medium polar liquids.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.	
13	0.20	PP	non sterile	500	**9.055 530**	5
13	0.45	PP	non sterile	500	**9.055 532**	
25	0.20	PP	non sterile	500	**9.055 531**	
25	0.45	PP	non sterile	500	**9.055 533**	

E & OE.

LLG Syringe Filter PTFE, Polytetrafluorethylene

NEW!

Hydrophobic membrane. Ideal for filtration of non-polar liquids and gases.
It is very resistant to various solvents as well as acids and bases.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
13	0.20	PP	non sterile	500	**7.970 402**
13	0.45	PP	non sterile	500	**7.970 385**
25	0.20	PP	non sterile	500	**9.055 535**
25	0.45	PP	non sterile	500	**6.255 331** 1

1



6.255 331

LLG Syringe Filter PES, Polyethersulfone

NEW!

Hydrophobic membrane. Ideal for filtration of non-polar liquids and gases.
It is very resistant to varous solvents as well as acids and bases.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
13	0.20	Acrylic	non sterile	500	**9.055 524**
13	0.45	Acrylic	non sterile	500	**9.055 526**
25	0.20	Acrylic	non sterile	500	**9.055 525**
25	0.45	Acrylic	non sterile	500	**7.970 213** 2

2



7.970 213

LLG Syringe Filter PVDF, Polyvinylidene fluoride

NEW!

Hydrophilic membrane for aqueous polar and light unpolar solutions. Very low protein binding High flow rates ideal for use with biological macromolecules, water soluble oligomers and polymers.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
13	0.20	PP	non sterile	500	**7.970 258**
13	0.45	PP	non sterile	500	**9.055 534**
25	0.20	PP	non sterile	500	**7.970 387**
25	0.45	PP	non sterile	500	**7.970 286** 3

3



7.970 286

LLG Syringe Filter GF, Glass-fibre

NEW!

Hydrophilic membrane suitable for pre-filtration. They can be used for solutions with high particulate loads or for highly viscous solutions (e.g. soil samples, fermentation broths) either alone or in combination with other filters.

Filter diam. mm	Pore size µm	Housing	Type	PK	Cat. No.
25	0.70	PP	non sterile	500	**9.055 550**
25	1.00	PP	non sterile	500	**9.055 551**
25	1.20	PP	non sterile	500	**9.055 552** 4
25	3.10	PP	non sterile	500	**9.055 553**

4



9.055 552

Syringe Filters please see page 672.

1



1 HPLC columns with NUCLEODUR® Phasen

NUCLEODUR® C18 - C 8 Gravity nonpolar high density phases *MACHEREY-NAGEL*

available as octadecyl (C18 -USP L!) and octyl (C8 - USP L7) modifications
Pore size 110 Å; particle sizes 1.8µm, 3µm and 5µm for C18, 1.8 and 5µm for C8
7, 10, 12 and 16µm particles for preparative separations on request
carbon content 18 %C for C18 , 11%C for C8
ideal for method development
allows HPLC at pH extremes (pH 1 - 11)
suitable for **LC/MS** due to low bleeding characteristics
recommended for overall sophisticated analytical separations
optimal for: pharmaceuticals, e.g. analgesics, antiinflammatory drugs, antidepressants; herbicides; phytopharmaceuticals; immunosppressants

EC analytical columns NUCLEODUR® C18 Gravity, 3µm

particle size 3µm, 18% C. *MACHEREY-NAGEL*

Int. diam. mm	Length mm	PK	Cat. No.
2.0	50	1	**4.004 400**
3.0	50	1	**4.004 401**
4.0	50	1	**4.004 402**
4.6	50	1	**4.004 403**
2.0	125	1	**4.004 404**
3.0	125	1	**6.232 333**
4.0	125	1	**4.004 405**
4.6	125	1	**4.004 406**
2.0	150	1	**4.004 411**
3.0	150	1	**4.004 412**
4.0	150	1	**4.004 413**
4.6	150	1	**4.004 414**
2.0	250	1	**4.004 407**
3.0	250	1	**4.004 408**
4.0	250	1	**4.004 409**
4.6	250	1	**4.004 410**

Guard columns for EC columns NUCLEODUR® C18 Gravity, 3µm

MACHEREY-NAGEL

Type	PK	Cat. No.
for 2 and 3 mm i.d.	3	**4.004 624**
for 4 and 4.6 mm i.d.	3	**4.004 625**

Guard columns for EC columns require guard column adapter EC (Cat. No. 7.081 898)

NUCLEOSIL® 100-5 C18 PAH special octadecyl phase for PAH analysis

Base material NUCLEOSIL® silica, particle size 5µm, pore size 110 Å; polymeric coating - USP L1; eluent in column acetonitrile/water 70:30; allows efficient gradient separation of the 16 PAH in accordance with EPA, detection of the separated PAH by UV (250 to 280nm), with diode array or with fluorescence detection at different wavelegths for excitation and emission (acenaphthylene cannot be analysed with fluorescence detection). *MACHEREY-NAGEL*
Other HPLC columns on request.

EC analytical columns NUCLEOSIL® 100-5 C18 PAH, 5µm

Octadecyl phase PAH, particle size 5µm. *MACHEREY-NAGEL*
Guard columns for EC columns NUCLEOSIL® 100-5 C_{18} PAH, 5µm available on request.

Int. diam. mm	Length mm	PK	Cat. No.
4.0	50	1	**4.002 491**
3.0	150	1	**4.002 493**
4.0	150	1	**4.002 494**
2.0	250	1	**7.089 855**
3.0	250	1	**4.002 372**
4.0	250	1	**4.002 373**
4.6	250	1	**4.002 374**

Other HPLC-columns on request.

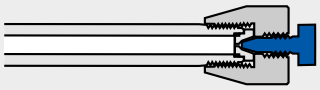
E & OE.

MN column systems

EC standard columns for analytical HPLC *MACHEREY-NAGEL*

analytical column system manufactured from stainless steel M 8 outer threads on both ends combination of sealing element and very fine-meshed stainless steel screen, PTFE sealing ring and fitting adaptor column heads SW 12 with inner threads M8 x 0.75 and UNF 10-32, as built -in guard columns use ChromCart® guard column cartridges with 8mm length with the guard column adaptor EC, packed with NUCLEODUR® spherical silica.

Available standard dimensions of EC columns · please ask for availability of certain phases

ID [mm]	Length [mm]										End fitting design
	8*	20	30	50	75	100	125	150	200	250	300	
2	–	x	x	x	x	x	x	x	x	x	x	
3	x	x	x	x	x	x	x	x	x	x	x	
4	x	x	x	x	x	x	x	x	x	x	x	
4,6	–	x	x	x	x	x	x	x	x	x	x	

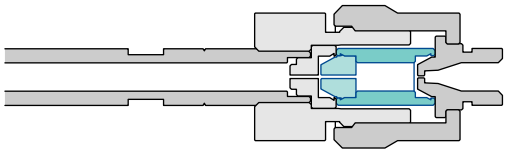
* Please note that 3 mm ID guard column cartridges are applicable for 2 mm ID and 3 mm ID EC columns, while 4 mm ID guard column cartridges are also used for 4.6 mm ID EC columns.

Installation of the EC guard column adaptor (Cat.No. 7.081 898)






EC column with CC guard column





Accessories and replacement parts for EC columns

MACHEREY-NAGEL

Description	PK	Cat. No.
Guard column adapter EC	1	**7.081 898**
1/16" nut for connecting 1/16" capillaries	5	**4.002 179**
1/16" ferrule	5	**4.002 180**
1/16" end cap, plastic	4	**4.002 178**
EC fitting adaptor	1	**4.002 219**
EC column head (nut)	1	**4.002 220**
EC PTFE sealing ring	4	**4.002 221**
3-part sealing combination for EC columns	1	**4.002 222**

1

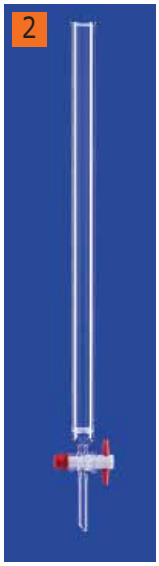


1 Chromatographic columns with Frit, PTFE- /or Valve Stopcock

Chromatography columns with socket and with frit. *Isolab*
Manufactured from borosilicate glass 3.3 which is resistant to heat and almost all chemicals.
NS necks are in compliance with DIN 12242 standards.

Length mm	Int. diam. mm	Capacity ml	Description	PK	Cat. No.
200	10	15	without frit NS 14/23	1	**4.008 398**
400	20	125	without frit NS 29/32	1	**4.008 399**
600	30	430	without frit NS 29/32	1	**4.008 400**
200	10	15	with frit (P=0) NS 14/23	1	**4.008 401**
300	10	25	with frit (P=0) NS 14/23	1	**4.008 402**
200	15	35	with frit (P=0) NS 14/23	1	**4.008 403**

2



6.202 416

3



6.223 574

Chromatographic columns, PTFE- or Valve Stopcock, DURAN® tubing

Made of DURAN® tubing. Chromatography columns with sintered frit, porosity 0. *Lenz*
Available in three versions:
- with frit, beaded rim and PTFE stopcock
- with frit, NS socket and PTFE stopcock
- with NS socket and needle-valve stopcock (bore 0 - 2.5mm)

Length mm	Int. diam. mm	Capacity ml	Description	Stopcock	PK	Cat. No.
200	15	35	beaded rim	PTFE	1	**6.205 017**
400	20	125	beaded rim	PTFE	1	**6.202 416** 2
600	30	430	beaded rim	PTFE	1	**6.202 417**
800	40	1000	beaded rim	PTFE	1	**6.202 418**
100	10	8	socket NS 14/23	PTFE	1	**6.225 859**
200	10	15	socket NS 14/23	PTFE	1	**9.025 912**
300	10	23	socket NS 14/23	PTFE	1	**9.025 913**
200	15	35	socket NS 14/23	PTFE	1	**9.025 914**
400	20	125	socket NS 29/32	PTFE	1	**6.203 961**
600	30	430	socket NS 29/32	PTFE	1	**6.303 297**
200	15	35	socket NS 29/32	Valve	1	**6.223 574** 3

4



9.025 936

Chromatographic columns with indentations and NS socket, DURAN® tubing

Made of DURAN® tubing. Basic chromatographic columns with indentations above the stopcock for placing a cotton plug, with NS socket, with PTFE stopcock and retaining device. *Lenz*

Length mm	Int. diam. mm	Capacity ml	Description	PK	Cat. No.
200	10	15	with NS 14 / 23 socket	1	**9.025 932**
400	20	125	with NS 29 / 32 socket	1	**9.025 934**
600	30	430	with NS 29 / 32 socket	1	**9.025 936** 4

5



5 Glass wool

Extra fine. In packs as outlined below.

Capacity g	PK	Cat. No.
30	1	**9.114 303**
1000	1	**9.114 310**

Stands and fittings - please see page 168.

E & OE.

1 Quartz wool

Silica. Fibre thickness 4µm to 12µm. *proQuarz*



Capacity g	PK	Cat. No.
500	1	**9.114 331**

Silica adsorbents for low pressure column chromatography

standard silica 60, pore size ~ 60 Å; pore volume ~ 0.75ml/g; spec. surface BET ~ 500m²/g. highly porous, amorphous silicic acid in the form of hard, opalescent particles, prepared by precipitation of water glass with sulphuric acid. For higher demands on the performance of column packings we recommend our high-purity irregular Polygoprep silicas. Silica FIA for the fluorescence indicator adsorption procedure for the determination of hydrocarbon groups in the testing of liquid fuels in accordance with DIN 51791 and ASTM D 1319-58T. The FIA method determines saturated hydrocarbons, olefins and aromatic hydrocarbons of a sample chromatographically by adsorption and desorption in a column filled with FIA silica, in the presence of a fluorescent dye mixture. *MACHEREY-NAGEL*

Description	Particle size	Weight kg	PK	Cat. No.
Silica 60, 0.015 - 0.04 mm		1	1	**4.004 999**
Silica 60, 0.025 - 0.04 mm		1	1	**4.004 948**
Silica 60, 0.04 - 0.063 mm	230 - 400 mesh	1	1	**4.004 968**
Silica 60 M, 0.04 - 0.063 mm	230 - 400 mesh	1	1	**4.004 971**
Silica 60, 0.05 - 0.1 mm	130 -270 mesh	1	1	**4.004 974**
Silica 60, 0.05 - 0.2 mm	70 -270 mesh	1	1	**4.004 954**
Silica 60, 0. 063 - 0.2 mm	70 - 230 mesh	1	1	**4.004 957**
Silica 60, < 0.063 mm	+ 230 mesh	1	1	**4.004 977**
Silica 60, < 0.08 mm	+ 190 mesh	1	1	**4.004 951**
Silica 60, 0.1 - 0.2 mm	70 - 130 mesh	1	1	**4.004 960**
Silica 60, 0.2 - 0.5 mm	35 - 70 mesh	1	1	**4.004 962**
Silica 60, 0.5 - 1.0 mm	18 - 35 mesh	1	1	**4.004 965**
Silica 60, 0.015 - 0.04 mm		5	1	**4.005 001**
Silica 60, 0.025 - 0.04 mm		5	1	**4.004 950**
Silica 60, 0.04 - 0.063 mm	230 - 400 mesh	5	1	**4.004 970**
Silica 60 M, 0.04 - 0.063 mm	230 - 400 mesh	5	1	**4.004 973**
Silica 60, 0.05 - 0.1 mm	130 - 270 mesh	5	1	**4.004 976**
Silica 60, 0.05 - 0.2 mm	70 - 270 mesh	5	1	**4.004 956**
Silica 60, 0. 063 - 0.2 mm	70 - 230 mesh	5	1	**4.004 959**
Silica 60, < 0.063 mm	+ 230 mesh	5	1	**4.004 979**
Silica 60, < 0.08 mm	+ 190 mesh	5	1	**4.004 953**
Silica 60, 0.1 - 0.2 mm	70 - 130 mesh	5	1	**4.004 961**
Silica 60, 0.2 - 0.5 mm	35 - 70 mesh	5	1	**4.004 964**
Silica 60, 0.5 - 1.0 mm	18 - 35 mesh	5	1	**4.004 967**
Silica 60, 0.015 - 0.04 mm		25	1	**4.005 000**
Silica 60, 0.025 - 0.04 mm		25	1	**4.004 949**
Silica 60, 0.04 - 0.063 mm	230 - 400 mesh	25	1	**4.004 969**
Silica 60 M, 0.04 - 0.063 mm	230 - 400 mesh	25	1	**4.004 972**
Silica 60, 0.05 - 0.1 mm	130 - 270 mesh	25	1	**4.004 975**
Silica 60, 0.05 - 0.2 mm	70 - 270 mesh	25	1	**4.004 955**
Silica 60, 0. 063 - 0.2 mm	70 - 230 mesh	25	1	**4.004 958**
Silica 60, < 0.063 mm	+ 230 mesh	25	1	**4.004 978**
Silica 60, < 0.08 mm	+ 190 mesh	25	1	**4.004 952**
Silica 60, 0.2 - 0.5 mm	35 - 70 mesh	25	1	**4.004 963**
Silica 60, 0.5 - 1.0 mm	18 - 35 mesh	25	1	**4.004 966**
Silicia FIA fine	0,071 - 0,16 mesh	1	1	**4.004 980**
Silicia FIA coarse	0,071 - 0,63 mesh	1	1	**4.004 981**

2 HPLC bottles, DURAN® complete system 4-port screw cap

For sterile transfer of media or for feeding solvent to HPLC instruments. The bottle is pressure/vacuum resistant from -1 to +1.5 bar (tested by TÜV in accordance with EN 1596, GS marked). Complete with a 4-port screw cap (autoclavable, reusable) made from PP, 4 connection screw caps (black, M8 thread) and silicone seal. Suitable for tube diameters of 1.6mm and 3.2mm. Spare parts are available individually. Further connection system components for the GL45 thread are available upon request (Tubing not included). Neutral/Type I glass acc. to USP/EP. With Retrace Code (Batch Identification), with certificate available via the internet. Autoclavable. *DURAN Group*



Capacity ml	PK	Cat. No.
500	1	**9.072 526**
1000	1	**9.072 525**

1 Flexible connecting system for DURAN® GL 45 flasks

NEW!

DURAN Group

Materials used: PP and PTFE. Flexible modular system. Four different tube diameters (1.6mm; 3.0mm; 3.2mm and 6.0mm) can be connected. Sterile pressure equalisation is possible through use of a membrane filter. Unused ports can be provided with a blind cap.
Typical applications: safe transfer of liquid media within a closed and sterile system (evaporation is reduced).
Temperature resistant up to max. 140°C. For all solvents PP-resistant.

Description	PK	Cat. No.
Scew cap GL 45, 2 port x GL 14	1	**6.227 780**
Screw cap GL 45, 3 port x GL 14	1	**7.623 018**
Screw cap GL 14 for tubing connector	1	**6.227 781**
Liner for GL 14 screw cap, 1.6mm i.d. hole	1	**6.229 494**
Liner for GL 14 screw cap, 3mm i.d. hole	1	**6.229 495**
Liner for GL 14 screw cap, 3.2mm i.d. hole	1	**6.230 213**
Liner for GL 14 screw cap, 6mm i.d. hole	1	**6.227 782**
Screw cap, GL 14, red	1	**7.623 838**
Pressure equalising set, 0.2µm filter, for 2- / 3-Port screw cap	1	**6.228 023**
Replacement 0.2µm membrane filter for pressure equalising set	2	**6.230 844**
Bottle 1000ml, GL 45, DURAN® pressure resistant up to +1.5 bar	1	**9.971 704**
Bottle 500ml, GL 45, DURAN® pressure resistant up to +1.5 bar	1	**9.071 707**

1



2 Accessories for connecting system for DURAN® GL 45 bottles, DURAN®

NEW!

DURAN Group

Description	PK	Cat. No.
Screw cap HPLC GL 45, 4 Port complete	1	**6.226 328**
Spare set for HPLC screw cap	1	**6.226 329**
Pressure equilization, 0.2µm for 4-Port-cap, incl. membrane filter	1	**6.226 915**
Spare membrane filter for pressure equilization, 0,2 µm	1	**6.230 844**
Bottle 1000 ml, GL 45, DURAN® pressure resistant up to +1,5 bar	1	**9.971 704**
Bottle 500 ml, GL 45, DURAN® pressure resistant up to +1,5 bar	1	**9.071 707**

2



Connecting system for GL 80 flasks please see page 67.

E & OE.

SafetyCaps

Scat

The integral air filter blocks hazardous vapours and cleans the inflowing air from dust and dirt particles. With various connectors for capillaries and tubes. SafetyCaps are available for most common glass bottles (e.g. thread size GL45). They can be customised for other container sizes by using different adapters. Especially recommended for HPLC use: Solvents stay clean and components of solvent mixtures can not evaporate. Optimum protection against health hazards caused by evaporation and insufficient sealing.

Key advantages:
- No evaporation of hazardous gases, no contamination of solvents
- No crimping of connection tubing, easy container exchange
- No air intake (HPLC)
- Save expensive solvents by avoiding evaporation, cost efficiency
- Reproducible analysis results through stable mobile phase

SafetyCaps, S 40/GL 40/GL 45

Scat

Safe solvent supply. With integral air filter vent. For maximum efficiency, we recommend that the vent is changed every 6 months. The filter membrane absorbs dust and dirt particles to protect your solvent reservoirs. The vent is universally suitable for all SafetyCaps. It also works with your current SafetyCaps, simply replace the old vent with the new one.

Description	Thread	Connections	PK	Cat. No.	
SafetyCap I	S40 / GL40	1 capillaries (3.2mm o.d.)	1	**6.253 976**	
SafetyCap II	S40 / GL40	2 capillary (3.2mm o.d.)	1	**7.628 821**	
SafetyCap I (1with stopcock)	S40 / GL40	1 capillaries (3.2mm o.d.)	1	**9.139 895**	
SafetyCaps I	GL45	1 capillary (3.2mm o.d.)	1	**9.139 850**	1
SafetyCaps II	GL45	2 capillaries (3.2mm o.d.)	1	**9.139 851**	
SafetyCaps III	GL45	3 capillaries (3.2mm o.d.)	1	**9.139 852**	
SafetyCaps IV	GL45	4 capillaries (3.2mm o.d.)	1	**9.139 853**	
SafetyCaps VI	GL45	6 capillaries (3.2mm o.d.)	1	**9.139 854**	
SafetyCaps I, with 1 stopcock	GL45	1 capillary (3.2mm o.d.)	1	**9.139 855**	
SafetyCaps II, with 2 stopcocks	GL45	2 capillaries (3.2mm o.d.)	1	**9.139 856**	
SafetyCaps III, with 3 stopcocks	GL45	3 capillaries (3.2mm o.d.)	1	**9.139 857**	
SafetyCaps IV, with 4 stopcocks	GL45	4 capillaries (3.2mm o.d.)	1	**9.139 858**	
SafetyCaps VI, with 6 stopcocks	GL45	6 capillaries (3.2mm o.d.)	1	**9.139 859**	
SafetyCaps II, combined (1with stopcock / 1 without stopcock)	GL45	2 capillaries (3.2mm o.d.)	1	**9.139 860**	2
SafetyCaps III, combined (2 with stopcocks / 1 without stopcock)	GL45	3 capillaries (3.2mm o.d.)	1	**9.139 861**	
SafetyCaps I, for preparative operation	GL45	1 capillary (4.76 mm o.d.)	1	**9.139 862**	3
SafetyCaps II, for ground neck bottles	NS 29/32	2 capillaries (3.2mm o.d.)	1	**9.139 863**	4

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9.139 850

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9.139 860

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9.139 862

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9.139 863

5 6 7 HPLC starter kits, GL 45

NEW!

Scat

- Extraction initial equipment for a HPLC system
- Price advantage compared to ordering piece by piece
- Suitable for all current HPLC systems

Supplied with:
HPLC SafetySet 1: 3 x SafetyCap I, 1 x SafetyCap II, 1 x blind plug
HPLC SafetySet 2: 4 x SafetyCap II, 4 x blind plug
HPLC SafetySet 3: 3 x SafetyCap I fire resistant, 1 x SafetyCap II fire resistant, 1 x blind plug

5



Type	PK	Cat. No.
HPLC SafetySet 1	1	**7.627 142**
HPLC SafetySet 2	1	**7.670 287**
HPLC SafetySet 3	1	**6.264 451**

6



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1 Pressure relief valve for SafetyCaps

NEW!

Scat

Pressure relief valve for SafetyCaps, with integral air filter.
The valve opens when the HPLC pump is operated, and allows air to flow into the bottle - this prevents a vacuum building up in the bottle. As soon as the pump stops, the membrane immediately seals properly and no dangerous solvent vapours can escape.

Description	Flow rate amount ml/min	PK	Cat. No.
Pressure relief valve for SafetyCaps	150	1	**9.139 864**
Pressure relief valve for SafetyCaps (refill pack of 10)	150	10	**4.005 886**
Pressure relief valve SafetyCaps, fire-resistant	150	1	**4.005 769**
Pressure relief valve SafetyCaps (preparative)	400	1	**4.005 948**

2



2 HPLC Safety Set

NEW!

Scat

HPLC Safety Set suitable for all HPLC Systems
Complete system for removal and disposal of solvents.

One single set for Solvent supply and Waste:
- 4x SafetyCap III GL45
- 4x Air Valve
- 4x Solvent bottle 1 L, GL45, glass
- 12x Blind plug for capillary connections
- 10x Fittings diam. 2.3mm grey
- 4x Fittings diam. 3.2mm blue
- 10x Fitting diam. 1.6 mm green
- 4x Fittings diam. 3.2mm red
- 6x Fittings diam. 3.2mm yellow
- 1x Tube connector 6.4-9.0mm
- 1x SafetyWasteCap GL45
- 1x Exhaust filter size M
- 1x Container 5 L, GL45, PE-HD
- 2x Tube connector 6-8mm

Type	PK	Cat. No.
HPLC Safety Set	1	**6.264 436**

SafetyWasteCaps with or without hose connection

Scat

For a safe disposal of liquid waste. SafetyWasteCaps have a connection for an exhaust vent filter. The exhaust vent filter absorbs 99% of all volatile substances that can evaporate from the containers during solvent disposal. For optimum protection of health and environment. SafetyWasteCaps are manufactured of pure PTFE and PE-HD, ensuring maximum chemical resistance against organic solvents and other aggressive chemicals. Further thread sizes and configuration are available on request.
Fittings for connections are included in delivery.

Please order exhaust vent filter separately.

Thread	Connections	PK	Cat. No.	
S40 / GL40	3 x tubing connectors 2.3/3.2mm o.d.	1	**7.628 820**	
S40 / GL40	2 x tubing connectors 2.3/3.2mm o.d., 1 x tubing connector 6.4-9.0mm i.d.	1	**9.139 896**	
GL45	3 x tubing connectors Ø 2.3/3.2mm o.d.	1	**9.139 865**	
GL45	2 x tubing connectors Ø 2.3/3.2mm o.d., 1x tubing connector Ø 6.4-9.0mm i.d.	1	**9.139 866**	5
S51	2 x tubing connectors 2.3 / 3.2mm o.d., 1 x tubing connector 6.4-9.0mm i.d.	1	**4.005 583**	
S55	2 x tubing connectors 2.3 / 3.2mm o.d., 1 x tubing connector 6.4-9.0mm i.d.	1	**4.005 584**	
S60/61	3 x tubing connectors 2.3 / 3.2mm o.d.	1	**9.139 867**	3
S60/61	2 x tubing connectors 2.3 / 3.2mm o.d., 1 x tubing connector 6.4-9.0mm i.d.	1	**9.139 868**	4
S70/71	2 x tubing connectors 2.3 / 3.2mm o.d., 1 x tubing connector 6.4-9.0mm i.d.	1	**4.005 585**	
S90	4 x tubing connectors 2.3 / 3.2mm o.d., 1 x tubing connector 6.4-9.0mm i.d.	1	**9.139 870**	

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9.139 867

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9.139 868

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9.139 866

E & OE.

Charcoal filters for SafetyWasteCaps

3 sizes of absorbent charcoal filters (with capacity for 3, 6 or 9 months respectively) available. *Scat*

Depending on the required capacity 3 filter sizes each with a different lifetime are available. With S.C.A.T. special granulates 99% of the solvent vapors are absorbed. Exhaust filters with splash guard are recommended for SafetyWasteCaps with integrated Safety Funnels.
Filters should be changed according to filter life.

Filter also available with change indicator, do not forget change interval..

Filter size	Life time	Description	Volume litres	PK	Cat. No.
S	3 months		≤ 5	1	**9.139 871**
S	3 months	Supply pack	≤ 5	4	**4.005 884** 1
S	3 months	with splash guard	≤ 5	1	**4.005 634**
S	3 months	Fire-resistant	≤ 5	1	**4.005 782**
S	3 months	with change indicator + splash guard	≤ 5	1	**9.042 895** 2
M	6 months		≤ 20	1	**9.139 872** 3
M	6 months	Supply pack	≤ 20	3	**4.005 885**
M	6 months	with splash guard	≤ 20	1	**4.005 631** 4
M	6 months	Fire-resistant	≤ 20	1	**4.005 784**
M	6 months	with change indicator + splash guard	≤ 20	1	**9.042 896** 5
L	9 months		≥ 20	1	**9.139 873**
L	9 months	with splash guard	≥ 20	1	**4.005 635**

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4.005 884

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9.042 895

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9.139 872

4

4.005 631

5

9.042 896

6 Thread adapters for SafetyCaps/SafetyWasteCaps, PTFE

Use SafetyCaps and SafetyWasteCaps also for bottles with GL40 or GL38 thread. *Scat*
Further adapters in different thread sizes are available on request.

Description	PK	Cat. No.
Adapter GL38 (f) - GL45 (m)	1	**9.139 882**
Adapter S40 / GL40 (f) - GL45 (m)	1	**9.139 883**

6


7 Accessories for charcoal filters for SafetyWasteCaps

NEW!

The adapters can be combined so that the charcoal filters can be fixed on the waste containers. Space-saving at low heights. *Scat*

Description	PK	Cat. No.
90°-Adapter for angled connection	1	**4.005 508**
45°-Adapter for angled connection	1	**4.005 511**

7


Hose barbs for tube connector for SafetyCaps/SafetyWasteCaps

NEW!

Connectors for variable tube connector sizes on SafetyWasteCaps. *Scat*
Further configuration available on request.

Description	Material	PK	Cat. No.
Hose barb, curved 6.4-9.0mm i.d.	PP	1	**7.940 304** 8
Hose barb, straight for capillary connector 6-8mm i.d.	PP	1	**4.005 793** 9
Hose barb, straight 3-4mm i.d.	PP	1	**4.005 558**
Hose barb, angled 9.5-10mm i.d.	PP	1	**4.005 556**

8

7.940 304

9

4.005 793

1



6.266 051

2



9.139 876

SafetyWasteCaps with safety funnel

NEW!

Scat

The safety funnel with shut-off valve has to be opened manually only during the disposal of liquids. At the safety funnel with automatic closing the container will be closed and sealed automatically when releasing the button. In both versions, the port for the exhaust filter is integrated for optimum protection against vapors. Each cap is equipped with variable connections for capillaries and tubes. Further thread sizes with safety funnel are available on request.

Please order exhaust vent filter separately, we recommend the splash protected exhaust filters.

Thread	Connections	PK	Cat. No.	
S50	2 x connectors 2.3/3.2mm o.d.	1	**9.139 874**	
S51	1 x connector 2.3/3.2mm o.d., 1 x tube connector 6.4-9.0mm i.d.	1	**6.264 449**	
S51	1 x connector 2.3/3.2mm o.d., 1 x tube connector 6.4-9.0mm i.d.*	1	**6.266 051**	1
S55	2 x connectors 2.3/3.2mm o.d.	1	**9.139 875**	
S60 / 61	2 x connectors 2.3/3.2mm o.d.	1	**9.139 876**	2
S65	4 x connectors 2.3/3.2mm o.d.	1	**9.139 877**	
S70 / 71	4 x connectors 2.3/3.2mm o.d.	1	**9.139 878**	
S90	4 x connectors 2.3/3.2mm o.d.*	1	**4.005 825**	
S90	4 x connectors 2.3/3.2mm o.d.	1	**9.139 880**	

*automatic

3



4.005 613

SafetyWasteCaps with mechanical level control

Scat

The red floater is immediately visible when the container has reached the critical fill level. Even suitable for canister of opaque material, when fill level can not be shown from the outside.

- Proven S.C.A.T. technology for SafetyWasteCaps
- Different thread sizes
- Connections for capillaries and tubings
- Exhaust filter
- Safety funnel
- Mechanical level control
- Supplied as a set with connectors
- With connection for S.C.A.T. exhaust filters **(Please order charcoal filters separately.)**

Further thread sizes are available on request.

Thread	Connections	PK	Cat. No.	
S55	2 x connectors 2.3/3.2mm o.d., 1 x connector 6.4-9.0mm i.d.	1	**4.005 612**	
S60/61	2 x connectors 2.3/3.2mm o.d., 1 x connector 6.4-9.0mm i.d.	1	**4.005 613**	3
S90	4 x connectors 2.3/3.2mm o.d., 1 x connector 6.4-9.0mm i.d.	1	**4.005 616**	

Collectors for tube connector for SafetyWasteCaps

NEW!

Scat

Collectors for additional parts to add more tubings and capillaries. Delivered with fittings.
Further configurations available on request.

Description	Material	PK	Cat. No.	
3 x connectors (90°) for 3 capillaries diam. 2.3/3.2mm o.d.	PTFE/PFA/PP	1	**9.139 888**	5
3 x connectors (90°) for 2 capillaries diam. 2.3/3.2mm o.d. and 1 tubing diam. 6.4-9.0mm i.d.	PTFE/PFA/PP	1	**4.005 859**	6
3 x connectors (straight) for 3 capillaries diam. 6.4mm i.d.	PTFE/PP	1	**6.262 289**	4
2 x connectors (90°) for 3 tubings diam. 6.4-9.0mm i.d.	PTFE/PP	1	**4.005 865**	7
2 x connectors (straight) for 2 capillaries diam. 2.3/3.2mm o.d.	PTFE/PFA	1	**4.005 866**	
3 x connectors (straight) for 3 capillaries diam. 2.3/3.2mm o.d.	PTFE/PFA	1	**4.005 860**	
8 x connectors (straight) for 8 capillaries diam. 2.3/3.2mm o.d.	PTFE/PFA	1	**9.139 889**	
8 x connectors (straight) for 7 capillaries diam. 2.3/3.2mm o.d. and 1 tubing diam. 6.4mm i.d.	PTFE/PFA/PP	1	**4.005 976**	8

4



6.262 289

5



9.139 888

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4.005 859

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4.005 865

8



4.005 976

E & OE.

1 Fittings and Ferrules for capillary connector for SafetyCaps/SafetyWasteCaps

Fittings with integrated ferrule for SafetyCaps and SafetyWasteCaps.
Parts not in use can be closed with a plug.

Scat

Description	Material	Colour	PK	Cat. No.	
Fittings for capillaries diam. 1.6mm o.d.	PFA	green	5	**6.241 792**	
Fittings for capillaries diam. 1.6mm o.d.	PTFE	white	10	**4.005 444**	
Fittings for capillaries diam. 2.3mm o.d.	PFA	violet	5	**6.255 961**	
Fittings for capillaries diam. 2.3mm o.d.	PFA	grey	5	**6.241 793**	
Fittings for capillaries diam. 2.3mm o.d.	PTFE	white	10	**4.005 445**	
Fittings for capillaries diam. 3.2mm o.d.	PFA	black	5	**9.042 891**	
Fittings for capillaries diam. 3.2mm o.d.	PFA	blue	5	**9.042 892**	
Fittings for capillaries diam. 3.2mm o.d.	PFA	red	5	**7.639 112**	
Fittings for capillaries diam. 3.2mm o.d.	PFA	yellow	5	**9.042 893**	
Fittings for capillaries diam. 3.2mm o.d.	PFA	neutral	5	**9.042 894**	
Fittings for capillaries diam. 3.2mm o.d.	PTFE	white	10	**4.005 446**	
Fittings for capillaries diam. 4.76mm (3/16") o.d.	PTFE	white	1	**4.005 448**	
Fittings for capillaries diam. 6.35mm (1/4") o.d.	PTFE	white	1	**4.005 447**	
Blind plugs for capillary connections diam. 1.6/2.3/3.2mm o.d.	PFA	neutral	10	**9.139 890**	2
Blind plugs for capillary connections diam. 4.76mm o.d.	PTFE	white	5	**4.005 945**	
Blind plugs for capillary connections diam. 4.76mm o.d.	PTFE	white	10	**4.005 880**	
Blind plug for tubing connection + capillary connection diam. 6.35mm o.d.	PTFE	white	1	**4.005 883**	3
Blind plugs for charcoal filter connections	PTFE/VITON	white/black	1	**4.005 504**	4

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9.139 890

3



4.005 883

4



4.005 504

partner of the LLG Lab Logistics Group

We can supply this manufacturer's whole product range !

S·C·A·T europe

1 Hydrogen Generators for GC combustion detector applications and GC and GC/MS carrier gas applications

Parker Hannifin

The Parker domnick hunter H high purity hydrogen and H-MD for ultra high purity gas generators offer the optimum combination of safe operation, reliability and performance.
Utilising field proven PEM cell technology, hydrogen is produced on demand from deionised water and electricity, at low pressure and with minimal stored volume. Innovative control software allows unrivalled operational safety and reliability. The H generators ideally supply fuel gas to all known GC combustion detectors used in today's laboratory workflows. Three models operate at flow rates; 160 ml/min, 250 ml/min and 500 ml/min. Hydrogen generators are available with Remote Networking software. RemoteNet allows up to 27 hydrogen generators to be actively controlled from one central PC, and facilitates true cascading capabilities.

The H-MD generators ideally supply GC and GC/MS carrier gas, in addition to all known combustion detectors that are routinely used in today's laboratory workflows. Four models operate at flow rates; 160 ml/min, 250 ml/min, 500 ml/min and 1100 ml/min.

- Eliminate dangerous hydrogen cylinders from the work place
- Simple to install and operate
- Compact, reliable with minimal maintenance
- Produces a continuous supply of 99.9995% pure hydrogen at up to 6.9 bar
- (H-MD) Produces a continuous supply of 99.99995% pure hydrogen up to 1.100ml/min and 6.9 bar
- 2 year warranty for the cell
- Optional automatic water fill and remote networking capability

Specifications

Ambient Temperature Range:	5 - 40°C
Water Supply Pressure*:	0.1 bar g
Water Supply Flow Rate*:	1 L/min
Water Quality:	Deionised. ASTM II, >1MΩ, <1µs, filtered to <100µm
Supply Voltage Range:	90 - 264V 50/60Hz
Port Connections	
Hydrogen Outlet:	1/8" Compression Fitting
Water Drain:	Quick Release Push in Fitting
Water Fill*:	Quick Release Push in Fitting

*With optional AWF

Type	Flow rate L / min.	Purity %	Flow rate L / week	Delivery Pressure bar g	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
20H*	0.16	>99.9995	1.25	0.3 - 6.89	342 x 437 x 456	19.0	1	**9.870 301**
40H*	0.25	>99.9995	2.00	0.3 - 6.89	342 x 437 x 456	19.0	1	**9.870 302**
60H*	0.50	> 99.9995	4.00	0.3 - 6.89	342 x 437 x 456	19.0	1	**9.870 303**
20H-MD*	0.16	>99.99995	1.69	0.69 - 6.89	342 x 470 x 456	20.5	1	**9.870 311**
40H-MD*	0.25	>99.99995	2.41	0.69 - 6.89	342 x 470 x 456	20.5	1	**9.870 312**
60H-MD*	0.50	>99.99995	4.82	0.69 - 6.89	342 x 470 x 456	20.5	1	**9.870 313**
110H-MD	1.10	>99.99995	10.60	0.69 - 6.89	342 x 470 x 456	23.6	1	**9.870 314**

Note: For auto water fill option add suffix AWF ie 20H-AWF or 20H-MD-AWF
*With optional AWF

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Preventative Maintenance

Parker Hannifin

Description	Change interval	PK	Cat. No.
Replacement desiccant cartridge	As required*	1	**9.870 308**

* 20H Continuous operation approx 6 to 7 months
* 40H Continuous operation approx 4 to 5 months
* 60H Continuous operation approx 2 to 3 months

E & OE.

1 Zero Air Generators for GC combustion detector applications

Parker Hannifin

The Parker domnick hunter UHP-ZA zero air generators produce a continuous stream of organic impurity free air from an external dry compressed air source and offer superior limits of detection over and above other modes of supply. Flow rates range from 1 L/min to 30 L/min. The UHP-ZA generators feature an interchangeable top panel facilitating the direct mounting of any Parker domnick hunter hydrogen generator. The stackable system forms an innovative, modular FID gas station suitable for all known GC combustion detectors such as FID, FPD and NPD. UHP-ZA generators may also be used in many other chemical analysis and life science applications, including LC/MS source gas, zero and combustion gas for total hydrocarbon analysers and as a gas sensing calibration and dilution gas.

- Ultra high purity, organic free, air for GC combustion detectors
- Increase resolution and detection limits of analysis
- Compact, reliable with minimal operator attention and maintenance
- Eliminate inconvenient and potentially dangerous air cylinders
- Payback period typically less than 24 months
- Models available to supply up to 75 FID's

Specifications

Ambient Temperature Range:	5 - 40°C
Organic Impurity:	< 0.1ppm
Inlet Air Quality:	Clean dry compressed air ISO8573-1:2001 Class 3.2.1
Supply Voltage Range:	103 - 126V 60Hz 207 - 253V 50/60Hz
Port Connections	
Outlet (UHP-10ZA-S & UHP-35ZA-S):	1/8" Compression Fitting
Inlet (UHP-10ZA-S & UHP-35ZA-S):	1/8" Compression Fitting
Outlet (UHP-50ZA-S - UHP-300ZA-S):	1/4" Compression Fitting
Inlet (UHP-50ZA-S - UHP-300ZA-S):	1/4" Compression Fitting

Type	Flow rate L / min.	Air Inlet L/min	Delivery Pressure bar g	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
UHP-10ZA-S	1.00	1.2	4 - 10	340 x 425 x 325	10.2	1	**9.870 331**
UHP-35ZA-S	3.50	42.0	4 - 10	340 x 425 x 325	14.2	1	**9.870 332**
UHP-50ZA-S	5.00	6.0	4 - 10	340 x 425 x 325	14.2	1	**9.870 333**
UHP-75ZA-S	7.50	9.0	4 - 10	340 x 425 x 325	14.2	1	**9.870 334**
UHP-150ZA-S	15.00	18.0	4 - 10	340 x 425 x 325	15.2	1	**9.870 335**
UHP-200ZA-S	20.00	24.0	4 - 10	340 x 425 x 325	15.2	1	**9.870 336**
UHP-300ZA-S	30.00	35.0	4 - 10	340 x 425 x 325	15.2	1	**9.870 337**

Note: Add suffix E' for 207-253V 50/60Hz ie. UHP-10ZA-S-E
Add suffix W' for 103 -126V 60Hz ie. UHP-10ZA-S-W

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Preventative Maintenance

Parker Hannifin

Description	Change interval	PK	Cat. No.
Inlet Filter PM Kit - all models	12 Months	1	**9.870 338**
Outlet Filter PM Kit - all models	12 Months	1	**9.870 339**
Fan PM Kit, 230V - all models	24 Months	1	**9.870 340**

1



9.870 412

Generators for GC makeup gas and carrier gas applications

Parker Hannifin

The Parker domnick hunter zero nitrogen generators employ robust, field proven technology to produce ultra high purity nitrogen for GC makeup and carrier gas applications. An integral heated platinum catalyst ensures carrier grade nitrogen free from organic impurities to <0.1ppm. The generators provide a continuous stream of ultra high purity nitrogen from a single plug & play' unit. Models are available with and without an integral oil free compressor, are extremely quiet in operation and are fully approved for use by major instrumentation manufacturers. Innovative design features include economy mode as standard which extends compressor life and significantly reduces on going running costs.

- Ultra high purity, organic free, nitrogen
- Economy mode as standard, increases compressor life
- Ideal for GC make-up and carrier gas applications including ECD
- Integral oil free compressor, with advanced noise reduction technology
- Eliminate inconvenient and potentially dangerous nitrogen cylinders
- Compact, reliable with minimal operator attention and maintenance

Specifications

Ambient Temperature Range:	15 - 25°C
Organic contaminants:	< 0.1ppm total hydrocarbons
Inlet Air Quality*:	Clean dry compressed air ISO8573-1:2001 Class 2.-.1
Supply Voltage Range:	207 - 253V 50/60Hz
Port Connections	
Inlet*:	1/4" Compression Fitting
Outlet:	1/8" Compression Fitting

*Non compressor models only

Type	Flow rate	Purity	Air Inlet	Delivery Pressure	Dimensions (W x D x H)	Weight	PK	Cat. No.
	L / min.	%	L/min	bar g	mm	kg		
UHPZN2-1000	1.00	>99,9995 %	42.0	5	345 x 667 x 869	86.0	1	**9.870 412** 1
UHPZN2-3000	3.00	>99,9995 %	52.0	5	345 x 667 x 869	86.0	1	**9.870 414**

2



9.870 404

Ultra High Purity Nitrogen Generators for GC and other critical analytical applications

Parker Hannifin

The Parker domnick hunter nitrogen gas generators employ robust, field proven technology to produce ultra high purity nitrogen for critical life science, chemical analysis and spectroscopy applications. Flow rates range from 0.55 L/min to 3 L/min, with purities >99.9995%. The generators provide a continuous stream of ultra high purity nitrogen from a single plug & play' unit. Models are available with and without an integral oil free compressor, are extremely quiet in operation and are fully approved for use by major instrumentation manufacturers. Innovative design features include economy mode as standard which extends compressor life and significantly reduces on going running costs.

- Complete Plug and Play' system specifically designed for critical analytical applications
- Produces a continuous supply of 99.999% purity nitrogen 24 hours a day
- Integral oil free compressor, with advanced noise reduction technology
- Eliminate inconvenient and potentially dangerous nitrogen cylinders
- Compact, reliable with minimal operator attention and maintenance
- Economy mode as standard; increases compressor life

Specifications

Ambient Temperature Range:	15 - 25°C
Inlet Air Quality*:	Clean dry compressed air ISO8573-1:2001 Class 2.-.1
Supply Voltage Range:	207 - 253V 50/60Hz
Port Connections	
Inlet*:	1/4" Compression Fitting
Outlet UHPN2 550 & 750:	1/8" Compression Fitting
Outlet UHPN2 1500 & 3000:	1/4" Compression Fitting

*Non compressor models only

Type	Flow rate	Purity	Air Inlet	Oulet Pressure	Dimensions (W x D x H)	Weight	PK	Cat. No.
	L / min.	%	L/min	bar g	mm	kg		
UHPN2-550	0.55	>99,9995	33.0	5	345 x 417 x 869	44.0	1	**9.870 404** 2
UHPN2-750	0.75	>99,9995	33.0	5	345 x 417 x 869	44.0	1	**9.870 406**
UHPN2-1500	1.50	>99,9995	117.0	5	345 x 667 x 869	84.0	1	**9.870 408**
UHPN2-3000	3.00	>99,9995	117.0	5	345 x 667 x 869	84.0	1	**9.870 410**

1 Nitrogen Generators for Agilent 6400 & 6500 LC/MS instruments


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Parker Hannifin

The Parker domnick hunter LCMS64/65 dual flow nitrogen gas generators employ robust, field proven technology to meet the drying, sheath, nebulisation and collision gas requirements of the Agilent Technologies QQQ & Q-TOF instrumentation portfolio. The LCMS64/65 generators provide two continuous streams of high purity nitrogen from a single plug & play' unit. Models are available both with and without an integral oil free compressor, are extremely quiet in operation, and fully approved for use by major instrumentation manufacturers. Innovative design and technology facilitate optimised operating time, attractive return on investment and proven analytical performance, eliminating the need for other modes of supply.

- Complete Plug and Play' system specifically designed for the Agilent 6400 & 6500
- Produces a continuous supply of LC/MS grade nitrogen 24 hours a day
- Integral oil free compressor, with noise reduction technology
- Eliminate inconvenient and potentially dangerous nitrogen cylinders
- Compact, reliable with minimal operator attention and maintenance
- Phthalate-free componentry

Specifications

Ambient Temperature Range:	5 - 40°C
Inlet Air Quality*:	Clean dry compressed air ISO8573-1:2001 Class 2.-.1
Supply Voltage Range:	103 - 126V 60Hz 207 - 253V 50/60Hz
Port Connections	
Nitrogen Outlet:	1/4" Compression Fitting
Air Inlet*:	1/4" Compression Fitting

*Non compressor models only

Type	Description	Flow rate Nitrogen L / min.	Purity %	Air Inlet L/min	Delivery Pressure bar g	Dimensions (W x D x H) mm	Air Inlet L/min	PK	Cat. No.
LCMS64-0		0.20	> 99.999	90.0	6.8	510 x 559 x 705	103.0	1	**9.870 389**
LCMS64-1	with Compressor	0.20	> 99.999		6.8	510 x 826 x 705	143.0	1	**9.870 390**
LCMS65-0		0.20	> 99.999	90.0	6.8	510 x 559 x 705	103.0	1	**9.870 391**
LCMS65-1	with Compressor	0.20	> 99.999		6.8	510 x 826 x 705	143.0	1	**9.870 392**

Note: Add suffix E' for 207-253V 50/60Hz ie LCMS64-0-E
Add suffix W' for 103 -126V 60Hz ie LCMS64-0-W

Nitrogen and Dry Air Generators for LC/MS instruments


2

9.870 394

Parker Hannifin

The Parker domnick hunter LCMS20/3 dual flow nitrogen and dry air generators employ robust, field proven technology to meet the nebulisation requirements of LC/MS instruments, both in positive and negative ionisation mode. The LCMS20/3 generators provide two continuous streams of high purity nitrogen and dry air from a single plug & play' unit. Models are available with and without an integral oil free compressor, are extremely quiet in operation and are fully approved for use by major instrumentation manufacturers. Innovative design and technology facilitate optimised operating time, attractive return on investment and proven analytical performance, eliminating the need for other modes of supply.

- Complete Plug and Play' system specifically designed for LC/MS
- Produces a continuous supply of LC/MS grade nitrogen 24 hours a day
- Integral oil free compressor, with noise reduction technology
- Eliminate inconvenient and potentially dangerous nitrogen cylinders
- Compact, reliable with minimal operator attention and maintenance
- Phthalate-free componentry

Specifications

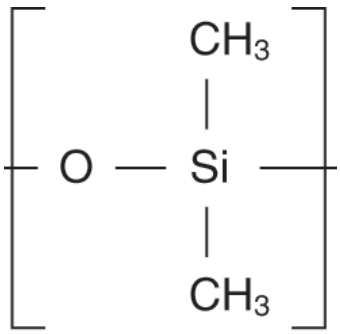
Ambient Temperature Range:	5 - 40°C
Inlet Air Quality*:	Clean dry compressed air ISO8573-1:2001 Class 2.-.1
Supply Voltage Range:	103 - 126V 60Hz 207 - 253V 50/60Hz
Port Connections	
Outlet:	1/4" Compression Fitting
Inlet*:	1/4" Compression Fitting

*Non compressor models only

Type	Description	Flow rate Nitrogen L / min.	Purity Nitrogen %	Air Inlet L/min	Delivery Pressure bar g	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
LCMS20/3-0		20.00	> 99	85.0	7	510 x 559 x 705	103.0	1	**9.870 393**
LCMS20/3-1	with Compressor	20.00	> 99		7	510 x 826 x 705	143.0	1	**9.870 394** 2

Note: Add suffix E' for 207-253V 50/60Hz ie. LCMS20/3-0-E
Add suffix W' for 103 -126V 60Hz ie. LCMS20/3-0-W

1



1 OPTIMA® 1 high performance capillary columns for GC

100% dimethylpolysiloxane *MACHEREY-NAGEL*

nonpolar phase separation of components according to boiling points thick film columns ≥3µm film are especially recommended for solvent analysis.
Similar phases: Permabond® SE-30, OV-1, DB-1, SE-30, HP-1, SPB-1, CP-Sil 5 CB, Rtx-1, 007-1, BP1, MDN-1, AT-1, ZB-1, OV-101.
For columns with 0.25 to 0.32mm ID and films <3µm the max. temperature for isothermal operation is 340°C, the max. temperature for short isotherms in a temperature programme is 360°C.
For 0.53mm ID columns with films <3µm the max. temperatures are 320 and 340°C, resp. for thick film columns with films ≥3µm the max. temperatures are 300 and 320°C, resp.

Int. diam. mm	Ext. diam. mm	Film thickness µm	Length m	PK	Cat. No.
0.25	0.4	0.10	25	1	**9.003 657**
0.25	0.4	0.25	25	1	**9.003 662**
0.25	0.4	0.50	25	1	**9.003 667**
0.25	0.4	1.00	25	1	**9.003 671**
0.25	0.4	0.10	30	1	**9.003 658**
0.25	0.4	0.25	30	1	**9.003 663**
0.25	0.4	0.50	30	1	**9.003 668**
0.25	0.4	1.00	30	1	**9.003 672**
0.25	0.4	0.25	50	1	**9.003 664**
0.25	0.4	0.50	50	1	**9.003 669**
0.25	0.4	1.00	50	1	**9.003 673**
0.25	0.4	0.10	60	1	**9.003 659**
0.25	0.4	0.25	60	1	**9.003 665**
0.25	0.4	0.50	60	1	**9.003 670**
0.25	0.4	1.00	60	1	**9.003 674**
0.32	0.5	0.10	25	1	**9.003 676**
0.32	0.5	0.25	25	1	**9.003 682**
0.32	0.5	0.35	25	1	**9.003 686**
0.32	0.5	0.50	25	1	**9.003 691**
0.32	0.5	1.00	25	1	**9.003 697**
0.32	0.5	3.00	25	1	**9.003 701**
0.32	0.5	5.00	25	1	**9.003 706**
0.32	0.5	0.10	30	1	**9.003 677**
0.32	0.5	0.25	30	1	**9.003 683**
0.32	0.5	0.35	30	1	**9.003 687**
0.32	0.5	0.50	30	1	**9.003 692**
0.32	0.5	1.00	30	1	**9.003 698**
0.32	0.5	3.00	30	1	**9.003 702**
0.32	0.5	5.00	30	1	**9.003 707**
0.32	0.5	0.10	50	1	**9.003 678**
0.32	0.5	0.25	50	1	**9.003 684**
0.32	0.5	0.35	50	1	**9.003 688**
0.32	0.5	0.50	50	1	**9.003 693**
0.32	0.5	1.00	50	1	**9.003 699**
0.32	0.5	3.00	50	1	**9.003 703**
0.32	0.5	5.00	50	1	**9.003 708**
0.32	0.5	0.10	60	1	**9.003 679**
0.32	0.5	0.25	60	1	**9.003 685**
0.32	0.5	0.35	60	1	**9.003 689**
0.32	0.5	0.50	60	1	**9.003 694**
0.32	0.5	1.00	60	1	**9.003 700**
0.32	0.5	3.00	60	1	**9.003 704**
0.53	0.8	0.50	25	1	**4.003 149**
0.53	0.8	1.00	25	1	**4.003 164**
0.53	0.8	2.00	25	1	**4.003 152**
0.53	0.8	5.00	25	1	**4.003 265**
0.53	0.8	0.50	30	1	**4.003 150**
0.53	0.8	1.00	30	1	**4.003 165**
0.53	0.8	2.00	30	1	**4.003 153**
0.53	0.8	5.00	30	1	**4.003 266**
0.53	0.8	5.00	30	1	**4.003 267**

Custom-made columns to your specifications available on request.
Each column is individually tested and supplied with test certificate and test chromatogram, but without fittings or ferrules.
Column ends are melted or closed with septa, and thus protected from atmospheric oxygen. Additionally, we supply the corresponding test mixture with each column.

E & OE.

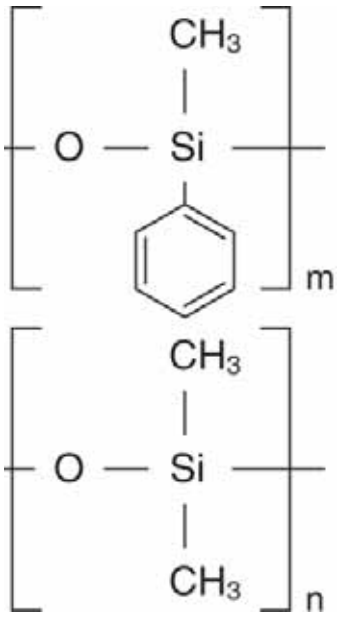
1 OPTIMA® 5 capillary columns for GC

5% phenyl - 95% dimethylpolysiloxane *MACHEREY-NAGEL*

USP G27, G36 nonpaolar standard phase with large range of application similar phases: Permabond® SE-52 , SE-54, SE-52, DB-5, HP-5, SPB-5, CP-Sil 8, Rtx-5, 007-5, BP5, MDN-5, AT-5, ZB-5 for columns with 0.1 to 0.32mm ID and films <3µm the max. temperature for isothermal operation is 340°C, the max. temperature for short isotherms in a temperature programme is 360°C for 0.53mm ID columns with films < 3µm the max. temperatures are 320 and 340°C, resp. for thick film columns with films ≥ 3µm the max. temperatures are 300 and 320°C, resp.

Further lengths available on request.

1



Int. diam. mm	Ext. diam. mm	Film thickness µm	Length m	PK	Cat. No.
0.10	0.4	0.10	10	1	**4.003 235**
0.25	0.4	0.10	25	1	**9.003 709**
0.25	0.4	0.25	25	1	**9.003 715**
0.25	0.4	0.35	25	1	**9.003 719**
0.25	0.4	0.50	25	1	**9.003 723**
0.25	0.4	1.00	25	1	**9.003 727**
0.25	0.4	0.10	30	1	**9.003 710**
0.25	0.4	0.25	30	1	**9.003 716**
0.25	0.4	0.35	30	1	**9.003 720**
0.25	0.4	0.50	30	1	**9.003 724**
0.25	0.4	1.00	30	1	**9.003 728**
0.32	0.5	0.10	25	1	**9.003 733**
0.32	0.5	0.25	25	1	**9.003 738**
0.32	0.5	0.35	25	1	**9.003 742**
0.32	0.5	0.50	25	1	**9.003 746**
0.32	0.5	1.00	25	1	**9.003 751**
0.32	0.5	3.00	25	1	**9.003 755**
0.32	0.5	5.00	25	1	**9.003 760**
0.32	0.5	0.10	30	1	**9.003 734**
0.32	0.5	0.25	30	1	**9.003 739**
0.32	0.5	0.35	30	1	**9.003 743**
0.32	0.5	0.50	30	1	**9.003 747**
0.32	0.5	1.00	30	1	**9.003 752**
0.32	0.5	3.00	30	1	**9.003 756**
0.32	0.5	5.00	30	1	**9.003 761**
0.53	0.8	0.50	25	1	**4.003 155**
0.53	0.8	1.00	25	1	**4.003 168**
0.53	0.8	2.00	25	1	**4.003 158**
0.53	0.8	5.00	25	1	**4.003 261**
0.53	0.8	0.50	30	1	**4.003 156**
0.53	0.8	1.00	30	1	**4.003 169**
0.53	0.8	2.00	30	1	**4.003 159**
0.53	0.8	5.00	30	1	**4.003 262**

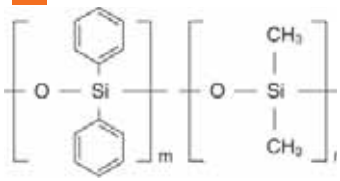
Custom-made columns to your specifications available on request.
Each column is individually tested and supplied with test certificate and test chromatogram, but without fittings or ferrules. Column ends are melted or closed with septa, and thus protected from atmospheric oxygen.
Additionally, we supply the corresponding test mixture with each column.

2 OPTIMA® 5 MS capillary columns for GC

5% diphenyl - 95% dimethylpolysiloxane *MACHEREY-NAGEL*

nonpolar phase with low bleeding, deal for GC/MS and ECD applications and general analyses at trace level perfect inertness for basic compounds.
Similar phases: DB-5 MS, HP-5 MS, Ultra-2, Equity-5, CP-Sil 8 CB low bleed/MS, Rtx-5SIL-MS, Rtx-5 MS, 007-5 MS, BPX5, MDN-5S, AT-5 MS, VF-5 MS.
max. temperature for isothermal operation: 340°C, max. temperature for short isotherms in a temperature program: 360°C

2



Int. diam. mm	Ext. diam. mm	Film thickness µm	Length m	PK	Cat. No.
0.25	0.4	0.25	30	1	**7.080 092**
0.25	0.4	0.50	30	1	**4.003 099**
0.25	0.4	1.00	30	1	**4.003 101**
0.32	0.5	0.25	30	1	**6.700 690**
0.32	0.5	0.50	30	1	**4.003 093**

Custom-made columns to your specifications available on request.
Each column is individually tested and supplied with test certificate and test chromatogram, but without fittings or ferrules. Column ends are melted or closed with septa, and thus protected from atmospheric oxygen.
Additionally, we supply the corresponding test mixture with each column.

Other GC-columns on request.

Reagents and methods for derivatisation

Derivatisation reagents *MACHEREY-NAGEL*

for improved volatility, better thermal stability or low limit of detection in gas chromatography prerequisite: quantitative, rapid and reproducible formation of only on derivative halogen atoms introduced by derivatisation (e.g. trifluoroacetates) allow specific detection (ECD) with the advantage of high sensitivity elution order and fragmentation patterns in MS can be influenced by a specific derivatisation
reagents for **silylation - alkylation (methylation) - acylation** are available

These products contain harmful substances which must be specially labelled as hazardous. For detailed information please see the MSDS, which can be downloaded under www.mn-net.com.

Derivatisation method development kit

Which type of derivatisation is best suited for your sample (alkylation, silylation or acylation)? Test kit for determination of the optimum derivatisation. *MACHEREY-NAGEL*

Content	PK	Cat. No.
2 x 1 ml each for TMSH, MSTFA, MBTFA	2	**4.001 514**

Acylation kit

Which is the proper reagent for acylation? *MACHEREY-NAGEL*
Test kit for determination of the optimum acylation.

Content	PK	Cat. No.
2 x 1 ml each for MBTFA , TFAA, MBHFBA	1	**6.207 118**

Alkylation kit

Which is the proper reagent for methylation? *MACHEREY-NAGEL*
Test kit for determination of the optimum alkylation.

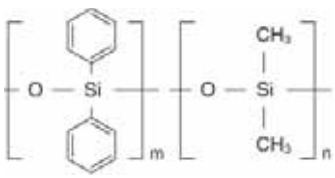
Content	PK	Cat. No.
3x1 ml each for TMSH, DMF-DMA	3	**4.001 513**

Silylation kit

Which is the proper reagent for silylation? *MACHEREY-NAGEL*
Test kit for determination of the optimum silylation.

Content	PK	Cat. No.
2 x 1 ml each for MSTFA, BSTFA, TSIM, MSHFBA	1	**6.704 458**

1



1 Silylation reagents - MSTFA

N-methyl-N-trimethylsilyl-trifluoroacetamide *MACHEREY-NAGEL*
m.w. 199.1, Bp 70°C (75mm Hg), density d20°/4° = 1.11
MSTFA: R' = CF_3, R" = CH_3
the most volatile trimethylsilyl amide available
very strong TMS donor which does not cause any noticeable fouling of the FID burning chamber even after long-time measuring series
The already good solution characteristics can be improved by addition of submolar quantities of protic solvents (e.g. TFA for extremely polar compounds such as hydrochlorides) or pyridine (e.g. for carbohydrates).

recommended application: carboxylic acids, hydroxy and ketocarboxylic acids, amino acids, amines, alcohols, polyalcohols, sugars, mercaptans and similar compounds with active hydrogen atoms. Even amine hydrochlorides can be silylated directly.
advantages: complete reaction with high reaction rates, even without a catalyst (1 to 2% TMCS or TSIM)
the by-product of the reaction (N-methyltrifluoroacetamide) features high volatility and short retention time.

Description	Capacity ml	PK	Cat. No.
MSTFA	1	20	**7.055 892**
MSTFA	10	1	**6.704 091**
MSTFA	10	5	**6.085 475**
MSTFA	50	6	**6.227 450**
MSTFA	100	6	**4.001 493**

Due to their purpose, derivatisation reagents are very reactive substances. For this reason they should be stored cool and protected from moisture.
The derivatisation reagents are supplied in vials with crimp caps for easy access with a syringe. Vials with pierced sealing disks have limited stability and should be used soon.

E & OE.

Silylation reagents - BSTFA, SILYL-991

N,O-bis-trimethylsilyl-trifluoroacetamide *MACHEREY-NAGEL*
m.w. 257.4, Bp 40°C (12mm Hg), density d20°/4° = 0.961
BSTFA: R = CF_3 powerful trimethylsilyl donor with approximately the same donor strength as the non-fluorinated analogue BSA
advantage of BSTFA over BSA: greater volatility of its reaction products (particularly useful for GC of some lower boiling TMS amino acids.

BSTFA is nonpolar (less polar than MSTFA), and can be mixed with acetonitrile for improved solubility. For silylating fatty acid amides, hindered hydroxyls and other compounds, which are difficult to silylate (like secondary alcohols and amines), we recommend BSTFA + 1% trimethylchlorosilane (TMCS), available under the designation SILYL-991.

Description	Capacity ml	PK	Cat. No.
BSTFA	1	20	**4.001 486**
BSTFA	10	1	**6.803 320**
BSTFA	10	5	**4.001 487**
SILYL-991 (BSTFA - TMCS (99:1)	1	20	**4.001 511**
SILYL-991 (BSTFA - TMCS (99:1)	50	1	**4.001 510**

Due to their purpose, derivatisation reagents are very reactive substances. For this reason they should be stored cool and protected from moisture.
The derivatisation reagents are supplied in vials with crimp caps for easy access with a syringe. Vials with pierced sealing disks have limited stability and should be used immediately.

Acylation reagents for GC - Bisacylamides

Acylation with fluorinated acid amides is recommended for alcohols, primary and secondary amines as well as for thiols under mild, neutral conditions. MBTFA also forms very volatile derivatives with carbohydrates. *MACHEREY-NAGEL*

by-products: corresponding neutral acylamides, which can be easily removed due to their high volatility; because of neutral conditions and favourable chromatographic properties often removal of the bisacylamide is not necessary. Thus sample preparation is much more convenient.

MBTFA /MBHFBA
N-methyl-bis(trifluoroacetamide) MBTFA
m.w. 223.08, Bp 123 - 124°C (760mm Hg), density d20°/4° = 1.55,
CF_3 - CO - $N(CH_3)$ - CO - CF_3

Description	Capacity ml	PK	Cat. No.
MBTFA	1	20	**7.401 143**
MBTFA	10	1	**7.510 796**
MBTFA	10	5	**6.228 605**

Due to their purpose, derivatisation reagents are very reactive substances. For this reason they should be stored cool and protected from moisture.
The derivatisation reagents are supplied in vials with crimp caps for easy access with a syringe. Vials with pierced sealing disks have limited stability and should be used soon.

Acylation reagents for GC - Anhydrides

Acylation with fluorinated acid anhydrides can be used for alcohols, phenols, carboxylic acids, amines, amino acids and steroids forming volatile, stable derivatives suited for FID as well as for ECD detection. *MACHEREY-NAGEL*

by-products of acylation with anhydrides: corresponding acids
excess reagent and the acid formed have to be removed

Heptafluorobutyric acid anhydride (HFBA)
m.w. 410.06, Bp 106 - 107°C (760mm Hg),
C_3F_7 - CO - O - CO - C_3F_7
density d20°/4° = 1.665

Description	Capacity ml	PK	Cat. No.
HFBA	1	20	**4.001 480**
HFBA	10	1	**4.001 479**
HFBA	10	5	**4.001 481**

Alkylation reagents for GC - Trimethylsulphonium hydroxide

TMSH (0.2M in methanol) M.G. 94.06 *MACHEREY-NAGEL*

Description	Capacity ml	PK	Cat. No.
TMSH	1	10	**7.086 147**
TMSH	1	20	**7.083 308**
TMSH	10	5	**4.001 512**

SGE Analytical Science
A TRAJAN Brand

Providing Confidence
in Your Analysis



SGE Analytical Science
for your instrument and
laboratory since 1960.

www.sge.com

1



1 Syringes for Agilent GC autosampler

NEW!

GC syringes for Agilent autosampler 7673, 7683 and 6850
with fixed or removable needle
two different needle diameter and tapered needles
high reproducibility, low carry-over

SGE Analytical Science

Gauge (OD) mm	Needle Typ	Capacity µl	PK	Cat. No.
23-26s (0.63/0.47)	fixed	5	1	**9.221 270**
23-26s (0.63/0.47)	fixed	5	6	**6.204 103**
23-26s (0.63/0.47)	fixed	10	1	**6.226 427**
23-26s (0.63/0.47)	fixed	10	6	**6.254 971**
23-26s (0.63/0.47)	fixed	10 (Gas tight)	1	**9.221 271**
23-26s (0.63/0.47)	fixed	10 (Gas tight)	6	**9.221 272**
26 (0.47)	fixed	5	1	**6.203 350**
26 (0.47)	fixed	5	6	**6.205 076**
23 (0.63)	fixed	5	1	**9.221 273**
23 (0.63)	fixed	5	6	**6.072 528**
26 (0.47)	fixed	10	1	**9.221 274**
26 (0.47)	fixed	10	6	**6.206 502**
23 (0.63)	fixed	10	1	**6.089 587**
23 (0.63)	fixed	10	6	**6.050 962**
26 (0.47)	removable	0.5	1	**6.228 788**
23 (0.63)	removable	0.5	1	**9.221 275**
23 (0.63)	removable	1	1	**9.221 276**

E & OE.

Inlet Liner and o-rings for Agilent GC

NEW!

SGE Analytical Science

Inlet Liner for Agilent 5890, 6850, 6890, 7890 und HP4890. SGE's inlet liners come as a complete, single packed unit.

5 or 25 packs, individualy packed
Complete with instrument appropriate o-rings and sealing rings
Each pack is supplied with quality test results

Description	Ext. diam. mm	Int. diam. mm	Length mm	PK	Cat. No.	
Split, Straight-through Liner	6.3	4.0	78.5	5	**7.653 145**	1
Split, with Quartz wool	6.3	4.0	78.5	5	**9.003 576**	
Split / Splitless with Single Taper	6.3	4.0	78.5	5	**9.003 579**	
Split / Splitless with Single Taper (Quartz Wool)	6.3	4.0	78.5	5	**6.236 751**	2
Split/Splitless Focus Liner	6.3	4.0	78.5	5	**6.223 552**	
Split/Splitless Focus Liner	6.3	4.0	78.5	25	**6.239 332**	
Split/Splitless Tapered Focus Liner	6.3	4.0	78.5	5	**6.223 553**	3
Split/Splitless Tapered Focus Liner	6.3	4.0	78.5	25	**9.003 572**	
Split/Splitless FAST Focus Liner	6.3	2.3	78.5	5	**6.223 554**	
Split/Splitless Tapered FAST Focus Liner	6.3	2.3	78.5	5	**9.003 586**	
Split/Splitless Recessed Gooseneck (Quartz Wool)	6.3	4.0	78.5	5	**9.003 588**	4
ConnecTite Liner Bottom Hole	6.3	4.0	78.5	5	**9.003 587**	
Viton o-ring, suitable for liners with OD 6,3mm	6.3	4.0	78.5	10	**9.221 277**	

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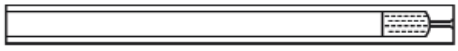
7.653 145

3



6.223 553

2



6.236 751

4



9.003 588

Inlet Liner for Thermo GC

NEW!

SGE Analytical Science

Liners come individually packed complete with instrument appropriate o-rings and sealing rings.
Each pack is supplied with quality test results.
Further liners und pack sizes available on request.

Description	Ext. diam. mm	Int. diam. mm	Length mm	PK	Cat. No.	
Split FocusLiner™	8.0	5.0	105.0	5	**6.265 466**	5
Splitless FocusLiner™	8.0	5.0	105.0	5	**6.265 467**	6
Splitless with Single Taper	8.0	5.0	105.0	5	**6.265 468**	7
Splitless, Straight-through Liner	8.0	3.0	105.0	5	**6.265 469**	
Split, Straight-through Liner	8.0	5.0	105.0	5	**6.265 470**	8
Trace 2000 PTV Liner	2.8	1.75	120.0	5	**7.630 911**	

5



6.265 466

7



6.265 468

6



6.265 467

8



6.265 470

Inlet Liner for Shimadzu GC

NEW!

SGE Analytical Science

Liners come individually packed complete with instrument appropriate o-rings and sealing rings.
Each pack is supplied with quality test results.
Further liners und pack sizes available on request.

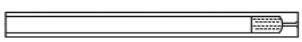
Description	Ext. diam. mm	Int. diam. mm	Length mm	PK	Cat. No.	
Split / Splitless FocusLiner™	5.0	3.4	95.0	5	**6.205 958**	
Split / Splitless Tapered FocusLiner™	5.0	3.4	95.0	5	**6.228 225**	11
Split, Straight-through Liner	5.0	3.4	95.0	5	**6.265 473**	9
Split / Splitless with Single Taper	5.0	3.4	95.0	5	**6.265 474**	10
Split / Splitless with middle gooseneck	5.0	3.4	95.0	5	**6.265 475**	

9



6.265 473

10



6.265 474

11



6.228 225

Consumables from other GC manufacturers on request

1



1 Ferrules for Agilent GC

NEW!

High quality ferrules made of 100% Graphite or 15% Graphite/85% Vespel *SGE Analytical Science*

Type A: 15% Graphite/85% Vespel, for injectors and detectors at atmospheric pressure (e.g. FID)

Type B: 15% Graphite/85% Vespel, for GC-MS interface connection

Type C: 100% Graphite, for injectors and detectors at atmospheric pressure (not for GC-MS)

Column ID mm	Ferrule ID mm	Type	PK	Cat. No.
0.1 - 0.25	0.4	A	10	**6.223 558**
0.32	0.5	A	10	**9.221 278**
0.53	0.8	A	10	**9.221 279**
0.1 - 0.25	0.4	B	10	**6.088 109**
0.32	0.5	B	10	**6.059 976**
0.53	0.8	B	10	**6.059 977**
0.1 - 0.32	0.5	C	10	**7.652 355**
0.45 - 0.53	0.8	C	10	**9.221 280**

2



2 Septa for Agilent GC

NEW!

All Septa are made with a high grade silicone material to minimize needle coring. These new materials meet or exceed industry standards, giving you reassurance in the quality of your work. All of these Septa are durable with excellent resealing properties and excellent solvent resistance. *SGE Analytical Science*

GP = General Purpose Silicone Septa for non-demanding routine applications up to 200°C.
EC = High Temperature Silicone Septa, for significantly longer injection life, low bleed and low injection port adhesion.
MN = High Temperature Premium Silicone Septa for autosamplers, up to 400 injections per septum.

Also available: Septa for instruments from Perkin-Elmer, Shimadzu, Thermo and Varian/Bruker.

Diam. mm	Material	Temp. max. °C	PK	Cat. No.
5.0	GP	200	50	**9.003 590**
5.0	MN	400	50	**9.003 591**
9.5	GP	200	50	**6.224 189**
9.5	EC	400	25	**9.003 592**
9.5	HT	400	25	**9.003 593**
11.0	GP	200	50	**6.085 419**
11.0	EC	400	25	**9.003 594**
11.0	MN	400	50	**6.255 348**
11.0	HT	400	25	**9.003 595**
12.5	GP	200	48	**6.087 242**
12.5	HT	400	25	**9.003 596**
12.5	EC	400	25	**9.003 597**

3



3 Syringes for CTC autosampler

NEW!

Type A - syringes for CTC Analytics HTS, HTC and LC PAL (needle tip: LC)
Type B - syringes for CTC Analytics CombiPal and GC PAL with fixed or removable needle, two different needle diameters (needle tip: cone). High reproducibility, low carry-over *SGE Analytical Science*

Gauge (OD) mm	Type	Needle length mm	Needle Typ	Capacity µl	PK	Cat. No.
22 (0.72)	A	51	fixed	25 (Gas tight)	1	**9.221 286**
22 (0.72)	A	51	fixed	100 (Gas tight)	1	**9.221 287**
22 (0.72)	A	51	removable	250 (Gas tight)	1	**9.221 288**
23 (0.63)	B	50	fixed	5	1	**7.607 298**
26 (0.47)	B	50	fixed	10 (Gas tight)	1	**9.221 289**
26 (0.47)	B	50	fixed	10 (Gas tight)	6	**9.221 290**
23 (0.63)	B	50	fixed	10	1	**7.607 297**
23 (0.63)	B	50	fixed	10	6	**9.221 291**

E & OE.

1 Syringes for Perkin-Elmer GC autosampler

NEW!

SGE Analytical Science

GC syringes for all Perkin-Elmer autosampler e.g. Clarus. With fixed or removable needle. Two different needle diameter. All needles are 70mm long with a cone point style. High reproducibility, low carry-over.

Gauge (OD) mm	Needle Typ	Capacity µl	PK	Cat. No.
26 (0.47)	fixed	5	1	**9.221 281**
23 (0.63)	fixed	5	1	**9.221 282**
26 (0.47)	fixed	5 (Gas tight)	1	**9.221 283**
23 (0.63)	fixed	5 (Gas tight)	1	**6.204 955**

1



Inlet Liner for Perkin-Elmer GC

NEW!

SGE Analytical Science

Inlet Liner for Perkin-Elmer Autosystem and Clarus 500, 600. SGE's inlet liners come as a complete, single packed unit. 5 or 25 packs, individualy packed. Complete with instrument appropriate o-rings and sealing rings. Each pack supplied with quality test results.

2



6.206 049

3



6.206 050

4



9.003 568

Description	Ext. diam. mm	Int. diam. mm	Length mm	PK	Cat. No.
Split / Splitless Focus Liner	6.2	4.0	92.0	5	**6.206 049** 2
Split / Splitless Tapered Focus Liner	6.2	4.0	92.0	5	**9.003 567**
Split straight through liner	6.2	4.0	92.0	5	**6.206 050** 3
Split / Splitless Focus Liner for PSS Injector	4.0	2.0	86.2	5	**9.003 568** 4
PTV liner with 0.25 mm ID restriction	2.0	1.0	88.0	5	**9.003 569**
Liner SH17A 3.4mm ID FOC	5.0	3.4	95.0	5	**6.205 958**
Liner AG 4mm ID, GN QW	6.3	4.0	78.5	25	**7.670 774**

5 Ferrules for Perkin-Elmer GC

NEW!

SGE Analytical Science

High quality ferrules made of 100% Graphite or 15%Graphite/85%Vespel
Type A - 15%Graphite/85%Vespel, for injectors and detectors at atmospheric pressure (e.g. ID)
Type C - 100%Graphite, for injectors and detectors at atmospheric pressure (not for GC-MS)

5



Column ID mm	Ferrule ID mm	Type	PK	Cat. No.
0.1 - 0.25	0.4	A	10	**6.088 109**
0.32	0.5	A	10	**6.059 976**
0.53	0.8	A	10	**6.059 977**
0.1 - 0.32	0.5	C	10	**9.221 284**
0.45 - 0.53	0.8	C	10	**9.221 285**

6 Three-layer septa for GC inlet

Hamilton

Low density silicone wad sandwiched between two high density silicone layers. Working temperature max. 200°C.

6



Diam. mm	PK	Cat. No.
6.35	12	**9.221 801**
8.00	12	**9.221 802**
9.00	12	**9.221 803**
9.50	12	**9.221 804**
10.00	12	**9.221 805**
12.70	12	**9.221 806**
11.00	12	**9.221 807**
13.00	12	**9.221 809**
16.00	12	**9.221 808**

Consumables from other GC manufacturers on request

Ready-to-use layers for TLC

Support materials for TLC ready-to-use layers *MACHEREY-NAGEL*

Glass plates: glass, ~ 1.3mm thick, high requirements for weight, packaging and storage, ideal torsional strength, high temperature stability, susceptible to breakage, can not be cut with scissors, high resistance against solvents, mineral acids and conc. ammonia, suitability for aqueous detection reagents depends on the phase

POLYGRAM®: polyester, ~ 0.2mm thick, low requirements for weight, packaging and storage, low torsional strength, max. 185°C temperature stability, not susceptible to breakage, can be cut with scissors, high resistance against solvents, mineral acids and conc. ammonia, very suitable for aqueous detection reagents

ALUGRAM®: aluminium, ~ 0.15mm thick, low requirements for weight, packaging and storage, relatively high torsional strength, high temperature stability, not susceptible to breakage, can be cut with scissors, high resistance against solvents, low resistance against mineral acids and conc. ammonia, limited suitability for aqueous detection reagents

ADAMANT unmodified standard silica layers for TLC

NEW!

Silica 60, specific surface (BET) ~ 500m²/g, mean pore size 60Å, specific pore volume 0.75ml/g, particle size 5 to 17µm. Outstanding hardness and abrasion resistance due to an optimized binder system. Increased separation efficiency due to an optimized particle size distirbution. High suitability for trace analyses resulting from a UV indicator with brilliance and a low-noise background of the layer. *MACHEREY-NAGEL*

Available as glass plates with or without fluorescent indicator (UV254).

Type	Plate format	Gel thickness	PK	Cat. No.
	cm	mm		
ADAMANT UV254	2.5 x 7.5	0.25	100	**4.005 060**
ADAMANT	5 x 10	0.25	50	**4.005 067**
ADAMANT UV254	5 x 10	0.25	50	**4.005 061**
ADAMANT	5 x 10	0.25	200	**4.005 068**
ADAMANT UV254	5 x 10	0.25	200	**4.005 062**
ADAMANT UV254	5 x 20	0.25	100	**4.005 063**
ADAMANT	10 x 10	0.25	25	**4.005 069**
ADAMANT UV254	10 x 10	0.25	25	**4.005 064**
ADAMANT	10 x 20	0.25	50	**6.266 605**
ADAMANT UV254	10 x 20	0.25	50	**4.005 065**
ADAMANT	20 x 20	0.25	25	**4.005 070**
ADAMANT UV254	20 x 20	0.25	25	**4.005 066**

1



1 TLC plates, Silica gel 60 F 254

Merck

Material	Plate format	Gel thickness	PK	Cat. No.
	cm	mm		
Glass	20 x 20	0.25	25	**9.130 050**
Glass	10 x 20	0.25	50	**9.130 051**
Glass	5 x 20	0.25	100	**9.130 052**
Glass	5 x 20	0.25	25	**9.130 053**
Glass	5 x 10	0.25	200	**9.130 054**
Glass	5 x 10	0.25	25	**9.130 055**
Glass	2.5 x 7.5	0.25	100	**9.130 056**
Glass	2.5 x 7.5	0.25	500	**9.130 057**
Aluminium	20 x 20	0.25	25	**9.130 058**
Aluminium	5 x 10	0.25	50	**9.130 059**
Aluminium	5 x 7.5	0.25	20	**9.130 060**
Plastic	20 x 20	0.25	25	**9.130 063**

TLC plates

Silica gel 60 F_{254} *Merck*

Material	Plate format	Gel thickness	PK	Cat. No.
	cm	mm		
Glass backed	20 x 20	0.50	20	**9.130 061**
Glass backed	20 x 20	2.00	12	**9.130 062**

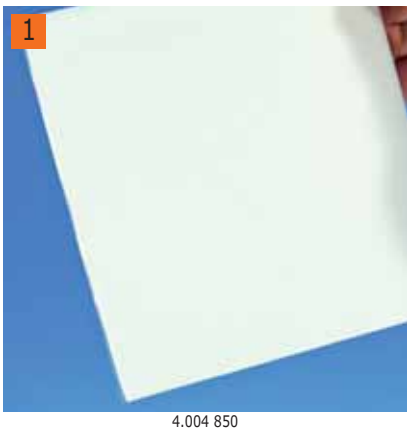
E & OE.

SIL G unmodified standard silica layers for TLC, glass plates/ POLYGRAM®

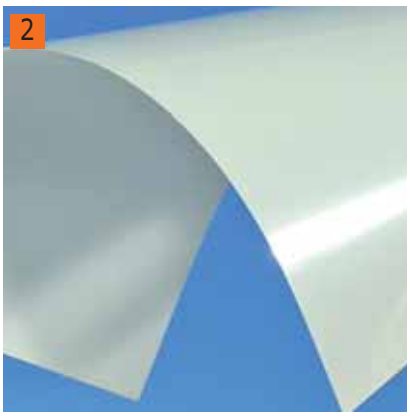
glass plates, POLYGRAM®, ALUGRAM® *MACHEREY-NAGEL*

silica 60, specific surface (BET) ~500m²/g, mean pore size 60 Å, specific pore volume 0.75 ml/g, particle size 5 to 17µm; standard grade; thickness of layer for analytical plates 0.25mm, for preparative plates 0.5 and 1mm; for 2mm preparative layers a slightly coarser material is used indicators: manganese activated zinc silicate with green fluorescence for short-wave UV (254nm); special inorganic fluorescent pigment with blue fluorescence for long-wave UV (366nm) binders: highly polymeric products, which are stable in almost all organic solvents and resistant towards aggressive visualisation reagents; binder system for Polygram® sheets is also completely stable in purely aqueous eluents
available as glass plates, Polygram polyester sheets and Alugram aluminium sheets.
Available as glass plates with or without fluorescent indicator (UV254).

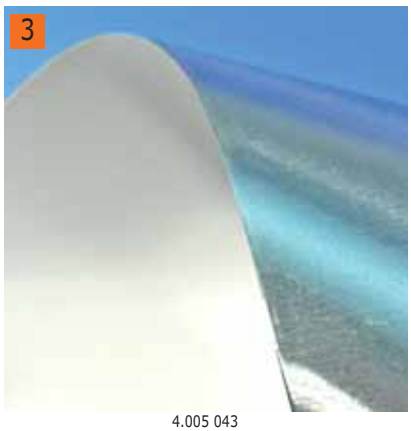
Type	Plate format cm	Gel thickness mm	PK	Cat. No.	
Glass plates SIL G-25 UV_{254}	2.5 x 7.5	0.25	100	**4.004 850**	1
Glass plates SIL G-25	5 x 10	0.25	50	**6.230 729**	
Glass plates SIL G-25	5 x 10	0.25	50	**4.004 848**	
Glass plates SIL G-25	5 x 10	0.25	200	**4.004 847**	
Glass plates SIL G-25	5 x 10	0.25	200	**4.004 849**	
Glass plates SIL G-25	5 x 20	0.25	100	**4.004 846**	
Glass plates SIL G-25 UV_{254}	5 x 20	0.25	100	**6.232 660**	
Glass plates SIL G-25 UV_{254}	10 x 10	0.25	25	**9.003 474**	
Glass plates SIL G-25	10 x 20	0.25	50	**6.227 917**	
Glass plates SIL G-25 UV_{254}	10 x 20	0.25	50	**6.230 274**	
Glass plates SIL G-25	20 x 20	0.25	25	**9.003 491**	
Glass plates SIL G-25 UV_{254}	20 x 20	0.25	25	**9.003 492**	
Glass plates SIL G-100	20 x 20	1.00	15	**4.004 853**	
Glass plates SIL G-100 UV_{254}	20 x 20	1.00	15	**7.300 555**	
Glass plates SIL G-200	20 x 20	2.00	12	**6.224 417**	
Glass plates SIL G-200 UV_{254}	20 x 20	2.00	12	**4.004 854**	
POLYGRAM® polyester sheets SIL G	2.5 x 7.5	0.20	200	**4.004 827**	2
POLYGRAM® polyester sheets SIL G UV_{254}	2.5 x 7.5	0.20	200	**4.004 826**	
POLYGRAM® polyester sheets SIL G	4 x 8	0.20	50	**4.004 825**	
POLYGRAM® polyester sheets SIL G UV_{254}	4 x 8	0.20	50	**9.003 493**	
POLYGRAM® polyester sheets SIL G	5 x 20	0.20	50	**6.803 651**	
POLYGRAM® polyester sheets SIL G UV_{254}	5 x 20	0.20	50	**9.003 476**	
POLYGRAM® polyester sheets SIL G	20 x 20	0.20	25	**6.202 190**	
POLYGRAM® polyester sheets SIL G UV_{254}	20 x 20	0.20	25	**9.003 494**	
POLYGRAM® polyester sheets SIL G	40 x 20	0.20	25	**4.004 822**	
POLYGRAM® polyester sheets SIL G UV_{254}	40 x 20	0.20	1	**4.004 824**	
ALUGRAM® aluminium sheets SIL G UV_{254}	2.5 x 7.5	0.20	200	**4.005 043**	3
ALUGRAM® aluminium sheets SIL G UV_{254}	4 x 8	0.20	50	**9.003 496**	
ALUGRAM® aluminium sheets SIL G	5 x 7.5	0.20	20	**4.005 042**	
ALUGRAM® aluminium sheets SIL G UV_{254}	5 x 7.5	0.20	20	**6.227 948**	
ALUGRAM® aluminium sheets SIL G	5 x 10	0.20	50	**6.802 883**	
ALUGRAM® aluminium sheets SIL G UV_{254}	5 x 10	0.20	50	**9.003 477**	
ALUGRAM® aluminium sheets SIL G	5 x 20	0.20	50	**7.084 918**	
ALUGRAM® aluminium sheets SIL G UV_{254}	5 x 20	0.20	50	**9.003 478**	
ALUGRAM® aluminium sheets SIL G	10 x 20	0.20	20	**4.005 052**	
ALUGRAM® aluminium sheets SIL G UV_{254}	10 x 20	0.20	20	**6.233 568**	
ALUGRAM® aluminium sheets SIL G	20 x 20	0.20	25	**7.059 745**	
ALUGRAM® aluminium sheets SIL G UV_{254}	20 x 20	0.20	25	**9.003 497**	
ALUGRAM® aluminium sheets SIL G UV_{254}	20 x 20	0.20	25	**6.242 312**	
ALUGRAM® aluminium sheets SIL G	20 x 20	0.20	25	**9.003 465**	



4.004 850



4.004 827



4.005 043



1 ALUGRAM® Nano-SIL unmodified Nano-silica layers for HPTLC

ALUGRAM® *MACHEREY-NAGEL*

Nano silica 60, specific surface (BET) ~ 500m²/g, mean pore size 60Å, specific pore volume 0.75ml/g, particle size 2 to 10µm. Indicator: manganese activated zinc silicate with green fluorescence for short-wave UV (254nm).

Binder: highly polymeric product, which is stable in almost all organic solvents and resistant towards aggressive visualisation reagents. Narrow fractionation of the silica particles allows sharper separations, shorter developing times, shorter migration distances, smaller samples and an increased detection sensitivity compared to SIL G plates.

Available as glass plates with or without fluorescent indicator (UV254).

Type	Plate format cm	Gel thickness mm	PK	Cat. No.
ALUGRAM® NANO-SIL G	5 x 20	0.20	50	**4.005 044**
ALUGRAM® NANO-SIL G UV254	5 x 20	0.20	50	**6.227 900**
ALUGRAM® NANO-SIL G	20 x 20	0.20	25	**6.227 899**
ALUGRAM® NANO-SIL G UV254	20 x 20	0.20	25	**4.005 045**



7.400 375

RP-18 W/UV254 octadecyl-modified nano silica layers for HPTLC

ALUGRAM® *MACHEREY-NAGEL*

base material: Nano-K silica 60, specific surface (BET) ~500m²/g, mean pore size 60Å, specific pore volume 0.75ml/g, particle size 2 to 10 µm; for preparative plates (1 mm thickness of layer) standard silica 60, particle size 5 to 17 µm, pH stability 2 to 10 indicator: acid-resistant product with a pale blue fluorescence for short-wave UV (254nm); UV-absorbing substances apppear as dark-blue to black spots on a light-blue background; partial octadecyl modification, wettable with water, carbon content 14%. 18-100 normal phase or reversed phase separation modes with eluents from anhydrous solvents to mixtures with high concentrations of water (see figure); the relative polarity of the eluent determines the polarity of the layer.
Recommended application: aminophenols, barbiturates, preservatives, nucleobases, polycyclic aromatic hydrocarbons, steroids, tetracyclines, plasticizers (phthalates).

Available as glass plates with or without fluorescent indicator (UV254).

Glass plates available on request.

Type	Plate format cm	Gel thickness mm	PK	Cat. No.
ALUGRAM® aluminium sheets RP-18 W UV_{254}	4 x 8	0.15	50	**7.400 375** 2
ALUGRAM® aluminium sheets RP-18 W UV_{254}	5 x 10	0.15	50	**6.901 143**
ALUGRAM® aluminium sheets RP-18 W UV_{254}	5 x 20	0.15	50	**4.005 046**
ALUGRAM® aluminium sheets RP-18 W UV_{254}	10 x 10	0.15	25	**4.005 047**
ALUGRAM® aluminium sheets RP-18 W UV_{254}	20 x 20	0.15	25	**6.704 046**



3 Aluminium oxide layers for TLC

Standard, rigid TLC plates in a choice of media, backing materials, and with dimensions as outlined below. *MACHEREY-NAGEL*

Type	Plate format cm	Path length mm	PK	Cat. No.
POLYGRAM aluminium oxide*	20 x 20	0.20	25	**9.003 495**
ALUGRAM aluminium oxide*	20 x 20	0.20	25	**9.003 498**

*with 254 nm UV indicator

E & OE.

1 Chromatography paper, reels



Chromatography Paper 1 CHR *GE Healthcare*
The standard chromatography paper. Good resolution for general analytical separations.
Pure cellulose. Thickness 0.18mm. Capillary rise (water) 130mm/30 min.

Chromatography Paper 3MM CHR
Used in electophoresis, in general chemistry and as blotting paper. Pure cellulose. Thickness 0.34mm.
Capillary rise (water) 130mm/30 min.

Grade	Width mm	Length m	PK	Cat. No.
1Chr	10	100	1	**9.950 322**
1Chr	20	100	1	**9.950 323**
1Chr	30	100	1	**9.950 324**
1Chr	40	100	1	**9.950 325**
1Chr	50	100	1	**9.950 326**
1Chr	100	100	1	**9.950 328**
1Chr	150	100	1	**9.950 329**
3MMChr	20	100	1	**9.950 327**
3MMChr	100	100	1	**9.950 330**
3MMChr	150	100	1	**9.950 331**
3MMChr	190	100	1	**9.950 332**
3MMChr	230	100	1	**9.950 333**
3MMChr	270	100	1	**9.950 334**

2 3 Chromatography paper/Ion exchange papers





Whatman chromatography papers are the most widely used papers for chromatography worldwide. This acceptance and usage reflects the purity, high quality and consistency of Whatman papers. These qualities are relied upon by chromatographers and essential to successful reproducible chromatography. Whatman chromatography paper media are made from specially selected cotton cellulose. They are rigorously quality controlled for characteristics important to the chromatographer and to ensure uniformity within the grade. *GE Healthcare*

1 Chr world standard chromatography paper. A smooth surface, 0.18 mm thick with a linear flow rate (water) of 130 mm/30 min. Good resolution for general analytical separations.

3MM Chr widely used as a blotting paper, 3MM Chr is used in both electrophoresis and for general chemistry. A medium thickness paper (0.34 mm) used extensively for general chromatography and electrophoresis. Flow rate is 130 mm/30 min.

3 Chr medium thickness paper (0.36 mm) with a flow rate of 130 mm/30 min. For general applications with medium/heavy solute loadings. Frequently used for separation of inorganic compounds and for electrophoresis.

17 Chr thick (0.92 mm) and highly absorbent paper with a very high flow rate of 190 mm/30 min. Suitable for the heaviest loadings and ideal for preparative paper chromatography and electrophoresis.

Ion exchange paper

SG81: A unique paper (0.27 mm thick) combining cellulose and large pore silica gel. Suitable for separations in which both partition and adsorption are important, including the separation of phospholipids, steroids, phenols and dyes. Flow rate is 110 mm/30 min.

Grade	Dimensions mm	PK	Cat. No.
1Chr	100 x 300	100	**9.950 308**
1Chr	200 x 200	100	**9.950 309**
1Chr	250 x 250	100	**9.950 310**
1Chr	460 x 570	100	**9.950 311**
3MMChr	200 x 200	100	**9.950 312**
3MMChr	315 x 355	100	**9.950 313**
3Chr	460 x 570	100	**9.950 314**
3MMChr	460 x 570	100	**9.950 371**
3MMChr	580 x 680	100	**9.950 315**
4Chr	460 x 570	100	**9.950 316**
17Chr	460 x 570	25	**9.950 317**
SG81	460 x 570	25	**9.950 319**

Chromatography strips

Divided into 12 bands, each of 15mm wide, for parallel separation of 12 samples. *GE Healthcare*

Grade	Width mm	Length mm	PK	Cat. No.
1Chr CRL	110	213	100	**9.950 321**



1 Standard separating chamber with knob lid/ ground cover plate

NEW!

With absolutely flat chamber floor, ground flange rim and lid for all TLC plates up to 200mm x 200mm.

Other separating chambers available on request.

Type	PK	Cat. No.
Separating chamber with knob lid	1	**9.020 160**
Separating chamber with glass lid	1	**9.020 173**
Knob lid for 9.020 160	1	**9.020 163**
Glass lid for 9.020 173	1	**9.020 177**
Filter paper for chamber saturation	25	**9.020 179**



2 Simultaneous developing chamber and DC accessories

MACHEREY-NAGEL

Type	PK	Cat. No.
DC simultaneous chamber for up to 5 plates, 20cm x 20cm	1	**9.003 500**
Laboratory atomiser, glass with rubber bulb	1	**4.004 909**
Glass capillary 1µl	150	**7.056 849**
Outlining templates	2	**4.004 903**
Chromatography Paper MN 260, 7.5cm x 17cm (for saturating)	100	**4.004 907**



3 Nano separating chambers, with knob/ stainless lid

The Nano separating chambers with 100mm x 100mm plate format have all the advantages of standard separating chambers.

Type	PK	Cat. No.
Nano separating chamber 100mm x 100mm, with knob lid	1	**9.020 210**
Nano separating chamber 100mm x 100mm, with stainless steel lid	1	**9.020 212**
Nano knob lid, 100mm x 100mm	1	**9.020 211**
Nano stainless steel lid, 100mm x 100mm	1	**9.020 213**
Nano filter paper for vapour conditioning the chamber, 210mm x 110mm, 25 sheets	25	**9.020 214**



4 H separating chamber

biostep

The H separating chambers make optimum use of HPTLC gel layer advantages. Small particle size 5µm, stringently controlled pore size and distribution, and more theoretical bases. Excellent value for money and can be supplied for time and cost saving in 50mm x 50mm plate format or traditional 100mm x 100mm format. Optimum separations are achieved even on the shortest runs.

Type	Width mm	Length mm	PK	Cat. No.
H separation chamber	50	50	1	**9.023 150**
H separation chamber	100	100	1	**9.023 160**
Frit rods		50	5	**9.023 955**
Cover plate	50	50	1	**9.023 956**
Cover plate	100	100	1	**9.023 957**



5 Chromatography sprayer SG e1

Spraying with powerful and quiet pump.The finest spray is produced even when the battery power is low. Liquids, up to the viscosity of light oil, can be finely sprayed at the touch of a button. Particle diameter 5µm to 10µm with a throughput of 20ml/min. based on water. The reservoir bottle for the spray reagent is made of borosilicate glass. The bottle is screwed into the high-grade PTFE nozzle and can be changed in seconds. With quick-charging dock as a storage base. Overload protection enables continuous storage of the sprayer in the charging station. Supplied with battery, battery charger, bottle and nozzle.

Type	PK	Cat. No.
SG e1	1	**9.539 045**
Reagent reservoir, 50 ml	10	**9.539 046**

1 Special atomiser, with rubber blowball

With rubber blowball for nebulising reagents. Can be connected to other compressed air supplies.

Type	PK	Cat. No.
Special atomiser	1	**9.024 000**



2 Test tube atomiser, glass

Glass atomiser for nebulising small amounts of reagents. Atomiser can be inserted in a 12ml test tube with a ground joint and held in position with a spring clip.

Type	PK	Cat. No.
Test tube atomiser	1	**9.023 990**



3 UV analysis lamp HP-UVIS®

For UV analysis without a darkroom. Inclusive UV shield. High-pressure mercury lamp emits very intense radiation at 366nm for fluorescence evaluation. Specially selected 254nm filters enable optimal contrast. Minimal footprint in spite of simultaneous observation points for two 200mm x 200mm plates. Inclined plate angle gives comfortable viewing. Dimensions (WxDxH) 325mm x 290mm x 480mm. Weight: 11.5kg. Supply requirements 230V.

Type	PK	Cat. No.
HP-UVIS®	1	**9.539 360**



4 UV irradiation system BIO-LINK, BLX 254

Vilber Lourmat

- Compact and powerful, ideal for a broad range of applications
- Precise measurement and control technology, non-ageing UV sensors
- Choice for irradiation parameter energy or time
- Easy operation: Programme memory, storage of the last parameters, programme resumes after opening of the door, auto-restart after power failure
- Secure and stable construction, very easy to use
- Easy exchange of the UV tubes for wavelength change

Dimensions (WxDxH)
Housing: 350 x 360 x 305mm
Interior: 260 x 330 x 145mm

Type	Description	Tubes W	Wave-length nm	PK	Cat. No.
BLX-254	UV crosslinker	5 x 8	254	1	**9.971 923**

Other models available on request.



5 TLC Viewing cabinets, CN-6/ CN-15

Vilber Lourmat

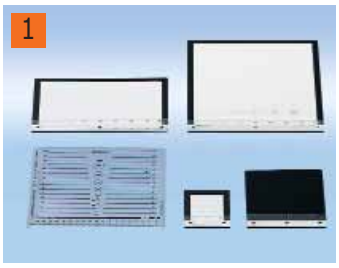
Model CN-6:
- for one or two UV hand lamps model BVL-6; choice of combined wavelengths 254nm, 312nm and 365nm
- cabinet dimensions (WxDxH): 300mm x 280mm x 240mm

Model CN-15:
- integral high intensity UV lamps, extra large capacity; easy access also for large samples; white-light bulb for normal observation
- removable bottom panel for use with an BETXF Professional Line transilluminator
- cabinet dimensions (W x D x H): 505mm x 415mm x 280mm

Type	Description	Tubes W	Wave-length nm	PK	Cat. No.
CN-6	without UV handlamps	-	-	1	**9.971 926**
CN-15.LC*	with integrated UV tubes and white-light source	4 x 15	365 / 254	1	**9.971 927**

* Other models available on request.





1 Universal application and evaluation template

Plexiglass. Simplifies application, marking and evaluation of thin layer chromatograms. Size 200mm x 200mm.

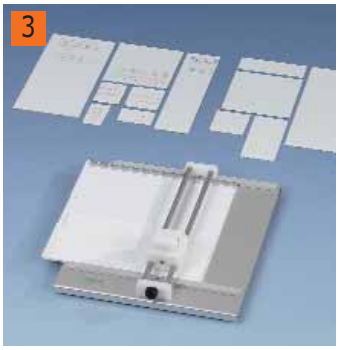
Type	PK	Cat. No.
Universal application and evaluation template	1	**9.020 131**



2 Outlining templates

With limit stops for precise positioning of the plate on the template. Provide precise pipette guidance due to triangular apertures in a 5mm spaced grid, providing 9, 19 or 39 outlining points, depending on the size of the template. A non-slip coating means that the outlining template does not slide on the bench.

Width mm	Length mm	PK	Cat. No.
100	100	1	**9.020 134**
50	50	1	**9.020 135**
200	100	1	**9.020 136**
200	200	1	**9.020 137**



3 TLC plate cutter

For scoring and cutting glass backed TLC plates. For cost-effectiveness in plate use, or in order to give individual plates different derivatives after separation. Supplied with cutting ring and template.

Type	PK	Cat. No.
TLC plate cutter	1	**9.539 041**



4 Laboratory dryer HT0139

Power: approx. 2100 W. 2 speed settings, 3 temperature settings with cold air-stream button. soft-touch housing. Air-inlet grille detachable for cleaning. cable retracts at the touch of a button.

Type	PK	Cat. No.
HT0139	1	**9.106 788**



Legal measurement units are compulsory in legal and official use

Parameter	Name	Unit and conversion factor	Comments
Activity, radioactive	Becquerel Curie	1 Bq = 1 /s 1 Ci = 3.7 x 10^{10} /s	SI Unit
Equivalent dose	Sievert Röntgen equivalent man	1 Sv = 1 J/kg 1 rem = 10^{-2} J/kg	SI Unit
Work, mechanical	Joule Erg	J = 1 N x m = 1 kg x m^2/s^2 1 erg = 10^{-7} J	SI Unit
Illumination	Lux Nox	1 lx = 1 lm/m^2 1 nx = 10^{-3} lx	SI Unit
Unit of power of a lens system	Dioptre	1 dpt = 1/m	also known as refractive power
Density	–	kg/m^3	Sl Unit; measurement is usually given in g/ml or g/cm^3
Rotation, specific	– –	Degrees x m^2/kg Degrees x dm^{-1} x g^{-1} x ml	Sl Unit; measurement is usually given in degrees; rotation value of 1 g of substance in 1 ml of solution in a 10 cm long tube
Number of revolutions	Revolutions per second Revolutions per minute	1 s^{-1} = 1 Hz 1 min^{-1} = 1 UpM = 1/60 s^{-1} = 1 min^{-1} = rpm	Sl Unit
Pressure	Pascal Bar physical atmosphere technical atmosphere techn. atmosph. overpressure Metres water column Millimetre mercury column or Torr	1 Pa = 1 N/m^2 1 bar = 10^5 Pa 1 atm = 1.01325 x 10^5 Pa 1 at = 1 kp/cm^2 ato = atm + 1 1 mWS = 9.790 x 10^3 Pa 1 mm Hg = 1 Torr = 1.3332 x 10^2 Pa	Sl Unit; see also "Conversion of Imperial units into metric units" table
Energy	Joule Electronvolt Calorie	1 J = 1 N x m = 1 kg x m^2/s^2 = 1 W x s 1 eV = 1.60219 x 10^{-19} J 1 cal = 4.1868 J	Sl Unit
Absorbed dose	Gray Rad Rem	1 Gy = 1 J/kg 1 rd = 0.01 J/kg 1 rem = 0.01 J/kg	Sl Unit
Absorbed dose / rate	–	1 Gy/s = 1 W/kg	Sl Unit
Extinction coefficent, molar specific	– –	l/mol x cm l/g x cm	also known as spectral absorption measure (DIN) or decadic absorptivity (IUPAC)
Field strength, electric	Volt per metre	1 V/m = 1 m x kg/(s^3 x A) = 1 W/(A x m)	SI Unit
magnetic	Ampere per metre Oersted	1 A/m 1 Oe = $\frac{10^3}{4\pi}$ A/m	Sl Unit
Area	Square metre Are Hectare	1 m^2 = 1 m x 1 m = 1 sq. m 1 a = 10^2 m^2 1 ha = 10^4 m^2	Sl Unit
Flow, magnetic	Weber Maxwell	1 Wb = 1 V x s 1 M = 10^{-8} Wb	Sl Unit
Flow density, electric magnetic	Coulomb per square metre Tesla Gauss	C/m^2 1 T = 1 Wb/m^2 = 1 V x s/m^2 1 G = 10^{-4} T	Sl Unit Sl Unit, previously magnetic induction

Frequency	Hertz	1 Hz = 1 s^{-1} 1 s^{-1} = 1Hz	SI unit for periodic operations
Velocity	Metre per second Kilometre per hour	m/s 1 km/h = 0.27 m/s	SI unit
Inductance, electromagnetic	Henry Internat. Henry	1 H = 1 Wb/A = 1 V x s/A = 1 W x s/A^2 = 1Ω x s 1 H_{int} = 1.00049 H	SI unit
Ion dose	Coulomb per kilogram Röntgen	C/kg 1 R = 2.58 x 10^{-4} C/kg	SI unit
Capacitance, electric	Farad internat. Farad	1 F = 1 C/V = 1 A^2 x s/W = 1 s/Ω 1 F_{int} = 0.99951 F	SI unit
Force	Newton Pond Dyn	1 N = 1 kg x m/s^2 1 P = 9.807 x10^{-3} N 1 dyn = 10^{-5} N	SI unit
Charge, electric	Coulomb	1 C = 1 A x s = 1 J/V	SI unit
Length	Metre Micrometre Ångström Femtometre (Fermi) Inch	1 m 1 µ = 10^{-6} m 1 Å = 10^{-10} m 1 f = 10^{-15} m 1'' = 25.4 mm	SI basic unit
Power	Watt Horsepower	1 W = 1 J/s 1 PS = 0.735 kW	SI unit
Conductance, related to length	Siemens per centimetre	1 S/cm = 1Ω^{-1} x cm^{-1}	SI unit
Conductance, electric	Siemens	1 S = 1Ω^{-1}	SI unit
Luminance	Candela per square metre Nit Stilb Lambert	1 cd/m^2 1 nt = 1 cd/m^2 1 sb = 1 cd/cm^2 1 la = $\frac{1}{\pi}$ sb = $\frac{1}{\pi}$ cd/cm^2	SI unit
Luminous radiation, specific	Lumen per square metre Phot	1 lm/m^2 1 ph = 1 lm/m^2	SI unit
Luminous intensity	Candela Hefner candle Internat. candle	1 cd 1 HK = 0.903 cd 1 IK = 1.019 cd	SI basic unit
Luminous Flux	Lumen	1 lm = 1 sr x cd = 1cd	SI unit
Mass (Weight read from scales)	Kilogram Gram Ton Metric carat Atomic mass unit Dalton	1 kg 1 g = 10^{-3} kg 1 t = 10^3 kg 1 Kt = 0.2 g 1 u = 1 amu = 1.6605 x 10^{-27} kg 1 Dalton = 1.6602 x 10^{-27} kg	SI basic unit For precious stones only
Voltage, electric	Volt Internat. Volt	1 V = 1 J/C = 1 W/A V_{int} = 1.00034 V	SI unit, also electric potential
Amount of substance	Mol Mol quantity Gram molecule Gram atom Gram equivalent	1 mol 1 Mol 1 Mol 1 Tom 1 Val	SI basic unit
Amount of substance fraction	- – Mole fraction	mol/mol %	also known as amount fraction

Parameter	Name	Unit and conversion factor	Comments
Amount of substance concentration	Molarity	1 mol/l	
	Molality	1 mol/kg	
	Normality	1 N	
Current electrical	Ampere	1 A = 1 C/s	SI basic unit
	Internat. Ampere	$1\,A_{int}$ = 1.000291 A	
Temperature	Kelvin	K = °C + 273.15	Sl basic unit
	Degrees Celsius	°C = K – 273.15	
	Degrees Kelvin	°K = K	
	Degrees Fahrenheit	°F = 1.8 K – 459.4	
	Degrees Rankine	°Rank = 1.8 K	
	Degrees Reaumur	°R = 1.25 °C	
Viscosity, dynamic	–	1 Pa x s = 1 N x s x m^2 = 1 kg/s x m	SI unit
	Poise	1 P = 0.1 Pa x s	
kinematic	–	m^2/s	SI unit
	Stokes	1 St = 1 cm^2/s	
Volumes	Cubic metre	1 m^3 = 1 m x 1 m x 1 m = 1 cbm	SI unit
	Litre	1 l = 10^{-3} m^3 = 1 cdm	
	Solid cubic metre	1 Fm = 1 m^3	
	Stacked cubic metre	1 Rm = 1 m^3	
	Standard cubic metre	1 Nm = 1 m^3	
Volume flow rate	–	1 m^3/s = 10^3 l/s	SI unit
Volume flow	–	1 l/s = 10^6 mm^3/s	
Heat	Joule	1 J = 1 N x m = 1 W x s	SI unit
	Calorie	1 cal = 4.187 J	
Resistance, electrical	Ohm	1 Ω = 1 V/A = 1 W/A^2 = 1 kg x m^2/s^3 x A^2	SI unit
	Internat. Ohm	$1\,\Omega_{int}$ = 1.00079 Ω	
specific	–	1 Ω x mm^2/m	
Angle, plane	Radian	1 rad = 1 m/1 m = 57°17'45''	Supplementary SI unit (plane angle = relationship of an arc to the radius of a circle)
	Round angle	1 round ang. = 2π rad = 360°	
	Degree	$1° = \frac{\pi}{180}$ rad	
	Minute	1' = (1/60)°	
	Second	1'' = (1/60)'	
	Gon	$1\,gon = \frac{\pi}{180}$ rad	
solid	Steradian	1 sr = 1 m^2/1 m^2	Supplementary SI unit; solid angle = relationship of the area of the surface of the sphere cut off by this angle to the square of the radius of the sphere Sl basic unit
Time	Second	1 s = 1 sec	
	Minute	1 min = 60 s = 1 min	
	Hour	1 h = 60 min	
	Day	1 d = 24 h	

Conversion of Imperial units into metric units

Parameter	Unit	Symbol	Conversion		Comments
Length	inch	in	1 in	= 2.54 cm	
	foot	ft	1 ft	= 0.305 m	
	yard	yd	1 yd	= 0.914 m	
	mile	mi	1 mi	= 1.609 km	
Area	square inch	in^2	1 in^2	= 6.452 cm^2	
	square foot	ft^2	1 ft^2	= 9.290 dm^2	
	square yard	yd^2	1 yd^2	= 0.836 m^2	
	square mile	mi^2	1 mi^2	= 2.590 km^2	
Volume	cubic inch	in^3	1 in^3	= 16.39 cm^3	
	cubic foot	ft^3	1 ft^3	= 28.31 dm^3	
	cubic yard	yd^3	1 yd^3	= 0.765 m^3	
Measure for	minim		1 minim	= 59.19 mm^3	for GB
liquids	minim		1 minim	= 61.61 mm^3	for USA
	fluid ounce	ozfl	1 ozfl	= 28.41 cm^3	for GB
	fluid ounce	ozfl	1 ozfl	= 29.57 cm^3	for USA
	liquid pint	pt	1 pt	= 568.3 cm^3	for GB
	liquid pint	pt	1 pt	= 473.2 cm^3	for USA
	liquid quart	qt	1 qt	= 1.136 dm^3	for GB
	liquid quart	qt	1 qt	= 946.4 cm^3	for USA
	gallon	gal	1 gal	= 4.546 dm^3	for GB
	gallon	gal	1 gal	= 3.785 dm^3	for USA
	barrel		1 barrel	= 159.0 dm^3	for oil
Measure for dry	dry pint		1 dry pint	= 550.6 cm^3	for USA
substances	dry quart		1 dry quart	= 1.101 dm^3	for USA
	dry barrel		1 dry barrel	= 115.6 dm^3	for USA
Mass	grain	gr	1 gr	= 64,80 mg	
(Weight)	dram	dr	1 dr	= 1.772 g	
	ounce	oz	1 oz	= 28.35 g	
	pound	lb	1 lb	= 453.6 g	
	quarter	qr	1 qr	= 12.70 kg	for GB
	cental	ctl	1 ctl	= 45.36 kg	for GB
	(long) hundredweight	cwt	1 cwt	= 50.80 kg	for GB
	short hundredweight	sh cwt	1 sh cwt	= 45.36 kg	for USA
	(long) ton	tnl	1 tnl	= 1016 kg	for GB
	short ton	tnsh	1 tnsh	= 907.2 kg	
	pennyweight	dwt	1 dwt	= 1.555 g	for precious stones and metals
	troy ounce	oz tr	1 oz tr	= 31,10 g	for GB
	troy ounce	oz t	1 oz t	= 31,10 g	for USA
Density	pound/cubic foot	lb/ft^2	1 lb/ft^2	= 0,016 g/cm^3	
	pound/cubic inch	lb/in^2	1 lb/in^2	= 27,68 g/cm^3	
	pound/cubic yard	lb/yd^2	1 lb/yd^2	= 0,593 kg/m^3	
Pressure	pound/square inch	lb/in^2	1 lb/in^2	= 6,895 · 10^{-2} bar	
	(p.s.i.)		(1 p.s.i.	= 6,895 · 10^{-2} bar)	
	pound/square foot	lb/ft^2	1 lb/ft^2	= 4,788 · 10^{-4} bar	
	inch Hg	in Hg	1 in Hg	= 3,337 · 10^{-2} bar	
	inch WS	in WS	1 in WS	= 2,487 · 10^{-3} bar	

Plastic Materials

The careful evaluation of material requirements by the user is absolutely necessary. The following recommendations from technical literature and/or the raw material manufacturers themselves only offer information to allow decisionmaking. They do not replace, under any circumstances, qualification tests by the user, who must be familiar with the respective application conditions in each case.
Plastics have become generally accepted as an alternative material to glass within the laboratory. Physical and chemical characteristics vary strongly. Application conditions decide which plastic is suitable. There are various influences: Exposure period and concentration of chemicals involved, temperature load, sterilization requirement, mechanical load, aging, e.g. by the effect of cleaning agents or by other environmental factors.

Abbreviations of the most important plastics, acc. to DIN 7728

ABS	Acrylo-Butadiene-Styrene-Copolymer
ACL	Acetal (Polyoxymethylene)
CA	Cellulose acetate
CN	Cellulose nitrate
CP	Cellulose propionate
ECTFE	Ethylene-Chlortrifluoroethylene-Copolymer
ETFE	Ethylene-Tetrafluoroethylene-Copolymer
FEP	Tetrafluoroethylene-Perfluoropropylene
GF	Glass-fibre, Glass-fibre reinforced
NBR	Nitrile rubber
NR	Natural rubber
NYL	Nylon (Polyamide)
PA	Polyamide (Nylon)
PAN	Polyacrylonitrile
PC	Polycarbonate
PCTFE	Polychlorotrifluoroethylene
PE	Polyethylene
PBTP	Polybutylene terephthalate
PE-HD	High density polyethylene
PE-LD	Low density polyethylene
PETP	Polyethylene terephthalate
PFA	Perfluoralkoxylalkane
PMMA	Polymethylmethacrylate
PMP	Polymethylpentene (TPX®)
POM	Polyoxymethylene
PP	Polypropylene
PPO	modified Polyphenylene oxide
PS	Polystyrol
PSE	Polysulphone
PTFE	Polytetrafluoroethylene
PUR	Polyurethane
PVC	Polyvinyl chloride
SAN	Styrene-Acrylnitrile-Copolymer
SB	Styrene-Butadiene-Copolymer (Impact-resistant PS)
SI	Silicone rubber
TFE	Teflon® (Tetrafluorethylene, PTFE)

Physical characteristics

	Operating temperature max. °C	Brittle point temperature °C	Density ca. g/cm³	Flexibility	Transparency
ABS	85	-40	1.05	rigid	none
ECTFE/ETFE	150	-100	1.70	moderate	opaque
FEP/PFA	205/250	-270	2.15	moderate	opaque
NR	70	-40	1.2	excellent	none
PA	90	0	1.13	rigid	opaque
PC	130	-130	1.20	rigid	total
PE-HD	105	-50	0.95	rigid	opaque
PE-LD	80…90	-50	0.92	excellent	opaque
PMMA	65…95	-50	1.18	rigid	total
PMP (TPX®)	175	0	0.83	rigid	total
POM	85	-40	1.42	good	none
PP	135	0	0.90	rigid	opaque
PPO, mod.	150	-40	1.08	good	none
PS	70	-20	1.05	rigid	total
PTFE	270	-270	2.17	excellent	none
PVC	80	-20	1.35	rigid	total or coloured
SAN	70	-40	1.03	rigid	total
SI	180	-60	1.1	excellent	opaque

Sterilization stability of major plastics (without warranty)

Only sterilize carefully cleaned vessels, rinsed with distilled water.
Always remove closures!

	Steam sterilization 121°C, up to 20 min acc. DIN	°-Radiation 25 kGy	Gas (Ethylene oxide)	Chemical (Formalin, Ethanol)
ABS	no	no	yes	yes
ECTFE/ETFE	yes	no	yes	yes
FEP/PFA/PTFE	yes	no	yes	yes
NR	no	no	yes	yes
PA	no	yes	yes	yes
PC	yes [1)]	yes	yes	yes
PE-HD	no	yes	yes	yes
PE-LD	no	yes	yes	yes
PMMA	no	yes	no	yes
PMP (TPX®)	yes	yes	yes	yes
POM	no	no	yes	yes
PP	yes	no	yes	yes
PPO, mod.	yes	no	yes	yes
PS	no	yes	no	yes
PVC	no [2)]	no	yes	yes
SAN	no	no	yes	yes
SI	yes	no	yes	yes

[1)] Loss of rigidity is possible.
[2)] Some exceptions possible.

Chemical resistance of major plastics in relation to substance groups (without warranty)

Plastics are divided into the following three groups according to their chemical stability:

A = very good chemical stability.
Constant exposure to the medium does not cause damage to the plastic over 30 days.
The plastic can remain resistant for years.

B = good to fair chemical stability.
Constant exposure to the medium causes slight damage/change within the period of 7 to 30 days.
Some of these changes are partially reversible (radiation, softening, reductions in rigidity, discoloration).

C = low chemical stability.
Not suitable for prolonged exposure to the medium. Damage can occur immediately
(reduction in rigidity, deformation, discoloration, increased porosity, dissolving)!

Substance group at 20 °C	ABS	ECTFE ETFE	NR	PA	PC	PE-HD	PE-LD	PMMA	PMP (TPX®)	POM	PP	PPO	PS	PTFE FEP PFA	PVC	SAN	SI
Acids																	
weak, dilute	B	A	B	B	B	A	A	C	A	C	A	B	B	A	A	B	B
highly conc. oxidising acids	C	A	C	C	C	A	A	C	A	C	A	C	B	A	A	C	C
Oxidisers	C	B	C	C	C	B	B	C	B	C	B	C	C	A	C	C	C
Caustic solutions (lyes)	B	A	A	B	C	A	A	A	A	A	A	A	A	A	A	A	A
Alcohols, aliphatic	A	A	A	B	A	A	A	C	A	A	A	B	A	A	A	A	A
Ketones	C	B	C	A	C	B	B	C	B	A	B	C	C	A	C	C	C
Aldehydes	C	A	B	B	B	A	A	B	B	B	A	B	C	A	C	C	B
Esters	C	A	B	A	C	B	B	B	B	C	B	C	C	A	C	C	B
Hydrocarbons																	
aliphatic	C	A	C	A	B	A	B	A	B	A	A	A	C	A	A	C	C
aromatic	C	A	C	A	C	A	B	C	C	A	B	B	C	A	C	C	C
halogenated	C	A	C	B	C	B	C	C	C	A	B	B	C	A	C	C	C
Ether	C	A	C	A	C	B	C	C	C	A	B	C	C	A	C	C	C

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4.000 254	1205	4.001 556	1333	4.003 490	1362	4.004 854	1391	4.005 866	1376	4.008 065	459	4.008 308	831	4.008 423	597
4.000 255	1205	4.001 556	1338	4.003 498	1361	4.004 903	1394	4.005 880	1377	4.008 075	817	4.008 309	831	4.008 424	597
4.000 256	1206	4.001 557	1346	4.003 499	1361	4.004 907	1394	4.005 883	1377	4.008 077	817	4.008 310	831	4.008 425	597
4.000 257	1206	4.001 559	1339	4.003 507	1360	4.004 909	1394	4.005 884	1375	4.008 135	551	4.008 311	932	4.008 426	597
4.000 258	1206	4.001 563	1333	4.003 511	1362	4.004 948	1371	4.005 885	1375	4.008 136	620	4.008 312	936	4.008 427	597
4.000 259	1206	4.001 564	1339	4.003 512	1360	4.004 949	1371	4.005 886	1374	4.008 137	421	4.008 313	175	4.008 428	591
4.000 260	1206	4.001 565	1339	4.003 514	1360	4.004 950	1371	4.005 945	1377	4.008 142	430	4.008 314	934	4.008 433	96
4.000 261	1206	4.002 178	1369	4.003 530	1363	4.004 951	1371	4.005 948	1374	4.008 149	621	4.008 315	934	4.008 434	96
4.000 262	1206	4.002 179	1369	4.003 534	1363	4.004 952	1371	4.005 954	252	4.008 150	551	4.008 316	934	4.008 435	96
4.000 263	1206	4.002 180	1369	4.003 535	1363	4.004 953	1371	4.005 955	252	4.008 194	1333	4.008 317	934	4.008 436	96
4.000 264	1206	4.002 219	1369	4.003 536	1363	4.004 954	1371	4.005 976	1376	4.008 194	1338	4.008 318	934	4.008 437	699
4.000 265	1206	4.002 220	1369	4.003 538	1363	4.004 955	1371	4.005 989	564	4.008 196	1337	4.008 322	865	4.008 438	699
4.000 269	1206	4.002 221	1369	4.003 547	1361	4.004 956	1371	4.005 990	564	4.008 196	1338	4.008 323	865	4.008 439	699
4.000 270	1206	4.002 222	1369	4.003 550	1361	4.004 957	1371	4.006 927	1209	4.008 196	1340	4.008 324	865	4.008 440	137
4.000 272	1206	4.002 372	1368	4.003 552	1364	4.004 958	1371	4.006 928	1209	4.008 197	1334	4.008 327	399	4.008 441	137
4.000 273	1206	4.002 373	1368	4.003 557	1362	4.004 959	1371	4.006 931	1209	4.008 198	1333	4.008 328	399	4.008 445	111
4.000 274	1206	4.002 374	1368	4.003 561	1360	4.004 960	1371	4.006 932	1209	4.008 200	1333	4.008 329	399	4.008 446	111
4.000 275	1204	4.002 491	1368	4.003 563	1362	4.004 961	1371	4.006 960	1211	4.008 204	1348	4.008 341	604	4.008 447	111
4.000 276	1204	4.002 493	1368	4.003 565	1360	4.004 962	1371	4.006 961	1211	4.008 205	1343	4.008 342	604	4.008 448	110
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4.000 278	1204	4.003 093	1383	4.003 567	1360	4.004 964	1371	4.007 023	1198	4.008 207	1334	4.008 344	604	4.008 450	110
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4.000 280	1204	4.003 101	1383	4.003 571	1360	4.004 966	1371	4.007 801	261	4.008 210	1334	4.008 347	609	4.008 452	112
4.000 281	1204	4.003 149	1382	4.003 573	1360	4.004 967	1371	4.007 802	261	4.008 211	1336	4.008 348	609	4.008 453	112
4.000 282	1204	4.003 150	1382	4.003 575	1360	4.004 968	1371	4.007 804	261	4.008 212	1336	4.008 349	609	4.008 454	112
4.000 283	1204	4.003 152	1382	4.003 576	1360	4.004 969	1371	4.007 805	261	4.008 214	1337	4.008 350	609	4.008 455	112
4.000 284	1204	4.003 153	1382	4.003 577	1360	4.004 970	1371	4.007 809	261	4.008 215	1337	4.008 351	609	4.008 456	112
4.000 285	1204	4.003 155	1383	4.003 586	1363	4.004 971	1371	4.007 810	261	4.008 216	1337	4.008 352	609	4.008 457	112
4.000 286	1205	4.003 156	1383	4.003 595	1362	4.004 972	1371	4.007 811	261	4.008 218	1336	4.008 353	609	4.008 458	112
4.000 287	1205	4.003 158	1383	4.003 605	1361	4.004 973	1371	4.007 812	261	4.008 221	1336	4.008 354	609	4.008 459	112
4.000 288	1205	4.003 159	1383	4.003 609	1361	4.004 974	1371	4.007 813	261	4.008 224	1336	4.008 355	605	4.008 471	123
4.000 289	1205	4.003 164	1382	4.003 613	1362	4.004 975	1371	4.007 814	261	4.008 225	1336	4.008 356	605	4.008 472	123
4.000 290	1205	4.003 165	1382	4.003 624	1362	4.004 976	1371	4.007 815	261	4.008 226	1336	4.008 357	605	4.008 473	123
4.000 291	1205	4.003 168	1383	4.003 630	1361	4.004 977	1371	4.007 816	261	4.008 227	1336	4.008 358	605	4.008 474	123
4.000 292	1205	4.003 169	1383	4.003 806	1361	4.004 978	1371	4.007 817	261	4.008 228	1336	4.008 360	370	4.008 475	123
4.000 293	1205	4.003 235	1383	4.003 808	1361	4.004 979	1371	4.007 819	261	4.008 229	1336	4.008 360	604	4.008 476	123
4.000 294	1205	4.003 261	1383	4.003 809	1361	4.004 980	1371	4.007 825	262	4.008 230	1336	4.008 361	605	4.008 477	123
4.000 295	1205	4.003 262	1383	4.003 811	1361	4.004 981	1371	4.007 826	262	4.008 234	1338	4.008 362	605	4.008 478	123
4.000 296	1205	4.003 265	1382	4.003 813	1361	4.004 999	1371	4.007 827	262	4.008 235	1338	4.008 364	605	4.008 479	123
4.000 297	1205	4.003 266	1382	4.003 814	1361	4.005 000	1371	4.007 828	262	4.008 236	1338	4.008 365	605	4.008 480	123
4.000 298	1205	4.003 267	1382	4.003 815	1361	4.005 001	1371	4.007 829	262	4.008 237	1338	4.008 366	605	4.008 481	123
4.000 299	1205	4.003 394	679	4.003 819	1361	4.005 042	1391	4.007 832	261	4.008 239	1339	4.008 367	605	4.008 482	124
4.000 300	1205	4.003 395	679	4.003 820	1361	4.005 043	1391	4.007 849	839	4.008 243	1339	4.008 369	605	4.008 483	124
4.000 301	1205	4.003 397	679	4.003 824	1364	4.005 044	1392	4.007 850	839	4.008 247	1335	4.008 370	582	4.008 484	124
4.000 302	1205	4.003 398	679	4.003 825	1364	4.005 045	1392	4.007 852	1284	4.008 248	1343	4.008 371	582	4.008 485	124
4.000 303	1205	4.003 399	678	4.003 826	1364	4.005 046	1392	4.007 853	1285	4.008 249	1335	4.008 372	582	4.008 486	167
4.000 304	1205	4.003 400	678	4.003 827	1364	4.005 047	1392	4.007 854	917	4.008 250	1335	4.008 373	586	4.008 487	167
4.000 305	1205	4.003 401	680	4.003 828	1364	4.005 052	1391	4.007 855	917	4.008 251	1339	4.008 375	579	4.008 488	167
4.000 306	1205	4.003 402	680	4.003 829	1364	4.005 060	1390	4.007 856	917	4.008 253	1339	4.008 376	602	4.008 489	167
4.000 307	1205	4.003 405	677	4.003 838	1360	4.005 061	1390	4.007 857	917	4.008 254	1339	4.008 377	576	4.008 490	168
4.000 308	1205	4.003 406	677	4.003 861	1362	4.005 062	1390	4.007 858	917	4.008 255	1340	4.008 378	576	4.008 491	168
4.000 312	1205	4.003 407	677	4.003 862	1362	4.005 063	1390	4.007 859	917	4.008 256	1341	4.008 379	570	4.008 492	168
4.000 313	1205	4.003 408	677	4.003 863	1362	4.005 064	1390	4.007 886	894	4.008 257	1341	4.008 380	570	4.008 493	168
4.000 363	1206	4.003 409	679	4.003 864	1362	4.005 065	1390	4.007 894	1181	4.008 259	1341	4.008 381	570	4.008 494	168
4.000 364	1206	4.003 410	679	4.003 865	1362	4.005 066	1390	4.007 895	1181	4.008 261	1341	4.008 382	570	4.008 495	608
4.000 365	1206	4.003 411	678	4.003 866	1362	4.005 067	1390	4.007 896	1183	4.008 262	1335	4.008 383	570	4.008 496	608
4.000 366	1206	4.003 412	678	4.003 867	1362	4.005 068	1390	4.007 897	1183	4.008 263	1342	4.008 384	570	4.008 497	608
4.000 389	1184	4.003 413	680	4.003 868	1362	4.005 069	1390	4.007 898	1184	4.008 264	1342	4.008 385	570	4.008 498	608
4.000 390	1184	4.003 414	680	4.003 869	1362	4.005 070	1390	4.007 899	1183	4.008 265	1343	4.008 386	573	4.008 499	608
4.000 391	1184	4.003 415	680	4.004 400	1368	4.005 102	1124	4.007 900	1183	4.008 266	1348	4.008 387	573	4.008 500	608
4.000 392	1185	4.003 416	679	4.004 401	1368	4.005 444	1377	4.007 901	1183	4.008 267	1342	4.008 388	573	4.008 501	439
4.000 394	941	4.003 417	679	4.004 402	1368	4.005 445	1377	4.007 902	1183	4.008 268	1344	4.008 390	575	4.008 506	646
4.000 395	941	4.003 418	679	4.004 403	1368	4.005 446	1377	4.007 903	1283	4.008 269	1344	4.008 391	575	4.008 506	1283
4.000 396	941	4.003 419	677	4.004 404	1368	4.005 447	1377	4.007 904	1283	4.008 270	1344	4.008 392	575	4.008 510	98
4.001 479	1385	4.003 420	677	4.004 405	1368	4.005 448	1377	4.007 905	1283	4.008 271	1346	4.008 393	575	4.008 512	138
4.001 480	1385	4.003 421	677	4.004 406	1368	4.005 504	1377	4.007 906	1283	4.008 272	1346	4.008 394	575	4.008 513	110
4.001 481	1385	4.003 422	677	4.004 407	1368	4.005 508	1375	4.007 907	1283	4.008 273	1347	4.008 395	575	4.008 514	502
4.001 486	1385	4.003 423	680	4.004 408	1368	4.005 511	1375	4.007 908	1283	4.008 274	1347	4.008 396	575	4.008 552	1218

4.008 574	1208	4.009 207	791	4.009 988	1240	6.050 640	196	6.070 187	1103	6.079 786	706	6.093 232	614	6.202 839	705
4.008 582	1242	4.009 208	791	4.009 989	1240	6.050 827	844	6.070 228	142	6.079 787	706	6.093 247	1335	6.202 850	1361
4.008 599	1208	4.009 209	791	4.009 990	1240	6.050 915	452	6.070 411	716	6.079 788	706	6.093 247	1337	6.202 868	848
4.008 606	1207	4.009 210	791	4.009 992	1240	6.050 962	1386	6.070 424	905	6.079 803	583	6.093 247	1338	6.202 909	196
4.008 608	1226	4.009 211	791	4.010 001	1240	6.051 307	908	6.070 542	613	6.079 832	604	6.093 247	1340	6.203 006	461
4.008 624	1226	4.009 212	792	4.010 028	809	6.051 403	1344	6.070 565	192	6.080 098	403	6.093 728	43	6.203 014	575
4.008 625	1218	4.009 213	792	4.010 029	809	6.051 579	1047	6.070 616	1026	6.080 130	705	6.095 234	314	6.203 095	452
4.008 637	43	4.009 214	792	4.010 033	1239	6.051 629	498	6.071 748	844	6.080 156	1049	6.100 661	739	6.203 235	873
4.008 649	1207	4.009 215	792	4.010 047	1239	6.051 813	396	6.071 767	794	6.080 217	311	6.100 662	739	6.203 237	475
4.008 650	1207	4.009 216	792	4.010 048	1239	6.051 845	1049	6.071 888	170	6.080 286	127	6.100 663	739	6.203 237	480
4.008 655	1220	4.009 217	792	4.010 053	797	6.051 881	908	6.072 042	130	6.080 286	502	6.100 664	739	6.203 256	1159
4.008 656	1220	4.009 218	792	4.010 065	797	6.051 958	1138	6.072 077	577	6.080 498	851	6.100 665	739	6.203 350	1386
4.008 657	1220	4.009 219	792	4.010 066	797	6.051 993	908	6.072 150	613	6.080 498	1229	6.100 666	739	6.203 367	938
4.008 658	1220	4.009 220	792	4.010 098	1240	6.052 018	512	6.072 172	591	6.080 511	1047	6.100 667	739	6.203 402	852
4.008 674	1226	4.009 221	792	4.010 227	819	6.052 085	1241	6.072 181	127	6.080 523	851	6.200 206	1102	6.203 415	579
4.008 713	1207	4.009 222	792	4.010 228	819	6.052 153	1359	6.072 181	502	6.080 523	1229	6.200 208	200	6.203 416	579
4.008 715	1221	4.009 223	792	4.010 229	819	6.052 157	1359	6.072 218	705	6.080 611	1103	6.200 263	510	6.203 535	757
4.008 721	1225	4.009 224	793	4.010 230	819	6.052 163	1242	6.072 288	573	6.080 908	904	6.200 303	186	6.203 538	613
4.008 723	1222	4.009 225	793	4.010 231	819	6.052 519	1138	6.072 528	1386	6.081 021	705	6.200 316	199	6.203 549	804
4.008 724	1220	4.009 226	793	4.010 232	819	6.052 587	154	6.072 558	574	6.081 022	705	6.200 394	498	6.203 561	309
4.008 740	1226	4.009 227	793	4.010 233	819	6.052 588	154	6.072 615	196	6.081 029	706	6.200 398	172	6.203 569	574
4.008 750	43	4.009 228	793	4.010 234	820	6.052 589	154	6.072 628	370	6.081 209	848	6.200 432	831	6.203 571	574
4.008 753	1222	4.009 229	793	4.011 052	818	6.052 590	154	6.072 757	199	6.081 483	1047	6.200 433	831	6.203 572	574
4.008 763	1220	4.009 230	793	4.011 053	818	6.052 591	154	6.072 800	938	6.081 654	706	6.200 434	831	6.203 600	1159
4.008 764	1220	4.009 231	793	4.011 054	818	6.052 592	154	6.072 920	613	6.081 798	844	6.200 447	577	6.203 603	1203
4.008 767	1221	4.009 232	793	4.011 055	818	6.052 593	154	6.073 056	196	6.081 879	706	6.200 448	848	6.203 604	1203
4.008 768	1207	4.009 233	793	4.011 063	818	6.052 594	154	6.073 068	613	6.082 633	905	6.200 496	831	6.203 851	904
4.008 772	1222	4.009 234	793	4.011 064	818	6.052 595	154	6.073 106	1049	6.082 701	706	6.200 515	1356	6.203 934	1355
4.008 779	1225	4.009 235	793	4.011 065	818	6.052 596	154	6.073 183	584	6.082 702	706	6.200 639	864	6.203 961	1370
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4.008 786	1225	4.009 237	793	4.011 067	819	6.052 630	1104	6.073 310	571	6.083 463	949	6.200 643	314	6.204 134	38
4.008 797	1226	4.009 238	793	4.011 068	819	6.052 729	704	6.073 481	576	6.083 519	705	6.200 654	191	6.204 184	905
4.008 802	1207	4.009 239	793	4.011 070	820	6.052 763	1048	6.073 489	603	6.084 029	844	6.200 675	570	6.204 286	757
4.008 806	1225	4.009 239	801	4.011 071	820	6.052 910	196	6.073 505	91	6.084 072	844	6.200 677	577	6.204 319	1129
4.008 809	1226	4.009 240	793	4.011 122	135	6.052 959	844	6.073 555	1341	6.084 197	167	6.200 686	1356	6.204 321	575
4.008 812	1226	4.009 240	801	4.013 108	549	6.053 383	309	6.073 833	1340	6.084 496	403	6.200 782	624	6.204 322	575
4.008 824	43	4.009 241	793	4.013 108	1312	6.053 384	309	6.074 044	167	6.084 538	706	6.200 838	152	6.204 399	827
4.008 825	43	4.009 241	801	4.652 643	1052	6.053 546	1026	6.074 169	364	6.084 681	904	6.200 843	704	6.204 427	1159
4.008 838	704	4.009 246	793	4.652 645	1052	6.053 602	907	6.074 169	1074	6.084 722	1048	6.200 903	1356	6.204 472	920
4.008 843	704	4.009 246	801	4.652 758	1233	6.054 191	705	6.074 754	326	6.084 976	905	6.200 910	138	6.204 492	498
4.008 850	1220	4.009 247	793	4.653 267	85	6.054 193	704	6.074 805	583	6.085 184	1277	6.200 955	844	6.204 522	300
4.008 852	1222	4.009 247	801	4.653 858	251	6.054 343	844	6.075 746	647	6.085 289	908	6.200 985	595	6.204 551	566
4.008 858	1221	4.009 248	793	4.653 906	230	6.054 581	1102	6.075 807	717	6.085 419	1388	6.201 004	156	6.204 562	601
4.008 866	1221	4.009 248	801	4.653 907	230	6.054 658	703	6.075 814	1301	6.085 475	1384	6.201 005	156	6.204 624	1355
4.008 874	1220	4.009 249	793	4.653 908	230	6.054 664	648	6.075 820	706	6.085 561	907	6.201 023	200	6.204 651	904
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4.008 945	1218	4.009 251	793	4.653 910	230	6.054 809	364	6.076 204	175	6.085 906	370	6.201 034	1255	6.204 795	590
4.008 951	1222	4.009 256	802	4.653 931	554	6.055 335	1352	6.076 257	130	6.085 914	139	6.201 067	1046	6.204 811	704
4.008 952	703	4.009 327	819	4.653 932	554	6.055 472	844	6.076 309	168	6.086 375	1048	6.201 068	168	6.204 819	573
4.009 004	1222	4.009 329	819	4.653 933	554	6.055 561	1138	6.076 362	1102	6.087 044	510	6.201 070	705	6.204 852	575
4.009 009	1207	4.009 330	819	4.653 934	554	6.056 446	825	6.076 481	907	6.087 242	1388	6.201 071	705	6.204 878	647
4.009 010	1207	4.009 331	819	4.653 935	554	6.056 477	403	6.076 532	591	6.087 345	706	6.201 089	1356	6.204 890	601
4.009 011	1220	4.009 332	819	4.653 936	555	6.056 580	936	6.076 639	1048	6.087 538	591	6.201 104	831	6.204 902	1011
4.009 018	1222	4.009 333	819	4.653 937	555	6.056 812	130	6.076 641	1048	6.087 703	1105	6.201 199	570	6.204 936	38
4.009 033	1222	4.009 334	819	4.653 938	555	6.056 820	844	6.076 887	237	6.088 058	591	6.201 255	757	6.204 955	1389
4.009 034	1220	4.009 335	819	4.653 939	555	6.056 856	573	6.076 896	908	6.088 109	1389	6.201 298	573	6.205 017	1370
4.009 036	1226	4.009 336	819	4.653 943	538	6.056 922	403	6.076 989	907	6.088 109	1388	6.201 320	757	6.205 076	1386
4.009 043	1218	4.009 337	819	4.653 944	537	6.056 947	905	6.077 002	913	6.088 125	1048	6.201 498	938	6.205 104	100
4.009 044	1218	4.009 338	819	4.655 158	1096	6.057 011	905	6.077 283	1241	6.088 166	1104	6.201 499	938	6.205 105	100
4.009 045	1220	4.009 339	819	4.655 159	1096	6.057 070	1166	6.077 361	844	6.088 530	130	6.201 514	1207	6.205 109	38
4.009 049	1220	4.009 340	819	4.655 160	1096	6.057 100	844	6.077 366	844	6.088 604	403	6.201 643	757	6.205 110	38
4.009 050	1220	4.009 341	820	4.655 161	1096	6.057 101	844	6.077 369	167	6.088 605	403	6.201 670	757	6.205 128	85
4.009 087	703	4.009 342	820	4.655 162	1096	6.057 279	705	6.077 738	570	6.088 774	703	6.201 752	344	6.205 144	904
4.009 096	1222	4.009 343	820	4.655 163	1096	6.057 808	403	6.077 875	705	6.088 853	170	6.201 892	999	6.205 165	920
4.009 101	1225	4.009 344	820	4.655 164	1096	6.057 941	571	6.077 876	705	6.088 871	1335	6.202 021	171	6.205 169	647
4.009 104	43	4.009 345	820	4.655 165	1096	6.058 016	907	6.077 877	705	6.088 950	705	6.202 080	196	6.205 218	1117
4.009 122	1218	4.009 346	820	4.655 166	1096	6.058 191	848	6.078 159	831	6.089 284	168	6.202 087	636	6.205 383	199
4.009 123	1218	4.009 347	820	4.655 171	1055	6.058 370	403	6.078 305	703	6.089 587	1386	6.202 172	757	6.205 396	199
4.009 142	703	4.009 348	820	4.656 048	786	6.059 056	1049	6.078 412	706	6.089 601	908	6.202 190	1391	6.205 412	326
4.009 142	704	4.009 349	820	6.005 993	106	6.059 364	848	6.078 942	196	6.089 903	1138	6.202 219	200	6.205 413	326
4.009 190	802	4.009 350	820	6.018 346	938	6.059 697	1049	6.079 073	584	6.090 340	851	6.202 281	579	6.205 415	326
4.009 191	800	4.009 351	820	6.018 347	938	6.059 699	848	6.079 079	706	6.090 340	1229	6.202 305	538	6.205 429	874
4.009 192	800	4.009 494	819	6.049 748	648	6.059 769	825	6.079 156	936	6.090 366	210	6.202 322	199	6.205 430	874
4.009 193	800	4.009 506	820	6.050 012	279	6.059 800	848	6.079 157	936	6.090 412	309	6.202 382	198	6.205 458	498
4.009 194	801	4.009 781	826	6.050 012	279	6.059 899	1352	6.079 307	170	6.090 419	705	6.202 386	613	6.205 483	38
4.009 195	801	4.009 783	797	6.050 054	636	6.059 957	138	6.079 397	844	6.090 495	706	6.202 416	1370	6.205 512	623
4.009 196	801	4.009 784	796	6.050 131	60	6.059 976	1389	6.079 477	199	6.090 497	950	6.202 417	1370	6.205 674	647
4.009 197	801	4.009 785	796	6.050 132	60	6.059 976	1388	6.079 478	199	6.090 788	210	6.202 418	1370	6.205 692	623
4.009 198	801	4.009 786	796	6.050 133	60	6.059 977	1389	6.079 513	60	6.090 811	370	6.202 446	613	6.205 694	574
4.009 199	801	4.009 788	826	6.050 151	1220	6.059 977	1388	6.079 568	517	6.091 055	511	6.202 459	586	6.205 753	15
4.009 200	801	4.009 790	826	6.050 155	1103	6.060 789	1140	6.079 602	142	6.091 529	403	6.202 467	463	6.205 839	647
4.009 201	801	4.009 791	826	6.050 160	1355	6.070 009	935	6.079 648	614	6.091 756	370	6.202 530	40	6.205 857	45
4.009 202	801	4.009 806	826	6.050 329	533	6.070 033	614	6.079 677	705	6.091 887	210	6.202 636	1160	6.205 906	874
4.009 203	801	4.009 808	826	6.050 333	705	6.070 044	174	6.079 678	1207	6.092 721	844	6.202 638	1160	6.205 920	45
4.009 204	801	4.009 809	826	6.050 553	1104	6.070 046	584	6.079 718	936	6.092 728	905	6.202 713	848	6.205 921	45
4.009 205	801	4.009 986	1240	6.050 554	1104	6.070 072	935	6.079 772	174	6.092 769	825	6.202 714	848	6.205 922	45
4.009 206	791	4.009 987	1240	6.050 586	705	6.070 172	142	6.079 785	706	6.093 022	644	6.202 804	575	6.205 958	1387

6.205 958	1389	6.223 283	590	6.225 776	1158	6.228 031	100	6.229 399	353	6.231 823	1200	6.233 891	678	6.235 660	194
6.205 965	623	6.223 298	100	6.225 791	451	6.228 059	309	6.229 494	1372	6.231 832	1198	6.233 904	636	6.235 684	460
6.205 966	623	6.223 310	1300	6.225 803	199	6.228 063	1361	6.229 495	1372	6.231 847	1222	6.233 912	1206	6.235 728	345
6.206 034	1208	6.223 318	1272	6.225 818	878	6.228 096	186	6.229 606	214	6.231 848	1221	6.233 918	1339	6.235 736	14
6.206 049	1389	6.223 345	498	6.225 848	878	6.228 145	1256	6.229 607	214	6.231 858	1347	6.234 011	678	6.235 767	1239
6.206 050	1389	6.223 413	219	6.225 859	1370	6.228 159	594	6.229 608	214	6.231 860	686	6.234 026	24	6.235 794	288
6.206 124	1355	6.223 427	591	6.225 876	344	6.228 184	1046	6.229 625	917	6.231 903	362	6.234 031	1360	6.235 806	379
6.206 129	706	6.223 504	859	6.225 880	1129	6.228 209	1199	6.229 635	1346	6.231 946	647	6.234 037	1160	6.235 892	1032
6.206 130	706	6.223 506	1334	6.225 909	844	6.228 218	689	6.229 655	1183	6.231 953	573	6.234 050	279	6.235 920	189
6.206 131	706	6.223 522	311	6.225 931	165	6.228 218	1268	6.229 662	1229	6.231 957	111	6.234 067	979	6.235 935	292
6.206 139	573	6.223 552	1387	6.225 934	1199	6.228 225	1387	6.229 663	1229	6.231 995	376	6.234 067	978	6.235 935	322
6.206 195	623	6.223 553	1387	6.225 937	403	6.228 233	1207	6.229 692	589	6.232 027	585	6.234 095	879	6.235 966	604
6.206 201	920	6.223 554	1387	6.225 967	686	6.228 246	464	6.229 695	589	6.232 031	200	6.234 096	879	6.235 995	301
6.206 206	38	6.223 558	1388	6.225 979	1134	6.228 255	501	6.229 702	435	6.232 074	585	6.234 159	1133	6.236 005	1154
6.206 247	904	6.223 574	1370	6.225 989	573	6.228 258	1362	6.229 740	920	6.232 176	1210	6.234 247	644	6.236 022	593
6.206 304	45	6.223 901	45	6.226 018	1131	6.228 324	603	6.229 751	680	6.232 178	1334	6.234 320	190	6.236 025	247
6.206 305	38	6.223 971	1219	6.226 022	1256	6.228 382	384	6.229 762	308	6.232 190	497	6.234 424	690	6.236 033	1158
6.206 347	38	6.224 032	200	6.226 043	100	6.228 387	100	6.229 781	755	6.232 207	132	6.234 451	1193	6.236 050	498
6.206 348	451	6.224 033	200	6.226 081	111	6.228 401	1059	6.229 909	1138	6.232 207	1249	6.234 463	199	6.236 081	1256
6.206 379	879	6.224 050	804	6.226 130	45	6.228 424	937	6.229 964	621	6.232 288	1211	6.234 464	199	6.236 085	1356
6.206 393	702	6.224 148	219	6.226 179	32	6.228 425	937	6.229 999	1296	6.232 289	1211	6.234 466	90	6.236 108	983
6.206 402	1220	6.224 171	161	6.226 207	508	6.228 436	827	6.230 074	641	6.232 290	1210	6.234 510	18	6.236 109	414
6.206 421	121	6.224 187	222	6.226 307	1158	6.228 471	200	6.230 184	1027	6.232 291	1210	6.234 511	350	6.236 112	623
6.206 439	38	6.224 187	364	6.226 328	1372	6.228 502	215	6.230 186	874	6.232 327	215	6.234 515	848	6.236 223	823
6.206 495	804	6.224 189	1388	6.226 329	1372	6.228 513	353	6.230 213	1372	6.232 333	1368	6.234 530	1230	6.236 224	823
6.206 502	1386	6.224 190	1299	6.226 406	716	6.228 560	1182	6.230 274	1391	6.232 337	1199	6.234 541	1346	6.236 239	594
6.206 520	904	6.224 191	1299	6.226 427	1386	6.228 599	1098	6.230 318	177	6.232 352	827	6.234 562	1159	6.236 264	116
6.206 521	904	6.224 207	920	6.226 573	564	6.228 605	1385	6.230 324	1129	6.232 362	680	6.234 567	904	6.236 293	817
6.206 524	576	6.224 223	1184	6.226 619	1256	6.228 639	511	6.230 345	1181	6.232 389	678	6.234 568	904	6.236 303	570
6.206 587	1049	6.224 227	908	6.226 643	584	6.228 676	907	6.230 356	344	6.232 433	799	6.234 576	1315	6.236 317	597
6.206 594	368	6.224 228	908	6.226 725	379	6.228 679	907	6.230 404	14	6.232 434	1028	6.234 591	516	6.236 318	597
6.206 600	924	6.224 229	908	6.226 741	300	6.228 698	886	6.230 405	14	6.232 481	1098	6.234 592	516	6.236 319	597
6.206 625	940	6.224 230	908	6.226 757	577	6.228 699	886	6.230 416	1197	6.232 482	1098	6.234 594	1229	6.236 320	597
6.206 675	831	6.224 231	904	6.226 798	1360	6.228 700	886	6.230 433	1314	6.232 523	1192	6.234 595	1229	6.236 321	597
6.206 691	309	6.224 232	908	6.226 802	177	6.228 701	886	6.230 445	746	6.232 525	101	6.234 596	1229	6.236 328	38
6.206 693	309	6.224 233	905	6.226 809	904	6.228 702	886	6.230 463	1199	6.232 548	679	6.234 598	497	6.236 329	38
6.206 710	33	6.224 234	906	6.226 824	403	6.228 703	886	6.230 464	1199	6.232 549	679	6.234 641	309	6.236 330	38
6.206 710	709	6.224 235	905	6.226 833	904	6.228 704	886	6.230 465	1199	6.232 574	516	6.234 665	1176	6.236 346	570
6.206 732	917	6.224 236	907	6.226 915	1372	6.228 705	886	6.230 515	990	6.232 575	1292	6.234 665	1177	6.236 347	572
6.206 733	917	6.224 287	566	6.226 934	990	6.228 706	887	6.230 535	920	6.232 577	516	6.234 666	1176	6.236 355	783
6.206 835	344	6.224 312	689	6.226 935	990	6.228 707	887	6.230 605	577	6.232 630	1211	6.234 666	1177	6.236 426	835
6.206 856	100	6.224 318	842	6.226 936	990	6.228 708	887	6.230 607	1210	6.232 660	1391	6.234 716	292	6.236 450	767
6.206 861	825	6.224 347	904	6.226 949	1256	6.228 709	887	6.230 626	326	6.232 685	1133	6.234 725	1308	6.236 456	130
6.206 884	907	6.224 397	601	6.226 950	1256	6.228 715	905	6.230 635	1131	6.232 715	292	6.234 735	706	6.236 466	1252
6.206 907	308	6.224 405	1199	6.227 097	200	6.228 716	905	6.230 658	376	6.232 716	362	6.234 815	510	6.236 477	1009
6.206 960	908	6.224 412	904	6.227 144	1192	6.228 718	904	6.230 719	579	6.232 716	362	6.234 827	357	6.236 479	985
6.207 044	761	6.224 417	1391	6.227 149	516	6.228 719	904	6.230 729	1391	6.232 743	296	6.234 850	349	6.236 508	570
6.207 050	1302	6.224 460	38	6.227 150	516	6.228 720	904	6.230 775	906	6.232 797	1210	6.234 859	326	6.236 532	1039
6.207 107	1082	6.224 461	38	6.227 253	1192	6.228 721	908	6.230 826	577	6.232 813	464	6.234 868	1159	6.236 533	1039
6.207 112	380	6.224 557	917	6.227 289	516	6.228 740	908	6.230 844	1372	6.232 946	1129	6.234 902	1347	6.236 539	1218
6.207 118	1384	6.224 842	1362	6.227 292	516	6.228 742	908	6.230 844	1372	6.233 091	573	6.234 956	590	6.236 596	100
6.207 164	1219	6.224 845	1361	6.227 381	689	6.228 743	908	6.230 881	199	6.233 114	573	6.234 957	590	6.236 597	100
6.207 171	378	6.224 846	1362	6.227 381	1268	6.228 744	908	6.230 903	1184	6.233 128	1360	6.235 003	564	6.236 598	100
6.207 176	601	6.224 868	1361	6.227 404	756	6.228 745	908	6.230 923	214	6.233 172	679	6.235 017	668	6.236 599	100
6.207 191	38	6.224 893	903	6.227 423	1031	6.228 746	908	6.231 072	100	6.233 176	693	6.235 019	600	6.236 618	107
6.207 195	380	6.224 904	1158	6.227 443	990	6.228 747	908	6.231 087	1230	6.233 275	571	6.235 042	90	6.236 659	691
6.207 277	917	6.224 905	1159	6.227 450	1384	6.228 748	908	6.231 100	1225	6.233 287	374	6.235 043	874	6.236 683	124
6.210 059	873	6.224 906	1160	6.227 486	905	6.228 750	908	6.231 115	107	6.233 339	1348	6.235 065	600	6.236 751	1387
6.210 129	326	6.224 913	1314	6.227 492	362	6.228 751	908	6.231 153	1353	6.233 381	299	6.235 082	249	6.236 773	576
6.210 135	896	6.224 919	904	6.227 520	380	6.228 752	906	6.231 161	1098	6.233 440	1152	6.235 096	245	6.236 774	570
6.210 150	896	6.225 059	326	6.227 536	54	6.228 753	906	6.231 173	344	6.233 543	378	6.235 098	353	6.236 800	951
6.210 168	583	6.225 112	794	6.227 544	1343	6.228 754	906	6.231 269	536	6.233 548	1205	6.235 155	222	6.236 845	1158
6.222 013	1353	6.225 158	556	6.227 666	1046	6.228 755	906	6.231 283	435	6.233 568	1391	6.235 155	364	6.236 850	497
6.222 104	613	6.225 161	309	6.227 688	100	6.228 756	907	6.231 284	464	6.233 571	379	6.235 183	434	6.236 854	366
6.222 130	1226	6.225 206	309	6.227 717	446	6.228 757	907	6.231 285	464	6.233 613	350	6.235 199	827	6.236 915	651
6.222 238	528	6.225 207	309	6.227 761	1297	6.228 758	907	6.231 389	221	6.233 617	1192	6.235 214	350	6.236 921	1029
6.222 339	831	6.225 208	309	6.227 768	1347	6.228 761	888	6.231 425	221	6.233 618	1193	6.235 226	461	6.236 945	912
6.222 441	1207	6.225 217	904	6.227 780	1372	6.228 788	1386	6.231 447	221	6.233 664	1299	6.235 231	564	6.236 954	583
6.222 480	905	6.225 223	1361	6.227 781	1372	6.228 848	1186	6.231 448	332	6.233 682	357	6.235 243	706	6.237 000	869
6.222 503	757	6.225 256	100	6.227 782	1372	6.228 856	218	6.231 512	799	6.233 690	390	6.235 314	1256	6.237 001	869
6.222 630	1047	6.225 263	757	6.227 789	348	6.228 898	231	6.231 520	641	6.233 696	1247	6.235 326	1356	6.237 002	869
6.222 672	1218	6.225 278	169	6.227 796	1124	6.228 911	161	6.231 539	448	6.233 706	534	6.235 330	564	6.237 003	869
6.222 688	799	6.225 298	689	6.227 799	1059	6.228 923	766	6.231 540	100	6.233 742	885	6.235 345	199	6.237 016	1283
6.222 778	827	6.225 298	1268	6.227 832	594	6.228 924	766	6.231 541	697	6.233 743	885	6.235 370	878	6.237 017	1283
6.222 851	728	6.225 477	553	6.227 849	231	6.228 969	1341	6.231 555	1046	6.233 744	885	6.235 417	1299	6.237 076	602
6.222 853	913	6.225 481	904	6.227 874	1344	6.228 976	1033	6.231 591	1028	6.233 745	885	6.235 425	1357	6.237 126	107
6.222 868	614	6.225 506	90	6.227 899	1392	6.228 993	879	6.231 607	350	6.233 748	693	6.235 500	362	6.237 141	1315
6.222 953	1219	6.225 507	90	6.227 900	1392	6.228 995	879	6.231 685	353	6.233 756	1205	6.235 534	550	6.237 160	36
6.223 092	296	6.225 557	593	6.227 906	1036	6.229 038	1210	6.231 686	920	6.233 757	100	6.235 556	353	6.237 164	572
6.223 093	511	6.225 614	553	6.227 917	1391	6.229 039	1210	6.231 720	1098	6.233 767	280	6.235 565	904	6.237 165	572
6.223 094	511	6.225 622	508	6.227 922	100	6.229 041	689	6.231 721	1256	6.233 795	357	6.235 571	906	6.237 166	572
6.223 125	1184	6.225 629	178	6.227 923	1229	6.229 041	1268	6.231 748	1033	6.233 811	647	6.235 585	827	6.237 167	623
6.223 165	403	6.225 629	1120	6.227 924	1229	6.229 104	1129	6.231 770	132	6.233 835	1231	6.235 596	280	6.237 176	951
6.223 191	1146	6.225 698	896	6.227 942	924	6.229 213	761	6.231 770	1249	6.233 844	288	6.235 606	1333	6.237 267	32
6.223 201	1242	6.225 714	32	6.227 948	1391	6.229 282	1210	6.231 785	1205	6.233 851	1205	6.235 610	827	6.237 268	32
6.223 248	1208	6.225 737	1299	6.228 020	1063	6.229 315	348	6.231 788	686	6.233 869	904	6.235 611	827	6.237 286	534
6.223 256	935	6.225 773	990	6.228 023	1372	6.229 381	1212	6.231 805	95	6.233 889	827	6.235 645	574	6.237 287	136

6.237 312	599	6.238 473	936	6.240 397	237	6.241 980	597	6.243 542	832	6.250 142	139	6.253 614	1016	6.256 766	1356
6.237 313	599	6.238 474	938	6.240 397	236	6.241 981	597	6.243 543	832	6.250 278	757	6.253 649	187	6.256 805	334
6.237 328	697	6.238 478	913	6.240 397	236	6.241 983	334	6.243 544	832	6.250 413	831	6.253 743	20	6.256 809	467
6.237 330	621	6.238 525	866	6.240 408	353	6.242 036	1199	6.243 545	832	6.250 417	1208	6.253 748	1019	6.256 816	467
6.237 371	879	6.238 526	597	6.240 412	597	6.242 062	1025	6.243 546	832	6.250 420	757	6.253 751	18	6.256 893	114
6.237 372	879	6.238 527	597	6.240 425	576	6.242 083	511	6.243 547	832	6.250 483	831	6.253 785	18	6.256 893	504
6.237 379	911	6.238 532	574	6.240 426	570	6.242 087	430	6.243 581	604	6.251 155	294	6.253 896	997	6.256 894	114
6.237 469	463	6.238 545	712	6.240 465	244	6.242 103	1337	6.243 582	604	6.251 233	1044	6.253 916	878	6.256 894	504
6.237 535	620	6.238 546	712	6.240 471	126	6.242 104	1338	6.243 583	604	6.251 347	322	6.253 917	878	6.256 895	114
6.237 538	621	6.238 547	712	6.240 474	175	6.242 163	571	6.243 584	604	6.251 366	593	6.253 918	878	6.256 895	504
6.237 539	621	6.238 548	191	6.240 475	133	6.242 170	699	6.243 585	604	6.251 383	662	6.253 919	878	6.256 896	114
6.237 540	621	6.238 574	1124	6.240 475	134	6.242 171	397	6.243 586	604	6.251 423	989	6.253 920	878	6.256 896	504
6.237 541	621	6.238 583	879	6.240 509	565	6.242 179	659	6.243 590	1159	6.251 424	989	6.253 921	878	6.256 897	114
6.237 542	621	6.238 613	643	6.240 535	1046	6.242 195	1272	6.243 602	581	6.251 438	378	6.253 922	878	6.256 897	504
6.237 578	1096	6.238 614	643	6.240 595	643	6.242 212	1341	6.243 603	581	6.251 451	814	6.253 931	1357	6.256 898	114
6.237 606	638	6.238 615	643	6.240 599	460	6.242 234	503	6.243 604	582	6.251 474	101	6.253 961	1256	6.256 898	504
6.237 620	32	6.238 672	453	6.240 637	448	6.242 239	384	6.243 607	576	6.251 486	1128	6.253 976	1373	6.256 952	461
6.237 621	32	6.238 676	308	6.240 684	1296	6.242 239	388	6.243 608	576	6.251 521	561	6.254 003	15	6.257 139	1340
6.237 622	32	6.238 677	308	6.240 725	1184	6.242 240	570	6.243 609	576	6.251 590	1097	6.254 004	14	6.257 173	743
6.237 623	32	6.238 711	169	6.240 744	308	6.242 267	1342	6.243 610	576	6.251 593	253	6.254 016	461	6.257 176	1244
6.237 627	936	6.238 821	761	6.240 745	308	6.242 287	637	6.243 611	576	6.251 643	1280	6.254 027	1256	6.257 177	1244
6.237 628	938	6.238 826	354	6.240 767	299	6.242 312	1391	6.243 612	576	6.251 644	1280	6.254 106	601	6.257 178	1244
6.237 629	939	6.238 838	362	6.240 795	313	6.242 313	191	6.243 613	576	6.251 689	15	6.254 108	600	6.257 179	1244
6.237 648	171	6.238 838	362	6.240 824	298	6.242 393	20	6.243 614	576	6.251 705	904	6.254 169	378	6.257 180	1244
6.237 656	214	6.238 840	831	6.240 956	497	6.242 394	597	6.243 615	576	6.251 768	1245	6.254 171	253	6.257 181	1244
6.237 684	214	6.238 844	168	6.240 962	602	6.242 395	597	6.243 616	573	6.251 893	300	6.254 273	487	6.257 247	962
6.237 698	1052	6.238 860	14	6.240 963	602	6.242 396	608	6.243 617	573	6.251 900	885	6.254 275	151	6.257 318	1278
6.237 702	570	6.238 867	1337	6.240 976	575	6.242 423	1072	6.243 618	573	6.251 939	460	6.254 325	583	6.257 342	519
6.237 703	117	6.238 921	298	6.240 977	575	6.242 424	107	6.243 619	573	6.251 980	1280	6.254 337	1098	6.257 343	519
6.237 704	576	6.238 947	542	6.240 978	575	6.242 463	936	6.243 620	573	6.252 036	278	6.254 364	897	6.257 359	341
6.237 705	835	6.238 965	1334	6.240 982	591	6.242 468	1342	6.243 633	306	6.252 072	662	6.254 389	15	6.257 410	1129
6.237 706	699	6.238 979	1340	6.240 983	591	6.242 476	127	6.243 654	574	6.252 153	92	6.254 394	973	6.257 480	799
6.237 707	699	6.239 008	699	6.241 090	565	6.242 476	502	6.243 655	574	6.252 154	92	6.254 430	1313	6.257 572	356
6.237 708	699	6.239 009	169	6.241 105	380	6.242 495	624	6.243 656	574	6.252 163	1203	6.254 445	1313	6.257 627	1224
6.237 709	831	6.239 037	1343	6.241 111	1344	6.242 557	885	6.243 657	574	6.252 163	1203	6.254 447	20	6.257 628	1224
6.237 710	831	6.239 043	879	6.241 114	643	6.242 631	652	6.243 658	574	6.252 166	92	6.254 476	461	6.257 629	1224
6.237 711	623	6.239 136	885	6.241 116	936	6.242 632	652	6.243 659	574	6.252 178	294	6.254 523	583	6.257 630	1224
6.237 751	1196	6.239 177	101	6.241 130	153	6.242 633	662	6.243 660	574	6.252 181	251	6.254 570	707	6.257 631	1224
6.237 752	1196	6.239 178	885	6.241 198	924	6.242 634	1044	6.243 661	574	6.252 200	19	6.254 571	707	6.257 632	1224
6.237 788	1072	6.239 195	111	6.241 199	254	6.242 668	652	6.243 662	574	6.252 246	261	6.254 572	707	6.257 633	1224
6.237 816	1159	6.239 227	242	6.241 216	936	6.242 669	659	6.243 663	574	6.252 312	261	6.254 577	35	6.257 634	1224
6.237 877	1221	6.239 228	242	6.241 225	1105	6.242 670	659	6.243 664	623	6.252 313	261	6.254 578	35	6.257 635	1224
6.237 901	67	6.239 242	242	6.241 227	1105	6.242 671	652	6.243 665	623	6.252 321	827	6.254 597	627	6.257 636	1224
6.237 909	1344	6.239 273	1193	6.241 238	220	6.242 672	652	6.243 666	623	6.252 363	127	6.254 604	627	6.257 637	1224
6.237 965	1032	6.239 332	1387	6.241 255	364	6.242 694	597	6.243 667	623	6.252 363	502	6.254 727	1357	6.257 638	1224
6.237 967	1199	6.239 337	1355	6.241 274	357	6.242 700	172	6.243 668	623	6.252 383	516	6.254 729	1180	6.257 639	1224
6.237 971	1021	6.239 360	1355	6.241 291	699	6.242 701	167	6.243 669	592	6.252 384	516	6.254 755	341	6.257 641	1224
6.237 971	1271	6.239 384	1032	6.241 371	519	6.242 703	168	6.243 670	592	6.252 619	190	6.254 782	1156	6.257 642	1224
6.237 973	31	6.239 400	904	6.241 373	885	6.242 704	138	6.243 673	599	6.252 620	190	6.254 785	127	6.257 643	1224
6.237 979	374	6.239 416	214	6.241 444	505	6.242 742	23	6.243 682	126	6.252 670	14	6.254 785	502	6.257 644	1224
6.237 998	783	6.239 419	735	6.241 460	488	6.242 746	45	6.243 690	172	6.252 729	1126	6.254 786	127	6.257 645	1224
6.238 001	382	6.239 420	188	6.241 474	334	6.242 747	659	6.243 711	662	6.252 739	776	6.254 786	502	6.257 646	1224
6.238 005	424	6.239 438	836	6.241 477	339	6.242 748	659	6.243 738	585	6.252 765	659	6.254 841	823	6.257 647	1223
6.238 007	36	6.239 505	827	6.241 502	1240	6.242 774	601	6.243 739	585	6.252 814	461	6.254 890	603	6.257 648	1223
6.238 044	353	6.239 507	168	6.241 533	604	6.242 784	91	6.243 740	585	6.252 823	460	6.254 947	238	6.257 649	1223
6.238 061	1182	6.239 547	583	6.241 601	262	6.242 793	460	6.243 741	585	6.252 939	1128	6.254 971	1386	6.257 650	1223
6.238 066	904	6.239 618	757	6.241 602	399	6.242 811	1049	6.243 754	1124	6.252 942	461	6.255 204	1049	6.257 651	1223
6.238 077	427	6.239 724	935	6.241 603	399	6.242 844	325	6.243 759	699	6.252 944	461	6.255 307	509	6.257 652	1223
6.238 106	885	6.239 745	1212	6.241 639	313	6.242 855	250	6.243 865	516	6.252 946	460	6.255 307	1121	6.257 653	1223
6.238 115	1193	6.239 754	35	6.241 644	1272	6.242 856	250	6.243 905	129	6.253 037	354	6.255 331	671	6.257 654	1223
6.238 117	910	6.239 769	298	6.241 652	699	6.243 010	23	6.243 959	1170	6.253 092	244	6.255 331	1367	6.257 655	1223
6.238 118	910	6.239 804	168	6.241 661	250	6.243 011	23	6.243 960	1170	6.253 093	244	6.255 348	1388	6.257 656	1223
6.238 119	910	6.239 812	595	6.241 668	597	6.243 055	579	6.243 960	1172	6.253 096	244	6.255 403	252	6.257 657	1223
6.238 120	909	6.239 822	168	6.241 669	597	6.243 056	579	6.243 960	1174	6.253 139	1256	6.255 458	827	6.257 658	1223
6.238 121	909	6.239 879	1012	6.241 670	597	6.243 069	496	6.244 006	133	6.253 163	510	6.255 503	586	6.257 659	1223
6.238 132	1184	6.239 883	388	6.241 671	597	6.243 069	1103	6.244 006	134	6.253 256	571	6.255 582	947	6.257 660	1223
6.238 138	366	6.239 884	388	6.241 673	251	6.243 162	33	6.244 011	597	6.253 276	1311	6.255 584	950	6.257 661	1223
6.238 139	366	6.239 903	697	6.241 690	1032	6.243 162	709	6.244 028	1218	6.253 281	461	6.255 612	425	6.257 662	1223
6.238 140	366	6.240 019	65	6.241 693	605	6.243 195	262	6.244 067	454	6.253 281	1311	6.255 638	767	6.257 761	789
6.238 141	32	6.240 037	642	6.241 705	332	6.243 203	35	6.244 120	738	6.253 311	237	6.255 678	132	6.257 820	593
6.238 169	364	6.240 038	643	6.241 715	583	6.243 204	31	6.244 121	738	6.253 315	1002	6.255 678	1249	6.257 821	593
6.238 170	364	6.240 039	1047	6.241 723	250	6.243 205	31	6.244 589	370	6.253 331	592	6.255 692	742	6.257 923	1034
6.238 171	364	6.240 040	1047	6.241 758	1357	6.243 206	31	6.244 589	604	6.253 344	1058	6.255 802	36	6.257 941	572
6.238 192	988	6.240 060	608	6.241 759	1357	6.243 207	31	6.244 591	580	6.253 368	1195	6.255 804	1185	6.257 992	461
6.238 239	542	6.240 071	884	6.241 792	1377	6.243 208	31	6.244 592	580	6.253 408	187	6.255 805	35	6.258 006	874
6.238 272	1272	6.240 089	1283	6.241 793	1377	6.243 209	31	6.244 593	580	6.253 443	107	6.255 806	577	6.258 034	1191
6.238 277	1193	6.240 102	885	6.241 795	904	6.243 210	37	6.244 594	580	6.253 481	54	6.255 819	176	6.258 150	577
6.238 278	1193	6.240 135	1342	6.241 820	101	6.243 211	37	6.245 034	1031	6.253 506	1039	6.255 819	718	6.258 155	194
6.238 319	904	6.240 223	1098	6.241 856	353	6.243 212	37	6.246 006	624	6.253 537	603	6.255 826	123	6.258 173	754
6.238 320	904	6.240 323	1044	6.241 879	518	6.243 213	37	6.246 007	624	6.253 538	603	6.255 961	1377	6.258 182	14
6.238 341	1256	6.240 332	1199	6.241 880	519	6.243 229	108	6.246 008	624	6.253 553	662	6.256 163	827	6.258 218	1028
6.238 345	570	6.240 333	608	6.241 881	519	6.243 251	712	6.246 009	624	6.253 577	897	6.256 301	1147	6.258 228	592
6.238 346	576	6.240 342	594	6.241 887	643	6.243 410	1013	6.246 010	624	6.253 609	1016	6.256 343	157	6.258 229	1058
6.238 376	205	6.240 343	264	6.241 888	643	6.243 414	1012	6.246 011	624	6.253 610	1016	6.256 343	710	6.258 233	549
6.238 377	205	6.240 360	885	6.241 895	107	6.243 486	1015	6.248 077	250	6.253 611	1016	6.256 437	659	6.258 234	549
6.238 426	345	6.240 378	712	6.241 904	934	6.243 486	1016	6.248 078	251	6.253 612	1016	6.256 514	520	6.258 234	549
6.238 472	570	6.240 382	384	6.241 972	107	6.243 541	832	6.250 017	1048	6.253 613	1018	6.256 566	962	6.258 235	948

6.258 244	577	6.260 677	1233	6.262 421	355	6.263 284	506	6.264 698	768	6.265 050	504	6.265 583	219	6.265 879	1034
6.258 269	549	6.260 678	1233	6.262 422	347	6.263 285	506	6.264 699	768	6.265 051	504	6.265 588	539	6.265 880	1034
6.258 271	549	6.260 731	631	6.262 423	347	6.263 286	506	6.264 712	1015	6.265 052	504	6.265 589	539	6.265 881	857
6.258 273	549	6.260 742	1335	6.262 424	355	6.263 287	506	6.264 727	261	6.265 053	113	6.265 590	539	6.265 881	1228
6.258 322	773	6.260 743	1335	6.262 425	347	6.263 288	506	6.264 728	261	6.265 054	113	6.265 591	539	6.265 882	857
6.258 368	1034	6.260 750	290	6.262 426	347	6.263 290	506	6.264 729	261	6.265 055	504	6.265 592	441	6.265 882	1228
6.258 369	1034	6.260 751	290	6.262 427	347	6.263 335	789	6.264 730	261	6.265 056	504	6.265 593	452	6.265 883	857
6.258 375	1034	6.260 874	134	6.262 428	347	6.263 368	512	6.264 731	261	6.265 057	504	6.265 594	452	6.265 883	1228
6.258 376	1034	6.260 896	355	6.262 429	347	6.263 410	428	6.264 732	261	6.265 058	504	6.265 595	452	6.265 900	441
6.258 415	608	6.260 903	233	6.262 430	347	6.263 411	428	6.264 733	261	6.265 059	113	6.265 596	452	6.265 901	441
6.258 416	608	6.260 922	519	6.262 431	347	6.263 420	421	6.264 734	261	6.265 060	113	6.265 597	452	6.265 902	538
6.258 417	608	6.260 923	519	6.262 447	721	6.263 430	412	6.264 735	261	6.265 061	500	6.265 598	453	6.265 903	538
6.258 446	924	6.260 924	519	6.262 468	354	6.263 431	412	6.264 740	356	6.265 062	500	6.265 599	453	6.265 906	1176
6.258 472	1256	6.260 925	519	6.262 513	1344	6.263 435	412	6.264 741	356	6.265 142	1034	6.265 601	336	6.265 906	1177
6.258 570	1253	6.260 926	519	6.262 520	843	6.263 440	429	6.264 742	354	6.265 200	1052	6.265 603	286	6.265 907	1177
6.258 629	962	6.261 006	179	6.262 521	843	6.263 441	429	6.264 743	354	6.265 201	1052	6.265 604	286	6.266 051	1376
6.258 630	962	6.261 010	129	6.262 522	843	6.263 488	1294	6.264 744	1156	6.265 202	1052	6.265 612	286	6.266 071	915
6.258 682	577	6.261 011	129	6.262 523	843	6.263 489	1294	6.264 745	1156	6.265 203	1052	6.265 613	286	6.266 071	914
6.258 683	590	6.261 028	1357	6.262 524	843	6.263 490	459	6.264 746	1159	6.265 212	1288	6.265 614	286	6.266 071	914
6.258 684	590	6.261 029	1357	6.262 525	843	6.263 491	459	6.264 747	1159	6.265 213	1288	6.265 615	301	6.266 072	914
6.258 685	590	6.261 030	1357	6.262 526	843	6.263 510	625	6.264 748	1159	6.265 214	649	6.265 619	301	6.266 072	914
6.258 692	599	6.261 031	1357	6.262 527	843	6.263 511	625	6.264 749	1159	6.265 214	1281	6.265 620	299	6.266 074	358
6.258 693	599	6.261 033	549	6.262 528	843	6.263 520	625	6.264 750	1160	6.265 221	464	6.265 621	300	6.266 183	1257
6.258 695	599	6.261 119	941	6.262 529	843	6.263 521	625	6.264 797	1052	6.265 222	464	6.265 622	300	6.266 184	1257
6.258 696	600	6.261 218	924	6.262 530	843	6.263 530	626	6.264 798	1052	6.265 233	1295	6.265 629	331	6.266 185	1227
6.258 697	600	6.261 219	924	6.262 531	843	6.263 531	626	6.264 799	1052	6.265 234	1295	6.265 630	302	6.266 186	1227
6.258 698	600	6.261 220	924	6.262 532	843	6.263 535	626	6.264 800	768	6.265 235	1295	6.265 636	325	6.266 187	1227
6.258 699	600	6.261 221	924	6.262 572	354	6.263 590	465	6.264 801	768	6.265 237	1295	6.265 638	1245	6.266 188	1227
6.258 713	43	6.261 222	924	6.262 573	354	6.263 591	465	6.264 802	768	6.265 238	1295	6.265 639	1245	6.266 189	678
6.258 714	43	6.261 223	924	6.262 574	354	6.263 592	465	6.264 803	768	6.265 239	1295	6.265 640	1245	6.266 190	678
6.258 821	25	6.261 344	163	6.262 575	354	6.263 593	465	6.264 804	768	6.265 241	1295	6.265 641	1245	6.266 191	678
6.258 822	25	6.261 363	251	6.262 576	346	6.263 594	465	6.264 805	768	6.265 242	1295	6.265 642	1245	6.266 192	678
6.258 823	25	6.261 370	163	6.262 577	346	6.263 595	465	6.264 806	768	6.265 243	1295	6.265 643	505	6.266 241	1099
6.258 824	25	6.261 411	1309	6.262 578	346	6.263 596	465	6.264 807	768	6.265 245	1295	6.265 644	505	6.266 249	1224
6.258 825	25	6.261 429	43	6.262 579	346	6.263 597	465	6.264 808	768	6.265 246	1295	6.265 645	505	6.266 250	1224
6.258 826	25	6.261 445	300	6.262 580	346	6.263 598	465	6.264 809	768	6.265 247	318	6.265 646	41	6.266 251	1224
6.258 827	25	6.261 478	941	6.262 581	346	6.263 599	465	6.264 810	768	6.265 248	318	6.265 647	41	6.266 252	1224
6.258 888	752	6.261 507	1248	6.262 582	346	6.263 610	1038	6.264 811	768	6.265 249	318	6.265 648	41	6.266 253	1224
6.258 996	60	6.261 508	1248	6.262 583	346	6.263 611	1038	6.264 812	768	6.265 250	318	6.265 649	41	6.266 254	1224
6.259 054	461	6.261 639	199	6.262 584	346	6.263 620	1038	6.264 813	768	6.265 251	329	6.265 649	513	6.266 255	1224
6.259 079	815	6.261 651	775	6.262 585	346	6.263 621	1038	6.264 814	768	6.265 252	329	6.265 650	41	6.266 256	1224
6.259 080	815	6.261 695	1309	6.262 586	346	6.263 805	356	6.264 815	768	6.265 253	329	6.265 650	513	6.266 257	1224
6.259 209	941	6.261 696	1309	6.262 587	346	6.263 838	1284	6.264 816	768	6.265 254	319	6.265 651	41	6.266 258	1224
6.259 301	789	6.261 697	1309	6.262 588	346	6.263 864	1295	6.264 817	768	6.265 255	319	6.265 651	513	6.266 259	1224
6.259 416	518	6.261 698	1309	6.262 589	346	6.263 882	194	6.264 836	356	6.265 256	319	6.265 652	41	6.266 260	1224
6.259 417	519	6.261 699	1309	6.262 590	346	6.263 883	194	6.264 837	1262	6.265 257	319	6.265 652	513	6.266 261	1224
6.259 530	1104	6.261 704	566	6.262 591	346	6.263 884	194	6.264 838	1262	6.265 258	284	6.265 653	41	6.266 262	1224
6.259 767	904	6.261 705	566	6.262 592	346	6.263 885	194	6.264 839	1262	6.265 259	284	6.265 653	513	6.266 263	1224
6.259 873	368	6.261 706	1309	6.262 593	346	6.263 911	896	6.264 840	1262	6.265 260	284	6.265 654	41	6.266 264	1224
6.259 903	1097	6.261 707	1309	6.262 594	346	6.263 912	896	6.264 841	1262	6.265 261	284	6.265 654	513	6.266 265	1224
6.260 006	705	6.261 708	1309	6.262 595	346	6.263 913	896	6.264 842	1263	6.265 262	284	6.265 655	41	6.266 266	1224
6.260 007	705	6.261 803	941	6.262 596	346	6.263 914	896	6.264 843	1263	6.265 263	330	6.265 655	513	6.266 267	1224
6.260 008	705	6.261 826	458	6.262 597	346	6.263 915	896	6.264 844	1263	6.265 264	330	6.265 656	41	6.266 268	1224
6.260 009	705	6.261 842	269	6.262 598	346	6.263 920	719	6.264 845	1263	6.265 265	330	6.265 656	513	6.266 269	1224
6.260 010	705	6.261 874	289	6.262 637	1029	6.264 042	362	6.264 846	1263	6.265 266	330	6.265 657	646	6.266 270	1224
6.260 015	705	6.261 874	333	6.262 659	729	6.264 055	724	6.264 889	1034	6.265 273	721	6.265 658	646	6.266 271	1224
6.260 016	705	6.261 875	333	6.262 660	729	6.264 066	719	6.264 929	1069	6.265 274	721	6.265 659	646	6.266 272	1224
6.260 017	705	6.261 876	289	6.262 810	726	6.264 087	1016	6.264 938	386	6.265 275	721	6.265 660	646	6.266 273	1224
6.260 020	705	6.261 876	333	6.262 835	347	6.264 110	756	6.264 939	386	6.265 276	721	6.265 661	646	6.266 274	1224
6.260 021	706	6.261 877	333	6.262 836	347	6.264 198	396	6.264 963	985	6.265 277	721	6.265 662	646	6.266 275	913
6.260 029	706	6.261 878	333	6.262 837	347	6.264 198	1103	6.265 000	406	6.265 278	1201	6.265 663	646	6.266 276	913
6.260 031	706	6.261 879	333	6.262 838	347	6.264 212	1034	6.265 001	1292	6.265 279	1201	6.265 664	646	6.266 277	913
6.260 032	706	6.261 880	333	6.262 839	347	6.264 322	1221	6.265 025	504	6.265 280	1201	6.265 665	646	6.266 278	913
6.260 033	706	6.261 881	333	6.262 840	347	6.264 323	1221	6.265 026	504	6.265 281	1273	6.265 666	646	6.266 279	913
6.260 034	706	6.261 882	333	6.262 841	347	6.264 386	354	6.265 027	504	6.265 283	285	6.265 667	513	6.266 300	513
6.260 035	706	6.261 958	42	6.262 842	347	6.264 436	1374	6.265 028	504	6.265 286	320	6.265 668	513	6.266 301	513
6.260 036	706	6.261 959	42	6.262 843	347	6.264 449	1376	6.265 029	504	6.265 288	285	6.265 688	914	6.266 302	511
6.260 037	706	6.261 960	42	6.262 844	347	6.264 451	1373	6.265 030	504	6.265 296	285	6.265 689	914	6.266 303	512
6.260 039	706	6.262 040	721	6.262 845	347	6.264 452	409	6.265 031	504	6.265 299	336	6.265 690	914	6.266 304	511
6.260 040	706	6.262 099	43	6.262 846	347	6.264 468	726	6.265 032	504	6.265 303	636	6.265 691	914	6.266 310	1315
6.260 041	706	6.262 107	996	6.262 847	355	6.264 475	193	6.265 033	113	6.265 408	366	6.265 692	914	6.266 311	1315
6.260 042	706	6.262 140	553	6.262 848	355	6.264 629	27	6.265 034	113	6.265 414	283	6.265 693	985	6.266 312	1315
6.260 043	706	6.262 187	985	6.262 867	898	6.264 631	193	6.265 035	500	6.265 415	283	6.265 694	985	6.266 313	1315
6.260 044	706	6.262 275	898	6.262 868	898	6.264 647	176	6.265 036	500	6.265 416	283	6.265 695	1295	6.266 314	788
6.260 045	706	6.262 289	1376	6.262 869	898	6.264 682	403	6.265 037	504	6.265 417	283	6.265 696	1295	6.266 337	799
6.260 046	706	6.262 306	1013	6.262 991	278	6.264 683	767	6.265 038	504	6.265 418	283	6.265 697	231	6.266 373	1214
6.260 350	993	6.262 314	1160	6.263 036	78	6.264 684	767	6.265 039	504	6.265 442	269	6.265 698	231	6.266 374	1214
6.260 351	993	6.262 320	355	6.263 174	1147	6.264 685	767	6.265 040	504	6.265 466	1387	6.265 700	453	6.266 375	1214
6.260 353	993	6.262 321	347	6.263 193	233	6.264 686	768	6.265 041	504	6.265 467	1387	6.265 701	551	6.266 376	1214
6.260 430	1356	6.262 322	347	6.263 207	264	6.264 687	768	6.265 042	504	6.265 468	1387	6.265 708	555	6.266 377	1214
6.260 435	269	6.262 323	347	6.263 221	1201	6.264 688	768	6.265 043	504	6.265 469	1387	6.265 727	858	6.266 378	1214
6.260 459	512	6.262 324	347	6.263 247	822	6.264 689	768	6.265 044	504	6.265 470	1387	6.265 838	1013	6.266 379	1214
6.260 488	988	6.262 325	347	6.263 260	1034	6.264 690	768	6.265 045	113	6.265 473	1387	6.265 849	137	6.266 380	1214
6.260 493	43	6.262 326	347	6.263 279	240	6.264 691	768	6.265 046	113	6.265 474	1387	6.265 875	1034	6.266 381	1214
6.260 542	512	6.262 327	354	6.263 280	240	6.264 695	768	6.265 047	500	6.265 475	1387	6.265 876	1034	6.266 382	1214
6.260 543	512	6.262 343	898	6.263 282	505	6.264 696	768	6.265 048	500	6.265 520	1219	6.265 877	1034	6.266 383	1214
6.260 544	512	6.262 420	347	6.263 283	505	6.264 697	768	6.265 049	504	6.265 521	1219	6.265 878	1034	6.266 384	1214

6.266 385	1214	6.266 641	231	6.266 915	278	6.267 172	1217	6.267 391	112	6.267 472	1117	6.267 685	718	6.268 104	857
6.266 386	1214	6.266 642	231	6.266 916	249	6.267 173	1217	6.267 392	112	6.267 473	1117	6.267 686	718	6.268 104	1228
6.266 387	1214	6.266 643	231	6.266 916	994	6.267 174	1217	6.267 393	113	6.267 474	1117	6.267 701	963	6.268 105	758
6.266 388	1214	6.266 644	231	6.266 917	249	6.267 175	1217	6.267 394	119	6.267 475	1120	6.267 702	963	6.268 106	521
6.266 389	1214	6.266 645	287	6.266 917	994	6.267 176	1217	6.267 395	119	6.267 476	1120	6.267 703	963	6.268 107	521
6.266 390	1214	6.266 646	287	6.266 918	249	6.267 177	1217	6.267 396	28	6.267 477	1120	6.267 704	963	6.268 108	219
6.266 391	1214	6.266 647	337	6.266 918	994	6.267 178	1217	6.267 397	28	6.267 478	1119	6.267 705	963	6.268 109	219
6.266 392	1214	6.266 668	1066	6.266 919	249	6.267 179	1217	6.267 398	28	6.267 479	1120	6.267 706	963	6.268 110	219
6.266 393	1214	6.266 669	1066	6.266 919	994	6.267 180	688	6.267 399	28	6.267 480	1115	6.267 707	963	6.268 112	522
6.266 394	1214	6.266 670	1066	6.266 920	249	6.267 180	1268	6.267 400	28	6.267 481	1115	6.267 708	963	6.268 113	522
6.266 395	1214	6.266 671	1066	6.266 920	994	6.267 181	688	6.267 401	28	6.267 482	1115	6.267 800	758	6.268 114	522
6.266 396	1214	6.266 672	1066	6.266 921	379	6.267 181	1268	6.267 402	28	6.267 483	1115	6.267 806	24	6.268 115	522
6.266 397	1214	6.266 673	1066	6.266 922	379	6.267 182	688	6.267 403	28	6.267 484	496	6.267 806	1255	6.268 116	522
6.266 398	1214	6.266 674	1067	6.266 984	601	6.267 182	1268	6.267 404	1073	6.267 484	1102	6.267 820	1126	6.268 117	522
6.266 417	1097	6.266 675	1067	6.266 985	614	6.267 183	688	6.267 405	103	6.267 485	496	6.267 821	1126	6.268 118	522
6.266 418	1097	6.266 676	1066	6.266 986	614	6.267 183	1268	6.267 406	1010	6.267 485	1102	6.267 830	1018	6.268 119	522
6.266 419	1097	6.266 677	1068	6.266 987	198	6.267 184	688	6.267 407	1008	6.267 486	496	6.267 831	1018	6.268 120	522
6.266 420	1097	6.266 678	1066	6.266 988	198	6.267 184	1268	6.267 408	1008	6.267 486	1102	6.267 847	718	6.268 121	522
6.266 426	1088	6.266 679	862	6.266 989	198	6.267 185	688	6.267 409	179	6.267 487	496	6.267 848	718	6.268 122	522
6.266 427	1088	6.266 680	862	6.266 990	1069	6.267 185	1268	6.267 410	179	6.267 487	1102	6.267 849	718	6.268 123	522
6.266 428	1088	6.266 681	862	6.266 991	1069	6.267 248	1052	6.267 411	1271	6.267 488	496	6.267 853	619	6.268 124	522
6.266 429	1088	6.266 682	862	6.266 993	962	6.267 249	1052	6.267 412	34	6.267 488	1102	6.267 854	619	6.268 125	522
6.266 430	1088	6.266 706	389	6.266 994	962	6.267 250	1052	6.267 413	34	6.267 489	496	6.267 855	619	6.268 126	522
6.266 431	1088	6.266 707	389	6.266 995	857	6.267 251	1052	6.267 414	34	6.267 489	1102	6.267 856	619	6.268 127	522
6.266 432	1088	6.266 708	974	6.266 995	1228	6.267 252	1052	6.267 415	34	6.267 490	496	6.267 887	615	6.268 128	522
6.266 433	1088	6.266 733	1278	6.266 996	857	6.267 253	1052	6.267 416	34	6.267 490	1102	6.267 888	615	6.268 129	522
6.266 434	1088	6.266 734	1278	6.266 996	1228	6.267 263	349	6.267 417	34	6.267 491	496	6.267 889	615	6.268 130	522
6.266 435	1088	6.266 735	1280	6.266 997	857	6.267 267	1358	6.267 418	34	6.267 491	1102	6.267 890	615	6.268 144	680
6.266 436	1088	6.266 736	1280	6.266 997	1228	6.267 268	1358	6.267 420	1119	6.267 492	496	6.267 891	615	6.268 161	1212
6.266 437	1089	6.266 737	1280	6.266 998	857	6.267 269	1358	6.267 421	1119	6.267 492	1102	6.267 892	615	6.268 162	1212
6.266 438	1089	6.266 739	1280	6.266 998	1228	6.267 270	1358	6.267 422	1119	6.267 493	496	6.267 893	616	6.268 163	1212
6.266 439	1089	6.266 740	1280	6.266 999	857	6.267 271	264	6.267 423	1119	6.267 493	1102	6.267 894	616	6.268 164	1212
6.266 440	1089	6.266 801	1245	6.266 999	1228	6.267 272	264	6.267 424	1112	6.267 494	496	6.267 895	616	6.268 165	1212
6.266 441	1089	6.266 802	1245	6.267 058	1099	6.267 273	264	6.267 425	1112	6.267 494	1102	6.267 896	616	6.268 166	1212
6.266 442	1089	6.266 805	67	6.267 059	1099	6.267 275	264	6.267 426	1112	6.267 495	496	6.267 897	616	6.268 167	1212
6.266 443	1089	6.266 806	67	6.267 060	1099	6.267 277	264	6.267 427	1112	6.267 495	1102	6.267 898	617	6.268 168	1212
6.266 444	1089	6.266 807	364	6.267 061	1099	6.267 278	264	6.267 428	1112	6.267 496	496	6.267 899	617	6.268 169	1212
6.266 445	1089	6.266 807	1074	6.267 065	1055	6.267 279	269	6.267 429	1112	6.267 496	1102	6.267 903	1055	6.268 170	1212
6.266 446	1089	6.266 808	364	6.267 066	1055	6.267 293	1072	6.267 430	1112	6.267 497	496	6.268 000	617	6.268 171	1212
6.266 447	1089	6.266 808	1074	6.267 100	857	6.267 294	1072	6.267 431	1112	6.267 497	1102	6.268 001	617	6.268 172	1212
6.266 448	1089	6.266 809	1301	6.267 100	1228	6.267 295	1072	6.267 432	1112	6.267 498	496	6.268 002	617	6.268 173	1212
6.266 449	1089	6.266 815	27	6.267 111	1338	6.267 296	1072	6.267 433	1112	6.267 498	1102	6.268 003	617	6.268 174	1212
6.266 450	1089	6.266 816	27	6.267 112	1338	6.267 297	1072	6.267 434	1112	6.267 499	496	6.268 004	618	6.268 175	1212
6.266 451	1089	6.266 817	134	6.267 113	1340	6.267 298	1072	6.267 435	1112	6.267 499	1102	6.268 005	618	6.268 176	1269
6.266 452	1089	6.266 818	134	6.267 114	1340	6.267 310	523	6.267 436	1111	6.267 578	1093	6.268 006	618	6.268 177	1269
6.266 453	1089	6.266 825	364	6.267 115	1340	6.267 311	524	6.267 437	1111	6.267 579	1093	6.268 007	618	6.268 178	1269
6.266 454	1089	6.266 825	1074	6.267 116	1341	6.267 312	524	6.267 438	1114	6.267 595	732	6.268 008	618	6.268 179	1269
6.266 455	1089	6.266 840	1095	6.267 117	1342	6.267 313	524	6.267 439	1114	6.267 596	758	6.268 009	618	6.268 180	1269
6.266 456	1089	6.266 864	1333	6.267 118	1342	6.267 314	524	6.267 440	1114	6.267 597	758	6.268 010	618	6.268 181	1269
6.266 457	1089	6.266 865	1333	6.267 119	1342	6.267 315	529	6.267 441	1114	6.267 598	758	6.268 011	618	6.268 182	1269
6.266 458	1089	6.266 866	1334	6.267 120	1342	6.267 317	438	6.267 442	1115	6.267 599	758	6.268 024	1127	6.268 183	1269
6.266 487	1158	6.266 867	1334	6.267 122	1344	6.267 318	438	6.267 443	1115	6.267 600	496	6.268 025	1127	6.268 184	1269
6.266 488	1158	6.266 868	1335	6.267 123	192	6.267 319	210	6.267 444	1115	6.267 600	1102	6.268 026	1128	6.268 185	1269
6.266 489	1159	6.266 869	1335	6.267 124	1348	6.267 320	210	6.267 445	1115	6.267 601	496	6.268 027	1128	6.268 186	1269
6.266 490	1159	6.266 870	1335	6.267 125	1348	6.267 321	210	6.267 446	1115	6.267 601	1102	6.268 028	1128	6.268 187	1269
6.266 491	1156	6.266 871	1337	6.267 126	1348	6.267 322	210	6.267 447	1111	6.267 602	496	6.268 029	1128	6.268 188	1269
6.266 492	1156	6.266 872	1336	6.267 127	1348	6.267 323	210	6.267 448	1111	6.267 602	1102	6.268 030	1128	6.268 189	1269
6.266 493	1156	6.266 873	125	6.267 129	213	6.267 346	1111	6.267 449	1111	6.267 603	496	6.268 031	1128	6.268 193	359
6.266 494	1156	6.266 874	125	6.267 130	213	6.267 347	1111	6.267 450	1116	6.267 603	1102	6.268 032	1128	6.268 195	359
6.266 495	1156	6.266 875	125	6.267 131	213	6.267 348	1111	6.267 451	1116	6.267 604	1119	6.268 033	1128	6.268 196	359
6.266 496	1156	6.266 876	125	6.267 132	399	6.267 350	693	6.267 452	1116	6.267 605	1119	6.268 034	1128	6.268 198	359
6.266 497	1156	6.266 877	125	6.267 133	399	6.267 351	693	6.267 453	1116	6.267 606	1119	6.268 035	1128	6.268 199	359
6.266 498	1156	6.266 878	125	6.267 134	399	6.267 352	693	6.267 454	1116	6.267 607	1110	6.268 036	1128	6.268 201	358
6.266 499	1156	6.266 879	125	6.267 135	399	6.267 353	1050	6.267 455	1116	6.267 608	1110	6.268 037	1128	6.268 202	358
6.266 500	1156	6.266 880	125	6.267 136	399	6.267 361	47	6.267 456	1116	6.267 609	1110	6.268 038	1128	6.268 203	358
6.266 501	1156	6.266 881	125	6.267 137	399	6.267 362	104	6.267 457	1116	6.267 610	1110	6.268 039	1128	6.268 204	358
6.266 502	1156	6.266 882	1055	6.267 138	399	6.267 363	104	6.267 458	178	6.267 611	1110	6.268 040	1128	6.268 205	358
6.266 503	1156	6.266 883	1336	6.267 139	399	6.267 364	104	6.267 458	1120	6.267 612	1110	6.268 041	1128	6.268 206	358
6.266 504	1156	6.266 884	1055	6.267 140	399	6.267 372	517	6.267 459	178	6.267 613	1110	6.268 042	1128	6.268 207	358
6.266 505	1156	6.266 885	1055	6.267 141	399	6.267 373	517	6.267 459	1120	6.267 614	1110	6.268 043	1128	6.268 208	349
6.266 506	1157	6.266 886	1055	6.267 142	399	6.267 374	517	6.267 460	178	6.267 615	1110	6.268 044	1128	6.268 210	349
6.266 507	1157	6.266 887	1055	6.267 160	993	6.267 375	517	6.267 460	1120	6.267 616	1110	6.268 045	1128	6.268 212	349
6.266 508	1157	6.266 888	1055	6.267 160	996	6.267 376	101	6.267 461	178	6.267 617	1110	6.268 048	1143	6.268 213	349
6.266 509	1157	6.266 889	1055	6.267 161	993	6.267 377	101	6.267 461	1120	6.267 618	1110	6.268 090	1227	6.268 215	349
6.266 568	1070	6.266 890	1104	6.267 161	996	6.267 378	101	6.267 462	178	6.267 619	1110	6.268 091	1227	6.268 216	349
6.266 569	983	6.266 893	349	6.267 162	993	6.267 379	100	6.267 462	1120	6.267 620	1110	6.268 092	1227	6.268 217	349
6.266 570	983	6.266 904	1072	6.267 162	996	6.267 380	100	6.267 463	178	6.267 621	1110	6.268 093	1227	6.268 218	349
6.266 571	988	6.266 905	1035	6.267 163	993	6.267 381	100	6.267 463	1120	6.267 622	1110	6.268 099	857	6.268 220	349
6.266 572	988	6.266 906	1031	6.267 163	996	6.267 382	106	6.267 464	178	6.267 623	1110	6.268 099	1228	6.268 222	349
6.266 573	1233	6.266 907	1013	6.267 164	278	6.267 383	106	6.267 464	1120	6.267 635	1175	6.268 100	857	6.268 223	349
6.266 574	1233	6.266 908	1015	6.267 165	278	6.267 384	106	6.267 465	1113	6.267 636	1175	6.268 100	1228	6.268 225	349
6.266 590	507	6.266 909	189	6.267 166	1221	6.267 385	112	6.267 466	1113	6.267 637	1175	6.268 101	857	6.268 226	349
6.266 605	1390	6.266 910	385	6.267 167	1221	6.267 386	112	6.267 467	1113	6.267 638	1175	6.268 101	1228	6.268 240	857
6.266 611	758	6.266 911	385	6.267 168	1221	6.267 387	112	6.267 468	1117	6.267 639	1175	6.268 102	857	6.268 240	1228
6.266 611	761	6.266 912	386	6.267 169	1221	6.267 388	116	6.267 469	1117	6.267 640	1175	6.268 102	1228	6.268 289	189
6.266 611	764	6.266 913	386	6.267 170	1221	6.267 389	116	6.267 470	1117	6.267 641	1174	6.268 103	857	6.268 333	199
6.266 640	231	6.266 914	277	6.267 171	1221	6.267 390	112	6.267 471	1117	6.267 642	1174	6.268 103	1228	6.268 334	199

6.268 358	218	6.314 563	1362	6.801 020	844	6.803 567	100	7.008 972	17	7.024 984	797	7.060 419	1334	7.085 892	1334
6.268 359	218	6.314 566	403	6.801 021	844	6.803 609	311	7.008 973	16	7.025 086	797	7.060 421	1334	7.086 147	1385
6.268 360	218	6.318 848	187	6.801 022	844	6.803 610	311	7.008 974	17	7.025 112	797	7.060 425	1347	7.086 520	1338
6.268 361	218	6.320 887	896	6.801 023	844	6.803 611	311	7.008 975	16	7.025 113	797	7.060 427	1347	7.087 863	1345
6.268 389	965	6.321 027	309	6.801 024	844	6.803 651	1391	7.008 976	16	7.025 114	797	7.060 433	1347	7.087 938	91
6.268 390	965	6.322 097	118	6.801 037	1355	6.803 677	1118	7.008 977	16	7.025 115	797	7.060 437	1342	7.087 939	91
6.268 391	965	6.323 052	229	6.801 073	24	6.803 717	1344	7.008 978	16	7.025 119	797	7.060 457	1345	7.087 940	91
6.268 392	965	6.324 668	187	6.801 073	1255	6.803 740	1158	7.008 999	834	7.047 590	690	7.060 459	1345	7.088 492	986
6.268 393	965	6.401 078	1280	6.801 096	197	6.803 751	1221	7.009 005	834	7.047 591	691	7.060 463	1345	7.089 089	1362
6.300 025	844	6.401 081	1280	6.801 137	1356	6.900 070	142	7.009 008	834	7.047 785	689	7.060 469	1339	7.089 161	1363
6.300 026	844	6.401 082	1280	6.801 219	1048	6.900 098	186	7.009 011	834	7.047 785	1268	7.060 471	1347	7.089 162	1363
6.300 028	844	6.401 093	77	6.801 239	107	6.900 118	107	7.009 014	834	7.047 787	689	7.060 471	1346	7.089 855	1368
6.300 165	716	6.401 134	1280	6.801 332	1047	6.900 119	517	7.009 017	834	7.047 787	1268	7.060 475	1341	7.089 998	1338
6.300 168	606	6.401 135	1280	6.801 361	614	6.900 157	584	7.009 020	834	7.047 789	689	7.060 477	1345	7.090 616	1344
6.300 299	844	6.401 199	1088	6.801 467	766	6.900 233	1339	7.009 023	834	7.047 789	1268	7.060 479	1346	7.090 617	1344
6.300 334	1000	6.401 203	576	6.801 515	950	6.900 312	591	7.009 026	834	7.047 791	689	7.060 678	847	7.091 220	461
6.300 402	1225	6.401 235	200	6.801 571	686	6.900 353	77	7.009 045	126	7.047 791	1268	7.060 690	834	7.190 001	24
6.300 696	1049	6.401 256	167	6.801 608	1363	6.900 361	705	7.009 046	126	7.047 793	689	7.060 691	834	7.190 011	24
6.300 995	172	6.401 362	603	6.801 655	702	6.900 409	1104	7.009 310	91	7.047 793	1268	7.060 692	834	7.190 021	24
6.301 466	1086	6.401 380	1358	6.801 684	505	6.900 428	168	7.017 207	676	7.048 062	77	7.060 693	834	7.190 023	24
6.301 526	221	6.401 428	577	6.801 707	706	6.900 429	168	7.017 224	676	7.048 063	77	7.060 694	834	7.190 028	24
6.301 538	905	6.401 432	613	6.801 727	1341	6.900 430	168	7.017 796	435	7.048 064	77	7.070 048	1279	7.200 075	844
6.301 574	151	6.401 458	91	6.801 789	705	6.900 522	594	7.017 797	435	7.048 065	77	7.071 063	1347	7.200 111	852
6.301 578	1355	6.401 505	705	6.801 854	1253	6.900 523	582	7.018 326	937	7.048 080	1231	7.071 151	1342	7.200 160	576
6.301 604	905	6.401 579	32	6.801 867	1047	6.900 648	606	7.018 327	937	7.048 081	1231	7.072 085	23	7.200 347	574
6.301 637	244	6.401 582	38	6.801 868	1047	6.900 713	1363	7.018 328	937	7.048 082	1231	7.072 146	614	7.200 409	864
6.301 671	1207	6.510 003	907	6.801 871	1280	6.900 722	983	7.018 337	936	7.048 388	689	7.072 310	199	7.200 414	1277
6.301 718	167	6.510 005	1241	6.801 872	1280	6.900 761	168	7.018 338	936	7.048 389	689	7.075 021	68	7.200 433	907
6.301 727	1225	6.510 172	851	6.801 890	1222	6.900 828	577	7.018 339	936	7.048 390	689	7.075 024	300	7.200 457	1256
6.301 732	848	6.510 172	1229	6.801 894	1361	6.900 898	613	7.018 358	934	7.048 391	689	7.075 031	833	7.200 489	601
6.301 841	403	6.510 180	831	6.801 962	599	6.900 937	907	7.018 359	934	7.048 392	689	7.075 941	766	7.200 498	1356
6.302 001	766	6.510 181	831	6.801 977	1105	6.900 963	1347	7.018 360	934	7.048 393	689	7.075 954	676	7.200 508	831
6.302 116	570	6.510 182	831	6.801 978	1105	6.900 991	1355	7.018 361	934	7.048 395	689	7.075 960	1334	7.200 519	704
6.302 247	703	6.510 183	831	6.801 979	1105	6.901 030	999	7.018 362	934	7.048 396	689	7.076 000	766	7.200 573	992
6.302 328	403	6.510 319	536	6.802 032	1280	6.901 143	1392	7.018 363	934	7.048 397	689	7.076 101	766	7.200 575	702
6.302 336	689	6.510 335	851	6.802 057	705	6.901 167	1229	7.018 364	934	7.048 662	1253	7.076 124	676	7.200 775	938
6.302 336	1268	6.510 335	1229	6.802 214	705	6.901 168	1229	7.018 365	934	7.048 663	1253	7.076 270	676	7.200 776	938
6.302 391	825	6.510 380	1047	6.802 215	705	6.901 208	704	7.018 397	847	7.048 731	692	7.076 312	61	7.200 809	1336
6.302 596	704	6.510 405	26	6.802 229	1208	6.901 244	704	7.018 398	847	7.048 732	692	7.076 456	797	7.210 063	1253
6.302 598	704	6.510 405	647	6.802 266	702	6.901 259	992	7.018 413	847	7.048 733	692	7.076 570	937	7.210 113	1356
6.302 667	1208	6.510 709	1137	6.802 293	705	6.901 328	332	7.018 680	581	7.048 734	692	7.076 593	936	7.210 114	1356
6.302 759	403	6.510 849	60	6.802 391	1355	6.901 329	1222	7.018 681	581	7.048 801	995	7.076 778	1336	7.300 006	1280
6.302 852	1049	6.510 856	1277	6.802 431	706	6.901 399	831	7.018 936	614	7.048 802	995	7.076 849	1279	7.300 124	1279
6.302 979	200	6.510 864	905	6.802 474	1279	6.901 466	403	7.018 947	614	7.050 202	1347	7.077 212	511	7.300 156	1279
6.303 032	848	6.510 909	171	6.802 498	907	6.901 567	52	7.018 948	614	7.050 285	1345	7.077 524	937	7.300 174	1343
6.303 189	613	6.700 069	1208	6.802 513	949	6.901 617	570	7.018 955	614	7.050 286	1346	7.077 661	42	7.300 175	1343
6.303 190	613	6.700 111	1355	6.802 537	1086	6.901 622	326	7.019 150	577	7.050 759	1339	7.077 849	702	7.300 197	1279
6.303 229	1355	6.700 357	307	6.802 598	1355	6.901 629	326	7.019 155	577	7.051 039	1347	7.077 852	42	7.300 223	247
6.303 297	1370	6.700 568	706	6.802 614	169	6.901 653	187	7.019 156	577	7.051 056	1362	7.077 915	796	7.300 224	247
6.303 525	78	6.700 690	1383	6.802 646	1221	6.901 670	326	7.019 181	570	7.051 092	42	7.078 722	91	7.300 349	702
6.303 738	844	6.700 747	1360	6.802 647	1221	6.901 671	326	7.019 182	570	7.051 404	1344	7.078 821	708	7.300 388	937
6.303 743	848	6.700 903	831	6.802 700	196	6.901 799	576	7.019 244	574	7.052 184	1347	7.078 822	708	7.300 389	938
6.303 795	170	6.701 485	1279	6.802 726	705	6.901 807	509	7.019 272	575	7.052 186	1345	7.079 366	702	7.300 390	938
6.303 841	172	6.702 588	1256	6.802 727	705	6.901 915	1280	7.019 348	1255	7.052 895	42	7.079 431	1363	7.300 555	1391
6.303 898	198	6.702 724	1218	6.802 824	60	6.901 962	583	7.019 669	438	7.052 896	42	7.079 432	1363	7.300 557	702
6.303 899	198	6.704 046	1392	6.802 833	1229	6.901 984	975	7.019 670	438	7.053 349	702	7.079 511	938	7.300 580	1279
6.303 926	1356	6.704 091	1384	6.802 883	1391	6.902 044	1333	7.019 672	438	7.053 350	702	7.079 563	1025	7.301 382	461
6.303 988	831	6.704 458	1384	6.802 901	326	6.902 222	1360	7.019 673	438	7.053 718	648	7.079 568	704	7.380 421	648
6.304 147	107	6.705 831	403	6.802 902	326	6.902 292	20	7.019 675	438	7.053 930	42	7.079 617	1360	7.380 422	648
6.304 307	181	6.705 832	403	6.802 927	1086	6.902 308	643	7.020 037	970	7.053 933	42	7.079 676	1279	7.380 423	648
6.304 322	210	6.800 124	844	6.802 957	590	6.902 309	643	7.020 038	970	7.054 161	23	7.079 677	1279	7.400 045	461
6.304 378	757	6.800 126	172	6.802 978	576	6.902 310	643	7.020 272	1020	7.054 864	299	7.079 679	702	7.400 375	1392
6.304 822	1104	6.800 139	188	6.803 016	703	6.902 328	804	7.020 278	1020	7.055 107	692	7.079 716	1279	7.400 537	1362
6.304 828	1355	6.800 181	1225	6.803 017	594	6.902 419	1346	7.020 278	1270	7.055 383	102	7.079 737	91	7.400 768	938
6.304 882	896	6.800 202	570	6.803 043	706	6.902 444	599	7.020 294	852	7.055 412	936	7.079 801	826	7.400 939	1026
6.304 939	584	6.800 204	172	6.803 050	706	6.902 445	599	7.020 295	852	7.055 486	1342	7.079 854	61	7.401 066	1333
6.305 117	511	6.800 214	570	6.803 056	706	6.902 461	904	7.020 330	30	7.055 892	1384	7.080 092	1383	7.401 066	1338
6.305 430	848	6.800 215	570	6.803 067	409	6.902 600	1357	7.021 486	62	7.055 909	938	7.080 155	676	7.401 143	1385
6.305 840	705	6.800 228	704	6.803 092	85	6.902 601	1357	7.021 547	1256	7.056 751	1346	7.080 208	511	7.401 474	1362
6.306 078	757	6.800 235	570	6.803 101	1221	6.902 602	1357	7.021 548	1256	7.056 849	1394	7.080 450	1345	7.401 744	1335
6.306 164	172	6.800 239	594	6.803 102	510	6.902 603	1357	7.021 549	1256	7.056 914	1363	7.080 947	1345	7.401 744	1337
6.306 275	574	6.800 337	576	6.803 102	1121	6.902 604	1357	7.021 550	1256	7.058 005	511	7.081 898	1369	7.401 744	1338
6.306 285	581	6.800 353	118	6.803 126	896	6.902 605	1357	7.021 797	570	7.058 102	708	7.082 062	936	7.401 744	1340
6.306 286	574	6.800 382	24	6.803 127	896	7.008 959	126	7.021 838	574	7.058 103	708	7.082 063	938	7.401 840	1345
6.306 550	614	6.800 382	1255	6.803 174	1335	7.008 959	503	7.021 840	574	7.058 120	511	7.083 308	1385	7.402 218	1362
6.306 551	614	6.800 399	703	6.803 183	43	7.008 960	126	7.022 042	933	7.058 142	1342	7.083 478	766	7.408 401	836
6.306 619	766	6.800 451	1056	6.803 185	905	7.008 960	503	7.022 043	933	7.058 143	1342	7.083 522	708	7.510 053	1342
6.307 233	896	6.800 620	24	6.803 270	705	7.008 961	126	7.022 044	933	7.058 640	91	7.083 595	1349	7.510 076	1279
6.307 252	167	6.800 620	1255	6.803 320	1385	7.008 961	503	7.023 176	404	7.059 540	986	7.083 596	1349	7.510 157	797
6.307 327	576	6.800 621	24	6.803 323	644	7.008 962	126	7.023 177	404	7.059 541	938	7.083 665	1360	7.510 242	831
6.307 820	576	6.800 621	1255	6.803 324	644	7.008 962	503	7.023 178	404	7.059 689	1279	7.084 720	1349	7.510 295	461
6.307 821	576	6.800 632	1000	6.803 325	644	7.008 966	17	7.023 179	404	7.059 690	1279	7.084 918	1391	7.510 296	461
6.307 822	576	6.800 667	999	6.803 371	100	7.008 967	16	7.023 754	687	7.059 691	1279	7.085 047	1361	7.510 391	871
6.307 823	576	6.800 724	197	6.803 384	1353	7.008 968	17	7.024 558	826	7.059 745	1391	7.085 191	601	7.510 426	935
6.308 831	896	6.800 733	170	6.803 417	1356	7.008 969	16	7.024 635	796	7.059 827	702	7.085 238	1334	7.510 427	935
6.308 832	896	6.801 018	844	6.803 543	574	7.008 970	17	7.024 658	796	7.059 854	512	7.085 372	42	7.510 455	1203
6.311 677	187	6.801 019	844	6.803 562	1219	7.008 971	16	7.024 659	796	7.059 855	512	7.085 511	1338	7.510 456	1203

7.510 686	1218	7.620 305	199	7.634 641	1055	7.670 287	1373	7.970 000	659	9.000 110	99	9.001 351	951	9.003 448	1335
7.510 691	705	7.620 719	107	7.634 697	123	7.670 774	1389	7.970 001	659	9.000 111	99	9.001 352	951	9.003 451	1336
7.510 796	1385	7.620 724	1337	7.634 892	147	7.671 016	1016	7.970 002	659	9.000 112	99	9.001 353	951	9.003 452	1345
7.600 059	704	7.620 817	510	7.635 031	1285	7.671 305	264	7.970 029	36	9.000 113	99	9.001 354	951	9.003 453	1345
7.600 162	702	7.620 828	1338	7.635 086	217	7.671 426	347	7.970 032	659	9.000 114	99	9.001 355	949	9.003 454	1345
7.600 324	24	7.621 765	1337	7.635 087	217	7.671 856	356	7.970 033	662	9.000 115	99	9.001 356	950	9.003 455	1346
7.600 324	1255	7.622 228	1340	7.635 088	217	7.671 880	726	7.970 045	659	9.000 116	99	9.001 357	950	9.003 456	1346
7.600 405	24	7.622 477	501	7.635 089	217	7.671 903	1067	7.970 057	659	9.000 150	101	9.001 358	950	9.003 457	1346
7.600 405	1255	7.622 596	610	7.635 711	1204	7.671 919	354	7.970 058	659	9.000 151	101	9.001 359	950	9.003 458	1346
7.600 688	1253	7.622 815	604	7.635 816	594	7.672 072	752	7.970 090	107	9.000 152	101	9.001 362	949	9.003 460	1345
7.601 147	591	7.623 018	1372	7.635 868	353	7.672 290	775	7.970 106	662	9.000 153	101	9.001 363	949	9.003 465	1391
7.601 585	785	7.623 040	1219	7.635 908	603	7.672 991	786	7.970 134	652	9.000 154	101	9.001 364	950	9.003 466	1344
7.601 891	1221	7.623 809	222	7.636 288	1356	7.700 004	610	7.970 139	652	9.000 204	101	9.001 365	950	9.003 470	1348
7.602 492	1280	7.623 809	364	7.636 628	52	7.850 009	1345	7.970 213	671	9.000 205	101	9.001 366	950	9.003 471	1348
7.602 538	107	7.623 810	222	7.636 721	1013	7.850 010	1346	7.970 213	1367	9.000 206	101	9.001 367	950	9.003 473	1348
7.603 129	1028	7.623 810	364	7.637 274	124	7.900 066	309	7.970 224	212	9.000 208	101	9.001 368	950	9.003 474	1391
7.603 864	614	7.623 838	1372	7.638 719	738	7.900 085	1012	7.970 225	212	9.000 210	101	9.001 369	950	9.003 475	1348
7.603 959	1207	7.623 881	222	7.638 738	833	7.900 098	1039	7.970 226	212	9.000 212	101	9.001 370	950	9.003 476	1391
7.604 109	702	7.623 881	364	7.638 923	998	7.900 140	536	7.970 241	594	9.000 216	101	9.001 371	950	9.003 477	1391
7.604 410	200	7.623 893	52	7.639 112	1377	7.900 288	1218	7.970 258	671	9.000 220	101	9.001 400	953	9.003 478	1391
7.604 610	601	7.623 930	496	7.639 439	425	7.900 289	1218	7.970 258	1367	9.000 225	101	9.001 401	953	9.003 479	1363
7.604 787	668	7.623 930	1103	7.639 613	950	7.900 427	523	7.970 266	652	9.000 230	101	9.001 402	953	9.003 480	1333
7.605 462	269	7.623 934	510	7.639 971	748	7.900 483	608	7.970 267	652	9.000 304	101	9.001 403	953	9.003 481	1333
7.605 582	170	7.624 167	205	7.639 994	537	7.900 484	608	7.970 268	652	9.000 305	101	9.001 404	953	9.003 482	1342
7.606 374	24	7.624 168	205	7.650 037	344	7.900 486	608	7.970 269	652	9.000 306	101	9.001 405	953	9.003 484	1334
7.606 375	24	7.624 578	303	7.650 112	190	7.900 515	292	7.970 271	659	9.000 308	101	9.001 406	953	9.003 487	1360
7.606 811	706	7.624 685	1302	7.651 616	907	7.900 515	322	7.970 278	594	9.000 310	101	9.001 410	953	9.003 488	1360
7.606 907	613	7.625 012	1346	7.651 746	67	7.900 620	1196	7.970 286	671	9.000 312	101	9.001 411	953	9.003 491	1391
7.606 908	613	7.625 237	353	7.651 831	603	7.910 125	1343	7.970 286	1367	9.000 316	101	9.001 412	953	9.003 492	1391
7.607 198	24	7.625 555	222	7.651 871	24	7.910 240	285	7.970 290	326	9.000 320	101	9.001 420	952	9.003 493	1391
7.607 198	1255	7.625 555	364	7.651 871	1255	7.920 043	1192	7.970 339	662	9.000 325	101	9.001 421	952	9.003 494	1391
7.607 297	1388	7.625 884	497	7.651 872	24	7.920 120	644	7.970 385	671	9.000 330	101	9.001 422	952	9.003 495	1392
7.607 298	1388	7.626 118	604	7.651 872	1255	7.920 135	1195	7.970 385	1367	9.000 460	102	9.001 423	952	9.003 496	1391
7.607 378	904	7.626 193	1015	7.651 881	168	7.930 022	1199	7.970 387	671	9.000 461	102	9.001 424	952	9.003 497	1391
7.607 431	704	7.626 193	1016	7.652 008	603	7.930 023	1199	7.970 387	1367	9.000 462	102	9.001 425	952	9.003 498	1392
7.607 632	704	7.626 372	1047	7.652 355	1388	7.930 030	582	7.970 389	670	9.000 470	102	9.001 426	952	9.003 500	1394
7.607 778	24	7.626 422	251	7.652 552	24	7.930 095	1201	7.970 389	1366	9.000 471	102	9.001 427	952	9.003 511	1348
7.607 778	1255	7.626 542	197	7.652 552	1255	7.930 139	133	7.970 402	671	9.000 472	102	9.001 428	952	9.003 535	1341
7.607 913	577	7.626 604	384	7.652 924	317	7.930 215	461	7.970 402	1367	9.000 941	247	9.001 429	952	9.003 536	1342
7.607 933	904	7.626 614	384	7.653 124	497	7.930 246	1210	7.970 516	904	9.000 945	247	9.001 430	952	9.003 537	1343
7.608 012	686	7.626 764	1098	7.653 145	1387	7.930 290	835	7.970 541	904	9.000 956	244	9.001 431	952	9.003 538	1343
7.608 144	299	7.626 766	1098	7.653 251	238	7.930 291	835	7.970 571	659	9.000 996	244	9.001 432	952	9.003 540	1343
7.608 160	1338	7.627 062	1029	7.653 307	190	7.930 366	1336	7.970 573	608	9.001 015	949	9.001 433	952	9.003 541	1348
7.608 178	571	7.627 142	1373	7.653 714	624	7.930 401	857	7.970 591	659	9.001 018	949	9.001 434	952	9.003 542	1348
7.608 352	102	7.627 340	1128	7.654 045	107	7.930 401	1228	7.970 611	659	9.001 022	949	9.002 601	54	9.003 543	1347
7.608 837	1284	7.627 352	1128	7.654 046	107	7.930 403	857	7.970 688	512	9.001 054	498	9.002 602	54	9.003 544	1347
7.610 545	706	7.627 795	725	7.654 202	1181	7.930 403	1228	7.970 696	512	9.001 075	514	9.002 603	54	9.003 545	1347
7.610 567	702	7.628 015	1253	7.655 158	297	7.930 430	524	7.970 740	461	9.001 076	514	9.002 606	54	9.003 548	1341
7.610 631	585	7.628 209	584	7.655 427	500	7.930 431	524	7.970 742	662	9.001 077	514	9.002 607	54	9.003 549	1342
7.610 673	576	7.628 259	1044	7.655 618	250	7.939 057	1238	7.970 783	512	9.001 078	514	9.002 608	54	9.003 557	1334
7.610 674	576	7.628 820	1374	7.655 865	385	7.939 058	1238	7.970 790	662	9.001 079	514	9.002 611	58	9.003 558	1334
7.612 290	1280	7.628 821	1373	7.656 131	102	7.939 127	1191	7.970 892	1337	9.001 080	514	9.002 612	58	9.003 559	1334
7.612 465	52	7.629 194	307	7.656 279	18	7.939 128	1191	7.970 900	1008	9.001 081	514	9.002 670	54	9.003 560	1337
7.612 486	1047	7.629 195	305	7.656 640	748	7.939 129	1191	7.970 924	565	9.001 082	514	9.002 670	58	9.003 561	1337
7.612 486	1046	7.629 381	1105	7.656 680	730	7.939 153	260	7.971 006	199	9.001 083	514	9.002 671	54	9.003 562	1337
7.612 528	904	7.629 417	591	7.656 681	730	7.939 161	260	7.980 024	1098	9.001 084	514	9.002 671	58	9.003 563	1337
7.613 087	1333	7.629 440	608	7.656 739	239	7.939 170	260	7.980 025	1098	9.001 085	514	9.002 721	55	9.003 564	1340
7.613 330	1340	7.629 636	187	7.656 840	776	7.939 174	263	7.980 027	1098	9.001 086	514	9.002 722	55	9.003 565	1340
7.613 388	1333	7.629 638	187	7.656 858	1180	7.939 193	263	7.980 101	1096	9.001 110	948	9.002 723	55	9.003 566	1340
7.613 795	24	7.629 639	187	7.656 860	341	7.939 195	263	7.980 357	571	9.001 111	949	9.003 032	1074	9.003 567	1389
7.613 796	584	7.629 763	998	7.657 006	614	7.939 204	263	7.980 358	571	9.001 112	949	9.003 033	1074	9.003 568	1389
7.614 642	577	7.629 781	1240	7.657 852	614	7.939 213	263	7.980 484	1097	9.001 115	949	9.003 240	1074	9.003 569	1389
7.615 156	1348	7.629 955	600	7.658 006	299	7.939 215	263	7.980 485	1097	9.001 118	949	9.003 301	1075	9.003 572	1387
7.615 367	917	7.630 104	199	7.658 057	353	7.939 223	263	7.980 791	577	9.001 130	949	9.003 302	1075	9.003 576	1387
7.615 379	575	7.630 153	114	7.658 119	1357	7.939 331	263	7.980 806	565	9.001 132	949	9.003 303	1075	9.003 579	1387
7.615 661	757	7.630 235	614	7.658 120	1357	7.939 339	263	7.980 807	565	9.001 133	949	9.003 304	1075	9.003 586	1387
7.615 715	1337	7.630 287	613	7.658 531	1015	7.939 351	263	7.980 808	565	9.001 134	951	9.003 305	1074	9.003 587	1387
7.616 171	100	7.630 288	613	7.658 803	904	7.939 352	263	7.980 809	565	9.001 135	949	9.003 306	1075	9.003 588	1387
7.616 277	590	7.630 409	936	7.658 851	678	7.939 353	263	7.981 175	461	9.001 137	949	9.003 320	1074	9.003 590	1388
7.616 476	200	7.630 506	1229	7.658 877	1034	7.940 261	346	7.981 345	511	9.001 138	949	9.003 367	1348	9.003 591	1388
7.616 566	686	7.630 646	704	7.659 027	652	7.940 273	360	7.981 360	935	9.001 210	949	9.003 368	1348	9.003 592	1388
7.616 653	1343	7.630 775	920	7.659 228	843	7.940 304	1375	7.981 381	948	9.001 260	950	9.003 369	1348	9.003 593	1388
7.616 655	1343	7.630 911	1387	7.659 239	843	7.940 344	725	9.000 030	392	9.001 335	950	9.003 374	1074	9.003 594	1388
7.616 709	344	7.631 201	497	7.659 240	843	7.960 500	68	9.000 031	392	9.001 335	952	9.003 375	1074	9.003 595	1388
7.616 800	100	7.631 205	518	7.659 241	843	7.960 501	68	9.000 032	99	9.001 336	950	9.003 376	1074	9.003 596	1388
7.616 898	1343	7.631 961	852	7.659 242	843	7.960 502	68	9.000 034	99	9.001 336	952	9.003 425	1345	9.003 597	1388
7.617 935	192	7.631 964	553	7.659 384	1285	7.960 503	68	9.000 038	99	9.001 337	950	9.003 426	1345	9.003 657	1382
7.618 013	1067	7.631 971	556	7.659 854	1013	7.960 504	68	9.000 041	99	9.001 337	952	9.003 430	1345	9.003 658	1382
7.618 212	1067	7.632 226	1343	7.659 958	1159	7.960 505	68	9.000 044	99	9.001 338	950	9.003 434	1345	9.003 659	1382
7.618 375	1070	7.632 543	38	7.660 052	622	7.960 506	68	9.000 049	99	9.001 338	952	9.003 435	1333	9.003 662	1382
7.618 482	313	7.632 597	309	7.660 053	622	7.960 507	68	9.000 054	99	9.001 340	949	9.003 435	1338	9.003 663	1382
7.619 615	282	7.632 641	85	7.660 217	641	7.960 508	68	9.000 059	99	9.001 341	949	9.003 441	1339	9.003 664	1382
7.619 653	214	7.632 676	448	7.660 218	641	7.960 509	68	9.000 063	99	9.001 345	950	9.003 442	1341	9.003 665	1382
7.619 757	353	7.633 064	1348	7.660 305	678	7.960 510	68	9.000 074	100	9.001 346	951	9.003 443	1333	9.003 667	1382
7.619 784	1359	7.633 482	380	7.660 408	1034	7.960 511	68	9.000 075	100	9.001 347	950	9.003 444	1333	9.003 668	1382
7.619 815	782	7.633 920	344	7.661 153	234	7.960 512	68	9.000 076	100	9.001 347	952	9.003 445	1345	9.003 669	1382
7.619 816	783	7.634 155	1220	7.661 159	145	7.960 513	68	9.000 077	100	9.001 349	951	9.003 446	1339	9.003 670	1382

9.003 671	1382	9.004 154	400	9.005 172	188	9.005 422	212	9.006 007	185	9.010 475	1251	9.011 508	613	9.011 805	570
9.003 672	1382	9.004 155	400	9.005 173	188	9.005 423	212	9.006 008	185	9.010 476	1251	9.011 510	613	9.011 810	570
9.003 673	1382	9.004 156	400	9.005 174	188	9.005 424	212	9.006 009	185	9.010 477	1251	9.011 521	613	9.011 815	570
9.003 674	1382	9.004 157	400	9.005 175	188	9.005 427	215	9.006 010	184	9.010 478	1251	9.011 525	613	9.011 827	571
9.003 676	1382	9.004 158	400	9.005 176	212	9.005 446	226	9.006 011	184	9.010 481	1257	9.011 526	613	9.011 828	571
9.003 677	1382	9.004 159	400	9.005 177	212	9.005 447	226	9.006 012	184	9.010 482	1257	9.011 528	613	9.011 829	571
9.003 678	1382	9.004 160	400	9.005 180	219	9.005 451	226	9.006 020	187	9.010 512	1251	9.011 530	613	9.011 835	570
9.003 679	1382	9.004 161	400	9.005 190	219	9.005 452	226	9.006 120	185	9.010 601	27	9.011 532	613	9.011 840	570
9.003 682	1382	9.004 162	400	9.005 199	220	9.005 456	196	9.006 127	185	9.010 602	27	9.011 533	613	9.011 845	570
9.003 683	1382	9.004 163	400	9.005 200	219	9.005 458	196	9.006 128	185	9.010 603	27	9.011 545	613	9.011 850	570
9.003 684	1382	9.004 305	400	9.005 201	1066	9.005 500	201	9.006 129	185	9.010 605	27	9.011 548	613	9.011 855	570
9.003 685	1382	9.004 310	400	9.005 202	1066	9.005 501	201	9.006 130	185	9.010 606	27	9.011 603	613	9.011 860	570
9.003 686	1382	9.004 315	400	9.005 203	1066	9.005 502	201	9.006 131	190	9.010 608	27	9.011 605	613	9.011 864	570
9.003 687	1382	9.004 320	400	9.005 204	1066	9.005 503	201	9.006 306	217	9.010 609	27	9.011 609	613	9.011 865	570
9.003 688	1382	9.004 330	400	9.005 205	1066	9.005 504	201	9.006 307	217	9.010 610	27	9.011 613	613	9.011 866	570
9.003 689	1382	9.004 340	400	9.005 206	220	9.005 505	201	9.006 308	217	9.010 611	27	9.011 623	613	9.011 867	570
9.003 691	1382	9.004 350	400	9.005 207	220	9.005 506	201	9.006 371	207	9.010 612	26	9.011 625	613	9.011 868	570
9.003 692	1382	9.004 370	400	9.005 208	220	9.005 507	201	9.006 372	207	9.010 612	1257	9.011 629	613	9.011 869	570
9.003 693	1382	9.004 400	401	9.005 209	220	9.005 508	201	9.006 373	207	9.010 613	26	9.011 630	613	9.011 870	570
9.003 694	1382	9.004 561	401	9.005 222	222	9.005 509	201	9.006 374	207	9.010 613	1257	9.011 642	611	9.011 875	570
9.003 697	1382	9.004 568	401	9.005 222	364	9.005 511	201	9.006 375	207	9.010 614	27	9.011 643	611	9.011 877	570
9.003 698	1382	9.004 575	401	9.005 223	222	9.005 512	201	9.006 376	207	9.010 620	26	9.011 644	611	9.011 880	570
9.003 699	1382	9.004 582	401	9.005 223	364	9.005 513	201	9.006 377	207	9.010 620	1257	9.011 645	611	9.011 885	570
9.003 700	1382	9.004 589	401	9.005 246	223	9.005 514	201	9.006 378	207	9.010 632	731	9.011 647	611	9.011 896	1113
9.003 701	1382	9.004 640	401	9.005 247	223	9.005 515	201	9.006 379	208	9.010 633	731	9.011 653	611	9.011 897	1113
9.003 702	1382	9.004 650	401	9.005 250	224	9.005 516	201	9.006 380	208	9.010 634	731	9.011 655	611	9.011 898	1113
9.003 703	1382	9.004 651	401	9.005 260	224	9.005 531	201	9.006 381	208	9.010 635	731	9.011 656	611	9.011 901	573
9.003 704	1382	9.004 652	401	9.005 266	213	9.005 541	201	9.006 382	208	9.010 636	731	9.011 657	611	9.011 902	573
9.003 706	1382	9.004 653	401	9.005 267	213	9.005 542	201	9.006 383	204	9.010 637	731	9.011 658	611	9.011 903	573
9.003 707	1382	9.004 654	401	9.005 268	213	9.005 543	201	9.006 384	204	9.010 638	731	9.011 660	611	9.011 904	573
9.003 708	1382	9.004 655	401	9.005 269	213	9.005 544	201	9.006 385	204	9.010 639	731	9.011 663	610	9.011 905	573
9.003 709	1383	9.004 656	401	9.005 270	213	9.005 545	201	9.006 386	204	9.010 640	731	9.011 664	610	9.011 906	573
9.003 710	1383	9.004 657	401	9.005 271	223	9.005 546	201	9.006 891	225	9.010 641	731	9.011 665	610	9.011 907	573
9.003 715	1383	9.004 710	402	9.005 272	223	9.005 547	201	9.006 892	225	9.010 691	730	9.011 666	610	9.011 908	573
9.003 716	1383	9.004 900	402	9.005 275	211	9.005 549	201	9.006 893	224	9.010 692	730	9.011 667	610	9.011 910	573
9.003 719	1383	9.005 001	235	9.005 276	211	9.005 555	200	9.006 902	242	9.010 693	730	9.011 668	610	9.011 915	573
9.003 720	1383	9.005 002	235	9.005 277	211	9.005 558	200	9.006 903	242	9.010 694	730	9.011 675	610	9.011 920	573
9.003 723	1383	9.005 008	235	9.005 278	211	9.005 559	200	9.010 012	1257	9.010 770	861	9.011 676	610	9.011 933	574
9.003 724	1383	9.005 009	235	9.005 279	211	9.005 561	200	9.010 013	1257	9.010 781	861	9.011 677	610	9.011 935	574
9.003 727	1383	9.005 011	235	9.005 307	217	9.005 563	200	9.010 014	1257	9.010 782	861	9.011 678	610	9.011 936	574
9.003 728	1383	9.005 014	235	9.005 308	217	9.005 565	200	9.010 016	1257	9.010 783	861	9.011 680	610	9.011 938	574
9.003 733	1383	9.005 015	235	9.005 309	217	9.005 566	200	9.010 018	1257	9.010 784	861	9.011 685	610	9.011 939	574
9.003 734	1383	9.005 017	235	9.005 310	217	9.005 570	200	9.010 019	1257	9.010 793	861	9.011 686	610	9.011 941	574
9.003 738	1383	9.005 020	235	9.005 311	217	9.005 575	197	9.010 032	1255	9.010 794	861	9.011 687	610	9.011 942	574
9.003 739	1383	9.005 046	201	9.005 312	208	9.005 577	197	9.010 036	1255	9.010 795	861	9.011 688	610	9.011 943	574
9.003 742	1383	9.005 047	201	9.005 313	208	9.005 580	197	9.010 037	1255	9.010 800	861	9.011 690	610	9.011 945	574
9.003 743	1383	9.005 048	201	9.005 314	208	9.005 581	197	9.010 039	1255	9.010 801	861	9.011 693	624	9.011 946	574
9.003 746	1383	9.005 049	201	9.005 315	208	9.005 585	197	9.010 040	1255	9.011 009	54	9.011 694	624	9.011 947	574
9.003 747	1383	9.005 061	201	9.005 339	205	9.005 586	197	9.010 041	1255	9.011 010	54	9.011 695	624	9.011 949	574
9.003 751	1383	9.005 065	190	9.005 340	205	9.005 587	197	9.010 042	1255	9.011 025	54	9.011 696	624	9.011 950	574
9.003 752	1383	9.005 066	192	9.005 341	205	9.005 590	198	9.010 043	1255	9.011 060	54	9.011 697	624	9.011 951	574
9.003 755	1383	9.005 067	192	9.005 342	205	9.005 592	198	9.010 044	1255	9.011 069	54	9.011 698	624	9.011 952	574
9.003 756	1383	9.005 073	186	9.005 343	205	9.005 593	198	9.010 045	1255	9.011 071	54	9.011 703	610	9.011 953	575
9.003 760	1383	9.005 074	186	9.005 344	209	9.005 594	198	9.010 046	1257	9.011 072	54	9.011 704	610	9.011 955	575
9.003 761	1383	9.005 075	186	9.005 345	209	9.005 595	198	9.010 048	1257	9.011 076	54	9.011 705	610	9.011 956	575
9.003 890	263	9.005 078	188	9.005 346	209	9.005 596	198	9.010 050	1250	9.011 078	54	9.011 706	610	9.011 957	575
9.003 901	145	9.005 079	189	9.005 347	209	9.005 617	197	9.010 060	1250	9.011 102	55	9.011 707	610	9.011 958	575
9.003 906	48	9.005 090	189	9.005 348	209	9.005 670	195	9.010 070	1250	9.011 103	55	9.011 708	610	9.011 959	575
9.003 910	145	9.005 100	188	9.005 349	203	9.005 671	195	9.010 080	1251	9.011 104	55	9.011 710	610	9.011 960	575
9.003 911	145	9.005 101	191	9.005 350	203	9.005 672	195	9.010 116	1250	9.011 170	54	9.011 735	589	9.011 961	575
9.003 912	145	9.005 102	191	9.005 351	203	9.005 673	195	9.010 118	1250	9.011 181	54	9.011 736	589	9.011 962	575
9.003 913	145	9.005 103	191	9.005 352	203	9.005 674	195	9.010 120	1252	9.011 316	611	9.011 740	604	9.011 963	575
9.003 914	145	9.005 104	191	9.005 353	203	9.005 675	195	9.010 121	1252	9.011 317	611	9.011 750	604	9.011 964	575
9.003 920	48	9.005 105	188	9.005 362	208	9.005 681	195	9.010 122	1252	9.011 318	611	9.011 755	604	9.011 965	575
9.003 932	48	9.005 106	188	9.005 363	208	9.005 695	194	9.010 123	1252	9.011 319	611	9.011 760	604	9.011 966	575
9.003 941	48	9.005 107	190	9.005 364	208	9.005 696	194	9.010 125	1252	9.011 320	611	9.011 765	604	9.011 967	575
9.003 951	48	9.005 109	188	9.005 365	208	9.005 697	194	9.010 126	1252	9.011 321	611	9.011 766	604	9.011 968	575
9.003 954	48	9.005 115	189	9.005 390	206	9.005 698	194	9.010 127	1252	9.011 322	611	9.011 767	604	9.011 969	575
9.003 964	48	9.005 116	187	9.005 391	206	9.005 699	194	9.010 128	1252	9.011 323	611	9.011 768	606	9.011 970	575
9.004 006	400	9.005 117	187	9.005 392	206	9.005 731	194	9.010 130	1250	9.011 324	611	9.011 769	606	9.011 971	575
9.004 008	400	9.005 118	188	9.005 393	206	9.005 732	194	9.010 135	1250	9.011 325	611	9.011 770	606	9.011 982	576
9.004 010	400	9.005 123	186	9.005 394	206	9.005 733	194	9.010 140	1250	9.011 326	611	9.011 771	606	9.011 983	576
9.004 012	400	9.005 124	186	9.005 395	209	9.005 750	195	9.010 150	1250	9.011 327	611	9.011 773	609	9.011 984	576
9.004 014	400	9.005 125	186	9.005 396	209	9.005 751	195	9.010 151	1250	9.011 330	611	9.011 774	609	9.011 985	576
9.004 016	400	9.005 126	186	9.005 397	209	9.005 752	195	9.010 152	1250	9.011 400	610	9.011 775	609	9.011 986	576
9.004 057	400	9.005 127	186	9.005 398	209	9.005 753	195	9.010 153	1250	9.011 401	610	9.011 776	609	9.012 001	577
9.004 060	400	9.005 128	186	9.005 400	209	9.005 754	195	9.010 180	1250	9.011 402	610	9.011 777	609	9.012 002	577
9.004 065	400	9.005 131	191	9.005 401	209	9.005 755	195	9.010 185	1250	9.011 403	610	9.011 778	609	9.012 003	577
9.004 108	400	9.005 134	187	9.005 402	209	9.005 993	213	9.010 224	1251	9.011 404	610	9.011 779	609	9.012 006	577
9.004 109	400	9.005 147	185	9.005 403	209	9.005 994	213	9.010 239	1251	9.011 405	610	9.011 780	609	9.012 008	577
9.004 110	400	9.005 149	185	9.005 405	206	9.005 995	213	9.010 244	1251	9.011 406	610	9.011 781	609	9.012 009	577
9.004 111	400	9.005 157	188	9.005 406	206	9.005 996	213	9.010 254	1251	9.011 407	610	9.011 793	609	9.012 010	577
9.004 112	400	9.005 164	186	9.005 407	206	9.005 997	213	9.010 266	1251	9.011 408	610	9.011 794	609	9.012 012	577
9.004 113	400	9.005 166	190	9.005 408	206	9.006 000	184	9.010 273	1251	9.011 409	610	9.011 795	609	9.012 013	577
9.004 114	400	9.005 169	186	9.005 409	206	9.006 001	184	9.010 472	1251	9.011 504	613	9.011 796	609	9.012 014	577
9.004 115	400	9.005 170	219	9.005 420	212	9.006 002	184	9.010 473	1251	9.011 505	613	9.011 801	570	9.012 015	577
9.004 153	400	9.005 171	188	9.005 421	212	9.006 002	190	9.010 474	1251	9.011 506	613	9.011 802	570	9.012 016	577

9.012 017	577	9.012 402	583	9.012 765	591	9.013 610	15	9.014 100	603	9.020 134	1396	9.032 728	716	9.034 257	139
9.012 018	577	9.012 403	583	9.012 766	591	9.013 611	15	9.018 292	131	9.020 135	1396	9.032 729	716	9.034 258	139
9.012 019	577	9.012 404	583	9.012 767	591	9.013 612	15	9.018 294	131	9.020 136	1396	9.032 740	717	9.034 553	138
9.012 021	572	9.012 405	583	9.012 768	591	9.013 613	15	9.018 310	130	9.020 137	1396	9.032 741	717	9.034 557	138
9.012 022	572	9.012 406	583	9.012 769	591	9.013 614	15	9.018 311	130	9.020 160	1394	9.032 742	716	9.034 558	138
9.012 023	572	9.012 407	583	9.012 770	591	9.013 615	15	9.018 312	130	9.020 163	1394	9.032 743	716	9.039 921	52
9.012 024	572	9.012 408	583	9.012 921	175	9.013 616	15	9.018 313	130	9.020 173	1394	9.032 845	250	9.039 922	52
9.012 101	585	9.012 410	583	9.012 922	175	9.013 670	15	9.018 314	130	9.020 177	1394	9.032 920	120	9.039 923	52
9.012 103	585	9.012 413	583	9.012 923	175	9.013 671	15	9.018 315	131	9.020 179	1394	9.032 930	120	9.039 925	52
9.012 121	585	9.012 414	583	9.012 925	176	9.013 672	15	9.018 316	131	9.020 192	863	9.032 932	120	9.039 926	52
9.012 123	585	9.012 415	583	9.012 927	176	9.013 673	15	9.018 317	131	9.020 193	863	9.032 940	120	9.039 928	52
9.012 138	586	9.012 416	583	9.012 932	175	9.013 674	15	9.018 318	131	9.020 194	863	9.032 945	120	9.040 006	52
9.012 141	581	9.012 417	583	9.012 933	175	9.013 675	15	9.018 319	131	9.020 195	863	9.032 946	120	9.040 010	52
9.012 143	581	9.012 453	1118	9.012 934	175	9.013 676	15	9.018 360	131	9.020 196	863	9.033 018	45	9.040 011	52
9.012 153	581	9.012 456	1118	9.012 935	175	9.013 680	16	9.018 377	129	9.020 210	1394	9.033 026	45	9.040 012	52
9.012 161	586	9.012 459	1118	9.012 936	175	9.013 681	16	9.018 378	129	9.020 211	1394	9.033 029	45	9.040 022	52
9.012 163	586	9.012 470	592	9.012 937	175	9.013 682	16	9.018 388	130	9.020 212	1394	9.033 034	45	9.040 025	52
9.012 173	578	9.012 471	592	9.012 938	175	9.013 683	16	9.018 389	130	9.020 213	1394	9.033 121	48	9.040 030	51
9.012 182	578	9.012 473	1118	9.012 939	175	9.013 684	16	9.018 510	128	9.020 214	1394	9.033 123	48	9.040 031	51
9.012 183	578	9.012 476	1118	9.012 944	175	9.013 702	1112	9.018 511	128	9.023 150	1394	9.033 124	48	9.040 032	51
9.012 184	605	9.012 501	594	9.012 945	176	9.013 703	1112	9.018 512	129	9.023 160	1394	9.033 131	48	9.040 033	51
9.012 185	605	9.012 502	594	9.012 971	175	9.013 704	1112	9.018 519	129	9.023 955	1394	9.033 133	48	9.040 034	51
9.012 186	605	9.012 505	594	9.012 971	1131	9.013 706	1112	9.018 520	129	9.023 956	1394	9.033 134	48	9.040 110	52
9.012 187	605	9.012 506	594	9.012 972	175	9.013 707	1112	9.018 539	128	9.023 957	1394	9.033 141	48	9.040 115	52
9.012 188	605	9.012 507	592	9.012 973	175	9.013 708	1112	9.018 540	128	9.023 990	1395	9.033 143	48	9.040 206	52
9.012 189	605	9.012 509	592	9.012 974	175	9.013 710	1112	9.018 547	128	9.024 000	1395	9.033 144	48	9.040 212	52
9.012 190	605	9.012 510	592	9.012 975	175	9.013 722	1112	9.018 549	129	9.025 912	1370	9.033 201	44	9.040 216	51
9.012 191	605	9.012 511	593	9.012 976	175	9.013 723	1112	9.018 553	129	9.025 913	1370	9.033 202	44	9.040 325	52
9.012 193	586	9.012 515	593	9.012 977	176	9.013 724	1112	9.018 554	129	9.025 914	1370	9.033 211	44	9.040 330	52
9.012 203	579	9.012 516	593	9.013 007	13	9.013 725	1112	9.018 560	129	9.025 932	1370	9.033 212	44	9.040 332	52
9.012 213	579	9.012 517	593	9.013 008	13	9.013 726	1112	9.018 584	132	9.025 934	1370	9.033 213	44	9.040 335	52
9.012 216	580	9.012 518	593	9.013 014	13	9.013 727	1112	9.018 584	1249	9.025 936	1370	9.033 230	44	9.040 336	155
9.012 217	580	9.012 522	593	9.013 017	13	9.013 728	1112	9.018 585	132	9.031 961	716	9.033 231	44	9.040 337	155
9.012 218	580	9.012 523	593	9.013 024	13	9.013 729	1112	9.018 585	1249	9.031 962	716	9.033 232	44	9.040 338	155
9.012 219	580	9.012 524	593	9.013 029	13	9.013 731	1112	9.018 601	135	9.031 964	716	9.033 233	44	9.040 339	155
9.012 247	580	9.012 525	592	9.013 036	13	9.013 734	1112	9.018 602	135	9.031 970	716	9.033 234	44	9.040 340	155
9.012 248	580	9.012 526	592	9.013 041	13	9.013 735	1112	9.018 603	135	9.031 972	717	9.033 235	44	9.040 341	155
9.012 249	580	9.012 527	592	9.013 048	13	9.013 773	17	9.018 604	135	9.031 973	717	9.033 236	44	9.040 342	155
9.012 250	580	9.012 528	592	9.013 053	13	9.013 774	17	9.018 691	135	9.031 982	717	9.033 237	44	9.040 343	155
9.012 264	579	9.012 530	592	9.013 054	13	9.013 775	17	9.018 698	136	9.031 983	717	9.033 238	44	9.040 344	155
9.012 266	579	9.012 533	592	9.013 063	13	9.013 776	17	9.018 699	136	9.031 984	717	9.033 239	44	9.040 345	155
9.012 268	579	9.012 534	592	9.013 068	13	9.013 900	13	9.018 741	134	9.032 011	717	9.033 240	44	9.040 346	155
9.012 271	580	9.012 535	594	9.013 073	13	9.013 901	13	9.018 742	134	9.032 012	717	9.033 241	44	9.040 347	155
9.012 272	580	9.012 536	594	9.013 086	13	9.013 902	13	9.018 750	133	9.032 013	717	9.033 242	44	9.040 348	155
9.012 274	580	9.012 537	594	9.013 117	14	9.013 903	13	9.018 751	133	9.032 015	717	9.033 251	180	9.040 349	155
9.012 275	580	9.012 538	600	9.013 124	14	9.013 904	13	9.018 752	133	9.032 018	717	9.033 252	180	9.040 350	155
9.012 276	580	9.012 539	600	9.013 129	14	9.013 905	13	9.018 753	133	9.032 019	717	9.033 253	180	9.040 351	155
9.012 279	580	9.012 540	601	9.013 136	14	9.013 906	13	9.018 754	133	9.032 021	717	9.033 270	51	9.040 352	155
9.012 282	579	9.012 541	601	9.013 141	14	9.013 910	13	9.018 755	133	9.032 022	717	9.033 270	1213	9.040 353	155
9.012 285	579	9.012 542	594	9.013 148	14	9.013 911	13	9.018 756	133	9.032 024	717	9.033 275	51	9.040 379	155
9.012 287	578	9.012 543	594	9.013 153	14	9.013 912	13	9.018 758	133	9.032 025	717	9.033 275	1213	9.040 380	155
9.012 288	578	9.012 544	594	9.013 154	14	9.013 913	13	9.018 759	133	9.032 027	717	9.033 280	51	9.040 381	155
9.012 289	578	9.012 545	592	9.013 163	14	9.013 914	13	9.018 760	133	9.032 028	717	9.033 280	1213	9.040 388	155
9.012 290	578	9.012 546	594	9.013 168	14	9.013 915	13	9.018 761	133	9.032 030	717	9.033 285	51	9.040 389	156
9.012 291	579	9.012 547	592	9.013 192	1112	9.013 916	13	9.018 762	133	9.032 033	717	9.033 285	1213	9.040 425	156
9.012 292	579	9.012 548	593	9.013 208	15	9.013 920	13	9.018 779	133	9.032 065	984	9.033 286	51	9.040 438	156
9.012 293	579	9.012 603	580	9.013 209	15	9.013 921	13	9.018 794	134	9.032 066	984	9.033 286	1213	9.040 450	156
9.012 294	579	9.012 606	580	9.013 210	1113	9.013 922	13	9.018 798	133	9.032 067	984	9.033 287	51	9.040 550	156
9.012 295	579	9.012 607	582	9.013 211	1113	9.013 923	13	9.018 801	131	9.032 068	984	9.033 287	1213	9.040 552	159
9.012 296	579	9.012 608	582	9.013 212	1113	9.013 924	13	9.018 805	131	9.032 069	984	9.033 288	51	9.040 553	159
9.012 297	579	9.012 611	582	9.013 213	1113	9.013 925	13	9.018 820	131	9.032 070	984	9.033 288	1213	9.040 554	159
9.012 301	595	9.012 613	582	9.013 214	1113	9.013 930	13	9.018 935	139	9.032 071	984	9.033 341	48	9.040 556	159
9.012 302	595	9.012 621	582	9.013 215	1113	9.013 931	13	9.018 936	139	9.032 072	984	9.033 342	48	9.040 557	159
9.012 303	595	9.012 623	582	9.013 220	15	9.013 932	13	9.018 937	139	9.032 073	984	9.033 344	48	9.040 562	159
9.012 305	595	9.012 625	581	9.013 228	15	9.013 933	13	9.018 940	139	9.032 074	984	9.033 346	48	9.040 574	159
9.012 306	595	9.012 626	581	9.013 238	15	9.013 934	13	9.018 942	139	9.032 075	984	9.033 350	48	9.040 575	159
9.012 307	596	9.012 635	582	9.013 244	15	9.014 001	14	9.018 945	139	9.032 076	984	9.033 410	48	9.040 576	159
9.012 308	596	9.012 636	582	9.013 248	15	9.014 002	14	9.018 950	139	9.032 115	717	9.033 412	48	9.040 577	159
9.012 310	1118	9.012 653	581	9.013 254	15	9.014 003	14	9.018 960	139	9.032 127	717	9.033 414	48	9.040 578	159
9.012 311	605	9.012 654	581	9.013 256	15	9.014 004	14	9.018 970	139	9.032 131	716	9.033 416	48	9.040 579	159
9.012 312	605	9.012 655	581	9.013 262	15	9.014 005	14	9.019 002	1072	9.032 132	716	9.033 418	48	9.040 580	159
9.012 313	605	9.012 656	581	9.013 264	15	9.014 006	15	9.019 005	1072	9.032 133	716	9.033 420	48	9.040 581	159
9.012 314	605	9.012 657	581	9.013 266	15	9.014 020	21	9.019 010	1072	9.032 134	716	9.033 430	48	9.040 582	159
9.012 315	605	9.012 658	581	9.013 270	15	9.014 021	21	9.019 020	1072	9.032 135	716	9.033 440	48	9.040 583	159
9.012 316	605	9.012 659	581	9.013 315	16	9.014 022	21	9.019 030	1072	9.032 371	755	9.033 632	139	9.040 584	159
9.012 317	605	9.012 660	581	9.013 320	16	9.014 023	21	9.019 035	1072	9.032 372	755	9.033 636	139	9.040 585	159
9.012 319	605	9.012 695	582	9.013 328	16	9.014 024	21	9.019 040	1072	9.032 373	755	9.033 640	139	9.040 586	158
9.012 321	583	9.012 696	582	9.013 338	16	9.014 025	21	9.019 050	1072	9.032 374	755	9.033 653	138	9.040 612	156
9.012 322	583	9.012 701	584	9.013 344	16	9.014 026	22	9.019 060	1072	9.032 376	755	9.033 655	138	9.040 614	156
9.012 326	583	9.012 703	584	9.013 348	16	9.014 027	22	9.019 070	1072	9.032 377	755	9.033 657	138	9.040 616	156
9.012 327	583	9.012 751	591	9.013 350	16	9.014 028	22	9.019 080	1072	9.032 422	717	9.033 659	138	9.040 618	156
9.012 328	583	9.012 752	591	9.013 354	16	9.014 029	22	9.019 090	1072	9.032 423	717	9.033 740	139	9.040 620	156
9.012 329	583	9.012 753	591	9.013 356	16	9.014 030	18	9.019 092	1072	9.032 425	717	9.033 741	139	9.040 625	156
9.012 330	584	9.012 755	591	9.013 362	16	9.014 031	18	9.019 100	1072	9.032 426	717	9.034 110	138	9.040 635	156
9.012 333	584	9.012 756	591	9.013 364	16	9.014 032	18	9.019 110	1066	9.032 427	717	9.034 112	138	9.040 636	156
9.012 336	584	9.012 757	591	9.013 366	16	9.014 033	19	9.019 110	1072	9.032 726	716	9.034 114	138	9.040 652	156
9.012 337	584	9.012 764	591	9.013 370	16	9.014 034	19	9.020 131	1396	9.032 727	716	9.034 253	139	9.040 711	157

9.040 712	157	9.041 033	311	9.041 621	322	9.042 683	994	9.042 905	253	9.043 902	1147	9.046 024	1268	9.049 069	679
9.040 713	157	9.041 034	312	9.041 754	307	9.042 684	995	9.042 906	253	9.043 903	1147	9.046 034	691	9.049 070	679
9.040 714	157	9.041 036	311	9.041 755	307	9.042 690	995	9.042 907	253	9.043 904	1147	9.046 035	691	9.049 073	676
9.040 715	157	9.041 043	310	9.041 756	307	9.042 710	992	9.042 910	254	9.043 905	1147	9.046 037	691	9.049 077	680
9.040 716	157	9.041 045	310	9.041 757	307	9.042 715	992	9.042 911	254	9.043 906	1147	9.046 038	691	9.049 078	680
9.040 717	157	9.041 048	310	9.041 758	307	9.042 720	992	9.042 912	254	9.043 907	1147	9.046 041	691	9.049 079	679
9.040 718	157	9.041 050	309	9.041 759	307	9.042 725	992	9.042 915	254	9.043 909	1147	9.046 042	691	9.049 080	679
9.040 719	157	9.041 051	309	9.041 760	307	9.042 730	992	9.042 916	254	9.043 910	1147	9.046 044	691	9.049 081	676
9.040 720	157	9.041 052	309	9.041 761	307	9.042 740	990	9.042 917	254	9.043 911	1147	9.046 045	691	9.049 082	676
9.040 722	310	9.041 053	326	9.041 764	307	9.042 741	990	9.042 920	254	9.043 915	1147	9.046 055	691	9.049 084	676
9.040 723	310	9.041 055	326	9.041 765	307	9.042 742	990	9.042 921	254	9.043 916	1147	9.046 056	691	9.049 085	676
9.040 724	310	9.041 056	326	9.042 006	1001	9.042 743	990	9.042 922	254	9.043 917	1147	9.046 061	691	9.049 087	676
9.040 725	310	9.041 072	311	9.042 007	1000	9.042 751	993	9.042 925	253	9.043 918	1147	9.046 062	691	9.049 088	676
9.040 727	310	9.041 081	310	9.042 019	990	9.042 753	993	9.042 926	253	9.043 950	1147	9.046 064	691	9.049 091	676
9.040 728	310	9.041 092	311	9.042 031	990	9.042 755	993	9.042 927	253	9.045 700	1147	9.046 065	691	9.049 092	676
9.040 729	310	9.041 100	303	9.042 038	990	9.042 757	993	9.042 930	253	9.045 701	1147	9.046 067	691	9.049 094	676
9.040 734	310	9.041 105	303	9.042 043	990	9.042 759	993	9.042 931	253	9.045 702	1147	9.046 068	691	9.049 095	676
9.040 735	310	9.041 110	303	9.042 047	990	9.042 761	993	9.042 932	253	9.045 703	1147	9.046 109	690	9.049 097	676
9.040 744	310	9.041 112	303	9.042 119	991	9.042 763	996	9.042 934	253	9.045 704	1147	9.046 110	690	9.049 098	676
9.040 746	310	9.041 117	303	9.042 131	991	9.042 765	996	9.042 935	253	9.045 705	1147	9.046 111	690	9.049 101	675
9.040 749	310	9.041 120	303	9.042 132	991	9.042 767	996	9.042 936	253	9.045 706	1147	9.046 121	690	9.049 102	675
9.040 782	310	9.041 140	299	9.042 138	991	9.042 769	996	9.042 937	253	9.045 707	1147	9.046 122	690	9.049 103	675
9.040 796	312	9.041 141	299	9.042 139	991	9.042 771	993	9.042 940	253	9.045 708	1147	9.046 123	690	9.049 104	675
9.040 840	296	9.041 142	299	9.042 143	991	9.042 772	993	9.042 941	254	9.045 709	1147	9.046 131	690	9.049 105	675
9.040 841	296	9.041 143	299	9.042 144	991	9.042 773	993	9.042 942	253	9.045 710	1147	9.046 132	690	9.049 107	675
9.040 842	296	9.041 144	299	9.042 147	991	9.042 774	996	9.042 943	254	9.045 711	1147	9.046 133	690	9.049 108	675
9.040 843	296	9.041 145	300	9.042 148	991	9.042 775	996	9.042 943	254	9.045 800	652	9.046 141	690	9.049 109	675
9.040 844	296	9.041 146	300	9.042 232	991	9.042 776	993	9.042 945	254	9.045 801	652	9.046 142	690	9.049 115	676
9.040 845	297	9.041 147	300	9.042 239	991	9.042 777	993	9.042 946	254	9.045 802	652	9.046 143	690	9.049 116	676
9.040 851	296	9.041 148	300	9.042 244	991	9.042 778	993	9.042 947	254	9.045 803	652	9.046 187	680	9.049 117	676
9.040 861	325	9.041 149	300	9.042 248	991	9.042 779	996	9.042 950	254	9.045 804	652	9.046 196	680	9.049 118	676
9.040 862	325	9.041 150	300	9.042 319	991	9.042 780	996	9.042 951	254	9.045 805	652	9.048 933	654	9.049 119	676
9.040 863	325	9.041 151	300	9.042 331	991	9.042 781	993	9.042 956	254	9.045 806	652	9.048 934	654	9.049 120	676
9.040 864	325	9.041 152	301	9.042 338	991	9.042 782	993	9.042 972	254	9.045 807	652	9.048 937	654	9.049 122	675
9.040 865	308	9.041 153	301	9.042 343	991	9.042 783	993	9.042 975	253	9.045 808	652	9.048 938	654	9.049 123	675
9.040 866	308	9.041 155	299	9.042 347	991	9.042 784	996	9.042 976	254	9.045 809	652	9.048 939	654	9.049 126	676
9.040 867	308	9.041 156	301	9.042 419	991	9.042 785	993	9.042 977	253	9.045 810	652	9.048 940	654	9.049 127	676
9.040 868	308	9.041 160	303	9.042 431	991	9.042 786	993	9.042 978	252	9.045 820	652	9.048 942	654	9.049 128	676
9.040 869	308	9.041 163	302	9.042 438	991	9.042 787	996	9.042 979	252	9.045 821	652	9.048 943	654	9.049 129	675
9.040 870	298	9.041 164	302	9.042 443	991	9.042 788	996	9.042 980	252	9.045 822	652	9.048 944	654	9.049 130	675
9.040 871	308	9.041 165	302	9.042 447	991	9.042 789	996	9.042 988	252	9.045 825	652	9.048 945	654	9.049 146	676
9.040 872	296	9.041 166	302	9.042 500	992	9.042 790	996	9.043 001	1149	9.045 826	652	9.048 946	654	9.049 147	676
9.040 873	296	9.041 167	302	9.042 505	992	9.042 801	992	9.043 002	1149	9.045 827	652	9.049 015	653	9.049 151	684
9.040 876	296	9.041 180	303	9.042 507	992	9.042 802	992	9.043 003	1149	9.045 830	652	9.049 016	653	9.049 152	684
9.040 877	296	9.041 182	303	9.042 543	993	9.042 803	992	9.043 004	1149	9.045 831	652	9.049 017	653	9.049 153	684
9.040 881	296	9.041 207	303	9.042 543	996	9.042 804	992	9.043 005	1149	9.045 832	652	9.049 018	653	9.049 156	684
9.040 886	296	9.041 211	303	9.042 544	993	9.042 805	992	9.043 006	1149	9.045 833	652	9.049 019	653	9.049 157	684
9.040 890	297	9.041 217	303	9.042 544	996	9.042 810	990	9.043 007	1149	9.045 834	652	9.049 020	679	9.049 180	669
9.040 891	297	9.041 303	302	9.042 545	993	9.042 811	990	9.043 008	1149	9.045 840	659	9.049 021	679	9.049 181	669
9.040 892	297	9.041 304	302	9.042 545	996	9.042 812	990	9.043 009	1149	9.045 841	659	9.049 025	678	9.049 182	669
9.040 895	298	9.041 367	308	9.042 573	995	9.042 815	990	9.043 010	599	9.045 842	659	9.049 026	678	9.049 183	669
9.040 896	298	9.041 368	308	9.042 615	994	9.042 850	251	9.043 011	599	9.045 843	659	9.049 027	653	9.049 200	688
9.040 897	298	9.041 369	308	9.042 620	994	9.042 851	251	9.043 012	599	9.045 844	659	9.049 030	677	9.049 201	688
9.040 904	326	9.041 370	311	9.042 625	994	9.042 852	251	9.043 013	599	9.045 845	659	9.049 031	677	9.049 202	688
9.040 905	326	9.041 371	311	9.042 638	997	9.042 853	251	9.043 014	599	9.045 850	659	9.049 032	677	9.049 203	688
9.040 906	326	9.041 372	311	9.042 639	997	9.042 854	251	9.043 015	599	9.045 851	659	9.049 033	677	9.049 204	689
9.040 907	326	9.041 374	308	9.042 640	1001	9.042 855	251	9.043 016	599	9.045 852	659	9.049 035	660	9.049 205	689
9.040 911	309	9.041 442	325	9.042 643	1002	9.042 856	251	9.043 017	599	9.045 860	662	9.049 036	677	9.049 206	689
9.040 912	309	9.041 443	325	9.042 644	1002	9.042 859	251	9.043 018	599	9.045 861	662	9.049 037	677	9.049 241	683
9.040 913	309	9.041 446	325	9.042 646	997	9.042 860	251	9.043 019	599	9.045 862	662	9.049 038	677	9.049 242	683
9.040 914	309	9.041 447	325	9.042 647	997	9.042 861	251	9.043 020	599	9.045 865	662	9.049 039	677	9.049 243	688
9.040 915	309	9.041 448	325	9.042 648	997	9.042 862	251	9.043 021	600	9.045 866	662	9.049 040	677	9.049 300	1269
9.040 916	309	9.041 450	305	9.042 651	998	9.042 863	251	9.043 022	600	9.045 867	662	9.049 041	677	9.049 304	1269
9.040 920	309	9.041 451	305	9.042 652	997	9.042 864	251	9.043 023	600	9.045 868	662	9.049 042	678	9.049 311	1269
9.040 921	309	9.041 452	305	9.042 653	997	9.042 866	251	9.043 026	600	9.045 951	692	9.049 043	678	9.049 312	1269
9.040 922	309	9.041 454	305	9.042 654	997	9.042 867	251	9.043 027	600	9.045 952	692	9.049 044	678	9.049 313	1269
9.040 923	309	9.041 455	305	9.042 655	997	9.042 868	251	9.043 028	1149	9.045 953	692	9.049 045	660	9.049 315	1269
9.040 924	309	9.041 456	305	9.042 656	997	9.042 869	251	9.043 029	1149	9.045 954	692	9.049 046	678	9.049 320	1269
9.040 925	309	9.041 457	305	9.042 657	998	9.042 871	250	9.043 030	1149	9.045 956	692	9.049 047	678	9.049 340	1270
9.040 926	309	9.041 458	305	9.042 658	998	9.042 872	250	9.043 031	1149	9.045 957	692	9.049 048	678	9.049 341	1270
9.040 927	309	9.041 470	305	9.042 659	997	9.042 873	250	9.043 035	1149	9.045 958	692	9.049 049	678	9.049 672	664
9.040 928	309	9.041 471	305	9.042 660	997	9.042 874	250	9.043 036	1149	9.045 959	692	9.049 050	678	9.049 750	1215
9.040 940	311	9.041 472	305	9.042 661	1001	9.042 875	250	9.043 037	1149	9.045 961	692	9.049 051	678	9.049 753	1215
9.040 941	311	9.041 475	325	9.042 662	1002	9.042 876	251	9.043 038	1149	9.045 963	692	9.049 052	678	9.049 754	1216
9.040 942	311	9.041 476	325	9.042 663	999	9.042 879	251	9.043 039	1149	9.045 971	691	9.049 053	679	9.049 755	1215
9.040 943	311	9.041 506	305	9.042 664	1000	9.042 880	251	9.043 040	1149	9.045 972	691	9.049 054	679	9.049 756	1215
9.040 944	311	9.041 508	305	9.042 665	1001	9.042 881	250	9.043 041	1149	9.045 975	691	9.049 055	679	9.049 757	1215
9.040 945	311	9.041 553	306	9.042 666	1003	9.042 882	250	9.043 042	1149	9.045 976	691	9.049 056	679	9.049 758	1215
9.040 949	308	9.041 557	307	9.042 667	1003	9.042 891	1377	9.043 043	1149	9.045 978	691	9.049 057	679	9.049 759	1215
9.040 950	308	9.041 560	306	9.042 668	1003	9.042 892	1377	9.043 301	578	9.045 979	691	9.049 058	679	9.049 760	1214
9.040 951	308	9.041 562	306	9.042 669	1003	9.042 893	1377	9.043 302	578	9.046 020	690	9.049 059	679	9.049 761	1214
9.040 955	308	9.041 565	306	9.042 670	1001	9.042 894	1377	9.043 305	578	9.046 021	690	9.049 060	679	9.049 762	1214
9.040 987	326	9.041 619	282	9.042 674	995	9.042 895	1375	9.043 306	578	9.046 022	689	9.049 063	680	9.049 763	1214
9.040 993	288	9.041 619	292	9.042 675	995	9.042 896	1375	9.043 307	578	9.046 022	1268	9.049 065	679	9.049 764	1214
9.041 004	310	9.041 620	282	9.042 676	995	9.042 900	253	9.043 310	578	9.046 023	689	9.049 066	679	9.049 765	1215
9.041 007	310	9.041 620	292	9.042 681	994	9.042 901	253	9.043 311	578	9.046 023	1268	9.049 067	679	9.049 766	1215
9.041 009	310	9.041 621	317	9.042 682	994	9.042 902	253	9.043 901	1147	9.046 024	689	9.049 068	679	9.049 767	1215

9.049 768	1215	9.050 019	77	9.051 619	700	9.052 369	696	9.053 227	669	9.055 523	1366	9.056 256	656	9.056 725	664
9.049 769	1215	9.050 020	77	9.051 631	700	9.052 370	696	9.053 242	669	9.055 524	671	9.056 257	656	9.056 726	663
9.049 770	1215	9.050 021	77	9.052 021	693	9.052 371	696	9.053 243	669	9.055 524	1367	9.056 278	654	9.056 727	663
9.049 771	1216	9.050 022	77	9.052 022	693	9.052 372	696	9.053 304	668	9.055 525	671	9.056 279	654	9.056 729	664
9.049 772	1216	9.050 023	77	9.052 023	693	9.052 373	696	9.053 308	668	9.055 525	1367	9.056 294	658	9.056 730	663
9.049 773	1216	9.050 411	162	9.052 024	693	9.052 374	696	9.053 309	668	9.055 526	671	9.056 295	658	9.056 731	663
9.049 774	1216	9.050 412	162	9.052 025	693	9.052 375	696	9.053 349	668	9.055 526	1367	9.056 296	658	9.056 732	663
9.049 775	1216	9.050 413	162	9.052 031	693	9.052 376	696	9.053 364	668	9.055 530	670	9.056 297	658	9.056 733	663
9.049 776	1216	9.050 414	162	9.052 032	693	9.052 377	696	9.053 368	668	9.055 530	1366	9.056 298	658	9.056 734	663
9.049 777	1214	9.050 421	162	9.052 033	693	9.052 378	696	9.053 369	668	9.055 531	670	9.056 299	658	9.056 739	664
9.049 778	1214	9.050 422	162	9.052 034	693	9.052 379	696	9.053 384	668	9.055 531	1366	9.056 301	658	9.056 740	664
9.049 779	1214	9.050 423	162	9.052 036	693	9.052 380	696	9.053 388	668	9.055 532	670	9.056 304	657	9.056 741	664
9.049 780	1214	9.050 424	162	9.052 037	693	9.052 381	696	9.053 389	668	9.055 532	1366	9.056 305	657	9.056 742	664
9.049 781	1214	9.050 451	161	9.052 038	693	9.052 382	696	9.053 424	668	9.055 533	670	9.056 306	657	9.056 743	664
9.049 782	1215	9.050 452	161	9.052 039	693	9.052 383	696	9.053 428	668	9.055 533	1366	9.056 307	657	9.056 744	664
9.049 783	1215	9.050 453	161	9.052 040	693	9.052 384	696	9.053 429	668	9.055 534	671	9.056 308	657	9.056 745	664
9.049 784	1215	9.050 454	161	9.052 041	693	9.052 385	696	9.053 432	668	9.055 534	1367	9.056 309	657	9.056 750	663
9.049 785	1215	9.050 601	162	9.052 042	693	9.052 386	696	9.054 122	668	9.055 535	671	9.056 324	658	9.056 751	663
9.049 786	1215	9.050 602	162	9.052 043	693	9.052 387	696	9.054 122	1269	9.055 535	1367	9.056 325	658	9.056 752	663
9.049 787	1215	9.050 603	162	9.052 044	693	9.052 388	696	9.054 132	668	9.055 540	670	9.056 326	658	9.056 753	663
9.049 788	1216	9.050 604	162	9.052 060	693	9.052 389	696	9.054 132	1269	9.055 540	1366	9.056 327	658	9.056 754	663
9.049 789	1216	9.050 611	162	9.052 061	693	9.052 390	696	9.054 133	668	9.055 541	670	9.056 331	654	9.056 755	663
9.049 790	1216	9.050 612	162	9.052 062	693	9.052 391	698	9.054 133	1269	9.055 541	1366	9.056 332	654	9.056 756	663
9.049 791	1216	9.050 696	162	9.052 063	693	9.052 392	698	9.054 139	668	9.055 542	670	9.056 333	655	9.056 759	663
9.049 792	1216	9.050 715	977	9.052 064	693	9.052 393	698	9.054 139	1269	9.055 542	1366	9.056 334	653	9.056 760	663
9.049 793	1216	9.050 717	977	9.052 065	693	9.052 394	698	9.054 202	668	9.055 543	670	9.056 337	654	9.056 761	663
9.049 850	1215	9.050 721	977	9.052 066	696	9.052 395	698	9.054 202	1270	9.055 543	1366	9.056 338	654	9.056 762	663
9.049 851	1215	9.050 722	977	9.052 067	696	9.052 400	699	9.054 203	668	9.055 550	671	9.056 340	654	9.056 763	663
9.049 852	1215	9.050 723	977	9.052 068	696	9.052 412	698	9.054 203	1270	9.055 550	1367	9.056 341	654	9.056 764	663
9.049 853	1215	9.050 750	162	9.052 069	696	9.052 417	698	9.054 460	669	9.055 551	671	9.056 399	660	9.056 765	663
9.049 854	1215	9.050 751	162	9.052 080	693	9.052 423	698	9.054 462	669	9.055 551	1367	9.056 400	660	9.056 771	664
9.049 855	1216	9.050 752	162	9.052 081	693	9.052 427	698	9.054 464	669	9.055 552	671	9.056 401	660	9.056 772	664
9.049 856	1216	9.050 796	160	9.052 082	693	9.052 432	698	9.054 465	669	9.055 552	1367	9.056 402	660	9.056 773	664
9.049 857	1216	9.050 797	160	9.052 083	693	9.052 436	698	9.054 671	1216	9.055 553	671	9.056 403	660	9.056 774	664
9.049 858	1216	9.050 798	160	9.052 084	693	9.052 439	698	9.054 672	1216	9.055 553	1367	9.056 404	660	9.056 775	664
9.049 859	1216	9.050 799	160	9.052 085	693	9.052 443	698	9.054 673	1216	9.056 196	653	9.056 405	660	9.056 777	664
9.049 860	1216	9.050 811	160	9.052 086	693	9.052 449	698	9.054 674	1216	9.056 198	654	9.056 406	660	9.056 780	663
9.049 861	1214	9.050 812	160	9.052 087	693	9.052 450	698	9.054 675	1216	9.056 199	654	9.056 407	660	9.056 781	663
9.049 862	1214	9.050 813	160	9.052 088	693	9.052 451	698	9.054 681	685	9.056 200	654	9.056 410	660	9.056 782	663
9.049 863	1215	9.050 814	160	9.052 089	693	9.052 453	697	9.054 686	685	9.056 201	654	9.056 411	660	9.056 783	663
9.049 864	1215	9.050 815	160	9.052 090	693	9.052 454	697	9.055 006	1242	9.056 202	654	9.056 412	660	9.056 784	663
9.049 865	675	9.050 816	160	9.052 091	693	9.052 625	603	9.055 008	1242	9.056 203	654	9.056 413	660	9.056 785	663
9.049 866	675	9.050 817	160	9.052 092	693	9.052 744	687	9.055 010	1242	9.056 204	654	9.056 414	660	9.056 787	663
9.049 911	673	9.051 036	14	9.052 114	694	9.052 745	687	9.055 011	1242	9.056 205	654	9.056 415	660	9.056 801	664
9.049 912	673	9.051 044	14	9.052 121	694	9.052 746	687	9.055 012	1242	9.056 206	654	9.056 416	660	9.056 802	663
9.049 913	673	9.051 054	14	9.052 126	694	9.052 747	687	9.055 013	1242	9.056 207	654	9.056 417	660	9.056 803	663
9.049 915	673	9.051 063	14	9.052 131	694	9.052 748	687	9.055 014	1242	9.056 208	654	9.056 419	661	9.056 805	663
9.049 916	673	9.051 068	14	9.052 213	694	9.052 749	687	9.055 015	1242	9.056 209	654	9.056 420	661	9.056 807	673
9.049 917	673	9.051 073	14	9.052 214	694	9.052 750	687	9.055 017	1242	9.056 210	654	9.056 421	661	9.056 809	673
9.049 918	673	9.051 086	14	9.052 215	694	9.052 901	687	9.055 018	1242	9.056 211	654	9.056 422	661	9.056 810	673
9.049 919	673	9.051 088	14	9.052 216	694	9.052 901	695	9.055 019	1242	9.056 212	654	9.056 423	661	9.056 811	664
9.049 920	673	9.051 091	14	9.052 222	694	9.052 903	694	9.055 020	1242	9.056 213	654	9.056 424	661	9.056 814	664
9.049 925	673	9.051 150	13	9.052 226	694	9.052 905	694	9.055 022	1242	9.056 214	654	9.056 425	661	9.056 816	663
9.049 926	673	9.051 151	13	9.052 232	694	9.052 910	694	9.055 023	1242	9.056 215	654	9.056 426	661	9.056 820	673
9.049 927	673	9.051 152	13	9.052 301	696	9.052 913	694	9.055 025	1242	9.056 216	654	9.056 427	661	9.056 821	673
9.049 931	673	9.051 153	13	9.052 302	696	9.052 915	694	9.055 026	1242	9.056 217	654	9.056 461	653	9.056 822	673
9.049 932	673	9.051 154	13	9.052 303	696	9.052 920	694	9.055 027	1242	9.056 219	654	9.056 500	653	9.056 823	673
9.049 933	673	9.051 155	13	9.052 304	696	9.052 923	695	9.055 028	1242	9.056 220	655	9.056 502	653	9.056 824	681
9.049 934	673	9.051 156	13	9.052 305	696	9.052 925	695	9.055 031	1242	9.056 221	655	9.056 503	653	9.056 825	681
9.049 936	673	9.051 236	700	9.052 311	696	9.052 930	695	9.055 032	1242	9.056 222	655	9.056 504	653	9.056 826	681
9.049 937	673	9.051 244	700	9.052 312	696	9.052 941	695	9.055 034	1242	9.056 223	655	9.056 505	653	9.056 827	681
9.049 941	674	9.051 254	700	9.052 313	696	9.052 942	695	9.055 037	1242	9.056 224	655	9.056 506	653	9.056 828	681
9.049 942	674	9.051 263	700	9.052 314	696	9.052 943	695	9.055 500	670	9.056 225	655	9.056 507	653	9.056 829	681
9.049 943	674	9.051 268	700	9.052 315	696	9.052 944	695	9.055 500	1366	9.056 226	655	9.056 641	664	9.056 830	681
9.049 944	674	9.051 273	700	9.052 321	696	9.052 951	695	9.055 501	670	9.056 227	655	9.056 643	663	9.056 831	681
9.049 948	674	9.051 286	700	9.052 322	696	9.052 952	687	9.055 501	1366	9.056 230	653	9.056 661	664	9.056 832	681
9.049 949	674	9.051 288	700	9.052 323	696	9.052 952	695	9.055 502	670	9.056 231	653	9.056 662	663	9.056 833	681
9.049 950	674	9.051 291	700	9.052 324	696	9.052 953	695	9.055 502	1366	9.056 232	653	9.056 663	663	9.056 834	681
9.049 951	674	9.051 308	607	9.052 325	696	9.052 954	695	9.055 503	670	9.056 233	653	9.056 666	663	9.056 835	681
9.049 955	675	9.051 320	607	9.052 331	696	9.052 961	695	9.055 503	1366	9.056 234	653	9.056 667	663	9.056 836	681
9.049 959	674	9.051 321	607	9.052 332	696	9.052 962	695	9.055 504	670	9.056 235	653	9.056 671	664	9.056 837	681
9.049 960	674	9.051 324	607	9.052 333	696	9.052 963	695	9.055 504	1366	9.056 236	653	9.056 672	663	9.056 838	681
9.049 961	675	9.051 325	607	9.052 334	696	9.052 964	695	9.055 510	670	9.056 237	653	9.056 673	663	9.056 839	682
9.049 962	675	9.051 424	699	9.052 335	696	9.052 973	695	9.055 510	1366	9.056 239	653	9.056 674	664	9.056 840	681
9.049 963	675	9.051 436	699	9.052 341	696	9.052 975	695	9.055 511	670	9.056 240	655	9.056 676	663	9.056 841	681
9.049 964	675	9.051 444	699	9.052 342	696	9.052 980	695	9.055 511	1366	9.056 241	655	9.056 679	664	9.056 842	681
9.049 965	674	9.051 454	699	9.052 343	696	9.053 044	669	9.055 512	670	9.056 242	655	9.056 691	664	9.056 843	681
9.049 980	674	9.051 455	699	9.052 344	696	9.053 048	669	9.055 512	1366	9.056 243	655	9.056 692	663	9.056 844	681
9.049 981	675	9.051 456	699	9.052 345	696	9.053 049	669	9.055 513	670	9.056 244	655	9.056 699	664	9.056 845	681
9.049 982	675	9.051 457	699	9.052 361	696	9.053 055	669	9.055 513	1366	9.056 245	655	9.056 711	664	9.056 846	681
9.049 990	675	9.051 458	699	9.052 362	696	9.053 064	669	9.055 520	670	9.056 246	655	9.056 712	663	9.056 847	681
9.049 991	675	9.051 459	699	9.052 363	696	9.053 068	669	9.055 520	1366	9.056 247	655	9.056 713	663	9.056 887	1026
9.049 992	675	9.051 460	699	9.052 364	696	9.053 069	669	9.055 521	670	9.056 251	656	9.056 716	663	9.056 888	1026
9.049 993	675	9.051 471	699	9.052 365	696	9.053 075	669	9.055 521	1366	9.056 252	656	9.056 721	664	9.056 891	661
9.049 996	675	9.051 474	699	9.052 366	696	9.053 222	669	9.055 522	670	9.056 253	656	9.056 722	663	9.056 892	661
9.049 997	675	9.051 519	700	9.052 367	696	9.053 223	669	9.055 522	1366	9.056 254	656	9.056 723	663	9.056 893	661
9.050 018	77	9.051 531	700	9.052 368	696	9.053 224	669	9.055 523	670	9.056 255	656	9.056 724	664	9.056 894	661

9.056 895	661	9.060 106	660	9.068 289	546	9.071 684	61	9.072 078	63	9.072 508	87	9.072 873	72	9.073 054	74
9.056 896	661	9.060 200	660	9.068 290	546	9.071 685	61	9.072 079	63	9.072 514	87	9.072 874	72	9.073 055	74
9.056 897	661	9.060 201	660	9.068 291	546	9.071 686	62	9.072 080	64	9.072 519	87	9.072 875	72	9.073 056	74
9.056 898	661	9.060 202	660	9.068 292	546	9.071 687	62	9.072 081	64	9.072 524	87	9.072 876	72	9.073 057	74
9.056 899	191	9.060 203	660	9.068 293	546	9.071 688	62	9.072 082	64	9.072 525	1371	9.072 877	72	9.073 060	74
9.056 899	1026	9.060 204	660	9.068 294	546	9.071 689	62	9.072 085	64	9.072 526	1371	9.072 878	72	9.073 061	74
9.057 005	665	9.060 205	660	9.068 295	546	9.071 690	62	9.072 090	64	9.072 646	92	9.072 879	72	9.073 062	74
9.057 011	665	9.060 206	660	9.068 296	546	9.071 691	62	9.072 092	73	9.072 648	92	9.072 880	72	9.073 063	74
9.057 012	665	9.060 207	660	9.068 500	662	9.071 692	65	9.072 092	80	9.072 656	92	9.072 881	72	9.073 064	74
9.057 041	665	9.060 303	661	9.068 501	662	9.071 701	63	9.072 093	73	9.072 658	92	9.072 882	72	9.073 065	74
9.057 042	665	9.060 304	661	9.068 502	662	9.071 702	63	9.072 093	80	9.072 681	858	9.072 883	72	9.073 066	74
9.057 105	1213	9.060 305	661	9.068 503	662	9.071 706	63	9.072 094	73	9.072 682	858	9.072 884	72	9.073 067	74
9.057 107	1213	9.060 306	661	9.068 504	662	9.071 707	63	9.072 094	80	9.072 683	858	9.072 885	72	9.073 070	71
9.057 116	1213	9.062 303	655	9.068 505	662	9.071 707	1372	9.072 095	80	9.072 684	858	9.072 886	72	9.073 071	45
9.057 117	1213	9.062 304	655	9.068 506	662	9.071 707	1372	9.072 103	78	9.072 685	858	9.072 887	72	9.073 071	71
9.057 191	665	9.062 305	655	9.068 507	662	9.071 817	68	9.072 108	78	9.072 741	81	9.072 893	73	9.073 072	45
9.057 193	665	9.062 400	655	9.068 699	662	9.071 824	68	9.072 114	78	9.072 741	88	9.072 893	75	9.073 072	71
9.057 219	665	9.062 402	655	9.068 702	662	9.071 836	68	9.072 119	78	9.072 742	81	9.072 894	73	9.073 073	45
9.057 220	665	9.062 403	655	9.068 703	662	9.071 844	68	9.072 124	78	9.072 742	88	9.072 895	73	9.073 073	71
9.057 222	665	9.062 405	655	9.069 003	1026	9.071 854	68	9.072 133	78	9.072 743	81	9.072 896	73	9.073 074	45
9.057 225	665	9.062 406	655	9.069 011	365	9.071 863	68	9.072 135	78	9.072 743	88	9.072 897	73	9.073 074	71
9.057 226	665	9.062 407	655	9.069 922	97	9.071 896	65	9.072 138	78	9.072 745	81	9.072 898	73	9.073 075	71
9.057 228	665	9.062 704	656	9.069 924	97	9.071 897	66	9.072 144	78	9.072 745	88	9.072 899	73	9.073 300	1114
9.057 341	665	9.062 706	656	9.070 200	78	9.071 899	66	9.072 149	78	9.072 748	81	9.072 900	73	9.073 310	91
9.057 342	665	9.063 106	657	9.070 201	78	9.071 917	68	9.072 154	78	9.072 748	88	9.072 901	73	9.073 311	91
9.057 433	667	9.063 107	657	9.070 202	78	9.071 924	68	9.072 155	63	9.072 750	81	9.072 902	73	9.073 312	91
9.057 452	667	9.063 206	658	9.070 203	78	9.071 936	68	9.072 156	63	9.072 750	88	9.072 903	73	9.073 313	91
9.057 453	667	9.063 301	657	9.070 204	78	9.071 944	68	9.072 157	63	9.072 751	81	9.072 904	73	9.073 314	81
9.057 454	667	9.063 303	657	9.070 205	78	9.071 954	68	9.072 158	63	9.072 751	88	9.072 905	84	9.073 314	88
9.057 565	666	9.063 304	657	9.070 210	78	9.071 963	68	9.072 159	1117	9.072 752	81	9.072 914	86	9.073 315	81
9.057 571	666	9.063 305	657	9.070 211	78	9.071 966	65	9.072 160	78	9.072 752	88	9.072 915	86	9.073 315	86
9.057 572	666	9.063 306	657	9.070 212	78	9.071 968	66	9.072 161	78	9.072 755	81	9.072 919	86	9.073 315	88
9.057 578	666	9.063 307	657	9.070 213	78	9.071 969	66	9.072 162	78	9.072 755	88	9.072 924	86	9.073 318	81
9.057 605	666	9.063 308	657	9.070 301	46	9.071 979	62	9.072 163	78	9.072 757	81	9.072 929	86	9.073 318	86
9.057 611	666	9.063 309	657	9.070 302	46	9.071 980	62	9.072 164	68	9.072 757	88	9.072 932	74	9.073 318	88
9.057 612	666	9.063 310	657	9.070 303	46	9.071 981	62	9.072 165	68	9.072 759	81	9.072 934	74	9.073 319	81
9.057 618	666	9.063 402	657	9.070 304	46	9.071 982	62	9.072 166	68	9.072 759	88	9.072 943	75	9.073 319	88
9.057 712	666	9.063 403	657	9.070 305	46	9.071 983	62	9.072 167	68	9.072 762	81	9.072 944	75	9.073 320	81
9.057 771	666	9.063 404	657	9.070 306	46	9.071 984	62	9.072 168	85	9.072 762	88	9.072 945	75	9.073 320	88
9.057 772	666	9.063 405	657	9.070 307	46	9.071 985	62	9.072 169	85	9.072 771	81	9.072 946	75	9.073 321	86
9.057 791	666	9.063 406	657	9.070 308	46	9.071 987	62	9.072 170	85	9.072 771	88	9.072 947	75	9.073 322	86
9.057 792	666	9.063 407	657	9.070 408	79	9.071 988	62	9.072 171	85	9.072 773	81	9.072 948	75	9.073 344	71
9.057 795	666	9.063 408	657	9.070 414	79	9.071 989	62	9.072 172	85	9.072 773	86	9.072 949	75	9.073 345	71
9.057 798	666	9.063 409	657	9.070 419	79	9.071 991	62	9.072 173	85	9.072 773	88	9.072 950	75	9.073 346	71
9.057 800	666	9.063 410	657	9.070 424	79	9.071 992	62	9.072 175	85	9.072 775	81	9.072 951	75	9.073 347	71
9.057 812	666	9.063 411	657	9.070 505	79	9.071 995	62	9.072 177	85	9.072 775	86	9.072 952	75	9.073 348	71
9.058 326	665	9.063 604	656	9.070 508	79	9.071 996	62	9.072 181	61	9.072 775	88	9.072 953	75	9.073 349	71
9.058 327	665	9.063 606	656	9.070 514	79	9.071 997	62	9.072 182	61	9.072 777	81	9.072 954	75	9.073 355	89
9.058 328	665	9.063 607	656	9.070 519	79	9.071 998	62	9.072 183	61	9.072 777	88	9.072 955	75	9.073 356	89
9.058 623	667	9.063 611	656	9.070 524	79	9.071 999	62	9.072 184	61	9.072 778	69	9.072 965	70	9.073 357	89
9.058 624	667	9.063 804	658	9.070 808	79	9.072 000	61	9.072 185	61	9.072 778	81	9.072 966	70	9.073 358	89
9.058 642	667	9.063 805	658	9.070 814	79	9.072 001	61	9.072 210	68	9.072 778	88	9.072 967	70	9.073 359	89
9.058 643	667	9.063 905	656	9.070 817	79	9.072 002	61	9.072 211	68	9.072 779	69	9.072 968	70	9.073 360	89
9.058 644	667	9.063 906	656	9.070 824	79	9.072 003	61	9.072 325	69	9.072 779	72	9.072 970	70	9.073 361	89
9.058 663	667	9.063 907	656	9.070 836	79	9.072 004	61	9.072 326	69	9.072 781	69	9.072 971	71	9.073 362	89
9.058 664	667	9.063 909	656	9.070 844	79	9.072 005	61	9.072 327	69	9.072 781	72	9.072 971	70	9.073 363	89
9.058 682	667	9.065 104	656	9.070 854	79	9.072 007	61	9.072 331	60	9.072 782	69	9.072 972	71	9.073 364	89
9.058 683	667	9.065 105	656	9.070 863	79	9.072 008	61	9.072 332	60	9.072 783	82	9.072 972	70	9.073 365	81
9.058 684	667	9.065 106	656	9.070 873	79	9.072 009	61	9.072 334	60	9.072 784	82	9.072 973	70	9.073 365	88
9.058 809	666	9.065 107	656	9.070 886	79	9.072 010	61	9.072 335	60	9.072 785	82	9.072 974	75	9.073 366	81
9.058 812	666	9.065 108	656	9.070 917	79	9.072 011	61	9.072 336	60	9.072 786	82	9.072 975	75	9.073 366	88
9.058 839	666	9.065 109	656	9.070 924	79	9.072 012	61	9.072 337	60	9.072 787	82	9.072 976	75	9.073 368	81
9.058 842	666	9.066 597	655	9.070 936	79	9.072 013	61	9.072 338	60	9.072 788	82	9.072 977	75	9.073 368	88
9.058 865	666	9.066 598	656	9.070 944	79	9.072 014	61	9.072 371	79	9.072 789	82	9.072 978	75	9.073 369	81
9.058 869	666	9.068 210	546	9.070 954	79	9.072 015	61	9.072 372	79	9.072 808	86	9.072 979	75	9.073 369	88
9.058 872	666	9.068 211	546	9.070 963	79	9.072 016	61	9.072 373	79	9.072 814	86	9.072 981	69	9.073 370	81
9.058 935	666	9.068 212	546	9.071 405	68	9.072 017	61	9.072 374	79	9.072 819	86	9.072 982	69	9.073 370	88
9.058 939	666	9.068 213	546	9.071 408	68	9.072 018	61	9.072 375	79	9.072 824	86	9.072 983	69	9.073 373	82
9.058 942	666	9.068 214	546	9.071 414	68	9.072 019	61	9.072 376	79	9.072 850	84	9.072 984	69	9.073 374	82
9.058 946	666	9.068 215	546	9.071 419	68	9.072 020	61	9.072 377	79	9.072 851	84	9.072 985	69	9.073 375	82
9.058 951	666	9.068 216	546	9.071 424	68	9.072 041	80	9.072 378	79	9.072 852	84	9.072 986	69	9.073 376	82
9.058 965	666	9.068 218	546	9.071 508	68	9.072 041	84	9.072 379	80	9.072 853	84	9.072 987	69	9.073 377	82
9.058 969	666	9.068 220	546	9.071 514	68	9.072 042	80	9.072 380	80	9.072 854	84	9.072 988	69	9.073 378	82
9.058 975	365	9.068 224	546	9.071 519	68	9.072 051	80	9.072 381	80	9.072 855	84	9.072 989	69	9.073 379	83
9.058 981	666	9.068 226	546	9.071 524	68	9.072 052	80	9.072 382	80	9.072 856	84	9.072 990	69	9.073 380	83
9.058 987	666	9.068 227	546	9.071 672	60	9.072 055	80	9.072 383	80	9.072 857	84	9.073 030	75	9.073 381	83
9.059 016	365	9.068 228	546	9.071 673	60	9.072 060	80	9.072 384	80	9.072 858	84	9.073 031	75	9.073 385	71
9.059 017	365	9.068 229	546	9.071 674	60	9.072 061	80	9.072 385	80	9.072 859	84	9.073 032	75	9.073 386	71
9.059 018	365	9.068 276	546	9.071 675	60	9.072 062	80	9.072 386	80	9.072 862	84	9.073 033	75	9.073 387	71
9.059 503	684	9.068 277	546	9.071 676	60	9.072 065	80	9.072 387	80	9.072 863	84	9.073 034	75	9.073 388	45
9.059 504	684	9.068 279	546	9.071 677	60	9.072 070	80	9.072 400	64	9.072 866	84	9.073 035	75	9.073 389	45
9.059 513	684	9.068 282	546	9.071 678	60	9.072 071	64	9.072 401	64	9.072 867	84	9.073 036	74	9.073 390	45
9.059 514	684	9.068 283	546	9.071 679	60	9.072 072	64	9.072 402	64	9.072 868	84	9.073 042	74	9.073 391	45
9.060 102	660	9.068 284	546	9.071 680	61	9.072 073	64	9.072 408	87	9.072 869	72	9.073 050	74	9.073 392	45
9.060 103	660	9.068 285	546	9.071 681	61	9.072 075	64	9.072 414	87	9.072 870	72	9.073 051	74	9.073 393	45
9.060 104	660	9.068 287	546	9.071 682	61	9.072 076	63	9.072 419	87	9.072 871	72	9.073 052	74	9.073 394	45
9.060 105	660	9.068 288	546	9.071 683	61	9.072 077	63	9.072 424	87	9.072 872	72	9.073 053	74	9.073 395	73

9.073 396	73	9.102 218	47	9.103 252	77	9.106 510	179	9.112 583	1157	9.116 773	147	9.129 902	1125	9.130 403	1124
9.073 397	73	9.102 220	47	9.103 253	77	9.106 515	179	9.112 584	1157	9.116 775	147	9.129 904	1125	9.130 406	1124
9.073 398	73	9.102 224	47	9.103 254	77	9.106 520	179	9.112 585	1157	9.116 776	148	9.129 909	1125	9.130 407	1124
9.073 399	73	9.102 226	47	9.103 255	77	9.106 525	179	9.112 586	1157	9.116 777	148	9.129 912	1125	9.130 408	1124
9.073 400	73	9.102 228	47	9.103 256	77	9.106 530	179	9.112 587	1157	9.116 778	148	9.129 913	1125	9.130 409	1124
9.073 456	83	9.102 230	47	9.103 257	77	9.106 538	179	9.112 588	1158	9.116 780	148	9.129 914	1125	9.130 410	1124
9.073 457	83	9.102 232	47	9.103 258	77	9.106 540	179	9.112 589	1160	9.116 781	147	9.129 916	1125	9.130 411	1124
9.073 458	83	9.102 321	47	9.103 259	77	9.106 545	179	9.112 590	1160	9.116 782	147	9.129 918	1125	9.130 412	1124
9.073 459	83	9.102 322	47	9.103 279	86	9.106 550	179	9.112 591	1157	9.116 783	147	9.129 919	1125	9.130 413	1124
9.073 464	95	9.102 420	1114	9.103 280	86	9.106 555	179	9.112 592	1157	9.116 784	147	9.129 923	1125	9.130 414	1124
9.073 465	95	9.102 422	1114	9.103 281	86	9.106 560	179	9.112 593	1157	9.116 786	148	9.129 928	1125	9.130 415	1124
9.073 466	95	9.102 424	1114	9.103 282	86	9.106 570	1213	9.112 594	1157	9.116 787	148	9.129 931	1125	9.130 416	1124
9.073 467	95	9.102 426	1114	9.103 283	86	9.106 571	1213	9.112 603	1160	9.116 788	148	9.129 932	1125	9.130 417	1124
9.073 468	95	9.102 430	1115	9.103 284	87	9.106 572	1213	9.112 604	1160	9.116 789	148	9.129 933	1125	9.130 418	1124
9.073 469	95	9.102 958	1230	9.103 285	87	9.106 574	1213	9.112 605	1160	9.116 901	612	9.129 934	1125	9.130 419	1124
9.073 470	95	9.102 959	1230	9.103 286	87	9.106 580	1213	9.112 607	1160	9.116 902	611	9.129 938	1125	9.130 420	1124
9.073 480	72	9.102 960	1230	9.103 287	87	9.106 581	1213	9.112 608	1160	9.116 903	611	9.129 943	1125	9.130 421	1124
9.073 481	72	9.102 961	1230	9.103 288	87	9.106 582	1213	9.112 609	1160	9.116 904	611	9.130 001	276	9.130 422	1124
9.073 500	81	9.102 962	1230	9.103 289	87	9.106 583	1213	9.112 610	1160	9.116 909	612	9.130 002	276	9.130 423	1124
9.073 501	81	9.102 963	1230	9.105 384	234	9.106 600	564	9.112 611	1160	9.116 911	612	9.130 003	276	9.130 424	1124
9.073 502	81	9.102 964	1230	9.105 450	234	9.106 602	564	9.112 651	1272	9.116 924	612	9.130 004	276	9.130 425	1124
9.073 503	81	9.102 970	1231	9.105 451	234	9.106 604	564	9.114 303	1370	9.116 925	612	9.130 007	276	9.130 426	1124
9.073 504	81	9.102 972	1231	9.105 452	234	9.106 620	565	9.114 310	1370	9.116 950	612	9.130 009	276	9.130 427	1124
9.073 505	81	9.102 974	1231	9.105 453	234	9.106 621	564	9.114 331	1371	9.116 960	228	9.130 010	276	9.130 428	1124
9.073 510	69	9.102 977	1231	9.105 700	234	9.106 622	564	9.115 036	108	9.117 002	614	9.130 013	276	9.130 429	1124
9.073 511	69	9.102 984	1231	9.105 701	234	9.106 623	565	9.115 041	108	9.117 003	614	9.130 016	276	9.130 430	1124
9.073 512	69	9.103 011	1114	9.105 702	234	9.106 625	565	9.115 045	108	9.117 004	614	9.130 017	276	9.130 431	1124
9.073 512	498	9.103 012	1114	9.105 703	234	9.106 626	565	9.115 140	108	9.117 012	614	9.130 018	276	9.130 432	1124
9.073 513	69	9.103 013	1114	9.105 704	234	9.106 785	786	9.115 150	108	9.117 013	614	9.130 050	1390	9.130 433	1124
9.073 514	69	9.103 014	1114	9.105 705	234	9.106 788	127	9.115 160	108	9.117 014	614	9.130 051	1390	9.130 434	1124
9.073 515	69	9.103 015	1114	9.105 706	234	9.106 788	1396	9.115 245	108	9.117 100	163	9.130 052	1390	9.130 436	1124
9.073 516	69	9.103 016	1114	9.105 707	234	9.106 837	179	9.115 265	108	9.117 105	163	9.130 053	1390	9.130 437	1124
9.073 517	82	9.103 017	1114	9.105 708	234	9.106 838	179	9.115 295	108	9.117 110	163	9.130 054	1390	9.130 438	1124
9.073 518	82	9.103 035	84	9.105 709	234	9.110 010	182	9.115 301	100	9.117 115	163	9.130 055	1390	9.130 439	1124
9.073 519	82	9.103 036	84	9.105 710	234	9.110 011	182	9.115 302	100	9.117 116	163	9.130 056	1390	9.130 440	1124
9.073 520	82	9.103 037	84	9.105 711	234	9.110 190	602	9.115 303	100	9.117 118	163	9.130 057	1390	9.130 603	275
9.073 681	70	9.103 038	84	9.105 712	234	9.110 191	602	9.115 304	100	9.117 130	164	9.130 058	1390	9.130 605	275
9.073 682	70	9.103 039	84	9.105 713	234	9.110 192	602	9.115 305	100	9.117 131	164	9.130 059	1390	9.130 626	275
9.073 684	70	9.103 040	84	9.105 720	234	9.110 215	496	9.115 306	100	9.117 132	164	9.130 060	1390	9.130 651	275
9.073 686	70	9.103 077	87	9.105 721	234	9.110 215	1103	9.115 307	100	9.117 133	164	9.130 061	1390	9.130 652	275
9.073 688	70	9.103 121	1230	9.105 722	234	9.110 220	496	9.115 308	100	9.117 134	164	9.130 062	1390	9.130 656	275
9.073 740	1114	9.103 122	1230	9.105 723	234	9.110 220	1103	9.115 310	101	9.117 135	164	9.130 063	1390	9.130 657	275
9.073 741	1115	9.103 123	1230	9.105 724	234	9.110 225	496	9.115 311	101	9.117 177	164	9.130 112	275	9.130 658	275
9.073 742	1115	9.103 124	1230	9.105 725	234	9.110 225	1103	9.115 312	101	9.117 199	164	9.130 116	275	9.130 659	275
9.073 743	1115	9.103 125	1230	9.105 726	234	9.110 230	496	9.115 313	101	9.117 220	163	9.130 118	275	9.130 660	275
9.073 778	70	9.103 126	1230	9.105 727	234	9.110 230	1103	9.115 314	101	9.118 921	165	9.130 200	274	9.130 661	275
9.073 779	70	9.103 127	1230	9.105 728	234	9.110 236	496	9.115 315	101	9.118 921	165	9.130 203	274	9.130 663	275
9.073 781	70	9.103 136	45	9.105 729	234	9.110 236	1103	9.115 316	101	9.118 921	164	9.130 210	274	9.130 666	275
9.073 782	70	9.103 137	45	9.105 730	234	9.110 237	496	9.115 350	364	9.118 923	164	9.130 213	274	9.139 850	1373
9.074 051	73	9.103 138	45	9.105 731	234	9.110 237	1103	9.115 351	364	9.118 924	164	9.130 305	274	9.139 851	1373
9.074 052	73	9.103 140	45	9.105 732	234	9.110 290	602	9.115 404	859	9.118 925	164	9.130 306	274	9.139 852	1373
9.074 053	73	9.103 148	45	9.105 733	234	9.110 306	602	9.115 411	859	9.118 926	164	9.130 325	274	9.139 853	1373
9.074 054	73	9.103 149	45	9.105 740	234	9.110 306	1117	9.115 430	859	9.118 928	164	9.130 326	274	9.139 854	1373
9.074 061	73	9.103 200	69	9.106 013	177	9.110 308	602	9.115 450	859	9.118 929	164	9.130 344	274	9.139 855	1373
9.074 062	73	9.103 201	69	9.106 015	177	9.110 308	1117	9.115 480	859	9.118 945	165	9.130 347	274	9.139 856	1373
9.074 063	73	9.103 202	69	9.106 102	177	9.110 320	1116	9.115 485	859	9.118 946	166	9.130 355	274	9.139 857	1373
9.074 064	73	9.103 221	74	9.106 103	177	9.110 322	1116	9.115 487	859	9.118 947	166	9.130 356	274	9.139 858	1373
9.074 071	71	9.103 222	74	9.106 104	177	9.110 324	1116	9.115 501	858	9.118 960	165	9.130 358	274	9.139 859	1373
9.074 072	71	9.103 223	74	9.106 105	177	9.110 380	603	9.115 502	858	9.118 961	165	9.130 359	274	9.139 860	1373
9.074 073	71	9.103 224	74	9.106 106	177	9.110 390	603	9.115 505	858	9.118 962	165	9.130 360	275	9.139 861	1373
9.100 030	157	9.103 225	74	9.106 107	177	9.110 391	603	9.115 506	858	9.118 963	165	9.130 361	275	9.139 862	1373
9.100 030	710	9.103 226	74	9.106 205	177	9.110 452	603	9.115 507	858	9.118 964	165	9.130 362	274	9.139 863	1373
9.100 031	157	9.103 227	74	9.106 208	177	9.110 472	602	9.115 510	939	9.118 965	165	9.130 363	274	9.139 864	1374
9.100 031	710	9.103 228	76	9.106 210	177	9.110 473	602	9.115 515	623	9.118 970	165	9.130 366	275	9.139 865	1374
9.100 032	157	9.103 229	76	9.106 212	177	9.110 474	602	9.115 611	614	9.118 971	166	9.130 367	274	9.139 866	1374
9.100 032	710	9.103 230	76	9.106 213	177	9.110 500	120	9.115 614	614	9.118 975	165	9.130 368	274	9.139 867	1374
9.100 033	157	9.103 231	76	9.106 215	177	9.110 501	120	9.115 615	614	9.118 976	165	9.130 377	276	9.139 868	1374
9.100 040	158	9.103 232	76	9.106 240	177	9.110 510	120	9.115 618	614	9.118 977	165	9.130 378	276	9.139 870	1374
9.100 041	158	9.103 233	76	9.106 241	177	9.110 511	120	9.115 631	614	9.118 978	165	9.130 379	276	9.139 871	1375
9.100 042	158	9.103 234	76	9.106 242	177	9.112 563	1158	9.115 632	614	9.118 979	165	9.130 380	276	9.139 872	1375
9.100 043	158	9.103 235	76	9.106 261	177	9.112 564	1158	9.115 633	614	9.118 980	166	9.130 381	276	9.139 873	1375
9.100 044	158	9.103 236	76	9.106 263	177	9.112 565	1158	9.115 634	614	9.118 981	166	9.130 382	276	9.139 874	1376
9.100 045	158	9.103 237	76	9.106 266	177	9.112 566	1158	9.115 635	614	9.118 982	166	9.130 383	276	9.139 875	1376
9.100 046	158	9.103 238	76	9.106 278	178	9.112 567	1159	9.115 637	614	9.118 983	166	9.130 384	276	9.139 876	1376
9.100 047	158	9.103 239	76	9.106 279	178	9.112 568	1159	9.115 638	614	9.118 984	166	9.130 385	276	9.139 877	1376
9.100 048	158	9.103 240	76	9.106 280	178	9.112 569	1159	9.115 639	614	9.118 985	166	9.130 386	276	9.139 878	1376
9.100 049	158	9.103 241	76	9.106 284	178	9.112 570	1159	9.115 642	614	9.118 986	166	9.130 387	276	9.139 880	1376
9.100 050	158	9.103 242	76	9.106 286	178	9.112 571	1159	9.115 644	614	9.118 987	166	9.130 388	276	9.139 882	1375
9.100 051	158	9.103 243	76	9.106 287	178	9.112 572	1159	9.115 648	614	9.119 900	225	9.130 389	276	9.139 883	1375
9.100 052	158	9.103 244	76	9.106 288	179	9.112 573	1160	9.116 011	613	9.129 800	274	9.130 390	276	9.139 888	1376
9.100 060	158	9.103 245	76	9.106 300	178	9.112 574	1160	9.116 012	613	9.129 801	274	9.130 391	276	9.139 889	1376
9.102 204	47	9.103 246	76	9.106 300	1120	9.112 575	1160	9.116 013	613	9.129 802	274	9.130 392	276	9.139 890	1377
9.102 206	47	9.103 247	76	9.106 310	178	9.112 576	1160	9.116 014	613	9.129 803	274	9.130 393	1124	9.139 892	250
9.102 208	47	9.103 248	77	9.106 310	1120	9.112 577	1160	9.116 015	613	9.129 805	274	9.130 394	1124	9.139 893	250
9.102 210	47	9.103 249	77	9.106 450	180	9.112 578	1160	9.116 017	613	9.129 806	275	9.130 400	1124	9.139 894	250
9.102 214	47	9.103 250	77	9.106 460	180	9.112 579	1156	9.116 771	147	9.129 807	275	9.130 401	1124	9.139 895	1373
9.102 216	47	9.103 251	77	9.106 508	179	9.112 580	1156	9.116 772	147	9.129 808	275	9.130 402	1124	9.139 896	1374

9.139 906	56	9.140 308	572	9.140 532	602	9.141 184	19	9.142 039	588	9.144 044	100	9.149 884	403	9.151 179	1011
9.139 907	56	9.140 309	572	9.140 533	602	9.141 185	19	9.142 040	588	9.144 049	100	9.149 894	403	9.151 181	1008
9.139 916	55	9.140 310	572	9.140 534	602	9.141 186	19	9.142 041	588	9.144 054	100	9.149 898	403	9.151 182	1008
9.139 917	55	9.140 311	572	9.140 535	602	9.141 187	19	9.142 042	588	9.144 059	100	9.149 902	23	9.151 186	1009
9.139 918	56	9.140 312	572	9.140 536	604	9.141 188	19	9.142 043	588	9.144 063	100	9.149 905	23	9.151 423	1009
9.139 919	56	9.140 313	572	9.140 537	604	9.141 224	20	9.142 044	587	9.144 098	1048	9.149 906	23	9.151 427	1009
9.139 921	56	9.140 314	572	9.140 538	604	9.141 236	20	9.142 045	588	9.144 101	1049	9.149 907	23	9.151 433	1009
9.139 922	56	9.140 315	572	9.140 539	604	9.141 244	20	9.142 046	588	9.144 102	1049	9.149 916	23	9.151 442	1009
9.139 925	56	9.140 316	572	9.140 783	154	9.141 254	20	9.142 047	588	9.144 104	1048	9.149 917	23	9.151 453	1009
9.139 926	56	9.140 317	572	9.140 784	154	9.141 260	1252	9.142 048	588	9.144 105	1049	9.149 918	23	9.151 509	1010
9.139 929	53	9.140 318	572	9.140 784	1098	9.141 261	1252	9.142 049	588	9.144 110	1049	9.149 919	23	9.151 510	1010
9.139 930	53	9.140 319	572	9.140 786	154	9.141 263	1252	9.142 050	588	9.144 120	1049	9.150 012	110	9.151 594	1009
9.139 931	53	9.140 320	573	9.140 787	1098	9.141 270	18	9.142 051	588	9.144 140	1049	9.150 015	110	9.151 680	1008
9.139 932	53	9.140 321	573	9.140 788	1098	9.141 271	18	9.142 054	587	9.144 150	1049	9.150 018	110	9.151 682	1008
9.139 933	53	9.140 322	573	9.140 789	1098	9.141 272	18	9.142 063	587	9.144 201	1048	9.150 021	110	9.151 688	1008
9.139 934	53	9.140 323	573	9.140 790	1098	9.141 273	18	9.142 071	587	9.144 202	1048	9.150 025	110	9.151 817	1008
9.139 935	53	9.140 324	573	9.140 791	1098	9.141 274	18	9.142 076	587	9.144 205	1048	9.150 030	110	9.151 850	1023
9.139 936	53	9.140 325	573	9.140 792	1098	9.141 275	18	9.142 120	588	9.144 210	1048	9.150 050	109	9.151 850	1290
9.139 937	53	9.140 326	573	9.140 813	155	9.141 276	18	9.142 121	588	9.144 220	1048	9.150 060	110	9.151 851	1023
9.139 938	53	9.140 327	573	9.140 814	154	9.141 277	18	9.142 122	588	9.144 240	1048	9.150 073	110	9.151 851	1290
9.139 939	53	9.140 328	573	9.140 815	154	9.141 280	19	9.142 123	588	9.144 250	1048	9.150 074	110	9.151 852	1023
9.139 970	58	9.140 329	573	9.140 817	155	9.141 281	19	9.142 124	588	9.144 300	1049	9.150 080	110	9.151 852	1290
9.139 975	58	9.140 330	573	9.140 968	1253	9.141 282	19	9.142 126	588	9.144 301	1049	9.150 081	110	9.151 854	1023
9.139 996	57	9.140 331	573	9.140 969	1253	9.141 283	19	9.142 127	588	9.144 302	1049	9.150 082	110	9.151 854	1290
9.139 997	54	9.140 332	573	9.141 014	18	9.141 301	1229	9.142 128	588	9.144 340	1049	9.150 213	109	9.151 856	1023
9.139 997	57	9.140 333	573	9.141 017	18	9.141 302	1229	9.142 129	588	9.144 350	1049	9.150 218	109	9.151 856	1290
9.139 999	57	9.140 334	573	9.141 024	18	9.141 303	1229	9.142 130	588	9.144 360	1049	9.150 221	109	9.151 857	1023
9.140 000	57	9.140 335	573	9.141 028	18	9.141 304	1230	9.142 131	588	9.144 361	1049	9.150 226	109	9.151 857	1290
9.140 001	57	9.140 336	573	9.141 032	18	9.141 305	1230	9.142 132	588	9.144 372	1048	9.150 461	503	9.151 858	1023
9.140 002	57	9.140 337	573	9.141 036	18	9.141 306	1230	9.142 133	588	9.144 385	1048	9.150 462	503	9.151 858	1290
9.140 003	57	9.140 339	573	9.141 039	18	9.141 307	1230	9.142 134	588	9.144 390	1047	9.150 463	503	9.151 859	1023
9.140 004	57	9.140 361	574	9.141 044	18	9.141 308	1230	9.142 135	588	9.144 391	1047	9.150 464	503	9.151 859	1290
9.140 011	57	9.140 362	574	9.141 053	18	9.141 309	1230	9.142 136	588	9.144 410	1049	9.150 465	503	9.151 860	1023
9.140 021	59	9.140 363	574	9.141 054	18	9.141 310	1230	9.142 137	588	9.144 450	1049	9.150 530	116	9.151 860	1290
9.140 022	59	9.140 364	574	9.141 063	18	9.141 311	1230	9.142 138	588	9.144 460	1048	9.150 620	110	9.151 861	1023
9.140 023	59	9.140 365	574	9.141 068	18	9.141 312	1230	9.142 139	588	9.144 465	1048	9.150 639	503	9.151 861	1290
9.140 025	59	9.140 366	574	9.141 073	18	9.141 313	1230	9.142 140	588	9.144 490	1048	9.150 640	503	9.151 862	1023
9.140 026	59	9.140 367	574	9.141 079	18	9.141 381	20	9.142 141	588	9.144 510	1049	9.150 641	503	9.151 862	1290
9.140 027	59	9.140 368	574	9.141 080	18	9.141 382	20	9.142 142	588	9.144 601	1048	9.150 642	503	9.151 863	1023
9.140 030	59	9.140 369	574	9.141 081	18	9.141 383	20	9.142 143	588	9.144 602	1048	9.150 643	113	9.151 863	1290
9.140 031	59	9.140 370	574	9.141 082	18	9.141 384	20	9.142 246	587	9.144 605	1048	9.150 644	113	9.151 864	1023
9.140 032	59	9.140 371	574	9.141 083	18	9.141 385	20	9.142 251	587	9.144 610	1048	9.150 645	113	9.151 864	1290
9.140 033	59	9.140 372	574	9.141 084	18	9.141 417	21	9.142 257	587	9.144 650	1048	9.150 646	113	9.151 866	1023
9.140 037	59	9.140 373	574	9.141 085	18	9.141 424	21	9.142 259	587	9.144 660	1049	9.150 665	110	9.151 866	1290
9.140 038	59	9.140 374	574	9.141 086	18	9.141 436	21	9.142 271	587	9.144 662	1049	9.150 685	110	9.151 868	1023
9.140 040	59	9.140 375	574	9.141 087	18	9.141 444	21	9.142 272	587	9.144 663	1049	9.150 700	110	9.151 868	1290
9.140 042	59	9.140 377	574	9.141 088	18	9.141 454	21	9.142 273	587	9.144 664	1049	9.150 703	110	9.151 869	1023
9.140 043	59	9.140 378	574	9.141 089	18	9.141 464	21	9.142 476	587	9.144 666	1049	9.150 717	138	9.151 869	1290
9.140 046	59	9.140 385	571	9.141 090	575	9.141 468	21	9.142 834	589	9.144 667	1049	9.150 718	138	9.151 870	1023
9.140 047	59	9.140 386	571	9.141 091	571	9.141 471	21	9.142 846	589	9.144 730	1048	9.150 719	138	9.151 870	1290
9.140 048	59	9.140 387	571	9.141 092	571	9.141 636	21	9.142 857	589	9.144 750	1049	9.150 720	138	9.151 871	1023
9.140 050	59	9.140 388	571	9.141 093	571	9.141 644	21	9.142 866	589	9.144 751	1048	9.150 721	138	9.151 871	1290
9.140 051	59	9.140 389	571	9.141 100	20	9.141 654	21	9.142 867	589	9.144 756	1048	9.150 722	103	9.152 109	108
9.140 054	59	9.140 390	575	9.141 101	20	9.141 664	21	9.142 868	589	9.144 758	1048	9.150 723	103	9.152 125	108
9.140 061	59	9.140 391	575	9.141 102	20	9.141 671	21	9.142 869	589	9.144 759	1047	9.150 724	103	9.156 018	118
9.140 062	59	9.140 392	575	9.141 105	577	9.141 673	21	9.142 934	589	9.144 760	1047	9.150 726	103	9.156 020	118
9.140 063	59	9.140 393	575	9.141 106	577	9.141 676	21	9.142 946	589	9.144 761	1047	9.150 727	103	9.156 027	118
9.140 065	59	9.140 394	575	9.141 107	577	9.141 686	21	9.142 951	589	9.144 770	1047	9.150 728	103	9.156 030	118
9.140 068	59	9.140 395	575	9.141 108	577	9.141 717	21	9.142 957	589	9.144 771	1047	9.150 729	103	9.156 100	455
9.140 070	59	9.140 396	575	9.141 109	577	9.141 724	21	9.142 964	589	9.144 781	1047	9.150 730	103	9.156 101	455
9.140 071	59	9.140 397	575	9.141 110	577	9.141 736	21	9.143 003	22	9.144 791	1047	9.150 732	103	9.156 102	455
9.140 072	59	9.140 398	575	9.141 111	577	9.141 744	21	9.143 006	22	9.144 801	1047	9.150 733	103	9.156 103	455
9.140 073	59	9.140 401	577	9.141 112	577	9.141 754	21	9.143 009	22	9.145 020	1050	9.150 800	110	9.156 104	455
9.140 097	58	9.140 410	591	9.141 113	577	9.141 763	21	9.143 012	22	9.145 020	1288	9.150 801	110	9.156 105	455
9.140 098	58	9.140 411	591	9.141 114	19	9.141 764	21	9.143 015	22	9.148 099	255	9.150 802	110	9.156 106	455
9.140 099	58	9.140 412	591	9.141 117	19	9.141 824	22	9.143 031	23	9.148 100	255	9.150 810	111	9.156 107	455
9.140 100	58	9.140 413	591	9.141 124	19	9.141 836	22	9.143 032	23	9.148 101	256	9.150 811	111	9.156 108	455
9.140 101	58	9.140 414	591	9.141 132	19	9.141 844	22	9.143 033	23	9.148 104	256	9.150 812	111	9.156 110	118
9.140 102	58	9.140 415	591	9.141 136	19	9.141 851	22	9.143 035	23	9.148 200	255	9.150 815	112	9.156 129	455
9.140 103	58	9.140 416	591	9.141 139	19	9.141 854	22	9.143 036	23	9.148 203	255	9.150 816	112	9.156 130	455
9.140 108	59	9.140 502	585	9.141 144	19	9.141 860	571	9.143 037	23	9.148 212	255	9.150 817	112	9.156 131	455
9.140 110	64	9.140 503	585	9.141 154	19	9.141 861	571	9.143 040	22	9.148 216	255	9.150 820	111	9.156 132	455
9.140 110	67	9.140 504	585	9.141 163	19	9.142 001	588	9.143 055	1357	9.148 300	256	9.151 040	1010	9.156 133	455
9.140 113	102	9.140 507	585	9.141 169	1252	9.142 002	588	9.143 056	1357	9.148 301	256	9.151 050	1010	9.156 134	455
9.140 114	102	9.140 508	586	9.141 170	1252	9.142 003	588	9.143 057	1357	9.148 302	256	9.151 051	1010	9.156 135	455
9.140 115	102	9.140 511	586	9.141 171	1252	9.142 004	589	9.143 066	1357	9.148 303	269	9.151 052	1010	9.156 136	455
9.140 116	102	9.140 512	585	9.141 172	1252	9.142 005	589	9.143 067	1357	9.148 304	269	9.151 053	1010	9.156 137	455
9.140 118	102	9.140 513	584	9.141 173	1252	9.142 006	589	9.143 090	48	9.149 860	403	9.151 055	1009	9.156 138	455
9.140 119	102	9.140 514	584	9.141 174	1252	9.142 007	589	9.143 471	30	9.149 862	403	9.151 106	1010	9.156 142	456
9.140 205	109	9.140 515	584	9.141 175	1251	9.142 008	589	9.143 473	30	9.149 872	403	9.151 107	1010	9.156 148	455
9.140 210	109	9.140 516	584	9.141 176	1251	9.142 009	589	9.143 475	30	9.149 873	403	9.151 108	1010	9.156 164	455
9.140 302	572	9.140 517	584	9.141 177	1251	9.142 010	589	9.143 477	30	9.149 874	403	9.151 147	1008	9.156 165	455
9.140 303	572	9.140 518	584	9.141 178	1251	9.142 011	589	9.144 024	100	9.149 875	403	9.151 155	1009	9.156 166	455
9.140 304	572	9.140 519	584	9.141 180	19	9.142 024	587	9.144 032	100	9.149 876	403	9.151 171	1011	9.156 167	455
9.140 305	572	9.140 520	584	9.141 181	19	9.142 036	587	9.144 034	100	9.149 877	403	9.151 175	1011	9.156 168	455
9.140 306	572	9.140 530	602	9.141 182	19	9.142 037	588	9.144 038	100	9.149 878	403	9.151 177	1011	9.156 169	455
9.140 307	572	9.140 531	602	9.141 183	19	9.142 038	588	9.144 041	100	9.149 881	403	9.151 178	1011	9.156 170	455

9.156 171	455	9.160 391	126	9.161 141	1021	9.163 281	1292	9.170 448	1241	9.180 220	153	9.191 038	1057	9.193 075	37
9.156 172	455	9.160 391	1023	9.161 141	1289	9.163 283	1294	9.170 451	1241	9.180 230	153	9.191 040	1057	9.193 112	40
9.156 173	455	9.160 391	1291	9.161 145	1021	9.163 284	1292	9.170 456	1241	9.190 001	24	9.191 148	227	9.193 124	40
9.156 174	456	9.160 392	126	9.161 145	1289	9.163 285	1022	9.170 460	1241	9.190 003	24	9.191 149	227	9.193 141	36
9.156 175	456	9.160 392	1023	9.161 151	1021	9.163 286	1022	9.170 461	1241	9.190 006	24	9.191 150	214	9.193 142	36
9.156 176	456	9.160 392	1291	9.161 151	1289	9.164 050	517	9.170 462	1241	9.190 008	24	9.191 155	227	9.193 143	36
9.156 177	456	9.160 393	126	9.161 155	1021	9.164 075	517	9.170 463	1241	9.190 011	24	9.191 156	227	9.193 144	36
9.156 178	456	9.160 393	1023	9.161 155	1289	9.164 100	517	9.170 464	1241	9.190 013	24	9.191 158	227	9.193 145	36
9.156 179	456	9.160 393	1291	9.161 161	1022	9.164 125	517	9.170 465	1241	9.190 016	24	9.191 159	227	9.193 146	36
9.156 180	456	9.160 394	123	9.161 161	1290	9.164 206	516	9.170 466	1241	9.190 021	24	9.191 160	227	9.193 147	36
9.156 181	456	9.160 533	1274	9.161 162	1022	9.164 209	516	9.170 467	1241	9.190 023	24	9.191 161	227	9.193 200	38
9.156 182	456	9.160 534	1274	9.161 162	1290	9.164 212	516	9.170 570	1241	9.190 026	24	9.191 231	228	9.193 201	38
9.156 183	456	9.160 535	1274	9.161 163	1022	9.164 215	516	9.170 571	1241	9.190 028	24	9.191 233	228	9.193 202	38
9.156 184	456	9.160 536	1274	9.161 163	1290	9.164 218	516	9.170 572	1241	9.190 033	24	9.191 255	1059	9.193 230	37
9.156 185	456	9.160 537	1274	9.161 164	1022	9.164 225	516	9.170 573	1241	9.190 036	24	9.191 262	1057	9.193 231	37
9.156 186	456	9.160 543	1274	9.161 164	1290	9.164 235	516	9.170 574	1241	9.190 038	24	9.191 263	1057	9.193 232	37
9.156 187	456	9.160 651	117	9.161 165	1022	9.164 306	516	9.170 575	1241	9.190 101	25	9.191 265	1057	9.193 233	37
9.156 188	456	9.160 652	117	9.161 165	1290	9.164 309	516	9.170 576	1241	9.190 103	25	9.191 268	1057	9.193 240	37
9.156 233	122	9.160 653	117	9.161 171	1022	9.164 312	516	9.170 577	1241	9.190 106	25	9.191 268	1057	9.193 241	37
9.159 996	119	9.160 654	117	9.161 171	1290	9.164 315	516	9.170 578	1241	9.190 108	25	9.191 271	1057	9.193 242	37
9.160 000	119	9.160 655	117	9.161 172	1022	9.164 318	516	9.170 579	1241	9.190 111	25	9.191 272	1056	9.193 243	37
9.160 001	119	9.160 656	118	9.161 172	1290	9.164 355	517	9.170 580	1241	9.190 112	25	9.191 277	1060	9.193 245	37
9.160 004	114	9.160 657	118	9.161 173	1022	9.164 357	517	9.170 581	1241	9.190 113	25	9.191 278	1060	9.193 246	37
9.160 010	115	9.160 658	118	9.161 173	1290	9.164 373	516	9.170 621	1123	9.190 116	25	9.191 288	1057	9.193 247	37
9.160 012	1275	9.160 659	118	9.161 174	1022	9.164 374	516	9.170 622	1123	9.190 121	25	9.192 387	1061	9.193 248	37
9.160 013	1276	9.160 660	123	9.161 174	1290	9.164 375	516	9.170 623	1123	9.190 123	25	9.192 401	1060	9.193 250	37
9.160 014	1275	9.160 680	119	9.161 175	1022	9.164 410	516	9.170 624	1123	9.190 126	25	9.192 403	1060	9.193 251	37
9.160 020	1275	9.160 702	1247	9.161 175	1290	9.164 411	516	9.170 701	1010	9.190 128	25	9.192 404	1060	9.193 252	37
9.160 022	1275	9.160 703	1247	9.161 181	1290	9.164 412	516	9.171 121	124	9.190 133	25	9.192 405	1061	9.193 253	37
9.160 025	1275	9.160 704	1247	9.161 182	1290	9.164 413	516	9.171 122	124	9.190 136	25	9.192 406	1061	9.193 255	37
9.160 030	1275	9.160 705	1247	9.161 183	1290	9.164 420	516	9.171 123	124	9.190 138	25	9.192 410	1061	9.193 256	37
9.160 035	1275	9.160 706	1247	9.161 184	1290	9.164 421	516	9.171 124	124	9.190 151	25	9.192 415	1061	9.193 257	37
9.160 036	1275	9.160 708	1247	9.161 185	1290	9.164 422	516	9.171 211	124	9.190 153	25	9.192 417	1061	9.193 258	37
9.160 037	1275	9.160 710	1247	9.161 186	1290	9.164 501	1263	9.171 213	124	9.190 156	25	9.192 418	1061	9.193 260	37
9.160 040	1275	9.160 841	1273	9.161 187	1290	9.164 502	1263	9.171 214	124	9.190 158	25	9.192 420	1062	9.193 261	37
9.160 041	1246	9.160 842	1273	9.161 188	1290	9.164 503	1263	9.171 215	124	9.190 161	25	9.192 421	1062	9.193 262	37
9.160 042	1246	9.160 843	1273	9.161 189	1290	9.164 504	1263	9.171 217	124	9.190 162	25	9.192 422	1062	9.193 263	37
9.160 043	1246	9.160 844	1273	9.161 190	1290	9.164 515	1263	9.171 221	124	9.190 163	25	9.192 423	1062	9.193 762	39
9.160 050	1247	9.160 845	1273	9.161 200	1290	9.164 541	1263	9.171 223	124	9.190 166	25	9.192 425	1062	9.193 764	39
9.160 052	1247	9.160 899	1277	9.161 208	1022	9.164 542	1263	9.171 224	124	9.190 171	25	9.192 426	1062	9.193 766	39
9.160 053	1247	9.161 000	1022	9.161 208	1290	9.164 543	1263	9.171 225	124	9.190 173	25	9.192 427	1062	9.193 768	39
9.160 054	1247	9.161 015	1022	9.161 210	1024	9.164 544	1263	9.171 311	124	9.190 176	25	9.192 428	1062	9.193 772	39
9.160 055	1246	9.161 015	1291	9.161 211	1024	9.164 545	1263	9.171 313	124	9.190 178	25	9.192 431	1062	9.193 774	39
9.160 056	1246	9.161 018	1022	9.161 215	1024	9.164 546	1263	9.171 314	124	9.190 183	25	9.192 434	1062	9.193 776	39
9.160 057	1246	9.161 018	1291	9.161 230	1024	9.164 550	1263	9.171 316	124	9.190 186	25	9.192 435	1062	9.193 784	39
9.160 058	1246	9.161 020	1022	9.161 235	1024	9.164 551	1263	9.171 411	126	9.190 188	25	9.192 436	1062	9.193 788	39
9.160 061	1246	9.161 020	1291	9.161 250	1024	9.164 680	1266	9.171 414	126	9.190 200	25	9.192 437	1062	9.193 824	39
9.160 062	1246	9.161 021	1022	9.161 260	1024	9.164 681	1266	9.171 418	126	9.190 202	25	9.192 441	1063	9.193 836	39
9.160 063	1246	9.161 021	1291	9.161 270	1025	9.164 682	1266	9.171 425	126	9.190 205	25	9.192 442	1063	9.193 848	39
9.160 070	1275	9.161 022	1022	9.161 272	1025	9.164 683	1266	9.171 555	1119	9.190 305	25	9.192 445	1061	9.193 948	39
9.160 072	1275	9.161 022	1291	9.161 284	1025	9.164 690	1265	9.172 025	1072	9.190 310	25	9.192 446	1062	9.193 970	39
9.160 075	1275	9.161 024	1022	9.161 285	1025	9.164 691	1265	9.172 026	1072	9.190 320	25	9.192 447	1062	9.193 971	39
9.160 090	1275	9.161 024	1291	9.161 286	1025	9.164 692	1265	9.172 027	1072	9.190 410	26	9.192 448	1062	9.193 972	39
9.160 092	1275	9.161 032	1022	9.161 287	1025	9.164 693	1265	9.172 042	1073	9.190 416	26	9.192 501	1063	9.193 973	39
9.160 095	1275	9.161 032	1291	9.161 288	1025	9.165 101	115	9.172 043	1073	9.190 418	26	9.192 507	1063	9.193 974	39
9.160 124	123	9.161 040	1022	9.161 289	1025	9.170 000	182	9.172 044	1073	9.190 508	26	9.192 550	1060	9.193 975	39
9.160 125	125	9.161 040	1291	9.161 291	1025	9.170 002	181	9.172 050	1073	9.190 516	26	9.192 551	1060	9.193 980	710
9.160 126	125	9.161 050	1022	9.161 292	1025	9.170 003	181	9.172 051	1073	9.190 521	26	9.192 566	1059	9.193 981	33
9.160 127	125	9.161 050	1291	9.161 293	1025	9.170 004	181	9.172 052	1073	9.190 524	26	9.192 567	1059	9.193 981	709
9.160 128	125	9.161 060	1022	9.161 294	1025	9.170 005	181	9.172 053	1073	9.190 600	26	9.192 568	1059	9.193 982	32
9.160 129	125	9.161 060	1291	9.161 295	1024	9.170 006	182	9.172 054	1073	9.190 600	1257	9.192 569	1058	9.193 983	708
9.160 130	124	9.161 061	1291	9.161 296	1024	9.170 010	182	9.172 055	1073	9.190 605	26	9.192 570	1058	9.193 984	708
9.160 131	125	9.161 062	1291	9.161 297	1024	9.170 015	1276	9.172 056	1073	9.190 605	1257	9.192 601	1086	9.193 985	33
9.160 131	1213	9.161 063	1291	9.161 298	1024	9.170 020	1276	9.172 060	1073	9.190 901	27	9.192 602	1086	9.193 985	709
9.160 135	124	9.161 064	1291	9.161 299	1025	9.170 051	181	9.172 061	1073	9.190 902	27	9.192 605	1086	9.193 986	709
9.160 187	125	9.161 065	1291	9.161 300	1025	9.170 052	181	9.172 062	1073	9.190 903	27	9.192 611	1086	9.193 987	709
9.160 188	125	9.161 066	1291	9.161 302	1024	9.170 053	181	9.172 063	1073	9.190 940	365	9.192 612	1086	9.193 988	35
9.160 200	1276	9.161 070	1291	9.161 340	1293	9.170 054	181	9.172 064	1074	9.190 964	1048	9.192 615	1086	9.193 989	35
9.160 205	126	9.161 072	1291	9.161 341	1293	9.170 055	181	9.173 176	109	9.190 965	1048	9.192 641	1086	9.193 990	31
9.160 210	126	9.161 074	1291	9.161 350	1293	9.170 056	181	9.180 040	152	9.190 966	1048	9.192 642	1086	9.193 992	40
9.160 270	178	9.161 078	1019	9.161 352	1293	9.170 057	181	9.180 050	152	9.190 967	1048	9.192 646	1086	9.193 993	40
9.160 271	178	9.161 079	1020	9.161 370	1293	9.170 058	181	9.180 060	152	9.190 968	1048	9.192 711	1086	9.193 997	35
9.160 380	125	9.161 079	1270	9.161 380	1023	9.170 059	181	9.180 070	152	9.190 969	1048	9.192 712	1086	9.193 998	35
9.160 380	1023	9.161 080	1020	9.161 381	1023	9.170 060	181	9.180 080	152	9.190 973	1046	9.192 714	1086	9.194 000	31
9.160 380	1291	9.161 080	1270	9.161 382	1023	9.170 061	181	9.180 112	153	9.190 974	1063	9.192 751	1086	9.194 001	712
9.160 381	125	9.161 086	1020	9.161 386	1294	9.170 100	1243	9.180 117	153	9.190 975	1063	9.192 752	1086	9.194 002	870
9.160 381	1023	9.161 086	1270	9.161 395	1023	9.170 141	1241	9.180 120	153	9.190 976	1064	9.192 755	1086	9.194 003	870
9.160 381	1291	9.161 098	1020	9.161 395	1291	9.170 143	1241	9.180 125	153	9.190 977	1064	9.192 761	1086	9.194 004	870
9.160 386	126	9.161 098	1271	9.161 400	1293	9.170 146	1241	9.180 130	153	9.190 980	1046	9.192 762	1086	9.194 005	249
9.160 386	1023	9.161 110	1021	9.163 250	1292	9.170 148	1241	9.180 140	153	9.190 981	1046	9.192 765	1086	9.194 005	994
9.160 386	1291	9.161 110	1289	9.163 251	1292	9.170 151	1241	9.180 142	153	9.190 982	1046	9.193 012	40	9.194 006	249
9.160 387	126	9.161 120	1021	9.163 252	1292	9.170 153	1241	9.180 150	153	9.190 983	1046	9.193 018	40	9.194 006	994
9.160 387	1023	9.161 120	1289	9.163 253	1292	9.170 401	1241	9.180 199	153	9.190 984	1047	9.193 024	40	9.194 007	249
9.160 387	1291	9.161 130	1021	9.163 273	1294	9.170 417	1241	9.180 200	153	9.190 985	1289	9.193 071	37	9.194 007	994
9.160 388	126	9.161 130	1289	9.163 274	1294	9.170 432	1241	9.180 201	153	9.191 010	228	9.193 072	37	9.194 009	712
9.160 388	1023	9.161 140	1021	9.163 275	1294	9.170 442	1241	9.180 210	153	9.191 036	1057	9.193 073	37	9.194 011	595
9.160 388	1291	9.161 140	1289	9.163 280	1292	9.170 443	1241	9.180 215	153	9.191 037	1057	9.193 074	37	9.194 015	33

9.194 016	33	9.197 130	454	9.197 652	438	9.200 426	103	9.203 462	598	9.205 345	142	9.206 300	151	9.207 297	150
9.194 017	33	9.197 138	454	9.197 654	438	9.200 428	103	9.203 463	598	9.205 358	142	9.206 734	151	9.207 298	150
9.194 021	35	9.197 140	454	9.197 655	438	9.200 430	103	9.203 465	598	9.205 359	142	9.206 735	151	9.207 299	150
9.194 022	35	9.197 144	454	9.197 658	438	9.200 440	103	9.203 466	598	9.205 365	142	9.206 736	151	9.207 336	149
9.194 023	35	9.197 145	454	9.197 689	1261	9.200 450	103	9.203 467	598	9.205 366	142	9.206 737	151	9.207 338	149
9.194 024	35	9.197 146	454	9.197 717	439	9.200 518	102	9.203 468	598	9.205 369	142	9.206 738	151	9.207 340	149
9.194 025	35	9.197 147	454	9.197 725	439	9.200 524	102	9.203 482	598	9.205 370	142	9.206 941	144	9.207 356	149
9.194 026	33	9.197 149	454	9.197 735	439	9.200 526	102	9.203 483	598	9.205 372	142	9.206 944	144	9.207 357	149
9.194 026	649	9.197 176	455	9.198 010	450	9.200 529	102	9.203 485	598	9.205 373	142	9.206 951	144	9.207 435	153
9.194 027	34	9.197 177	455	9.198 050	590	9.200 533	102	9.203 486	598	9.205 374	142	9.206 956	144	9.207 436	153
9.194 028	34	9.197 178	455	9.198 766	438	9.200 536	102	9.203 487	598	9.205 379	142	9.206 957	144	9.207 437	153
9.194 029	34	9.197 179	455	9.198 767	438	9.200 700	104	9.203 488	598	9.205 380	142	9.206 961	144	9.207 439	153
9.194 030	118	9.197 194	454	9.198 910	438	9.200 701	104	9.203 531	598	9.205 382	142	9.206 962	144	9.207 440	153
9.194 031	118	9.197 195	454	9.198 919	438	9.200 702	104	9.203 532	598	9.205 384	142	9.206 967	144	9.207 445	153
9.194 032	95	9.197 205	448	9.198 920	438	9.200 703	104	9.203 533	598	9.205 386	142	9.206 968	144	9.207 452	153
9.194 513	38	9.197 206	448	9.198 925	438	9.200 704	104	9.203 534	598	9.205 387	142	9.206 973	144	9.207 460	153
9.194 514	38	9.197 207	448	9.198 930	438	9.200 705	104	9.203 535	598	9.205 392	142	9.206 976	144	9.207 465	153
9.194 515	38	9.197 251	590	9.198 935	438	9.200 706	104	9.204 206	117	9.205 394	142	9.206 977	144	9.207 510	153
9.194 516	38	9.197 252	590	9.198 940	438	9.201 025	126	9.204 207	117	9.205 397	142	9.207 113	146	9.207 512	153
9.194 517	38	9.197 253	590	9.198 945	438	9.201 025	503	9.204 220	117	9.205 398	142	9.207 114	146	9.207 514	153
9.194 523	38	9.197 256	590	9.198 950	438	9.201 030	126	9.204 222	116	9.205 482	142	9.207 115	146	9.207 517	153
9.194 524	38	9.197 257	590	9.198 960	438	9.201 030	503	9.204 231	117	9.205 492	142	9.207 133	146	9.207 521	153
9.194 525	38	9.197 258	590	9.198 970	438	9.201 035	126	9.204 232	117	9.205 608	143	9.207 134	146	9.207 525	153
9.194 526	38	9.197 311	590	9.198 980	438	9.201 035	503	9.204 233	117	9.205 609	143	9.207 135	146	9.207 529	153
9.194 527	38	9.197 312	590	9.200 014	103	9.201 040	126	9.204 234	117	9.205 616	143	9.207 153	147	9.207 601	150
9.194 533	38	9.197 313	590	9.200 017	103	9.201 040	503	9.204 235	117	9.205 619	143	9.207 154	147	9.207 602	150
9.194 534	38	9.197 314	590	9.200 020	103	9.201 052	127	9.204 325	118	9.205 621	143	9.207 155	147	9.207 603	150
9.194 535	38	9.197 321	590	9.200 022	103	9.201 052	503	9.204 332	119	9.205 630	143	9.207 156	147	9.207 611	150
9.194 536	38	9.197 322	590	9.200 028	103	9.201 053	127	9.204 610	122	9.205 634	143	9.207 157	147	9.207 612	150
9.194 537	38	9.197 355	590	9.200 035	103	9.201 053	503	9.205 142	142	9.205 644	143	9.207 158	147	9.207 613	150
9.194 543	38	9.197 356	590	9.200 037	103	9.201 055	127	9.205 143	142	9.205 645	143	9.207 163	148	9.207 621	150
9.194 544	38	9.197 359	591	9.200 114	103	9.201 055	503	9.205 144	142	9.205 657	143	9.207 165	148	9.207 622	150
9.194 545	38	9.197 363	591	9.200 117	103	9.201 057	127	9.205 145	142	9.205 658	143	9.207 167	148	9.207 623	150
9.194 546	38	9.197 364	591	9.200 120	103	9.201 057	503	9.205 146	142	9.205 665	143	9.207 168	148	9.207 631	150
9.194 547	38	9.197 400	450	9.200 122	103	9.201 058	127	9.205 147	142	9.205 668	143	9.207 169	148	9.207 632	150
9.194 553	38	9.197 403	116	9.200 128	103	9.201 058	503	9.205 148	142	9.205 672	143	9.207 174	148	9.207 707	154
9.194 554	38	9.197 404	116	9.200 135	103	9.201 059	127	9.205 149	142	9.205 680	143	9.207 179	148	9.207 708	154
9.194 555	38	9.197 405	116	9.200 137	103	9.201 059	503	9.205 150	142	9.205 700	143	9.207 182	148	9.207 709	154
9.194 556	38	9.197 406	116	9.200 150	103	9.201 061	127	9.205 157	140	9.205 701	143	9.207 183	148	9.207 710	154
9.194 557	38	9.197 407	116	9.200 155	103	9.201 061	503	9.205 158	140	9.205 702	143	9.207 184	148	9.207 712	154
9.194 563	38	9.197 408	116	9.200 160	103	9.201 062	127	9.205 159	140	9.205 703	143	9.207 185	148	9.207 713	154
9.194 564	38	9.197 424	116	9.200 165	103	9.201 062	503	9.205 160	140	9.205 704	143	9.207 189	148	9.207 715	154
9.194 565	38	9.197 426	116	9.200 170	103	9.201 065	127	9.205 166	140	9.205 705	143	9.207 190	148	9.207 717	154
9.194 566	38	9.197 431	116	9.200 177	103	9.201 065	503	9.205 170	140	9.205 706	143	9.207 200	149	9.207 718	154
9.194 567	38	9.197 433	116	9.200 181	103	9.201 091	126	9.205 171	140	9.205 707	143	9.207 203	149	9.207 720	154
9.196 020	623	9.197 435	116	9.200 182	103	9.201 092	126	9.205 173	140	9.205 708	143	9.207 205	149	9.207 722	154
9.196 024	623	9.197 460	439	9.200 183	103	9.201 093	126	9.205 174	140	9.205 709	143	9.207 207	149	9.207 725	154
9.196 036	623	9.197 461	439	9.200 184	103	9.201 113	127	9.205 179	140	9.205 732	143	9.207 208	149	9.207 801	150
9.196 044	623	9.197 462	439	9.200 203	104	9.201 113	502	9.205 180	140	9.205 733	143	9.207 210	149	9.207 811	150
9.196 054	623	9.197 463	439	9.200 204	104	9.201 118	127	9.205 184	140	9.205 734	143	9.207 221	148	9.207 812	150
9.196 063	623	9.197 464	439	9.200 205	104	9.201 118	502	9.205 187	140	9.205 735	143	9.207 222	148	9.207 813	150
9.196 224	624	9.197 465	439	9.200 206	104	9.201 121	127	9.205 192	140	9.205 740	143	9.207 223	148	9.207 821	150
9.196 236	624	9.197 466	439	9.200 207	104	9.201 121	502	9.205 195	140	9.205 745	140	9.207 224	148	9.207 822	150
9.196 244	624	9.197 490	1245	9.200 208	104	9.201 125	127	9.205 200	140	9.205 758	140	9.207 225	148	9.207 823	150
9.196 254	624	9.197 496	1245	9.200 220	104	9.201 125	502	9.205 222	141	9.205 765	140	9.207 226	148	9.207 831	150
9.196 263	624	9.197 497	1245	9.200 225	104	9.201 126	127	9.205 233	141	9.205 769	140	9.207 231	149	9.207 832	150
9.197 001	452	9.197 499	1245	9.200 232	104	9.201 126	502	9.205 245	141	9.205 772	140	9.207 232	149	9.207 833	150
9.197 003	452	9.197 502	438	9.200 243	104	9.201 131	127	9.205 246	141	9.205 774	140	9.207 233	149	9.207 834	150
9.197 006	451	9.197 503	438	9.200 252	104	9.201 131	502	9.205 258	141	9.205 782	140	9.207 234	149	9.207 835	150
9.197 007	452	9.197 504	438	9.200 267	104	9.201 135	127	9.205 259	141	9.205 784	140	9.207 235	149	9.207 841	150
9.197 009	451	9.197 505	438	9.200 269	104	9.201 135	502	9.205 260	141	9.205 787	140	9.207 236	149	9.207 842	150
9.197 011	452	9.197 506	438	9.200 270	104	9.201 140	127	9.205 265	141	9.205 792	140	9.207 241	149	9.207 843	150
9.197 013	452	9.197 507	438	9.200 275	104	9.201 140	502	9.205 266	141	9.205 800	146	9.207 242	149	9.207 844	150
9.197 019	453	9.197 508	438	9.200 282	104	9.201 143	127	9.205 267	141	9.205 804	140	9.207 243	149	9.207 845	150
9.197 020	453	9.197 509	438	9.200 283	104	9.201 143	502	9.205 269	141	9.205 805	140	9.207 244	149	9.207 846	150
9.197 021	451	9.197 510	438	9.200 292	104	9.201 219	127	9.205 270	141	9.205 806	140	9.207 245	149	9.207 865	150
9.197 022	451	9.197 512	438	9.200 297	104	9.201 219	502	9.205 273	141	9.205 807	140	9.207 246	149	9.207 866	150
9.197 023	451	9.197 514	438	9.200 324	102	9.201 222	127	9.205 274	141	9.205 808	140	9.207 247	149	9.207 867	150
9.197 024	451	9.197 515	438	9.200 327	102	9.201 222	502	9.205 275	141	9.205 809	140	9.207 251	150	9.207 869	150
9.197 030	452	9.197 520	438	9.200 328	102	9.201 232	127	9.205 279	141	9.205 816	141	9.207 252	150	9.207 871	150
9.197 031	452	9.197 525	438	9.200 335	102	9.201 232	502	9.205 280	141	9.205 818	141	9.207 253	150	9.207 872	150
9.197 032	452	9.197 530	438	9.200 345	102	9.201 235	127	9.205 282	141	9.205 820	141	9.207 254	150	9.207 873	150
9.197 033	453	9.197 535	438	9.200 370	105	9.201 235	502	9.205 284	141	9.205 823	141	9.207 255	150	9.207 874	150
9.197 034	453	9.197 540	438	9.200 372	104	9.201 590	108	9.205 285	141	9.205 824	142	9.207 256	150	9.207 875	150
9.197 036	453	9.197 545	438	9.200 373	104	9.201 596	108	9.205 287	141	9.205 825	142	9.207 257	150	9.208 076	410
9.197 053	440	9.197 550	438	9.200 374	104	9.203 322	597	9.205 292	141	9.205 827	142	9.207 261	149	9.208 080	410
9.197 054	440	9.197 560	438	9.200 375	104	9.203 323	597	9.205 294	141	9.205 830	142	9.207 262	149	9.208 081	410
9.197 055	440	9.197 570	438	9.200 376	104	9.203 325	597	9.205 300	141	9.205 833	142	9.207 263	149	9.208 100	410
9.197 060	448	9.197 580	438	9.200 377	104	9.203 328	597	9.205 301	141	9.205 836	142	9.207 264	149	9.208 101	410
9.197 101	455	9.197 590	439	9.200 378	104	9.203 330	597	9.205 302	141	9.205 839	142	9.207 265	149	9.208 120	407
9.197 121	454	9.197 591	439	9.200 379	104	9.203 332	597	9.205 303	141	9.205 898	145	9.207 270	148	9.208 121	407
9.197 122	454	9.197 592	439	9.200 380	105	9.203 372	597	9.205 304	141	9.205 899	145	9.207 291	150	9.208 131	407
9.197 124	454	9.197 593	439	9.200 392	860	9.203 373	597	9.205 305	141	9.205 904	151	9.207 292	150	9.208 131	410
9.197 125	454	9.197 594	439	9.200 394	860	9.203 375	597	9.205 306	141	9.205 906	151	9.207 293	150	9.208 201	145
9.197 126	454	9.197 595	439	9.200 412	103	9.203 376	597	9.205 307	141	9.205 910	151	9.207 294	150	9.208 202	145
9.197 127	454	9.197 643	439	9.200 416	103	9.203 377	597	9.205 308	141	9.205 914	151	9.207 295	150	9.208 203	145
9.197 128	454	9.197 645	439	9.200 420	103	9.203 378	597	9.205 309	141	9.205 918	151	9.207 296	150	9.208 204	145

9.208 205	145	9.209 517	606	9.220 945	1119	9.221 291	1388	9.222 072	1357	9.223 394	90	9.224 291	169	9.226 707	545
9.208 207	145	9.209 518	606	9.220 950	1119	9.221 300	1353	9.222 075	1357	9.223 395	90	9.224 292	449	9.226 708	545
9.208 208	145	9.209 529	606	9.220 980	182	9.221 305	1353	9.222 221	1358	9.223 397	90	9.224 292	556	9.226 709	545
9.208 209	145	9.209 559	606	9.220 990	182	9.221 310	1353	9.222 222	1358	9.223 400	90	9.224 293	449	9.226 710	545
9.208 210	145	9.209 581	606	9.221 001	1352	9.221 315	1353	9.222 225	1358	9.223 401	90	9.224 307	173	9.226 711	545
9.208 211	145	9.209 582	606	9.221 002	1352	9.221 320	1353	9.222 230	1358	9.223 402	90	9.224 310	173	9.226 712	545
9.208 212	145	9.209 714	612	9.221 002	1355	9.221 325	1353	9.222 232	1358	9.223 403	90	9.224 311	173	9.226 713	545
9.208 213	145	9.209 718	612	9.221 003	1352	9.221 328	1353	9.222 235	1358	9.223 491	88	9.224 312	173	9.226 714	545
9.208 214	145	9.209 725	612	9.221 004	1352	9.221 330	1353	9.222 242	1358	9.223 492	88	9.224 320	173	9.226 715	545
9.208 215	145	9.209 732	612	9.221 005	1352	9.221 335	1353	9.222 245	1358	9.223 493	88	9.224 322	173	9.226 716	545
9.208 216	145	9.209 735	612	9.221 006	1352	9.221 340	1353	9.222 250	1358	9.223 494	88	9.224 330	173	9.226 717	545
9.208 217	145	9.209 803	146	9.221 007	1352	9.221 345	1353	9.222 252	1358	9.223 500	87	9.224 401	171	9.226 718	545
9.208 218	145	9.209 806	146	9.221 010	1352	9.221 347	1353	9.222 255	1358	9.223 501	87	9.224 425	172	9.226 719	545
9.208 219	145	9.209 807	146	9.221 011	1352	9.221 348	1353	9.223 110	81	9.223 502	87	9.224 440	172	9.226 720	545
9.208 222	145	9.209 808	146	9.221 012	1352	9.221 448	1355	9.223 110	88	9.223 503	87	9.224 445	172	9.226 721	545
9.208 380	144	9.209 809	146	9.221 013	1352	9.221 448	1354	9.223 111	81	9.223 504	87	9.224 448	173	9.226 722	545
9.208 381	144	9.209 810	146	9.221 014	1352	9.221 449	1354	9.223 111	88	9.223 505	87	9.224 460	172	9.226 723	545
9.208 382	144	9.209 817	146	9.221 015	1352	9.221 450	1354	9.223 112	81	9.223 506	87	9.224 470	172	9.226 724	545
9.208 383	144	9.209 819	146	9.221 016	1352	9.221 455	1354	9.223 112	88	9.223 507	87	9.224 471	172	9.226 725	545
9.208 384	144	9.209 820	146	9.221 021	1352	9.221 460	1354	9.223 113	81	9.223 508	87	9.224 472	172	9.226 726	545
9.208 385	144	9.209 821	146	9.221 022	1352	9.221 465	1354	9.223 113	88	9.223 701	269	9.224 501	173	9.226 727	545
9.208 386	144	9.209 839	146	9.221 023	1352	9.221 470	1354	9.223 114	81	9.223 705	269	9.224 502	173	9.226 728	545
9.208 387	144	9.209 840	146	9.221 024	1352	9.221 475	1354	9.223 114	88	9.223 710	269	9.224 761	449	9.226 729	545
9.208 439	144	9.209 841	146	9.221 025	1352	9.221 480	1354	9.223 120	81	9.223 721	269	9.224 761	556	9.226 730	545
9.208 440	144	9.209 842	146	9.221 026	1352	9.221 485	1354	9.223 120	88	9.223 722	269	9.224 762	449	9.226 731	545
9.208 441	144	9.209 844	147	9.221 040	1355	9.221 487	1354	9.223 152	92	9.223 730	269	9.224 762	556	9.226 732	545
9.208 442	144	9.209 851	147	9.221 041	1355	9.221 488	1354	9.223 155	92	9.223 731	269	9.225 027	168	9.226 733	545
9.208 443	144	9.209 852	147	9.221 051	1356	9.221 489	1354	9.223 160	92	9.223 741	269	9.225 030	168	9.226 734	545
9.208 444	144	9.209 858	147	9.221 052	1356	9.221 490	1354	9.223 162	92	9.223 742	269	9.225 033	168	9.226 735	545
9.208 445	144	9.209 859	147	9.221 053	1356	9.221 491	1354	9.223 165	92	9.223 751	269	9.225 081	168	9.226 736	545
9.208 930	594	9.210 143	122	9.221 061	1356	9.221 492	1354	9.223 166	92	9.223 752	269	9.226 650	544	9.226 737	545
9.208 931	594	9.220 013	112	9.221 062	1356	9.221 493	1354	9.223 223	89	9.223 756	269	9.226 651	544	9.226 738	545
9.208 940	594	9.220 015	112	9.221 063	1356	9.221 494	1354	9.223 224	89	9.223 771	269	9.226 652	544	9.226 739	545
9.208 941	594	9.220 018	112	9.221 065	1356	9.221 590	1355	9.223 225	89	9.223 791	269	9.226 653	544	9.226 740	545
9.209 004	606	9.220 021	112	9.221 080	1352	9.221 603	1355	9.223 226	89	9.223 900	168	9.226 654	544	9.226 741	545
9.209 005	606	9.220 025	112	9.221 081	1352	9.221 607	1354	9.223 231	1115	9.223 901	168	9.226 655	544	9.226 742	545
9.209 014	64	9.220 030	112	9.221 082	1352	9.221 609	1354	9.223 232	1115	9.223 902	170	9.226 656	544	9.226 743	545
9.209 018	64	9.220 115	112	9.221 083	1352	9.221 620	1354	9.223 233	1115	9.223 904	171	9.226 657	544	9.226 744	545
9.209 025	64	9.220 118	112	9.221 084	1352	9.221 621	1354	9.223 234	1115	9.223 905	171	9.226 658	544	9.226 745	545
9.209 032	64	9.220 121	112	9.221 085	1352	9.221 622	1354	9.223 236	89	9.223 906	171	9.226 659	544	9.226 746	545
9.209 045	64	9.220 125	112	9.221 086	1352	9.221 623	1354	9.223 237	89	9.223 907	174	9.226 660	544	9.226 747	545
9.209 065	64	9.220 201	111	9.221 105	1353	9.221 624	1354	9.223 238	89	9.223 915	174	9.226 661	544	9.226 748	545
9.209 067	64	9.220 202	111	9.221 110	1353	9.221 625	1354	9.223 239	89	9.223 916	174	9.226 662	544	9.229 990	608
9.209 068	65	9.220 203	111	9.221 111	1353	9.221 626	1354	9.223 240	89	9.223 917	174	9.226 663	544	9.229 991	608
9.209 069	64	9.220 204	111	9.221 112	1353	9.221 650	1356	9.223 252	89	9.223 918	174	9.226 664	544	9.229 992	608
9.209 075	64	9.220 205	111	9.221 113	1353	9.221 692	1352	9.223 255	89	9.223 919	174	9.226 665	544	9.230 002	609
9.209 076	64	9.220 206	111	9.221 115	1353	9.221 693	1352	9.223 340	91	9.224 000	451	9.226 666	544	9.230 003	609
9.209 077	64	9.220 207	111	9.221 116	1353	9.221 694	1352	9.223 341	91	9.224 026	449	9.226 667	544	9.230 004	609
9.209 081	64	9.220 208	111	9.221 117	1353	9.221 695	1352	9.223 342	91	9.224 026	556	9.226 668	544	9.230 006	609
9.209 083	64	9.220 210	111	9.221 118	1353	9.221 707	1354	9.223 343	91	9.224 028	449	9.226 669	544	9.230 007	609
9.209 086	64	9.220 213	111	9.221 119	1353	9.221 709	1354	9.223 344	91	9.224 028	556	9.226 670	544	9.230 009	609
9.209 088	64	9.220 215	111	9.221 120	1353	9.221 720	1354	9.223 345	91	9.224 031	449	9.226 671	544	9.230 012	609
9.209 114	606	9.220 218	111	9.221 121	1355	9.221 721	1354	9.223 346	91	9.224 031	556	9.226 672	544	9.230 053	609
9.209 114	687	9.220 221	111	9.221 122	1355	9.221 722	1354	9.223 347	91	9.224 032	449	9.226 673	544	9.230 054	609
9.209 118	606	9.220 313	111	9.221 125	1355	9.221 723	1354	9.223 348	91	9.224 032	556	9.226 674	544	9.230 056	609
9.209 125	606	9.220 318	111	9.221 126	1355	9.221 724	1354	9.223 349	91	9.224 033	449	9.226 675	544	9.230 057	609
9.209 132	606	9.220 321	111	9.221 131	1355	9.221 726	1354	9.223 350	91	9.224 033	556	9.226 676	544	9.230 058	609
9.209 135	606	9.220 363	111	9.221 132	1355	9.221 735	1354	9.223 351	91	9.224 041	167	9.226 677	544	9.230 059	609
9.209 137	60	9.220 368	111	9.221 172	1353	9.221 801	1389	9.223 354	91	9.224 042	167	9.226 678	544	9.230 061	609
9.209 138	60	9.220 371	111	9.221 196	1356	9.221 802	1389	9.223 355	91	9.224 043	167	9.226 679	544	9.230 062	609
9.209 139	60	9.220 415	112	9.221 210	1353	9.221 803	1389	9.223 356	91	9.224 044	167	9.226 680	544	9.230 107	608
9.209 140	60	9.220 421	112	9.221 225	1353	9.221 804	1389	9.223 357	91	9.224 045	167	9.226 681	544	9.230 110	608
9.209 146	607	9.220 490	115	9.221 250	1353	9.221 805	1389	9.223 358	91	9.224 051	167	9.226 682	544	9.230 112	608
9.209 186	607	9.220 491	115	9.221 251	1353	9.221 806	1389	9.223 359	91	9.224 054	167	9.226 683	544	9.230 114	608
9.209 188	607	9.220 492	115	9.221 252	1353	9.221 807	1389	9.223 360	91	9.224 115	168	9.226 684	544	9.230 119	608
9.209 190	607	9.220 493	115	9.221 255	1353	9.221 808	1389	9.223 370	90	9.224 126	168	9.226 685	544	9.230 124	608
9.209 258	607	9.220 495	115	9.221 270	1386	9.221 809	1389	9.223 371	90	9.224 127	168	9.226 686	544	9.230 129	608
9.209 260	607	9.220 510	115	9.221 271	1386	9.221 831	1355	9.223 372	90	9.224 130	168	9.226 687	544	9.230 145	608
9.209 262	607	9.220 515	115	9.221 272	1386	9.221 832	1355	9.223 373	90	9.224 135	168	9.226 688	544	9.230 160	608
9.209 320	607	9.220 607	115	9.221 273	1386	9.221 833	1355	9.223 374	90	9.224 226	168	9.226 689	544	9.230 161	608
9.209 322	607	9.220 610	115	9.221 274	1386	9.221 834	1355	9.223 375	90	9.224 227	168	9.226 690	544	9.230 162	608
9.209 324	607	9.220 613	115	9.221 275	1386	9.221 835	1355	9.223 376	90	9.224 230	168	9.226 691	544	9.230 163	608
9.209 326	607	9.220 615	115	9.221 276	1386	9.221 836	1355	9.223 377	90	9.224 252	169	9.226 692	545	9.230 164	608
9.209 327	607	9.220 616	115	9.221 277	1387	9.221 837	1355	9.223 378	90	9.224 253	169	9.226 693	545	9.230 165	608
9.209 329	607	9.220 620	115	9.221 278	1388	9.221 838	1355	9.223 379	90	9.224 254	169	9.226 694	545	9.230 166	608
9.209 331	607	9.220 625	115	9.221 279	1388	9.221 839	1355	9.223 380	90	9.224 258	169	9.226 695	545	9.230 167	608
9.209 414	606	9.220 630	115	9.221 280	1388	9.221 840	1355	9.223 381	90	9.224 263	169	9.226 696	545	9.230 168	608
9.209 418	606	9.220 812	114	9.221 281	1389	9.222 021	1357	9.223 384	90	9.224 264	169	9.226 697	545	9.230 203	29
9.209 425	606	9.220 816	114	9.221 282	1389	9.222 022	1357	9.223 385	90	9.224 266	449	9.226 698	545	9.230 205	29
9.209 432	606	9.220 820	114	9.221 283	1389	9.222 025	1357	9.223 386	90	9.224 266	556	9.226 699	545	9.230 208	29
9.209 435	606	9.220 830	114	9.221 284	1389	9.222 030	1357	9.223 387	90	9.224 267	171	9.226 700	545	9.230 210	29
9.209 440	64	9.220 841	115	9.221 285	1389	9.222 032	1357	9.223 388	90	9.224 268	169	9.226 701	545	9.230 212	29
9.209 441	64	9.220 850	114	9.221 286	1388	9.222 035	1357	9.223 389	90	9.224 269	169	9.226 702	545	9.230 214	29
9.209 442	64	9.220 851	114	9.221 287	1388	9.222 061	1357	9.223 390	90	9.224 274	170	9.226 703	545	9.230 217	29
9.209 443	64	9.220 852	114	9.221 288	1388	9.222 062	1357	9.223 391	90	9.224 278	170	9.226 704	545	9.230 218	29
9.209 444	64	9.220 853	114	9.221 289	1388	9.222 065	1357	9.223 392	90	9.224 284	136	9.226 705	545	9.230 221	29
9.209 514	606	9.220 940	1119	9.221 290	1388	9.222 070	1357	9.223 393	90	9.224 289	136	9.226 706	545	9.230 223	29

9.230 226	29	9.230 829	1259	9.231 335	1258	9.233 400	370	9.236 788	368	9.250 245	106	9.251 186	94	9.252 070	697
9.230 229	29	9.230 830	1259	9.231 336	1258	9.234 253	784	9.236 790	368	9.250 250	106	9.251 187	94	9.252 090	697
9.230 231	29	9.230 831	1259	9.231 337	1258	9.234 254	784	9.236 800	368	9.250 260	106	9.251 188	94	9.252 110	697
9.230 236	29	9.230 832	1259	9.231 338	1258	9.234 510	772	9.236 801	368	9.250 306	106	9.251 189	94	9.252 125	697
9.230 241	29	9.230 833	1259	9.231 339	1258	9.234 511	772	9.236 810	399	9.250 308	106	9.251 190	94	9.252 150	697
9.230 247	29	9.230 834	1259	9.231 340	1258	9.234 512	772	9.236 811	399	9.250 310	106	9.251 191	94	9.252 185	697
9.230 250	29	9.230 835	1259	9.231 341	1258	9.234 513	772	9.236 812	399	9.250 313	106	9.251 192	94	9.252 240	697
9.230 256	29	9.230 836	1259	9.231 342	1258	9.234 514	772	9.236 813	399	9.250 314	106	9.251 193	94	9.252 270	697
9.230 260	29	9.230 837	1259	9.231 345	1259	9.234 515	772	9.236 814	399	9.250 316	106	9.251 194	94	9.252 320	697
9.230 264	29	9.231 010	1254	9.231 347	1259	9.234 990	370	9.236 815	399	9.250 319	106	9.251 195	94	9.252 330	698
9.230 271	29	9.231 012	1254	9.231 369	1258	9.235 120	372	9.236 816	399	9.250 327	106	9.251 196	94	9.252 331	698
9.230 279	29	9.231 015	1254	9.231 372	1258	9.235 135	395	9.236 817	399	9.250 340	107	9.251 197	94	9.252 332	698
9.230 287	29	9.231 017	1254	9.231 374	1258	9.235 145	390	9.236 818	399	9.250 350	107	9.251 200	93	9.252 333	698
9.230 294	29	9.231 019	1254	9.231 375	1258	9.235 245	368	9.236 819	399	9.250 351	107	9.251 201	93	9.252 334	698
9.230 481	29	9.231 022	1254	9.231 377	1258	9.235 250	368	9.236 840	402	9.250 389	107	9.251 202	93	9.252 335	698
9.230 482	29	9.231 024	1254	9.231 379	1258	9.235 255	368	9.236 841	402	9.250 390	107	9.251 203	93	9.252 338	698
9.230 483	29	9.231 028	1254	9.231 381	1258	9.235 260	368	9.236 842	402	9.250 391	107	9.251 204	93	9.252 339	698
9.230 484	29	9.231 032	1254	9.231 385	1258	9.235 265	368	9.236 843	402	9.250 392	107	9.251 205	93	9.252 340	698
9.230 485	29	9.231 038	1254	9.231 388	1258	9.235 275	368	9.236 844	402	9.250 393	107	9.251 208	95	9.252 341	698
9.230 486	29	9.231 042	1254	9.231 403	1259	9.235 276	368	9.236 845	402	9.250 394	107	9.251 210	95	9.252 342	698
9.230 487	29	9.231 052	1254	9.231 404	1259	9.235 277	368	9.236 846	402	9.250 399	107	9.251 212	95	9.252 343	698
9.230 488	29	9.231 066	1254	9.231 413	1259	9.235 278	368	9.236 847	402	9.250 400	107	9.251 215	95	9.252 344	698
9.230 503	29	9.231 072	1254	9.231 414	1259	9.235 279	368	9.236 848	402	9.250 401	107	9.251 220	95	9.252 345	698
9.230 505	29	9.231 076	1254	9.231 421	1258	9.235 505	369	9.236 849	402	9.250 402	107	9.251 225	95	9.252 348	698
9.230 508	29	9.231 077	1254	9.231 422	1258	9.235 510	369	9.236 850	369	9.250 403	107	9.251 237	93	9.252 349	698
9.230 510	29	9.231 082	1254	9.231 423	1258	9.235 525	369	9.236 852	369	9.250 404	107	9.251 241	93	9.252 500	697
9.230 512	29	9.231 100	1255	9.231 424	1258	9.235 536	369	9.236 854	369	9.250 405	107	9.251 248	93	9.252 501	697
9.230 514	29	9.231 101	1255	9.231 425	1258	9.235 545	369	9.236 858	369	9.250 406	107	9.251 307	96	9.252 502	697
9.230 517	29	9.231 102	1255	9.231 426	1258	9.235 546	369	9.236 860	369	9.250 407	107	9.251 311	96	9.252 503	697
9.230 518	29	9.231 103	1255	9.231 427	1258	9.235 547	369	9.236 862	369	9.250 630	109	9.251 316	96	9.252 504	697
9.230 521	29	9.231 104	1255	9.231 428	1258	9.235 548	369	9.236 864	369	9.250 635	109	9.251 319	96	9.252 505	697
9.230 523	29	9.231 105	1255	9.231 429	1258	9.235 549	369	9.236 866	369	9.250 640	109	9.251 323	96	9.252 506	697
9.230 526	29	9.231 106	1255	9.231 435	1258	9.235 550	369	9.236 868	369	9.250 650	109	9.251 332	96	9.252 507	697
9.230 529	29	9.231 107	1255	9.231 436	1258	9.235 663	371	9.236 870	369	9.250 660	109	9.251 338	96	9.252 512	102
9.230 531	29	9.231 108	1255	9.231 437	1258	9.235 664	371	9.236 872	369	9.250 665	109	9.251 340	96	9.252 513	102
9.230 536	29	9.231 109	1255	9.231 438	1258	9.235 665	371	9.236 874	369	9.250 670	109	9.251 341	96	9.252 514	102
9.230 541	29	9.231 120	1254	9.231 441	1258	9.235 666	371	9.236 876	369	9.250 680	109	9.251 342	96	9.252 515	102
9.230 547	29	9.231 130	1254	9.231 442	1258	9.235 667	371	9.236 879	369	9.250 900	105	9.251 343	96	9.252 516	102
9.230 550	29	9.231 140	1254	9.231 443	1258	9.235 668	371	9.236 880	369	9.250 901	105	9.251 391	94	9.253 006	729
9.230 556	29	9.231 150	1254	9.231 444	1258	9.235 669	371	9.236 881	369	9.250 902	105	9.251 392	94	9.253 008	729
9.230 560	29	9.231 160	1254	9.231 445	1258	9.235 675	371	9.236 882	369	9.250 903	105	9.251 393	94	9.253 131	584
9.230 564	29	9.231 178	1254	9.231 446	1258	9.235 676	371	9.236 936	369	9.250 904	105	9.251 394	94	9.253 135	584
9.230 571	29	9.231 185	1254	9.231 447	1258	9.235 677	371	9.241 131	372	9.250 905	105	9.251 395	94	9.253 140	584
9.230 579	29	9.231 190	1254	9.231 448	1258	9.235 678	371	9.241 134	372	9.250 906	105	9.251 396	94	9.253 406	1292
9.230 650	29	9.231 205	1253	9.231 449	1258	9.235 679	371	9.242 340	372	9.250 907	105	9.251 550	97	9.253 412	1292
9.230 651	29	9.231 207	1253	9.231 456	1258	9.235 680	371	9.243 100	376	9.250 910	105	9.251 551	97	9.260 020	389
9.230 652	29	9.231 209	1253	9.231 457	1258	9.235 705	369	9.243 101	376	9.250 911	105	9.251 552	97	9.260 150	389
9.230 653	29	9.231 210	1253	9.231 458	1258	9.235 708	369	9.243 102	377	9.250 912	105	9.251 553	97	9.260 178	392
9.230 654	29	9.231 211	1253	9.231 460	1258	9.235 710	369	9.243 111	377	9.250 913	105	9.251 554	97	9.260 179	392
9.230 655	29	9.231 212	1253	9.231 461	1258	9.235 720	369	9.243 112	377	9.250 914	105	9.251 555	97	9.260 181	391
9.230 656	29	9.231 213	1253	9.231 462	1258	9.236 021	370	9.243 113	377	9.250 915	105	9.251 556	97	9.260 184	391
9.230 657	29	9.231 214	1253	9.231 463	1258	9.236 022	370	9.243 114	377	9.250 916	105	9.251 557	97	9.260 186	391
9.230 703	30	9.231 215	1253	9.231 464	1258	9.236 023	370	9.243 165	372	9.250 920	105	9.251 558	97	9.260 187	391
9.230 706	30	9.231 216	1253	9.231 465	1258	9.236 024	370	9.246 002	371	9.250 921	105	9.251 559	598	9.260 188	390
9.230 707	30	9.231 218	1253	9.231 466	1258	9.236 025	370	9.246 003	371	9.250 922	105	9.251 560	97	9.260 189	391
9.230 708	30	9.231 220	1253	9.231 510	28	9.236 026	370	9.246 004	371	9.250 923	105	9.251 561	97	9.262 005	393
9.230 709	30	9.231 224	1253	9.231 512	28	9.236 027	370	9.246 005	371	9.250 924	105	9.251 602	94	9.262 010	393
9.230 710	30	9.231 225	1253	9.231 514	28	9.236 028	370	9.246 006	371	9.250 925	105	9.251 605	94	9.262 062	393
9.230 712	30	9.231 226	1253	9.231 516	28	9.236 701	373	9.246 310	371	9.250 930	105	9.251 610	94	9.262 071	390
9.230 714	30	9.231 229	1253	9.231 518	28	9.236 703	373	9.246 311	371	9.250 931	105	9.251 615	94	9.262 080	394
9.230 715	30	9.231 231	1253	9.231 520	28	9.236 705	375	9.246 312	371	9.250 932	105	9.251 620	94	9.262 111	394
9.230 716	30	9.231 232	1253	9.231 522	28	9.236 707	373	9.246 313	371	9.250 933	105	9.251 625	94	9.262 205	393
9.230 718	30	9.231 233	1253	9.231 530	28	9.236 710	373	9.246 314	371	9.250 934	105	9.251 630	94	9.262 210	393
9.230 720	30	9.231 234	1253	9.231 532	28	9.236 711	373	9.246 315	371	9.250 935	105	9.251 635	94	9.262 410	392
9.230 722	30	9.231 237	1253	9.231 534	28	9.236 712	373	9.246 316	371	9.250 936	105	9.251 640	95	9.262 411	392
9.230 724	30	9.231 238	1253	9.231 535	28	9.236 713	373	9.246 317	371	9.250 937	105	9.251 645	95	9.262 521	394
9.230 726	30	9.231 240	1253	9.231 536	28	9.236 714	373	9.246 318	371	9.250 940	108	9.251 650	95	9.262 530	394
9.230 728	30	9.231 245	1253	9.231 541	28	9.236 715	376	9.246 319	371	9.250 941	108	9.251 655	95	9.262 605	203
9.230 730	30	9.231 270	28	9.232 994	435	9.236 716	376	9.250 030	106	9.250 942	108	9.251 660	95	9.262 606	203
9.230 732	30	9.231 271	28	9.232 994	556	9.236 717	376	9.250 035	106	9.250 943	108	9.251 665	95	9.263 004	98
9.230 734	30	9.231 272	28	9.232 996	435	9.236 718	376	9.250 040	106	9.251 003	93	9.251 720	96	9.263 005	98
9.230 736	30	9.231 273	28	9.232 998	435	9.236 719	376	9.250 045	106	9.251 005	93	9.251 725	96	9.263 006	98
9.230 738	30	9.231 274	28	9.232 999	435	9.236 720	368	9.250 050	106	9.251 007	93	9.251 730	96	9.263 007	98
9.230 741	30	9.231 275	28	9.233 000	435	9.236 721	368	9.250 060	106	9.251 011	93	9.251 735	96	9.263 008	98
9.230 745	30	9.231 276	28	9.233 010	370	9.236 722	368	9.250 070	106	9.251 016	93	9.251 740	96	9.263 009	98
9.230 750	30	9.231 277	28	9.233 015	370	9.236 723	368	9.250 130	106	9.251 019	93	9.251 741	96	9.263 010	98
9.230 755	30	9.231 278	28	9.233 116	370	9.236 724	368	9.250 135	106	9.251 023	93	9.251 814	97	9.263 011	98
9.230 760	30	9.231 279	28	9.233 126	370	9.236 725	368	9.250 140	106	9.251 123	93	9.251 819	97	9.263 012	98
9.230 765	30	9.231 326	1259	9.233 210	370	9.236 726	368	9.250 145	106	9.251 128	93	9.251 829	97	9.263 013	98
9.230 821	1259	9.231 327	1259	9.233 216	370	9.236 727	368	9.250 150	106	9.251 133	93	9.252 022	697	9.263 015	98
9.230 822	1259	9.231 328	1259	9.233 226	370	9.236 730	368	9.250 160	106	9.251 138	93	9.252 027	697	9.263 020	98
9.230 823	1259	9.231 329	1259	9.233 325	370	9.236 731	368	9.250 170	106	9.251 141	93	9.252 028	697	9.263 025	98
9.230 824	1259	9.231 330	1259	9.233 326	370	9.236 783	368	9.250 180	106	9.251 146	93	9.252 034	697	9.263 424	99
9.230 825	1259	9.231 331	1259	9.233 365	370	9.236 784	368	9.250 225	106	9.251 157	93	9.252 044	697	9.263 432	99
9.230 826	1259	9.231 332	1259	9.233 367	370	9.236 785	368	9.250 230	106	9.251 161	93	9.252 045	697	9.263 434	99
9.230 827	1259	9.231 333	1259	9.233 369	370	9.236 786	368	9.250 235	106	9.251 169	93	9.252 054	697	9.263 441	99
9.230 828	1259	9.231 334	1258	9.233 372	370	9.236 787	368	9.250 240	106	9.251 185	94	9.252 055	697	9.263 446	99

9.263 452	99	9.270 115	932	9.272 023	849	9.272 375	850	9.273 273	842	9.274 194	832	9.276 011	838	9.276 595	841
9.263 457	99	9.270 116	932	9.272 024	849	9.272 376	850	9.273 276	842	9.274 195	832	9.276 012	838	9.276 600	836
9.263 461	99	9.270 117	932	9.272 025	849	9.272 377	850	9.273 280	842	9.274 196	832	9.276 013	838	9.276 601	836
9.263 466	99	9.270 118	932	9.272 026	849	9.272 380	846	9.273 281	842	9.274 197	832	9.276 243	840	9.276 602	836
9.263 470	99	9.270 119	932	9.272 027	849	9.272 381	846	9.273 282	842	9.274 198	831	9.276 246	840	9.276 603	836
9.263 471	99	9.270 120	932	9.272 028	849	9.272 382	846	9.273 284	842	9.274 199	831	9.276 247	840	9.276 604	836
9.263 472	99	9.270 121	933	9.272 029	849	9.272 383	846	9.273 286	842	9.274 200	831	9.276 248	840	9.276 605	836
9.263 473	99	9.270 122	933	9.272 031	847	9.272 384	846	9.273 288	842	9.274 201	831	9.276 249	840	9.276 606	836
9.263 474	99	9.270 125	933	9.272 032	847	9.272 385	846	9.273 301	851	9.274 202	831	9.276 250	840	9.276 607	836
9.263 475	99	9.270 144	933	9.272 033	847	9.272 387	846	9.273 302	851	9.274 203	831	9.276 251	840	9.276 608	836
9.263 476	99	9.270 147	933	9.272 034	847	9.272 388	846	9.273 305	851	9.274 204	831	9.276 252	840	9.276 609	836
9.263 477	99	9.270 148	933	9.272 036	847	9.272 389	846	9.273 310	851	9.274 206	831	9.276 253	840	9.276 610	836
9.263 526	99	9.270 155	933	9.272 037	847	9.272 390	846	9.273 320	851	9.274 207	831	9.276 254	840	9.276 611	836
9.263 528	99	9.270 156	933	9.272 069	850	9.272 391	846	9.273 325	851	9.274 408	833	9.276 255	840	9.276 612	836
9.263 530	99	9.270 157	933	9.272 070	850	9.272 392	846	9.273 350	851	9.274 409	833	9.276 260	839	9.276 613	836
9.263 532	99	9.270 158	933	9.272 071	850	9.272 507	851	9.273 399	851	9.274 410	833	9.276 261	839	9.276 614	836
9.264 101	248	9.270 159	933	9.272 072	850	9.272 510	851	9.273 826	859	9.274 411	833	9.276 262	839	9.276 620	838
9.264 102	248	9.270 160	933	9.272 073	850	9.272 512	851	9.273 827	859	9.274 412	833	9.276 263	839	9.276 621	838
9.264 103	248	9.270 161	932	9.272 074	850	9.272 513	851	9.273 836	859	9.274 413	833	9.276 264	839	9.276 622	838
9.264 104	248	9.270 162	932	9.272 075	850	9.273 001	845	9.273 837	859	9.274 414	833	9.276 265	839	9.276 623	838
9.264 105	248	9.270 163	932	9.272 076	850	9.273 002	845	9.273 838	859	9.274 415	833	9.276 270	839	9.276 624	838
9.264 106	248	9.270 164	932	9.272 077	850	9.273 003	845	9.273 850	866	9.274 420	833	9.276 271	839	9.276 625	838
9.264 146	240	9.270 165	932	9.272 078	850	9.273 005	845	9.273 851	866	9.274 428	833	9.276 272	839	9.276 626	838
9.264 147	240	9.270 166	932	9.272 079	850	9.273 007	845	9.273 852	866	9.274 438	833	9.276 273	839	9.276 627	838
9.264 160	241	9.270 167	932	9.272 086	850	9.273 012	845	9.273 853	866	9.274 448	833	9.276 274	839	9.276 628	838
9.264 163	242	9.270 168	932	9.272 089	850	9.273 013	845	9.273 860	866	9.274 454	833	9.276 275	839	9.276 629	838
9.264 164	241	9.270 169	932	9.272 090	849	9.273 014	845	9.273 861	866	9.274 462	833	9.276 436	836	9.276 630	838
9.264 165	240	9.270 536	938	9.272 091	849	9.273 015	845	9.273 868	866	9.274 464	833	9.276 438	836	9.276 631	838
9.264 170	241	9.270 538	938	9.272 092	849	9.273 018	845	9.273 868	866	9.274 790	833	9.276 443	836	9.276 645	835
9.264 171	241	9.270 540	938	9.272 093	849	9.273 019	845	9.273 895	860	9.274 791	833	9.276 446	836	9.276 646	835
9.264 172	241	9.270 542	938	9.272 102	850	9.273 101	843	9.273 896	859	9.274 792	833	9.276 447	836	9.276 647	835
9.264 174	242	9.270 734	937	9.272 104	850	9.273 102	843	9.273 900	860	9.274 793	833	9.276 448	836	9.276 648	835
9.264 175	242	9.270 737	937	9.272 105	847	9.273 103	843	9.273 920	860	9.274 794	833	9.276 449	836	9.276 649	835
9.264 190	247	9.270 738	937	9.272 106	847	9.273 104	843	9.273 925	860	9.274 795	833	9.276 450	836	9.276 650	835
9.264 191	247	9.270 764	937	9.272 107	847	9.273 105	843	9.273 928	860	9.274 796	833	9.276 451	836	9.276 651	835
9.264 210	246	9.270 767	937	9.272 108	847	9.273 106	843	9.273 930	861	9.274 797	833	9.276 452	836	9.276 652	835
9.264 211	246	9.270 768	937	9.272 109	847	9.273 107	843	9.273 970	866	9.274 870	833	9.276 453	836	9.276 653	835
9.264 212	246	9.270 780	937	9.272 110	847	9.273 108	843	9.273 980	860	9.275 008	835	9.276 454	836	9.276 679	837
9.264 213	246	9.270 785	936	9.272 111	847	9.273 109	843	9.273 985	860	9.275 020	835	9.276 455	836	9.276 680	837
9.264 214	246	9.270 905	938	9.272 112	847	9.273 110	843	9.273 990	860	9.275 028	835	9.276 456	836	9.276 681	837
9.264 215	246	9.270 915	938	9.272 113	847	9.273 111	843	9.274 005	832	9.275 038	835	9.276 457	836	9.276 682	837
9.264 216	246	9.270 921	933	9.272 114	847	9.273 112	843	9.274 008	832	9.275 048	835	9.276 460	839	9.276 683	837
9.264 217	246	9.270 922	933	9.272 115	847	9.273 113	843	9.274 020	832	9.275 054	835	9.276 461	839	9.276 684	837
9.264 218	246	9.270 923	933	9.272 116	847	9.273 114	843	9.274 028	832	9.275 062	835	9.276 462	839	9.276 685	837
9.264 219	246	9.270 924	933	9.272 117	847	9.273 115	843	9.274 038	832	9.275 070	834	9.276 463	839	9.276 686	837
9.264 220	246	9.270 925	933	9.272 118	847	9.273 116	843	9.274 048	832	9.275 071	834	9.276 464	839	9.276 687	837
9.264 221	246	9.270 990	939	9.272 121	849	9.273 117	843	9.274 054	832	9.275 072	834	9.276 465	839	9.276 688	837
9.264 222	246	9.270 995	939	9.272 122	849	9.273 118	843	9.274 062	832	9.275 073	834	9.276 470	837	9.276 689	837
9.268 100	404	9.271 053	935	9.272 124	849	9.273 119	843	9.274 064	832	9.275 074	834	9.276 471	837	9.276 690	837
9.268 101	404	9.271 055	935	9.272 125	849	9.273 121	845	9.274 080	832	9.275 075	834	9.276 472	837	9.276 691	837
9.268 103	404	9.271 056	935	9.272 127	849	9.273 122	845	9.274 081	832	9.275 076	834	9.276 473	837	9.276 692	837
9.268 110	404	9.271 058	935	9.272 129	849	9.273 123	845	9.274 082	832	9.275 080	834	9.276 474	837	9.276 693	837
9.268 111	404	9.271 082	935	9.272 131	849	9.273 125	845	9.274 083	832	9.275 081	834	9.276 475	837	9.276 694	837
9.268 113	404	9.271 084	935	9.272 250	846	9.273 127	845	9.274 084	832	9.275 082	834	9.276 476	837	9.276 695	837
9.268 120	404	9.271 085	935	9.272 251	846	9.273 132	845	9.274 085	832	9.275 083	834	9.276 477	837	9.276 696	837
9.268 121	404	9.271 086	935	9.272 252	846	9.273 133	845	9.274 086	832	9.275 084	834	9.276 478	837	9.276 697	837
9.268 123	404	9.271 087	935	9.272 253	846	9.273 134	845	9.274 105	830	9.275 085	834	9.276 479	837	9.276 698	837
9.268 130	404	9.271 088	935	9.272 254	846	9.273 135	845	9.274 108	830	9.275 086	834	9.276 480	837	9.276 699	839
9.268 131	404	9.271 225	934	9.272 255	846	9.273 138	845	9.274 120	830	9.275 208	835	9.276 481	837	9.276 700	839
9.268 133	404	9.271 227	934	9.272 256	846	9.273 220	844	9.274 128	830	9.275 220	835	9.276 482	837	9.276 701	839
9.268 140	404	9.271 235	934	9.272 260	842	9.273 221	844	9.274 138	830	9.275 228	835	9.276 483	837	9.276 702	839
9.268 201	404	9.271 237	934	9.272 261	842	9.273 222	844	9.274 148	830	9.275 238	835	9.276 484	837	9.276 703	839
9.268 203	404	9.271 332	941	9.272 262	842	9.273 223	844	9.274 154	830	9.275 248	835	9.276 485	837	9.276 704	839
9.268 210	404	9.271 333	941	9.272 263	842	9.273 224	844	9.274 162	830	9.275 254	835	9.276 486	837	9.276 705	839
9.268 213	404	9.271 334	941	9.272 264	842	9.273 225	844	9.274 164	830	9.275 262	835	9.276 487	837	9.276 706	839
9.268 220	404	9.271 335	941	9.272 265	842	9.273 226	844	9.274 170	830	9.275 738	16	9.276 488	837	9.276 707	839
9.268 223	404	9.271 338	941	9.272 267	842	9.273 232	846	9.274 171	830	9.275 740	16	9.276 489	837	9.276 708	839
9.268 230	404	9.271 980	852	9.272 268	842	9.273 233	846	9.274 172	830	9.275 742	16	9.276 500	840	9.276 709	839
9.268 233	404	9.271 985	852	9.272 269	842	9.273 235	846	9.274 173	830	9.275 744	16	9.276 501	840	9.276 710	839
9.268 240	404	9.271 986	852	9.272 270	842	9.273 236	846	9.274 174	830	9.275 746	16	9.276 502	840	9.276 711	839
9.268 301	404	9.272 000	848	9.272 350	848	9.273 238	846	9.274 175	830	9.275 748	16	9.276 503	840	9.276 712	839
9.268 303	404	9.272 001	848	9.272 351	848	9.273 239	846	9.274 176	830	9.275 772	16	9.276 504	840	9.276 713	839
9.268 310	404	9.272 002	848	9.272 352	848	9.273 257	845	9.274 177	830	9.275 773	16	9.276 505	840	9.276 714	839
9.268 313	404	9.272 003	848	9.272 353	848	9.273 258	845	9.274 178	830	9.275 775	16	9.276 506	840	9.276 715	840
9.268 320	404	9.272 004	848	9.272 354	848	9.273 259	845	9.274 180	830	9.275 776	16	9.276 507	840	9.276 716	840
9.268 323	404	9.272 005	848	9.272 355	848	9.273 260	845	9.274 181	830	9.275 777	16	9.276 508	840	9.276 717	840
9.268 330	404	9.272 006	848	9.272 358	848	9.273 261	845	9.274 182	830	9.275 778	16	9.276 509	840	9.276 718	840
9.268 333	404	9.272 007	848	9.272 359	848	9.273 262	845	9.274 183	830	9.275 779	16	9.276 510	840	9.276 719	840
9.268 340	404	9.272 008	848	9.272 366	850	9.273 263	845	9.274 184	830	9.275 850	15	9.276 511	840	9.276 720	840
9.268 790	404	9.272 009	848	9.272 367	850	9.273 264	845	9.274 185	830	9.275 852	15	9.276 512	840	9.276 733	840
9.269 420	404	9.272 016	849	9.272 368	850	9.273 265	845	9.274 186	830	9.276 002	836	9.276 513	840	9.276 734	840
9.269 480	405	9.272 017	849	9.272 369	850	9.273 266	845	9.274 187	830	9.276 003	836	9.276 514	840	9.276 735	840
9.270 100	932	9.272 018	849	9.272 370	850	9.273 268	845	9.274 188	830	9.276 004	836	9.276 590	841	9.276 736	840
9.270 101	932	9.272 019	849	9.272 371	850	9.273 269	845	9.274 190	832	9.276 006	836	9.276 591	841	9.276 737	840
9.270 102	932	9.272 020	849	9.272 372	850	9.273 270	842	9.274 191	832	9.276 007	836	9.276 592	841	9.276 738	840
9.270 103	932	9.272 021	849	9.272 373	850	9.273 271	842	9.274 192	832	9.276 008	836	9.276 593	841	9.276 739	840
9.270 104	932	9.272 022	849	9.272 374	850	9.273 272	842	9.274 193	832	9.276 010	838	9.276 594	841	9.276 758	838

9.276 759	838	9.280 055	871	9.281 052	869	9.282 514	906	9.282 694	881	9.283 191	893	9.283 969	867	9.284 381	929
9.276 760	838	9.280 056	871	9.281 053	869	9.282 515	906	9.282 695	881	9.283 192	893	9.283 970	867	9.284 382	930
9.276 761	838	9.280 057	871	9.281 054	869	9.282 516	906	9.282 696	881	9.283 193	893	9.284 020	940	9.284 383	930
9.276 762	838	9.280 060	871	9.281 080	865	9.282 517	906	9.282 697	881	9.283 194	893	9.284 021	940	9.284 410	929
9.276 763	838	9.280 061	871	9.281 085	865	9.282 518	906	9.282 698	881	9.283 200	889	9.284 022	922	9.284 411	929
9.276 764	838	9.280 062	871	9.281 086	866	9.282 519	906	9.282 699	881	9.283 201	889	9.284 023	922	9.284 414	929
9.276 765	838	9.280 063	871	9.281 087	866	9.282 520	906	9.282 700	881	9.283 202	889	9.284 024	922	9.284 415	929
9.276 766	838	9.280 065	871	9.281 088	866	9.282 521	906	9.282 701	881	9.283 203	889	9.284 025	922	9.284 420	929
9.276 767	838	9.280 066	871	9.281 090	866	9.282 522	906	9.282 702	881	9.283 204	889	9.284 026	922	9.284 421	929
9.276 768	838	9.280 100	872	9.281 091	866	9.282 523	907	9.282 703	881	9.283 205	889	9.284 027	922	9.284 424	929
9.276 769	838	9.280 101	872	9.281 092	866	9.282 524	907	9.282 704	881	9.283 206	889	9.284 030	922	9.284 425	929
9.276 770	838	9.280 102	872	9.281 094	866	9.282 525	907	9.282 705	881	9.283 207	889	9.284 031	922	9.284 430	929
9.276 818	841	9.280 103	872	9.281 095	866	9.282 526	907	9.282 706	881	9.283 208	889	9.284 032	922	9.284 431	929
9.276 820	841	9.280 104	872	9.281 096	866	9.282 527	907	9.282 707	881	9.283 209	889	9.284 033	922	9.284 434	929
9.276 828	841	9.280 105	872	9.282 400	884	9.282 528	907	9.282 708	881	9.283 210	888	9.284 034	922	9.284 435	929
9.276 838	841	9.280 106	872	9.282 401	884	9.282 529	907	9.282 709	882	9.283 211	888	9.284 035	922	9.284 440	929
9.276 848	841	9.280 113	872	9.282 402	884	9.282 530	907	9.282 710	882	9.283 212	888	9.284 040	916	9.284 441	929
9.276 854	841	9.280 114	872	9.282 403	884	9.282 531	907	9.282 711	882	9.283 213	888	9.284 041	916	9.284 444	929
9.276 862	841	9.280 115	872	9.282 404	884	9.282 532	907	9.282 712	882	9.283 214	888	9.284 042	916	9.284 445	929
9.276 880	841	9.280 116	872	9.282 405	884	9.282 533	907	9.282 713	882	9.283 215	888	9.284 043	916	9.284 450	929
9.276 885	841	9.280 129	872	9.282 406	884	9.282 544	908	9.282 714	882	9.283 216	888	9.284 070	930	9.284 451	929
9.276 887	841	9.280 130	872	9.282 407	884	9.282 552	908	9.282 715	882	9.283 217	888	9.284 071	930	9.284 454	929
9.276 919	1116	9.280 131	912	9.282 408	884	9.282 554	908	9.282 716	882	9.283 218	888	9.284 072	930	9.284 455	929
9.276 920	1116	9.280 132	912	9.282 409	884	9.282 555	908	9.282 717	882	9.283 219	888	9.284 073	930	9.284 460	930
9.276 921	1116	9.280 133	912	9.282 410	884	9.282 556	908	9.282 718	882	9.283 220	888	9.284 074	930	9.284 461	930
9.276 922	1116	9.280 575	894	9.282 411	884	9.282 570	908	9.282 719	882	9.283 221	888	9.284 075	930	9.284 464	930
9.276 923	1116	9.280 576	894	9.282 412	885	9.282 614	881	9.282 720	882	9.283 222	892	9.284 076	930	9.284 465	930
9.276 924	1116	9.280 577	894	9.282 413	885	9.282 615	881	9.282 721	882	9.283 223	892	9.284 077	930	9.284 470	930
9.276 949	841	9.280 578	894	9.282 414	885	9.282 631	880	9.282 722	882	9.283 224	892	9.284 078	930	9.284 471	930
9.276 950	841	9.280 579	894	9.282 415	885	9.282 632	880	9.282 723	883	9.283 225	892	9.284 079	930	9.284 474	930
9.276 951	841	9.280 581	896	9.282 416	885	9.282 633	880	9.282 724	883	9.283 226	892	9.284 080	930	9.284 475	930
9.276 952	841	9.280 602	895	9.282 417	885	9.282 634	880	9.282 725	883	9.283 227	892	9.284 081	930	9.284 480	930
9.276 953	841	9.280 605	895	9.282 418	885	9.282 635	880	9.282 726	883	9.283 228	889	9.284 082	930	9.284 481	930
9.276 954	841	9.280 610	895	9.282 419	885	9.282 636	880	9.282 727	883	9.283 229	889	9.284 083	930	9.284 482	941
9.276 955	841	9.280 620	895	9.282 420	885	9.282 637	880	9.282 728	883	9.283 230	889	9.284 084	930	9.284 503	941
9.277 105	842	9.280 696	895	9.282 421	885	9.282 638	880	9.282 729	882	9.283 240	891	9.284 085	930	9.284 504	941
9.277 110	842	9.280 705	895	9.282 430	886	9.282 639	880	9.282 730	882	9.283 241	891	9.284 086	930	9.284 510	65
9.277 120	842	9.280 710	895	9.282 431	886	9.282 640	880	9.282 731	882	9.283 242	891	9.284 087	930	9.284 511	65
9.277 125	842	9.280 720	895	9.282 432	886	9.282 641	880	9.282 732	884	9.283 243	891	9.284 088	930	9.284 512	65
9.277 150	842	9.280 724	895	9.282 433	886	9.282 642	880	9.282 733	884	9.283 244	891	9.284 089	930	9.284 513	65
9.277 305	399	9.280 726	895	9.282 434	886	9.282 643	880	9.282 734	884	9.283 245	891	9.284 092	930	9.284 514	65
9.277 310	399	9.280 730	895	9.282 435	886	9.282 644	880	9.282 735	884	9.283 246	893	9.284 093	930	9.284 515	65
9.277 325	399	9.280 732	895	9.282 436	886	9.282 645	880	9.282 736	884	9.283 247	893	9.284 161	941	9.284 516	66
9.277 350	399	9.280 741	895	9.282 437	886	9.282 646	880	9.282 737	884	9.283 248	893	9.284 162	941	9.284 517	66
9.277 400	399	9.280 742	895	9.282 438	886	9.282 647	880	9.283 135	919	9.283 249	893	9.284 163	941	9.284 518	66
9.277 515	868	9.280 743	895	9.282 439	886	9.282 648	880	9.283 136	919	9.283 250	893	9.284 164	1280	9.284 519	66
9.277 516	868	9.280 745	895	9.282 440	887	9.282 651	880	9.283 137	919	9.283 251	893	9.284 165	1280	9.284 520	66
9.277 517	868	9.280 751	895	9.282 441	888	9.282 652	880	9.283 138	919	9.283 252	893	9.284 166	1280	9.284 521	66
9.277 518	868	9.280 752	895	9.282 450	885	9.282 653	880	9.283 139	919	9.283 254	891	9.284 167	1280	9.284 522	66
9.277 519	868	9.280 753	895	9.282 451	885	9.282 654	880	9.283 140	919	9.283 257	893	9.284 168	1280	9.284 523	66
9.277 520	868	9.280 755	895	9.282 452	885	9.282 655	880	9.283 141	919	9.283 502	919	9.284 169	1280	9.284 524	66
9.277 521	868	9.280 800	895	9.282 453	885	9.282 656	880	9.283 142	919	9.283 505	919	9.284 170	1280	9.284 525	66
9.277 522	868	9.280 801	895	9.282 454	885	9.282 657	880	9.283 143	919	9.283 516	1283	9.284 180	921	9.284 530	67
9.277 523	868	9.280 802	895	9.282 455	885	9.282 658	880	9.283 144	919	9.283 517	1283	9.284 181	921	9.284 531	65
9.277 524	868	9.280 803	895	9.282 456	885	9.282 661	883	9.283 145	919	9.283 518	1283	9.284 182	921	9.284 531	67
9.277 525	868	9.280 805	895	9.282 457	885	9.282 662	883	9.283 146	919	9.283 576	1186	9.284 183	921	9.284 532	67
9.277 526	868	9.280 810	895	9.282 458	885	9.282 663	883	9.283 147	919	9.283 577	1186	9.284 184	921	9.284 533	67
9.277 527	868	9.280 850	896	9.282 459	885	9.282 664	883	9.283 148	919	9.283 578	1186	9.284 185	921	9.284 534	67
9.277 528	868	9.280 901	895	9.282 460	885	9.282 665	883	9.283 149	919	9.283 579	1186	9.284 190	914	9.284 535	67
9.280 000	868	9.280 903	895	9.282 461	885	9.282 666	883	9.283 150	919	9.283 580	893	9.284 209	1285	9.284 536	67
9.280 001	868	9.280 905	895	9.282 462	885	9.282 667	883	9.283 151	919	9.283 581	893	9.284 225	914	9.284 537	67
9.280 002	868	9.280 923	917	9.282 463	885	9.282 668	883	9.283 152	919	9.283 595	1186	9.284 228	1285	9.284 538	67
9.280 003	868	9.280 924	917	9.282 464	885	9.282 669	883	9.283 153	919	9.283 596	1186	9.284 238	914	9.284 539	67
9.280 004	868	9.280 928	917	9.282 465	885	9.282 670	883	9.283 154	919	9.283 604	918	9.284 250	1285	9.284 540	67
9.280 005	868	9.280 929	917	9.282 466	885	9.282 671	883	9.283 155	919	9.283 615	918	9.284 251	1285	9.284 541	80
9.280 006	868	9.280 930	917	9.282 467	885	9.282 672	883	9.283 156	919	9.283 616	918	9.284 252	1285	9.284 541	931
9.280 007	868	9.280 931	917	9.282 470	887	9.282 673	883	9.283 157	919	9.283 618	918	9.284 256	1285	9.284 542	80
9.280 008	869	9.280 932	917	9.282 471	887	9.282 674	883	9.283 158	919	9.283 623	1202	9.284 257	1285	9.284 542	931
9.280 009	869	9.280 933	917	9.282 472	887	9.282 675	883	9.283 159	919	9.283 624	1202	9.284 258	1285	9.284 543	80
9.280 011	869	9.280 934	917	9.282 473	887	9.282 676	883	9.283 160	919	9.283 656	893	9.284 259	1285	9.284 543	931
9.280 012	870	9.280 935	917	9.282 474	887	9.282 677	883	9.283 161	919	9.283 657	893	9.284 260	1285	9.284 544	80
9.280 014	869	9.280 936	917	9.282 475	887	9.282 678	883	9.283 162	919	9.283 681	918	9.284 281	1099	9.284 544	931
9.280 030	873	9.280 937	917	9.282 476	887	9.282 679	883	9.283 163	919	9.283 800	923	9.284 282	1099	9.284 545	80
9.280 031	873	9.280 938	917	9.282 477	887	9.282 680	883	9.283 164	919	9.283 801	923	9.284 283	1099	9.284 545	931
9.280 032	873	9.280 939	917	9.282 478	887	9.282 681	883	9.283 165	919	9.283 802	923	9.284 285	1099	9.284 567	65
9.280 033	873	9.280 940	917	9.282 479	887	9.282 682	883	9.283 166	919	9.283 803	923	9.284 287	1099	9.284 568	65
9.280 034	873	9.280 941	917	9.282 480	886	9.282 683	883	9.283 167	919	9.283 804	923	9.284 288	1099	9.284 849	928
9.280 035	873	9.280 942	916	9.282 481	887	9.282 684	883	9.283 181	891	9.283 806	921	9.284 292	1099	9.284 850	928
9.280 036	873	9.280 943	916	9.282 482	887	9.282 685	884	9.283 182	891	9.283 808	921	9.284 293	1099	9.284 851	928
9.280 037	873	9.280 944	915	9.282 483	887	9.282 686	884	9.283 183	891	9.283 810	923	9.284 294	1099	9.284 852	928
9.280 038	873	9.280 945	915	9.282 484	887	9.282 687	884	9.283 184	891	9.283 958	867	9.284 295	1285	9.284 853	928
9.280 039	873	9.281 005	867	9.282 500	904	9.282 688	884	9.283 185	891	9.283 961	867	9.284 296	1285	9.284 854	928
9.280 050	871	9.281 005	1229	9.282 501	905	9.282 689	884	9.283 186	891	9.283 962	867	9.284 297	1285	9.284 897	890
9.280 051	871	9.281 041	867	9.282 510	906	9.282 690	884	9.283 187	893	9.283 965	867	9.284 298	1285	9.284 898	890
9.280 052	871	9.281 041	1229	9.282 511	906	9.282 691	884	9.283 188	893	9.283 966	867	9.284 299	1285	9.284 899	890
9.280 053	871	9.281 050	869	9.282 512	906	9.282 692	884	9.283 189	893	9.283 967	867	9.284 300	1285	9.284 900	890
9.280 054	871	9.281 051	869	9.282 513	906	9.282 693	884	9.283 190	893	9.283 968	867	9.284 380	929	9.284 901	890

9.284 902	890	9.287 967	924	9.301 502	255	9.303 858	497	9.304 570	1125	9.315 011	644	9.318 036	98	9.390 189	1056
9.284 903	890	9.287 968	924	9.301 503	50	9.303 859	497	9.304 581	1125	9.315 014	644	9.318 046	98	9.390 190	1056
9.284 904	890	9.287 969	924	9.301 504	50	9.303 860	497	9.304 582	1125	9.315 017	644	9.318 052	98	9.390 330	1218
9.284 905	890	9.287 970	924	9.301 505	50	9.303 862	497	9.304 583	1125	9.315 024	644	9.318 053	98	9.390 331	1218
9.284 906	890	9.287 995	924	9.301 506	50	9.303 864	497	9.304 585	1125	9.315 026	644	9.318 068	98	9.390 332	1218
9.284 907	890	9.287 996	924	9.301 507	50	9.303 865	497	9.304 586	1125	9.315 036	644	9.318 074	98	9.390 333	1218
9.284 908	890	9.287 997	924	9.301 508	50	9.303 866	497	9.304 587	1126	9.315 201	644	9.318 077	98	9.390 337	1218
9.284 909	890	9.287 998	924	9.301 509	50	9.303 868	497	9.304 588	1126	9.315 203	644	9.318 080	98	9.390 338	1218
9.284 910	890	9.288 200	865	9.301 510	50	9.303 870	497	9.304 591	1126	9.315 207	644	9.318 107	98	9.390 345	1217
9.284 920	890	9.288 201	865	9.301 511	50	9.303 872	497	9.305 319	985	9.315 210	644	9.318 134	98	9.390 346	1217
9.284 921	890	9.300 021	366	9.301 538	50	9.303 874	497	9.305 324	985	9.315 217	644	9.318 136	98	9.390 348	1217
9.284 922	890	9.300 022	366	9.301 553	913	9.303 875	497	9.305 329	985	9.315 220	644	9.318 146	98	9.390 350	1219
9.284 923	890	9.300 023	366	9.301 554	913	9.303 876	497	9.305 336	985	9.315 225	644	9.318 168	98	9.390 351	1219
9.284 924	890	9.300 032	366	9.301 555	913	9.303 877	497	9.305 340	985	9.315 237	644	9.318 201	98	9.390 356	1226
9.284 925	890	9.300 037	366	9.301 556	50	9.303 878	497	9.305 341	985	9.315 240	644	9.318 203	98	9.390 401	1220
9.284 926	890	9.300 041	366	9.301 566	50	9.303 879	497	9.305 342	985	9.315 245	644	9.318 205	98	9.390 402	1220
9.284 927	890	9.300 113	366	9.301 567	249	9.303 880	498	9.305 343	985	9.315 329	648	9.318 210	98	9.390 403	1220
9.284 928	890	9.300 123	366	9.301 568	249	9.303 882	498	9.305 344	985	9.315 339	648	9.318 221	98	9.390 410	1220
9.284 929	890	9.300 124	366	9.301 569	249	9.303 883	497	9.305 345	985	9.315 340	648	9.318 232	98	9.390 411	1220
9.284 930	890	9.300 127	366	9.301 641	49	9.303 884	498	9.305 346	985	9.315 343	1110	9.318 407	98	9.390 510	1207
9.284 931	890	9.300 150	366	9.301 643	49	9.303 885	498	9.305 349	984	9.315 344	1110	9.318 408	98	9.390 511	1207
9.284 932	890	9.300 151	366	9.301 645	49	9.303 886	497	9.305 350	984	9.315 345	1110	9.318 409	98	9.390 512	1207
9.284 933	890	9.300 152	366	9.301 647	49	9.303 887	497	9.305 351	984	9.315 346	1110	9.318 411	98	9.390 513	1207
9.284 934	890	9.300 153	366	9.301 649	49	9.303 888	497	9.305 352	984	9.315 412	645	9.380 421	648	9.390 514	1207
9.284 935	890	9.300 154	366	9.301 651	49	9.303 910	501	9.305 353	984	9.315 416	645	9.380 422	648	9.390 515	1221
9.284 936	890	9.300 155	366	9.301 655	49	9.303 911	501	9.305 367	587	9.315 420	645	9.380 423	648	9.390 550	1207
9.284 940	892	9.300 160	366	9.301 661	49	9.303 912	501	9.305 368	587	9.315 421	645	9.380 440	857	9.390 551	1207
9.284 941	892	9.300 161	366	9.301 663	49	9.303 913	501	9.305 369	587	9.315 423	645	9.380 440	1228	9.390 552	1207
9.284 942	892	9.300 162	366	9.301 664	49	9.303 914	501	9.306 000	145	9.315 509	644	9.380 441	857	9.390 553	1207
9.284 943	892	9.300 163	366	9.303 000	970	9.303 915	501	9.306 001	145	9.315 514	644	9.380 441	1228	9.390 554	1207
9.284 944	892	9.300 164	366	9.303 001	970	9.303 919	501	9.306 021	121	9.315 517	644	9.380 442	857	9.390 555	1207
9.284 945	892	9.300 500	367	9.303 005	598	9.303 933	510	9.306 105	121	9.315 691	650	9.380 442	1228	9.390 556	1207
9.284 947	893	9.300 805	367	9.303 028	151	9.303 935	510	9.306 107	121	9.315 692	650	9.380 443	857	9.390 557	1207
9.287 756	940	9.300 810	367	9.303 029	151	9.303 936	510	9.306 111	122	9.315 693	650	9.380 443	1228	9.390 600	704
9.287 779	940	9.300 815	367	9.303 031	970	9.303 937	510	9.306 115	122	9.315 694	650	9.380 453	858	9.390 601	704
9.287 780	940	9.300 820	367	9.303 032	970	9.303 938	510	9.306 117	122	9.315 695	650	9.380 454	858	9.390 710	1225
9.287 781	940	9.300 825	367	9.303 039	150	9.303 939	510	9.306 121	121	9.315 701	649	9.380 455	858	9.390 711	1225
9.287 800	926	9.300 830	367	9.303 043	426	9.303 943	510	9.306 125	121	9.315 701	1110	9.380 456	858	9.390 712	1225
9.287 801	926	9.300 835	367	9.303 125	970	9.303 950	509	9.306 127	120	9.315 702	649	9.380 457	858	9.390 713	1225
9.287 802	926	9.301 006	364	9.303 720	500	9.303 950	1121	9.309 409	1045	9.315 702	1110	9.380 458	858	9.390 714	1225
9.287 803	926	9.301 008	364	9.303 722	500	9.303 951	509	9.309 410	1045	9.315 703	649	9.380 471	858	9.390 715	1225
9.287 804	926	9.301 010	364	9.303 728	500	9.303 951	1121	9.309 411	1045	9.315 703	1110	9.380 472	858	9.400 004	24
9.287 805	926	9.301 026	364	9.303 732	500	9.303 955	509	9.309 412	1045	9.315 708	650	9.380 473	858	9.400 007	24
9.287 806	926	9.301 028	364	9.303 734	500	9.303 956	509	9.309 413	1045	9.315 709	650	9.380 474	858	9.400 009	24
9.287 807	926	9.301 030	364	9.303 736	500	9.303 960	510	9.309 414	1045	9.315 711	650	9.380 475	858	9.400 011	24
9.287 808	926	9.301 065	1350	9.303 775	152	9.303 960	1121	9.309 415	1045	9.315 712	650	9.380 476	858	9.400 015	24
9.287 809	926	9.301 066	365	9.303 776	152	9.303 961	510	9.309 416	1045	9.315 713	650	9.390 013	233	9.400 017	24
9.287 815	926	9.301 067	365	9.303 777	152	9.303 961	1121	9.309 419	1045	9.315 714	650	9.390 021	233	9.400 020	24
9.287 816	926	9.301 068	365	9.303 778	152	9.303 965	510	9.309 420	1045	9.315 716	650	9.390 022	233	9.400 022	24
9.287 820	927	9.301 069	365	9.303 779	152	9.303 966	510	9.309 421	1045	9.315 717	650	9.390 049	230	9.400 030	24
9.287 831	926	9.301 216	102	9.303 780	152	9.303 970	508	9.309 423	1045	9.315 718	650	9.390 050	230	9.400 040	24
9.287 832	926	9.301 220	102	9.303 781	152	9.303 975	508	9.309 424	1045	9.315 719	650	9.390 051	230	9.400 050	24
9.287 833	926	9.301 224	102	9.303 782	152	9.303 975	1120	9.309 425	1045	9.315 720	650	9.390 052	230	9.400 211	43
9.287 834	926	9.301 228	102	9.303 783	152	9.303 980	501	9.309 426	1045	9.315 721	651	9.390 053	230	9.400 215	43
9.287 835	926	9.301 232	102	9.303 784	152	9.303 981	501	9.309 427	1045	9.315 723	651	9.390 054	232	9.400 220	43
9.287 836	926	9.301 236	102	9.303 785	152	9.303 982	501	9.309 428	1045	9.315 724	651	9.390 055	232	9.400 225	43
9.287 859	867	9.301 240	102	9.303 786	152	9.303 983	501	9.309 429	1045	9.315 725	651	9.390 056	232	9.400 230	43
9.287 870	942	9.301 356	51	9.303 787	152	9.303 984	501	9.310 010	136	9.315 729	651	9.390 057	232	9.400 235	43
9.287 871	942	9.301 357	51	9.303 788	152	9.303 985	501	9.310 016	136	9.315 732	651	9.390 058	232	9.400 240	43
9.287 875	942	9.301 358	51	9.303 789	152	9.303 986	501	9.310 025	137	9.315 733	651	9.390 059	232	9.400 250	43
9.287 881	940	9.301 359	51	9.303 790	152	9.303 989	501	9.310 116	137	9.315 734	651	9.390 061	1053	9.400 260	43
9.287 882	940	9.301 360	51	9.303 800	507	9.303 990	501	9.310 120	137	9.315 738	651	9.390 062	1053	9.400 270	43
9.287 883	940	9.301 361	51	9.303 801	507	9.303 991	501	9.310 122	137	9.315 739	651	9.390 063	1053	9.400 280	43
9.287 884	940	9.301 362	51	9.303 802	507	9.303 992	501	9.310 125	137	9.315 740	651	9.390 064	1053	9.400 290	43
9.287 902	923	9.301 469	49	9.303 804	507	9.303 993	501	9.310 130	137	9.315 741	651	9.390 065	1053	9.400 310	1349
9.287 903	923	9.301 480	49	9.303 806	507	9.303 994	501	9.310 140	137	9.315 763	651	9.390 066	1053	9.400 311	1349
9.287 904	923	9.301 481	49	9.303 807	507	9.303 995	501	9.310 150	137	9.315 764	651	9.390 067	1053	9.400 312	1349
9.287 905	923	9.301 482	49	9.303 810	507	9.303 996	501	9.310 160	137	9.315 810	645	9.390 068	1053	9.400 313	1349
9.287 906	923	9.301 483	49	9.303 812	507	9.303 997	501	9.310 285	137	9.315 815	645	9.390 069	1053	9.400 314	1349
9.287 907	923	9.301 484	49	9.303 814	507	9.303 998	501	9.310 290	137	9.315 820	645	9.390 070	1053	9.400 315	1349
9.287 908	923	9.301 485	49	9.303 820	507	9.303 999	501	9.314 490	1261	9.315 830	647	9.390 071	1053	9.400 316	1349
9.287 909	923	9.301 486	49	9.303 822	507	9.304 000	501	9.314 491	1261	9.315 831	647	9.390 072	1054	9.400 317	1350
9.287 951	923	9.301 487	49	9.303 824	507	9.304 001	501	9.314 492	1261	9.315 832	647	9.390 073	1054	9.400 318	1350
9.287 953	923	9.301 488	49	9.303 828	508	9.304 002	501	9.314 493	1261	9.315 833	647	9.390 074	1054	9.400 319	1350
9.287 954	923	9.301 489	49	9.303 829	508	9.304 003	501	9.314 494	1261	9.315 834	647	9.390 075	1054	9.400 320	1350
9.287 955	923	9.301 490	50	9.303 830	507	9.304 038	1144	9.314 495	1261	9.316 062	646	9.390 076	1054	9.400 321	1350
9.287 956	923	9.301 491	50	9.303 831	509	9.304 048	1144	9.314 496	1262	9.316 062	1283	9.390 077	1054	9.400 322	1350
9.287 957	923	9.301 492	50	9.303 839	509	9.304 050	1144	9.314 497	1262	9.316 063	646	9.390 078	1055	9.400 323	1350
9.287 958	923	9.301 493	50	9.303 840	505	9.304 051	1144	9.314 498	1261	9.316 063	1283	9.390 079	1055	9.400 324	1350
9.287 959	923	9.301 494	50	9.303 842	505	9.304 170	1144	9.314 499	1261	9.316 064	646	9.390 090	179	9.400 325	1350
9.287 960	923	9.301 495	50	9.303 844	505	9.304 262	1145	9.314 500	1261	9.316 064	1283	9.390 091	179	9.400 326	1350
9.287 961	923	9.301 496	50	9.303 845	509	9.304 272	1145	9.314 501	1261	9.316 065	646	9.390 092	179	9.400 327	1350
9.287 962	924	9.301 497	50	9.303 846	507	9.304 273	1145	9.314 502	1261	9.316 065	1283	9.390 093	179	9.400 328	1350
9.287 963	924	9.301 498	50	9.303 850	498	9.304 280	1145	9.314 503	1261	9.316 067	646	9.390 185	1056	9.400 505	26
9.287 964	924	9.301 499	50	9.303 851	509	9.304 281	1145	9.315 000	1262	9.316 067	1283	9.390 186	1056	9.400 505	647
9.287 965	924	9.301 500	50	9.303 854	509	9.304 565	1125	9.315 001	1262	9.318 021	98	9.390 187	1056	9.400 520	26
9.287 966	924	9.301 501	50	9.303 855	509	9.304 569	1125	9.315 010	644	9.318 034	98	9.390 188	1056	9.400 520	647

9.400 530	26	9.401 160	702	9.404 065	245	9.405 127	226	9.405 894	707	9.407 517	1285	9.409 133	33	9.409 346	1281
9.400 530	647	9.401 161	702	9.404 066	245	9.405 128	226	9.405 895	707	9.407 522	1180	9.409 134	33	9.409 347	1282
9.400 532	26	9.401 162	702	9.404 070	243	9.405 129	226	9.405 896	707	9.407 605	1283	9.409 135	33	9.409 351	1183
9.400 532	647	9.401 163	702	9.404 071	243	9.405 130	226	9.405 897	707	9.407 606	1283	9.409 136	33	9.409 352	1281
9.400 562	26	9.401 164	702	9.404 099	243	9.405 131	226	9.405 898	707	9.407 607	1283	9.409 137	33	9.409 353	1281
9.400 562	647	9.401 165	702	9.404 100	243	9.405 132	226	9.405 899	707	9.407 608	1283	9.409 138	898	9.409 354	1281
9.400 564	26	9.401 166	702	9.404 101	243	9.405 133	226	9.405 900	707	9.407 609	1283	9.409 139	898	9.409 355	1281
9.400 564	647	9.401 167	702	9.404 102	243	9.405 134	226	9.405 901	707	9.407 610	1283	9.409 140	898	9.409 356	1281
9.400 565	26	9.401 168	702	9.404 103	243	9.405 135	226	9.405 910	707	9.407 611	1283	9.409 191	900	9.409 357	1281
9.400 565	647	9.401 170	702	9.404 104	243	9.405 136	226	9.405 911	707	9.407 614	1284	9.409 192	900	9.409 358	1281
9.400 590	26	9.401 171	702	9.404 105	243	9.405 137	226	9.405 912	707	9.407 615	1284	9.409 199	900	9.409 359	1281
9.400 590	647	9.401 172	702	9.404 114	511	9.405 138	226	9.405 913	707	9.407 616	1285	9.409 223	900	9.409 368	1183
9.400 615	647	9.401 173	702	9.404 115	511	9.405 139	226	9.406 011	1050	9.407 617	1285	9.409 238	860	9.409 369	1184
9.400 632	647	9.401 174	702	9.404 116	511	9.405 140	226	9.406 011	1286	9.407 618	1284	9.409 239	860	9.409 370	1181
9.400 664	647	9.401 175	702	9.404 117	511	9.405 141	226	9.406 012	1050	9.407 619	1284	9.409 245	1182	9.409 371	1181
9.400 665	647	9.401 223	702	9.404 118	511	9.405 142	226	9.406 012	1286	9.407 620	1184	9.409 246	1182	9.409 372	1181
9.400 901	26	9.401 224	702	9.404 119	511	9.405 143	226	9.406 110	1286	9.407 620	1285	9.409 247	1183	9.409 373	1182
9.400 901	647	9.401 272	704	9.404 120	511	9.405 144	226	9.406 111	1286	9.407 621	1285	9.409 248	1183	9.409 374	1181
9.400 908	26	9.401 274	704	9.404 121	511	9.405 145	226	9.406 114	1286	9.407 622	1284	9.409 254	1183	9.409 375	1181
9.400 908	647	9.401 275	704	9.404 122	511	9.405 146	226	9.406 115	1286	9.407 623	1285	9.409 255	1183	9.409 377	1182
9.400 912	703	9.401 276	704	9.404 123	511	9.405 147	226	9.406 118	1287	9.407 624	1284	9.409 256	1183	9.409 379	1186
9.400 913	703	9.401 278	704	9.404 124	511	9.405 148	226	9.406 119	1287	9.407 700	1278	9.409 257	1183	9.409 380	30
9.400 927	708	9.401 430	648	9.404 125	511	9.405 149	226	9.406 120	1287	9.408 035	1241	9.409 258	1183	9.409 381	1183
9.400 929	731	9.401 431	648	9.404 128	180	9.405 150	203	9.406 121	1287	9.408 040	1241	9.409 259	1183	9.409 383	1183
9.400 930	731	9.401 432	648	9.404 130	180	9.405 151	203	9.406 122	1287	9.408 045	1241	9.409 264	1183	9.409 384	1184
9.400 932	731	9.401 433	648	9.404 140	180	9.405 152	203	9.406 123	1287	9.408 047	1241	9.409 265	1183	9.409 386	1184
9.400 933	731	9.401 805	42	9.404 150	180	9.405 153	203	9.406 124	1287	9.408 094	1241	9.409 266	1183	9.409 386	1208
9.400 935	715	9.401 810	1117	9.404 151	180	9.405 154	203	9.406 125	1287	9.408 095	1241	9.409 277	649	9.409 387	1184
9.400 941	703	9.401 812	1117	9.404 152	180	9.405 162	193	9.406 126	1287	9.408 905	903	9.409 277	1281	9.409 387	1208
9.400 942	703	9.401 814	1117	9.404 153	180	9.405 165	193	9.406 127	1287	9.408 909	903	9.409 278	649	9.409 390	39
9.400 943	703	9.401 816	1117	9.404 160	181	9.405 205	205	9.406 431	1286	9.408 970	1208	9.409 278	1281	9.409 391	1184
9.400 944	711	9.401 820	42	9.404 161	181	9.405 206	205	9.406 432	1286	9.408 976	1205	9.409 279	649	9.409 392	1288
9.400 945	730	9.401 822	42	9.404 162	181	9.405 207	205	9.406 433	1286	9.408 983	1184	9.409 279	1281	9.409 397	1288
9.400 946	708	9.401 825	42	9.404 163	181	9.405 211	205	9.406 434	1286	9.408 983	1208	9.409 280	1181	9.409 398	1288
9.400 947	708	9.401 830	42	9.404 164	181	9.405 217	205	9.406 435	1286	9.409 000	32	9.409 281	1181	9.409 403	909
9.400 948	708	9.401 835	42	9.404 165	181	9.405 220	205	9.406 436	1286	9.409 006	32	9.409 282	1181	9.409 404	909
9.400 949	708	9.401 838	42	9.404 166	181	9.405 235	205	9.406 437	1286	9.409 006	711	9.409 283	1181	9.409 405	910
9.400 950	703	9.401 840	42	9.404 167	181	9.405 236	205	9.406 438	1286	9.409 006	1297	9.409 284	1181	9.409 406	911
9.400 953	709	9.401 850	44	9.404 171	181	9.405 237	205	9.406 439	1287	9.409 007	711	9.409 285	1181	9.409 407	909
9.400 954	709	9.401 851	44	9.404 172	181	9.405 238	205	9.406 440	1287	9.409 008	32	9.409 286	1181	9.409 408	909
9.400 956	715	9.401 852	44	9.404 173	181	9.405 239	205	9.406 441	1287	9.409 008	711	9.409 287	1181	9.409 409	909
9.400 957	715	9.401 853	44	9.404 176	181	9.405 286	204	9.407 027	1217	9.409 008	1297	9.409 288	649	9.409 410	909
9.400 958	711	9.401 854	44	9.404 177	181	9.405 287	204	9.407 077	1217	9.409 013	40	9.409 288	1281	9.409 411	909
9.400 967	703	9.401 855	44	9.404 178	181	9.405 288	204	9.407 100	1226	9.409 014	40	9.409 289	649	9.409 412	909
9.400 968	703	9.401 860	43	9.404 179	181	9.405 289	204	9.407 101	1226	9.409 015	32	9.409 289	1281	9.409 413	909
9.400 969	703	9.402 310	42	9.404 182	245	9.405 290	204	9.407 102	1226	9.409 015	711	9.409 290	649	9.409 414	909
9.400 970	703	9.402 310	514	9.404 184	245	9.405 291	204	9.407 103	1226	9.409 015	1297	9.409 290	1281	9.409 415	909
9.400 971	703	9.402 313	42	9.404 186	245	9.405 369	214	9.407 104	1226	9.409 016	32	9.409 291	1282	9.409 416	909
9.400 976	157	9.402 313	514	9.404 220	243	9.405 370	214	9.407 105	1226	9.409 016	711	9.409 292	33	9.409 417	909
9.400 978	710	9.402 318	42	9.404 221	243	9.405 371	214	9.407 106	1226	9.409 016	1297	9.409 294	649	9.409 418	909
9.400 979	710	9.402 318	514	9.404 222	243	9.405 371	1065	9.407 107	1226	9.409 017	32	9.409 294	1281	9.409 420	910
9.400 982	711	9.402 321	42	9.404 223	243	9.405 372	214	9.407 108	1226	9.409 017	711	9.409 301	1277	9.409 421	910
9.400 983	711	9.402 321	514	9.404 224	243	9.405 373	215	9.407 109	1226	9.409 017	1297	9.409 303	1277	9.409 422	910
9.400 984	711	9.402 324	42	9.404 231	512	9.405 374	215	9.407 110	1226	9.409 018	32	9.409 306	1184	9.409 425	911
9.400 990	730	9.402 324	514	9.404 232	512	9.405 400	1246	9.407 111	1226	9.409 018	711	9.409 307	1184	9.409 426	911
9.400 991	730	9.402 350	41	9.404 233	512	9.405 401	1246	9.407 112	1226	9.409 018	1297	9.409 308	31	9.409 427	911
9.400 995	712	9.402 350	513	9.404 234	511	9.405 410	1246	9.407 113	1226	9.409 023	646	9.409 309	31	9.409 428	911
9.400 996	712	9.402 353	41	9.404 235	511	9.405 750	1349	9.407 114	1226	9.409 023	1278	9.409 310	1277	9.409 429	911
9.400 997	712	9.402 353	513	9.404 236	511	9.405 751	1349	9.407 115	1226	9.409 024	646	9.409 311	1184	9.409 430	910
9.400 998	712	9.402 356	41	9.404 301	245	9.405 753	1349	9.407 393	1217	9.409 024	1278	9.409 312	31	9.409 431	910
9.401 000	705	9.402 356	513	9.404 303	245	9.405 754	1349	9.407 395	1217	9.409 025	646	9.409 313	31	9.409 432	910
9.401 002	705	9.402 359	41	9.404 305	245	9.405 756	1349	9.407 398	1217	9.409 025	1278	9.409 314	31	9.409 433	910
9.401 004	705	9.402 359	513	9.404 306	245	9.405 760	1349	9.407 399	1217	9.409 033	897	9.409 316	31	9.409 434	910
9.401 013	705	9.402 415	42	9.404 307	245	9.405 761	1349	9.407 401	1217	9.409 034	897	9.409 317	1282	9.409 435	910
9.401 015	705	9.402 420	42	9.404 309	245	9.405 762	1349	9.407 471	1207	9.409 035	897	9.409 320	1281	9.409 440	911
9.401 030	705	9.402 770	43	9.404 310	245	9.405 800	707	9.407 473	1221	9.409 036	897	9.409 321	31	9.409 441	911
9.401 032	705	9.402 776	43	9.404 311	245	9.405 801	707	9.407 475	1221	9.409 037	897	9.409 323	31	9.409 442	911
9.401 034	705	9.402 782	43	9.404 314	245	9.405 840	708	9.407 480	1208	9.409 038	897	9.409 324	1282	9.409 443	911
9.401 040	705	9.402 784	43	9.404 316	245	9.405 841	708	9.407 481	1208	9.409 039	897	9.409 326	1282	9.409 444	911
9.401 042	705	9.404 001	1244	9.404 326	245	9.405 842	708	9.407 482	1208	9.409 041	897	9.409 327	1282	9.409 445	911
9.401 044	705	9.404 002	1244	9.404 952	611	9.405 843	708	9.407 500	1182	9.409 042	897	9.409 328	1282	9.409 446	911
9.401 050	705	9.404 003	1244	9.404 952	1118	9.405 844	708	9.407 501	1180	9.409 043	897	9.409 329	1282	9.409 447	911
9.401 051	705	9.404 004	1244	9.404 955	611	9.405 845	708	9.407 502	1180	9.409 044	897	9.409 330	1282	9.409 448	911
9.401 052	705	9.404 005	1244	9.404 955	1118	9.405 846	708	9.407 503	1180	9.409 045	897	9.409 331	1281	9.409 450	910
9.401 053	705	9.404 006	1244	9.405 101	193	9.405 847	708	9.407 504	1180	9.409 046	897	9.409 332	1281	9.409 451	910
9.401 054	705	9.404 007	1244	9.405 106	193	9.405 848	708	9.407 505	1180	9.409 047	897	9.409 333	1281	9.409 452	910
9.401 055	705	9.404 008	1244	9.405 116	226	9.405 849	708	9.407 506	1184	9.409 048	897	9.409 334	1281	9.409 453	910
9.401 080	852	9.404 010	244	9.405 117	226	9.405 850	708	9.407 507	1182	9.409 049	897	9.409 335	1281	9.409 454	910
9.401 081	852	9.404 011	244	9.405 118	226	9.405 851	708	9.407 508	1284	9.409 088	31	9.409 336	1281	9.409 455	910
9.401 084	852	9.404 012	244	9.405 119	226	9.405 852	708	9.407 509	1284	9.409 097	897	9.409 337	1282	9.409 456	910
9.401 085	852	9.404 013	244	9.405 120	226	9.405 855	708	9.407 510	1284	9.409 098	897	9.409 338	1282	9.409 457	910
9.401 090	731	9.404 014	244	9.405 121	226	9.405 856	707	9.407 511	1284	9.409 099	897	9.409 339	1282	9.409 460	910
9.401 091	731	9.404 020	243	9.405 122	226	9.405 857	707	9.407 512	1284	9.409 128	898	9.409 341	1281	9.409 461	910
9.401 092	731	9.404 030	243	9.405 123	226	9.405 890	707	9.407 513	1285	9.409 129	898	9.409 342	1281	9.409 462	910
9.401 093	731	9.404 050	243	9.405 124	226	9.405 891	707	9.407 514	1180	9.409 130	898	9.409 343	1281	9.409 463	910
9.401 094	731	9.404 051	243	9.405 125	226	9.405 892	707	9.407 515	1180	9.409 131	33	9.409 344	1281	9.409 464	910
9.401 095	1186	9.404 052	243	9.405 126	226	9.405 893	707	9.407 516	1180	9.409 132	33	9.409 345	1281	9.409 465	910

9.409 466	910	9.409 700	901	9.409 807	1274	9.411 328	862	9.411 664	876	9.413 095	1068	9.519 223	515	9.524 536	715
9.409 467	910	9.409 701	901	9.409 808	1274	9.411 333	862	9.411 665	876	9.413 101	1071	9.520 050	1243	9.524 537	715
9.409 470	909	9.409 702	901	9.409 809	1274	9.411 344	862	9.411 666	876	9.413 102	1071	9.520 051	1243	9.524 538	715
9.409 471	909	9.409 703	901	9.409 810	1274	9.411 345	862	9.411 667	876	9.413 106	1070	9.520 053	1243	9.524 539	715
9.409 472	909	9.409 704	901	9.409 813	1274	9.411 357	862	9.411 668	876	9.413 107	1070	9.520 056	1243	9.524 540	715
9.409 473	909	9.409 705	901	9.409 814	1274	9.411 440	863	9.411 669	876	9.413 108	1070	9.520 057	1243	9.524 541	715
9.409 474	909	9.409 706	901	9.409 820	1275	9.411 449	903	9.411 670	876	9.413 152	1071	9.520 058	1243	9.524 542	715
9.409 475	909	9.409 707	901	9.409 841	1274	9.411 473	875	9.411 671	876	9.413 155	1071	9.520 059	1243	9.524 543	715
9.409 476	909	9.409 708	901	9.409 844	1274	9.411 474	875	9.411 672	876	9.413 156	1071	9.520 060	1243	9.524 544	715
9.409 477	909	9.409 709	901	9.409 845	1274	9.411 475	875	9.411 673	876	9.413 160	1244	9.520 061	1243	9.524 547	715
9.409 478	909	9.409 712	901	9.409 846	1274	9.411 476	875	9.411 674	876	9.413 161	1244	9.520 062	1243	9.524 548	715
9.409 480	909	9.409 713	901	9.409 850	1274	9.411 477	875	9.411 675	876	9.413 210	1071	9.520 063	1243	9.524 549	715
9.409 481	909	9.409 714	901	9.409 911	1274	9.411 478	875	9.411 680	876	9.413 211	1071	9.520 064	1243	9.524 550	715
9.409 482	909	9.409 715	901	9.409 915	1274	9.411 479	875	9.411 681	876	9.413 215	1056	9.520 065	1243	9.524 551	715
9.409 483	909	9.409 716	902	9.409 916	1274	9.411 480	875	9.411 682	876	9.413 216	1056	9.520 066	1243	9.524 552	715
9.409 484	909	9.409 717	902	9.409 918	1274	9.411 481	875	9.411 683	876	9.413 220	1065	9.520 067	1243	9.524 553	715
9.409 485	909	9.409 718	902	9.409 919	1274	9.411 482	875	9.411 684	876	9.413 224	1067	9.520 170	1247	9.524 554	715
9.409 486	909	9.409 719	902	9.409 920	1274	9.411 484	875	9.411 685	876	9.413 225	1067	9.520 171	1247	9.524 555	715
9.409 487	909	9.409 721	902	9.409 921	1274	9.411 484	874	9.411 690	877	9.414 040	232	9.520 172	1247	9.524 559	714
9.409 490	911	9.409 722	902	9.409 922	1274	9.411 491	879	9.411 691	877	9.414 041	232	9.520 174	1247	9.524 560	714
9.409 491	911	9.409 723	902	9.409 923	1274	9.411 492	879	9.411 692	877	9.414 042	232	9.520 178	1247	9.524 561	714
9.409 492	911	9.409 724	902	9.409 924	1274	9.411 493	879	9.411 693	877	9.414 047	231	9.520 180	1247	9.534 066	796
9.409 493	911	9.409 725	902	9.409 926	1274	9.411 494	879	9.411 694	877	9.414 048	231	9.520 181	1247	9.534 068	796
9.409 495	911	9.409 726	902	9.409 927	1274	9.411 501	903	9.411 695	877	9.414 049	231	9.520 182	1247	9.534 095	809
9.409 496	911	9.409 727	902	9.409 928	1274	9.411 502	903	9.411 696	877	9.414 050	233	9.520 184	1247	9.534 150	800
9.409 497	911	9.409 728	902	9.409 929	1274	9.411 503	875	9.411 697	877	9.414 051	229	9.520 185	1247	9.534 151	801
9.409 498	911	9.409 729	902	9.409 930	1274	9.411 504	879	9.411 700	878	9.414 080	233	9.520 186	1247	9.534 152	801
9.409 501	116	9.409 730	902	9.410 000	1358	9.411 505	878	9.411 701	878	9.414 100	232	9.520 190	1247	9.534 153	800
9.409 620	1181	9.409 731	912	9.410 002	1358	9.411 509	918	9.411 702	878	9.414 101	232	9.520 191	1247	9.534 154	801
9.409 621	1181	9.409 732	912	9.410 005	1358	9.411 510	918	9.411 703	878	9.414 102	232	9.520 200	1246	9.534 155	801
9.409 622	1181	9.409 733	902	9.410 010	1358	9.411 511	918	9.411 704	878	9.414 103	232	9.520 201	1246	9.534 156	791
9.409 623	1181	9.409 734	902	9.410 020	1358	9.411 512	918	9.411 705	878	9.414 104	232	9.520 203	1246	9.534 157	792
9.409 624	1181	9.409 735	902	9.410 025	1358	9.411 513	918	9.411 706	878	9.414 105	232	9.520 204	1246	9.534 158	792
9.409 625	1181	9.409 736	902	9.410 050	1358	9.411 514	918	9.411 707	878	9.414 342	229	9.520 205	1245	9.534 159	791
9.409 626	1181	9.409 737	902	9.410 061	1358	9.411 520	920	9.411 708	878	9.414 343	229	9.520 205	1246	9.534 161	791
9.409 627	1181	9.409 738	902	9.410 062	1358	9.411 521	920	9.411 731	875	9.414 344	229	9.520 206	1245	9.534 162	792
9.409 628	1181	9.409 739	902	9.410 063	1358	9.411 522	920	9.411 731	874	9.414 345	229	9.520 206	1246	9.534 163	792
9.409 629	1181	9.409 740	902	9.410 064	1358	9.411 523	920	9.412 800	1064	9.414 346	229	9.520 530	1245	9.534 165	792
9.409 630	1181	9.409 741	902	9.410 065	1358	9.411 524	920	9.412 801	1064	9.414 347	229	9.521 783	1271	9.534 167	793
9.409 631	1181	9.409 742	902	9.410 066	1358	9.411 525	920	9.412 805	1064	9.414 348	229	9.521 787	1271	9.534 168	793
9.409 632	1181	9.409 743	902	9.410 101	1359	9.411 526	920	9.412 810	158	9.414 349	229	9.521 801	1021	9.534 169	801
9.409 633	1181	9.409 744	902	9.410 102	1359	9.411 527	920	9.412 811	158	9.414 350	229	9.521 802	1021	9.534 170	801
9.409 634	1181	9.409 745	902	9.410 112	1359	9.411 561	917	9.412 900	161	9.414 351	229	9.521 940	1273	9.534 171	793
9.409 635	1181	9.409 746	902	9.410 114	1359	9.411 562	924	9.412 901	161	9.414 352	229	9.521 941	1273	9.534 171	801
9.409 636	1181	9.409 747	902	9.410 116	1359	9.411 563	924	9.412 902	161	9.414 353	229	9.521 942	1273	9.534 172	793
9.409 637	1181	9.409 748	902	9.410 118	1359	9.411 564	924	9.412 903	161	9.414 355	229	9.521 943	1273	9.534 172	801
9.409 653	917	9.409 749	902	9.410 120	1359	9.411 565	924	9.412 904	161	9.414 356	229	9.521 944	1273	9.535 531	1169
9.409 656	917	9.409 750	902	9.410 403	1359	9.411 566	924	9.412 905	161	9.414 357	229	9.521 945	1273	9.535 532	1169
9.409 660	1186	9.409 751	902	9.411 015	852	9.411 567	917	9.412 906	161	9.414 371	229	9.521 946	1273	9.535 533	1169
9.409 661	1185	9.409 752	902	9.411 020	852	9.411 568	917	9.412 907	161	9.414 373	229	9.521 947	1273	9.535 534	1169
9.409 662	1025	9.409 753	902	9.411 030	852	9.411 590	874	9.412 908	161	9.414 375	229	9.521 948	1273	9.535 535	1169
9.409 663	912	9.409 754	902	9.411 031	852	9.411 591	874	9.412 909	161	9.414 377	229	9.524 500	714	9.535 536	1168
9.409 664	912	9.409 755	902	9.411 032	852	9.411 592	874	9.412 910	161	9.414 379	229	9.524 501	714	9.535 537	1168
9.409 665	912	9.409 756	902	9.411 033	852	9.411 593	874	9.412 915	161	9.414 415	230	9.524 502	714	9.535 538	1168
9.409 666	912	9.409 757	900	9.411 035	852	9.411 594	874	9.412 916	161	9.414 417	230	9.524 503	714	9.535 539	1168
9.409 667	912	9.409 758	900	9.411 038	852	9.411 595	874	9.413 015	1065	9.414 419	230	9.524 504	714	9.535 540	1168
9.409 669	900	9.409 759	900	9.411 039	852	9.411 596	874	9.413 017	1065	9.414 600	218	9.524 505	714	9.535 541	1168
9.409 670	900	9.409 760	900	9.411 215	865	9.411 597	874	9.413 018	1069	9.414 601	218	9.524 506	713	9.535 542	1168
9.409 671	900	9.409 761	900	9.411 220	865	9.411 598	874	9.413 019	1068	9.414 602	218	9.524 507	713	9.535 543	1168
9.409 672	900	9.409 762	900	9.411 240	865	9.411 599	874	9.413 020	1065	9.414 605	220	9.524 508	713	9.535 544	1168
9.409 673	900	9.409 763	901	9.411 242	862	9.411 620	874	9.413 021	1065	9.414 606	220	9.524 509	713	9.535 545	1168
9.409 674	900	9.409 764	901	9.411 246	862	9.411 621	874	9.413 033	1066	9.414 607	220	9.524 510	713	9.535 601	802
9.409 675	900	9.409 765	901	9.411 252	864	9.411 622	874	9.413 034	1068	9.414 608	221	9.524 511	713	9.535 605	803
9.409 676	900	9.409 766	901	9.411 253	864	9.411 623	874	9.413 035	1068	9.414 609	221	9.524 512	713	9.535 607	803
9.409 677	900	9.409 767	901	9.411 254	864	9.411 624	874	9.413 036	1068	9.414 610	221	9.524 513	713	9.535 614	803
9.409 678	900	9.409 768	901	9.411 255	864	9.411 625	874	9.413 040	1057	9.414 611	221	9.524 514	713	9.535 635	803
9.409 679	900	9.409 769	900	9.411 256	864	9.411 626	874	9.413 041	1057	9.414 612	221	9.524 515	713	9.535 636	803
9.409 680	900	9.409 770	900	9.411 258	864	9.411 627	874	9.413 043	1069	9.414 613	221	9.524 516	713	9.535 637	803
9.409 681	900	9.409 771	900	9.411 260	863	9.411 628	874	9.413 044	1067	9.414 617	222	9.524 517	713	9.535 640	802
9.409 682	900	9.409 772	900	9.411 265	864	9.411 630	877	9.413 046	1068	9.414 618	222	9.524 518	713	9.535 643	803
9.409 683	900	9.409 773	900	9.411 266	864	9.411 631	877	9.413 047	1069	9.414 619	222	9.524 519	713	9.535 644	803
9.409 684	900	9.409 774	900	9.411 267	864	9.411 632	877	9.413 048	1070	9.414 620	222	9.524 520	713	9.535 645	803
9.409 685	900	9.409 775	900	9.411 268	864	9.411 633	877	9.413 050	1070	9.414 650	223	9.524 521	713	9.535 810	1170
9.409 686	900	9.409 776	901	9.411 270	864	9.411 634	877	9.413 051	1070	9.414 651	223	9.524 522	713	9.535 811	1170
9.409 687	900	9.409 777	901	9.411 271	864	9.411 635	877	9.413 052	1070	9.414 652	223	9.524 523	713	9.535 812	1170
9.409 688	901	9.409 778	901	9.411 273	864	9.411 636	877	9.413 054	1067	9.414 653	223	9.524 524	714	9.535 813	1170
9.409 689	901	9.409 779	901	9.411 274	864	9.411 637	877	9.413 057	1070	9.414 654	223	9.524 525	714	9.535 814	1170
9.409 690	901	9.409 780	901	9.411 275	864	9.411 650	875	9.413 065	1068	9.414 655	223	9.524 526	714	9.535 815	1170
9.409 691	901	9.409 781	901	9.411 276	864	9.411 651	875	9.413 070	1065	9.414 656	223	9.524 527	714	9.535 816	1170
9.409 692	901	9.409 782	901	9.411 277	864	9.411 652	875	9.413 077	1070	9.414 657	223	9.524 528	714	9.535 817	1170
9.409 693	901	9.409 783	903	9.411 279	864	9.411 653	875	9.413 078	1067	9.414 658	223	9.524 529	714	9.535 818	1170
9.409 694	901	9.409 784	903	9.411 280	864	9.411 654	875	9.413 081	1066	9.414 659	223	9.524 530	714	9.535 819	1170
9.409 695	901	9.409 785	903	9.411 307	862	9.411 655	875	9.413 082	1066	9.414 660	224	9.524 531	715	9.535 823	1172
9.409 696	901	9.409 786	903	9.411 309	862	9.411 660	876	9.413 083	1066	9.414 661	224	9.524 532	715	9.535 824	1172
9.409 697	901	9.409 804	1274	9.411 318	862	9.411 661	876	9.413 086	1066	9.414 662	224	9.524 533	715	9.535 825	1172
9.409 698	901	9.409 805	1274	9.411 322	862	9.411 662	876	9.413 091	1067	9.519 120	515	9.524 534	715	9.535 826	1172
9.409 699	901	9.409 806	1274	9.411 327	862	9.411 663	876	9.413 094	1068	9.519 213	515	9.524 535	715	9.535 827	1172

9.535 828	1172	9.536 227	724	9.537 979	798	9.570 861	554	9.584 677	1194	9.595 514	1189	9.620 441	1104	9.642 671	783
9.535 829	1172	9.536 228	724	9.537 980	798	9.570 878	553	9.584 680	1192	9.595 515	1190	9.620 443	1104	9.642 672	783
9.535 830	1172	9.536 229	724	9.537 981	798	9.570 882	555	9.584 681	1192	9.595 516	1190	9.620 446	1104	9.642 673	783
9.535 860	1173	9.536 230	724	9.537 982	798	9.570 886	555	9.584 682	1192	9.595 517	1190	9.620 447	1104	9.642 674	783
9.535 861	1173	9.536 231	724	9.537 983	798	9.570 896	555	9.584 683	1192	9.600 105	863	9.620 448	1104	9.642 720	782
9.535 862	1173	9.536 232	724	9.537 984	798	9.570 898	555	9.584 684	1192	9.600 110	863	9.620 449	1104	9.642 721	782
9.535 863	1173	9.536 233	724	9.537 985	799	9.570 922	556	9.584 685	1192	9.600 120	863	9.620 470	1105	9.642 722	782
9.535 864	1173	9.536 234	724	9.537 986	799	9.570 926	556	9.584 686	1192	9.600 122	863	9.620 471	1105	9.642 723	782
9.535 865	1173	9.536 235	724	9.537 987	799	9.570 940	552	9.584 690	1192	9.600 125	863	9.620 472	1105	9.642 724	782
9.535 866	1173	9.536 236	724	9.537 988	799	9.570 941	552	9.584 692	1192	9.600 140	863	9.620 473	1105	9.642 725	782
9.535 867	1173	9.536 237	724	9.537 989	799	9.570 942	552	9.584 693	1192	9.600 150	863	9.620 474	1105	9.642 726	782
9.535 868	1173	9.536 239	723	9.537 990	799	9.570 943	553	9.584 695	1197	9.600 199	863	9.620 475	1105	9.642 727	782
9.535 869	1173	9.536 241	809	9.537 991	799	9.570 944	553	9.584 696	1197	9.600 210	863	9.642 401	780	9.642 728	782
9.535 870	1173	9.536 242	809	9.537 992	799	9.570 945	553	9.584 697	1197	9.600 222	863	9.642 402	780	9.642 729	782
9.535 871	1173	9.536 243	809	9.538 001	806	9.570 946	553	9.584 699	1196	9.600 240	863	9.642 403	780	9.642 750	782
9.535 872	1170	9.536 245	809	9.538 002	806	9.570 947	553	9.584 720	1194	9.600 299	863	9.642 404	780	9.642 751	782
9.535 873	1170	9.536 246	809	9.538 003	806	9.570 948	553	9.584 721	1194	9.601 426	362	9.642 405	780	9.642 752	782
9.535 874	1170	9.536 248	809	9.538 004	806	9.570 949	554	9.584 722	1194	9.601 426	362	9.642 406	780	9.642 753	782
9.535 875	1171	9.536 249	809	9.538 005	806	9.570 950	554	9.584 723	1194	9.603 181	683	9.642 407	780	9.642 754	782
9.535 876	1171	9.536 251	809	9.538 006	807	9.570 951	554	9.584 724	1194	9.603 205	683	9.642 408	780	9.642 755	782
9.535 877	1171	9.536 550	1240	9.538 007	807	9.570 952	555	9.584 725	1194	9.603 250	687	9.642 409	780	9.642 756	782
9.535 878	1171	9.536 551	1240	9.538 008	807	9.570 953	555	9.584 726	1194	9.603 252	687	9.642 410	780	9.642 757	782
9.535 879	1171	9.536 552	1240	9.538 009	807	9.570 954	555	9.584 727	1194	9.603 290	686	9.642 411	780	9.642 758	782
9.535 880	1171	9.536 553	1240	9.538 010	807	9.570 959	552	9.584 730	1210	9.603 500	688	9.642 412	780	9.643 033	783
9.535 887	1171	9.536 700	1237	9.538 011	806	9.571 098	554	9.584 731	1210	9.603 501	688	9.642 413	780	9.643 034	783
9.535 888	1171	9.536 701	1237	9.538 012	806	9.571 119	554	9.584 732	1210	9.603 502	688	9.642 440	780	9.643 035	783
9.535 889	1171	9.536 702	1237	9.538 013	808	9.571 121	554	9.584 733	1210	9.603 503	688	9.642 441	780	9.643 036	783
9.535 890	1171	9.536 703	1237	9.538 014	808	9.571 198	554	9.584 734	1210	9.603 510	685	9.642 442	780	9.643 037	783
9.535 891	1171	9.536 704	1237	9.538 015	808	9.571 199	554	9.584 735	1210	9.603 520	685	9.642 443	780	9.643 038	783
9.535 892	1171	9.536 705	1237	9.538 016	808	9.571 200	554	9.584 737	1211	9.603 581	673	9.642 444	780	9.643 039	783
9.535 897	1170	9.536 706	1237	9.538 017	808	9.571 201	554	9.584 738	1211	9.603 584	673	9.642 445	780	9.643 072	783
9.535 898	1170	9.536 707	1237	9.539 041	1396	9.571 207	554	9.584 739	1211	9.603 585	673	9.642 446	780	9.643 073	783
9.535 922	1170	9.536 708	1237	9.539 045	1394	9.571 301	518	9.584 740	1211	9.604 022	676	9.642 500	781	9.643 074	783
9.535 923	1170	9.536 709	1237	9.539 046	1394	9.571 302	518	9.584 741	1211	9.604 024	676	9.642 501	781	9.643 075	783
9.535 923	1174	9.536 710	1238	9.539 360	1395	9.571 303	518	9.584 742	1211	9.604 061	685	9.642 502	781	9.643 081	783
9.535 924	1170	9.536 711	1238	9.569 991	568	9.571 304	518	9.584 750	1211	9.604 076	687	9.642 503	781	9.643 083	783
9.535 925	1170	9.536 712	1238	9.569 992	568	9.571 305	518	9.584 753	1212	9.604 201	685	9.642 504	781	9.643 122	784
9.535 925	1174	9.536 713	1238	9.569 993	568	9.571 308	518	9.584 754	1212	9.604 202	685	9.642 505	781	9.643 123	784
9.535 926	1170	9.536 714	1238	9.569 994	568	9.571 309	518	9.584 755	1200	9.604 204	686	9.642 506	781	9.643 124	784
9.535 926	1174	9.536 724	1239	9.569 995	568	9.571 350	556	9.584 756	1200	9.604 210	686	9.642 507	781	9.643 125	784
9.535 927	1170	9.536 725	1239	9.569 996	568	9.571 490	550	9.584 757	1200	9.604 211	686	9.642 508	781	9.643 126	784
9.535 927	1174	9.536 726	1239	9.570 016	566	9.571 491	550	9.584 758	1200	9.604 212	686	9.642 509	781	9.643 127	784
9.535 928	1169	9.536 727	1239	9.570 017	566	9.571 492	548	9.584 759	1200	9.604 213	686	9.642 510	781	9.645 280	1272
9.535 929	1169	9.536 728	1239	9.570 018	566	9.571 492	1312	9.584 760	1200	9.604 214	686	9.642 511	781	9.645 281	1272
9.535 931	1174	9.536 729	1239	9.570 075	567	9.571 493	548	9.584 761	1200	9.604 215	686	9.642 520	781	9.645 295	431
9.535 932	1169	9.536 760	1238	9.570 077	567	9.571 495	519	9.584 762	1200	9.604 216	686	9.642 521	781	9.645 296	431
9.535 933	1169	9.536 761	1238	9.570 078	567	9.580 006	728	9.584 763	1200	9.604 222	686	9.642 522	781	9.645 297	413
9.535 935	1174	9.536 762	1237	9.570 079	567	9.580 009	728	9.584 764	1195	9.604 223	686	9.642 523	781	9.645 298	431
9.535 936	1169	9.536 763	1237	9.570 080	567	9.580 010	728	9.584 765	1195	9.604 224	686	9.642 524	781	9.645 299	431
9.535 937	1169	9.536 764	1237	9.570 081	567	9.580 016	728	9.584 766	1195	9.604 226	686	9.642 525	781	9.645 316	776
9.535 951	1168	9.536 800	1240	9.570 082	567	9.580 040	728	9.584 767	1195	9.604 227	686	9.642 526	781	9.645 317	776
9.535 957	1168	9.537 203	799	9.570 083	567	9.580 041	728	9.584 768	1195	9.604 228	686	9.642 527	781	9.645 320	777
9.535 960	1172	9.537 204	799	9.570 084	567	9.580 042	728	9.584 770	1198	9.604 307	686	9.642 528	781	9.645 321	777
9.535 960	1174	9.537 928	794	9.570 085	567	9.580 043	728	9.584 771	1198	9.604 345	685	9.642 529	781	9.645 322	491
9.535 961	1170	9.537 929	794	9.570 086	567	9.580 045	728	9.584 772	1198	9.604 383	685	9.642 530	781	9.645 323	491
9.535 961	1172	9.537 932	794	9.570 087	567	9.580 046	728	9.584 773	1198	9.604 389	685	9.642 531	781	9.645 324	492
9.535 961	1174	9.537 933	794	9.570 088	567	9.580 047	728	9.584 774	1191	9.604 394	685	9.642 540	781	9.645 325	492
9.535 963	1172	9.537 934	794	9.570 089	567	9.580 048	728	9.584 775	1191	9.604 395	685	9.642 541	781	9.645 326	492
9.535 966	1174	9.537 935	794	9.570 090	567	9.580 049	728	9.584 788	1191	9.620 404	1104	9.642 542	781	9.645 327	492
9.535 968	1172	9.537 936	794	9.570 091	567	9.580 201	728	9.584 790	1197	9.620 405	1104	9.642 545	781	9.645 328	492
9.535 969	1170	9.537 937	794	9.570 092	567	9.580 202	728	9.584 791	1197	9.620 406	1104	9.642 546	781	9.645 329	492
9.535 970	1174	9.537 938	794	9.570 093	567	9.580 203	728	9.584 792	1197	9.620 407	1104	9.642 547	781	9.645 331	776
9.535 971	1170	9.537 939	794	9.570 096	567	9.580 204	728	9.584 793	1197	9.620 408	1104	9.642 548	781	9.645 335	431
9.535 972	1174	9.537 940	794	9.570 097	567	9.580 205	728	9.584 795	1211	9.620 409	1104	9.642 600	780	9.645 335	776
9.535 973	1174	9.537 941	794	9.570 098	566	9.584 651	1193	9.584 796	1211	9.620 410	1104	9.642 601	780	9.645 338	776
9.535 974	1170	9.537 942	794	9.570 223	549	9.584 652	1210	9.595 290	1185	9.620 411	1104	9.642 602	780	9.645 342	431
9.535 976	1172	9.537 944	794	9.570 225	549	9.584 654	1210	9.595 291	1185	9.620 413	1104	9.642 603	780	9.645 342	776
9.535 976	1174	9.537 945	794	9.570 226	549	9.584 655	1192	9.595 306	1196	9.620 414	1103	9.642 604	780	9.645 343	431
9.535 978	1168	9.537 946	794	9.570 227	549	9.584 656	1192	9.595 314	1196	9.620 415	1103	9.642 605	780	9.645 344	431
9.535 979	1168	9.537 961	798	9.570 228	549	9.584 657	1193	9.595 316	1188	9.620 416	1103	9.642 606	780	9.645 350	1260
9.535 980	1168	9.537 962	798	9.570 229	549	9.584 658	1193	9.595 319	1188	9.620 417	1103	9.642 607	780	9.645 351	1260
9.535 986	1174	9.537 963	798	9.570 230	549	9.584 659	1193	9.595 341	1188	9.620 418	1103	9.642 608	780	9.645 510	775
9.535 994	1170	9.537 964	798	9.570 231	549	9.584 660	1193	9.595 345	1199	9.620 419	1103	9.642 609	780	9.645 511	775
9.536 211	723	9.537 965	798	9.570 232	549	9.584 661	1193	9.595 346	1199	9.620 420	1104	9.642 610	780	9.645 590	779
9.536 212	723	9.537 966	798	9.570 233	549	9.584 662	1193	9.595 501	1189	9.620 421	1104	9.642 620	780	9.645 591	779
9.536 213	723	9.537 967	798	9.570 480	630	9.584 663	1193	9.595 502	1189	9.620 423	1104	9.642 621	780	9.645 592	779
9.536 214	723	9.537 968	798	9.570 500	551	9.584 664	1193	9.595 503	1189	9.620 424	1104	9.642 622	780	9.645 593	779
9.536 215	723	9.537 969	799	9.570 506	551	9.584 665	1193	9.595 504	1189	9.620 425	1104	9.642 623	780	9.645 594	779
9.536 216	723	9.537 970	799	9.570 507	551	9.584 666	1193	9.595 505	1189	9.620 426	1104	9.642 624	780	9.645 595	779
9.536 217	723	9.537 971	799	9.570 508	551	9.584 667	1193	9.595 506	1189	9.620 427	1104	9.642 625	780	9.645 616	775
9.536 219	723	9.537 972	799	9.570 509	551	9.584 670	1194	9.595 507	1189	9.620 429	1104	9.642 626	780	9.645 711	778
9.536 220	723	9.537 973	799	9.570 510	551	9.584 671	1194	9.595 508	1189	9.620 432	1104	9.642 627	780	9.645 712	778
9.536 221	724	9.537 974	799	9.570 841	553	9.584 672	1194	9.595 509	1189	9.620 434	1104	9.642 628	780	9.645 714	778
9.536 222	724	9.537 975	799	9.570 842	553	9.584 673	1194	9.595 510	1189	9.620 436	1104	9.642 630	782	9.645 715	778
9.536 223	724	9.537 976	799	9.570 855	553	9.584 674	1194	9.595 511	1189	9.620 437	1104	9.642 654	782	9.645 740	778
9.536 225	724	9.537 977	798	9.570 857	553	9.584 675	1194	9.595 512	1189	9.620 438	1104	9.642 660	782	9.645 744	778
9.536 226	724	9.537 978	798	9.570 859	554	9.584 676	1194	9.595 513	1189	9.620 439	1104	9.642 670	783	9.645 747	778

9.645 748	778	9.650 205	560	9.651 695	1264	9.698 964	709	9.699 318	719	9.700 805	1166	9.720 226	420	9.721 033	1297
9.645 781	779	9.650 208	560	9.651 850	1265	9.698 965	709	9.699 319	719	9.700 806	1167	9.720 231	433	9.721 036	1309
9.645 782	779	9.650 209	560	9.651 851	1265	9.698 966	709	9.699 320	720	9.704 000	282	9.720 232	433	9.721 038	488
9.645 785	779	9.650 217	560	9.651 852	1265	9.698 967	709	9.699 321	720	9.704 001	282	9.720 233	433	9.721 039	488
9.645 786	779	9.650 218	560	9.651 853	1265	9.698 968	709	9.699 322	720	9.704 002	282	9.720 241	435	9.721 040	488
9.645 787	779	9.650 223	563	9.651 854	1265	9.698 969	710	9.699 323	720	9.704 003	317	9.720 242	435	9.721 041	1308
9.645 814	774	9.650 224	563	9.651 855	1265	9.698 970	710	9.699 330	1129	9.704 004	317	9.720 250	430	9.721 042	1309
9.645 815	774	9.650 225	563	9.651 856	1265	9.698 971	710	9.699 331	1129	9.704 006	317	9.720 257	435	9.721 043	1309
9.645 816	774	9.650 228	562	9.651 857	1265	9.698 972	710	9.699 332	1129	9.704 010	313	9.720 261	433	9.721 044	1309
9.645 820	774	9.650 229	562	9.651 858	1265	9.698 973	710	9.699 333	1129	9.704 012	313	9.720 262	433	9.721 045	488
9.645 824	779	9.650 235	563	9.651 859	1265	9.698 974	710	9.699 334	1129	9.704 013	313	9.720 263	433	9.721 046	488
9.645 827	779	9.650 236	563	9.651 860	1265	9.698 975	710	9.699 340	722	9.704 014	313	9.720 276	435	9.721 047	488
9.645 828	779	9.650 238	563	9.651 861	1265	9.698 976	710	9.699 341	722	9.704 016	314	9.720 306	419	9.721 048	488
9.645 829	779	9.650 239	561	9.651 862	1265	9.698 980	725	9.699 342	722	9.704 017	325	9.720 348	433	9.721 049	467
9.645 831	779	9.650 240	561	9.651 863	1265	9.698 981	725	9.699 343	722	9.704 018	325	9.720 349	433	9.721 049	815
9.645 832	779	9.650 241	562	9.651 864	1265	9.699 005	726	9.699 344	722	9.704 078	324	9.720 350	433	9.721 050	1308
9.645 833	779	9.650 242	562	9.651 865	1265	9.699 006	726	9.699 345	722	9.704 079	324	9.720 351	433	9.721 052	1308
9.645 950	415	9.650 243	561	9.651 866	1265	9.699 007	726	9.699 380	722	9.704 081	324	9.720 352	433	9.721 053	1308
9.645 951	416	9.650 244	561	9.651 867	1265	9.699 008	726	9.699 381	722	9.704 083	324	9.720 365	416	9.721 054	1308
9.645 954	422	9.650 245	561	9.651 868	1265	9.699 085	735	9.699 382	722	9.704 147	292	9.720 411	432	9.721 055	1308
9.645 955	422	9.650 246	561	9.651 869	1265	9.699 086	735	9.699 383	722	9.704 148	292	9.720 412	432	9.721 056	814
9.645 956	425	9.650 247	561	9.651 870	1265	9.699 087	735	9.699 384	722	9.704 149	322	9.720 414	432	9.721 057	1315
9.645 957	425	9.650 248	561	9.695 000	729	9.699 096	735	9.699 385	722	9.704 150	322	9.720 417	432	9.721 058	1231
9.645 958	425	9.650 249	561	9.695 001	729	9.699 100	737	9.699 495	723	9.704 156	293	9.720 418	432	9.721 059	1298
9.645 959	424	9.650 250	561	9.695 002	729	9.699 101	737	9.699 497	723	9.704 157	293	9.720 419	166	9.721 060	815
9.645 960	424	9.650 254	562	9.695 003	729	9.699 110	736	9.699 501	723	9.704 158	293	9.720 441	434	9.721 061	467
9.645 961	424	9.650 258	562	9.695 004	729	9.699 142	805	9.699 502	723	9.704 159	293	9.720 442	434	9.721 061	815
9.645 962	424	9.650 260	563	9.695 005	729	9.699 142	1144	9.699 503	723	9.704 160	294	9.720 443	434	9.721 062	467
9.645 963	424	9.650 261	563	9.695 006	729	9.699 143	805	9.699 504	723	9.704 161	294	9.720 444	434	9.721 062	815
9.645 964	424	9.650 264	563	9.695 007	729	9.699 143	1144	9.699 630	732	9.704 162	294	9.720 445	434	9.721 063	467
9.645 965	424	9.650 267	563	9.695 008	729	9.699 144	805	9.699 631	732	9.704 163	294	9.720 446	434	9.721 063	815
9.645 966	424	9.650 268	563	9.695 009	729	9.699 144	1144	9.699 632	733	9.704 164	323	9.720 447	434	9.721 064	467
9.645 967	424	9.650 269	562	9.695 020	730	9.699 145	805	9.699 633	733	9.704 165	323	9.720 448	434	9.721 064	815
9.645 968	424	9.650 271	563	9.695 021	730	9.699 145	1144	9.699 634	733	9.704 166	323	9.720 449	434	9.721 065	488
9.645 969	424	9.650 273	561	9.695 022	730	9.699 146	805	9.699 634	732	9.704 350	295	9.720 470	418	9.721 066	1299
9.645 970	424	9.650 275	561	9.695 023	730	9.699 146	1144	9.699 640	734	9.704 351	295	9.720 480	421	9.721 067	742
9.645 971	424	9.650 276	561	9.698 395	724	9.699 147	805	9.699 641	734	9.704 352	295	9.720 493	419	9.721 068	1315
9.645 972	425	9.650 277	561	9.698 525	750	9.699 147	1144	9.699 642	734	9.704 353	295	9.720 494	419	9.721 070	1191
9.645 973	425	9.650 281	563	9.698 526	750	9.699 226	1130	9.699 643	734	9.704 354	324	9.720 495	419	9.721 071	1309
9.645 974	425	9.650 282	563	9.698 528	750	9.699 227	1130	9.699 644	734	9.704 355	324	9.720 496	777	9.721 072	1308
9.645 975	415	9.650 290	1084	9.698 530	750	9.699 228	1130	9.699 645	734	9.704 356	324	9.720 497	777	9.721 073	1308
9.645 976	414	9.650 291	1084	9.698 531	750	9.699 229	1130	9.699 646	734	9.704 357	342	9.720 498	777	9.721 074	1295
9.645 977	414	9.650 292	1084	9.698 532	750	9.699 230	1131	9.699 647	734	9.704 358	342	9.720 501	422	9.721 075	1231
9.645 978	415	9.650 293	1084	9.698 533	750	9.699 231	1131	9.699 648	734	9.704 359	342	9.720 595	423	9.721 076	1231
9.645 979	415	9.650 294	1085	9.698 534	750	9.699 231	1131	9.699 649	734	9.704 360	342	9.720 603	436	9.721 077	1231
9.645 980	415	9.650 294	1084	9.698 535	750	9.699 231	1130	9.699 650	734	9.704 364	343	9.720 604	436	9.721 078	1231
9.645 981	416	9.650 295	1084	9.698 536	750	9.699 235	1130	9.699 651	734	9.704 403	259	9.720 605	436	9.721 079	1308
9.645 982	416	9.650 300	1085	9.698 537	750	9.699 236	1130	9.699 652	734	9.704 404	259	9.720 606	436	9.721 080	1308
9.645 985	424	9.650 303	1085	9.698 538	750	9.699 240	1131	9.699 653	734	9.705 078	1011	9.720 607	436	9.721 081	467
9.645 986	424	9.650 304	1085	9.698 539	750	9.699 240	1131	9.699 654	734	9.705 088	1011	9.720 608	436	9.725 094	784
9.645 990	414	9.650 305	1085	9.698 540	750	9.699 240	1130	9.699 655	734	9.705 170	1019	9.720 609	436	9.725 320	785
9.645 991	414	9.650 306	1085	9.698 541	750	9.699 243	1130	9.699 656	734	9.705 175	1019	9.720 610	436	9.725 321	785
9.645 992	423	9.650 307	1085	9.698 550	750	9.699 244	1130	9.699 657	734	9.705 176	1019	9.720 611	436	9.725 322	785
9.646 000	424	9.650 308	1085	9.698 677	726	9.699 246	1130	9.699 658	734	9.705 177	1019	9.720 618	422	9.725 323	785
9.646 010	425	9.650 311	1084	9.698 680	725	9.699 247	1128	9.699 659	734	9.705 194	1019	9.720 624	423	9.725 363	785
9.646 011	426	9.650 312	1084	9.698 682	726	9.699 247	1130	9.699 660	734	9.705 195	1019	9.720 625	423	9.725 378	785
9.646 026	425	9.650 313	1084	9.698 683	725	9.699 264	1131	9.699 661	734	9.705 202	1019	9.720 650	423	9.725 381	784
9.646 027	425	9.650 314	1084	9.698 685	726	9.699 266	1130	9.699 662	734	9.705 206	1019	9.721 000	459	9.725 382	784
9.646 028	413	9.651 050	1262	9.698 686	724	9.699 267	1130	9.699 663	734	9.705 220	1019	9.721 001	628	9.725 383	784
9.646 029	413	9.651 051	1262	9.698 688	724	9.699 273	1131	9.699 664	734	9.705 221	1019	9.721 003	629	9.725 394	785
9.646 035	414	9.651 052	1262	9.698 690	726	9.699 275	287	9.699 665	734	9.705 225	1019	9.721 004	628	9.725 395	785
9.646 036	414	9.651 053	1262	9.698 691	726	9.699 276	287	9.699 666	734	9.705 226	1019	9.721 006	628	9.726 000	176
9.646 040	439	9.651 560	1266	9.698 692	724	9.699 277	287	9.699 667	734	9.705 230	1019	9.721 007	628	9.726 001	176
9.646 041	415	9.651 564	1266	9.698 693	724	9.699 278	1129	9.699 668	734	9.705 231	1019	9.721 008	628	9.726 403	395
9.646 042	415	9.651 637	1264	9.698 694	721	9.699 279	1129	9.699 669	734	9.705 272	1019	9.721 009	1299	9.726 404	395
9.646 043	415	9.651 638	1264	9.698 695	721	9.699 280	1128	9.699 670	734	9.718 011	377	9.721 010	1299	9.726 405	395
9.646 045	415	9.651 639	1264	9.698 696	721	9.699 281	1128	9.699 671	734	9.718 020	377	9.721 011	484	9.726 408	398
9.646 051	427	9.651 641	1264	9.698 697	724	9.699 282	1128	9.699 676	1158	9.718 200	377	9.721 013	484	9.726 410	398
9.646 056	415	9.651 642	1264	9.698 698	724	9.699 283	1128	9.699 677	1158	9.718 202	377	9.721 014	483	9.726 411	385
9.646 057	439	9.651 643	1264	9.698 699	725	9.699 284	1128	9.699 678	1158	9.718 222	377	9.721 015	481	9.726 412	387
9.646 058	439	9.651 656	1264	9.698 708	708	9.699 285	1128	9.700 400	259	9.718 230	377	9.721 016	488	9.726 413	385
9.650 151	560	9.651 657	1264	9.698 709	708	9.699 286	1128	9.700 401	259	9.720 085	412	9.721 017	484	9.726 413	387
9.650 152	560	9.651 658	1264	9.698 710	708	9.699 287	1128	9.700 420	954	9.720 090	413	9.721 018	467	9.726 416	385
9.650 156	560	9.651 659	1264	9.698 711	708	9.699 288	1128	9.700 421	954	9.720 091	413	9.721 019	466	9.726 416	387
9.650 157	561	9.651 660	1264	9.698 712	708	9.699 289	1128	9.700 422	954	9.720 092	413	9.721 021	467	9.726 417	385
9.650 158	561	9.651 661	1264	9.698 746	709	9.699 290	1128	9.700 423	954	9.720 093	413	9.721 021	815	9.726 417	387
9.650 159	561	9.651 674	1264	9.698 776	706	9.699 291	1128	9.700 430	954	9.720 094	413	9.721 022	815	9.726 422	387
9.650 160	557	9.651 675	1264	9.698 786	706	9.699 292	320	9.700 433	955	9.720 095	413	9.721 023	467	9.726 424	383
9.650 165	561	9.651 676	1264	9.698 787	706	9.699 293	320	9.700 435	955	9.720 096	413	9.721 023	815	9.726 426	383
9.650 166	561	9.651 677	1264	9.698 788	706	9.699 295	334	9.700 436	955	9.720 097	413	9.721 024	467	9.726 428	383
9.650 170	558	9.651 678	1264	9.698 789	706	9.699 301	1145	9.700 437	955	9.720 098	413	9.721 024	815	9.726 431	383
9.650 175	558	9.651 689	1264	9.698 954	710	9.699 302	1145	9.700 438	955	9.720 130	432	9.721 026	1295	9.726 531	396
9.650 180	557	9.651 690	1264	9.698 959	710	9.699 310	719	9.700 442	955	9.720 208	420	9.721 028	488	9.726 533	396
9.650 185	557	9.651 691	1264	9.698 960	710	9.699 311	719	9.700 443	955	9.720 210	418	9.721 029	488	9.726 964	396
9.650 190	562	9.651 692	1264	9.698 961	710	9.699 312	719	9.700 802	1166	9.720 211	418	9.721 030	488	9.726 965	396
9.650 195	560	9.651 693	1264	9.698 962	709	9.699 314	719	9.700 803	1166	9.720 220	416	9.721 031	488	9.727 002	1012
9.650 204	560	9.651 694	1264	9.698 963	709	9.699 315	719	9.700 804	1166	9.720 222	420	9.721 032	488	9.727 003	1012

9.727 015	1014	9.729 970	493	9.737 785	540	9.738 432	536	9.738 827	526	9.739 201	547	9.764 576	827	9.774 376	280
9.727 016	1014	9.729 971	493	9.737 787	540	9.738 433	536	9.738 829	526	9.739 202	547	9.764 577	827	9.774 377	281
9.727 022	1016	9.729 972	493	9.737 788	540	9.738 435	536	9.738 833	526	9.739 203	547	9.764 578	827	9.774 378	327
9.727 030	1014	9.729 973	493	9.737 789	540	9.738 437	536	9.738 835	526	9.739 204	547	9.764 579	827	9.774 379	315
9.727 031	1014	9.729 982	492	9.737 790	537	9.738 441	536	9.738 839	526	9.739 205	547	9.764 580	827	9.774 390	316
9.727 032	1012	9.729 983	492	9.737 791	537	9.738 442	536	9.738 847	527	9.739 208	524	9.764 582	827	9.774 391	316
9.727 033	1012	9.729 984	482	9.737 801	538	9.738 449	536	9.738 847	530	9.739 209	524	9.764 584	827	9.774 398	315
9.727 050	1014	9.729 985	482	9.737 805	539	9.738 453	534	9.738 848	526	9.739 210	524	9.764 585	827	9.774 399	315
9.727 051	1014	9.729 986	485	9.737 806	539	9.738 454	534	9.738 849	526	9.739 211	524	9.764 586	827	9.774 400	316
9.727 052	1014	9.729 987	485	9.737 807	539	9.738 455	534	9.738 852	526	9.739 212	524	9.764 587	827	9.774 401	316
9.727 053	1014	9.730 051	461	9.737 815	539	9.738 456	534	9.738 860	527	9.739 213	524	9.764 588	827	9.774 402	316
9.728 800	482	9.730 053	461	9.737 816	539	9.738 457	534	9.738 861	527	9.739 218	524	9.764 589	827	9.774 403	315
9.728 800	485	9.730 058	461	9.737 817	539	9.738 458	534	9.738 864	526	9.739 222	524	9.764 590	827	9.774 404	315
9.728 801	482	9.730 060	460	9.737 818	539	9.738 459	534	9.738 868	527	9.739 223	541	9.764 591	827	9.774 405	315
9.728 801	485	9.730 090	464	9.737 828	539	9.738 460	534	9.738 869	526	9.739 224	541	9.764 592	827	9.774 406	327
9.728 802	482	9.730 100	1311	9.737 829	540	9.738 461	534	9.738 870	527	9.739 238	544	9.770 106	1277	9.774 407	327
9.728 802	485	9.730 101	1311	9.737 830	540	9.738 500	524	9.738 871	527	9.739 241	541	9.770 108	1277	9.774 409	316
9.728 810	493	9.730 102	487	9.737 831	540	9.738 501	524	9.738 873	527	9.739 242	542	9.773 701	322	9.775 160	1313
9.728 811	493	9.730 103	487	9.737 832	540	9.738 502	524	9.738 874	526	9.739 243	544	9.773 702	292	9.775 161	1313
9.728 812	493	9.730 104	487	9.738 151	525	9.738 503	524	9.738 875	526	9.739 248	524	9.773 703	292	9.775 162	1313
9.728 813	493	9.730 105	487	9.738 170	525	9.738 504	524	9.738 877	527	9.739 252	524	9.773 710	294	9.775 163	1313
9.728 815	493	9.730 106	487	9.738 172	525	9.738 505	524	9.738 880	526	9.739 254	524	9.773 711	322	9.775 164	1313
9.728 820	468	9.730 107	487	9.738 173	525	9.738 506	524	9.738 885	526	9.739 255	542	9.773 712	322	9.775 165	1313
9.728 820	481	9.730 108	487	9.738 174	525	9.738 507	524	9.738 888	527	9.739 256	542	9.773 720	317	9.775 166	1313
9.728 821	468	9.730 109	487	9.738 200	531	9.738 508	524	9.738 914	521	9.739 257	542	9.773 721	317	9.775 167	1313
9.728 821	481	9.730 110	487	9.738 211	531	9.738 509	524	9.738 915	521	9.739 270	529	9.773 722	329	9.775 171	1314
9.728 830	468	9.730 111	487	9.738 218	529	9.738 510	524	9.738 916	521	9.739 271	529	9.773 723	329	9.775 411	1040
9.728 831	468	9.730 112	487	9.738 221	529	9.738 512	532	9.738 917	521	9.739 273	541	9.773 724	329	9.775 412	1040
9.728 840	469	9.730 113	487	9.738 222	529	9.738 514	532	9.738 952	528	9.739 274	529	9.773 850	290	9.775 416	1039
9.728 840	477	9.730 114	487	9.738 223	529	9.738 515	532	9.738 953	528	9.739 275	529	9.773 851	290	9.775 420	1039
9.728 841	469	9.730 115	1311	9.738 226	529	9.738 516	532	9.738 955	528	9.739 277	541	9.773 852	290	9.775 424	1039
9.728 841	477	9.730 116	1311	9.738 227	529	9.738 518	532	9.738 956	528	9.739 278	541	9.773 855	290	9.775 430	1039
9.728 842	469	9.730 117	1311	9.738 231	534	9.738 522	532	9.738 960	526	9.739 279	542	9.773 857	334	9.775 430	1040
9.728 842	477	9.730 118	1311	9.738 232	534	9.738 524	532	9.738 961	526	9.739 299	527	9.773 859	334	9.775 430	1313
9.728 843	469	9.730 119	1311	9.738 235	531	9.738 525	532	9.738 962	526	9.739 299	1267	9.773 861	334	9.775 434	1039
9.728 843	477	9.730 120	460	9.738 240	531	9.738 526	532	9.738 963	526	9.739 300	536	9.773 863	334	9.775 434	1313
9.728 850	1296	9.730 121	460	9.738 255	532	9.738 528	532	9.738 964	526	9.739 321	536	9.773 919	288	9.775 435	1039
9.728 851	1296	9.732 200	258	9.738 257	532	9.738 532	532	9.738 965	526	9.739 331	536	9.773 920	277	9.775 436	1039
9.728 852	1296	9.732 201	258	9.738 276	535	9.738 535	532	9.738 966	526	9.739 333	536	9.773 921	277	9.775 436	1313
9.728 853	1296	9.732 202	258	9.738 277	535	9.738 536	532	9.738 970	520	9.739 335	536	9.773 921	332	9.775 437	1313
9.728 854	1296	9.732 203	258	9.738 303	530	9.738 538	532	9.738 971	521	9.739 340	536	9.773 930	277	9.775 438	1313
9.728 885	437	9.732 204	257	9.738 304	530	9.738 552	533	9.738 972	521	9.739 341	536	9.773 931	277	9.775 440	1041
9.728 886	437	9.732 208	257	9.738 305	530	9.738 554	533	9.738 973	521	9.739 343	535	9.773 932	277	9.775 441	1041
9.728 887	437	9.732 209	257	9.738 310	547	9.738 555	533	9.738 974	521	9.739 345	535	9.773 932	277	9.775 442	1042
9.728 890	437	9.732 212	257	9.738 311	529	9.738 556	533	9.738 975	521	9.739 346	535	9.773 932	311	9.775 443	1042
9.728 891	437	9.732 213	257	9.738 313	547	9.738 556	535	9.738 976	521	9.739 347	535	9.773 933	277	9.775 450	1044
9.728 892	437	9.732 213	258	9.738 314	547	9.738 558	533	9.738 977	521	9.739 350	536	9.773 934	277	9.775 451	1044
9.728 893	437	9.732 220	258	9.738 315	532	9.738 560	533	9.738 978	521	9.739 351	536	9.773 934	311	9.775 452	1044
9.728 894	437	9.732 221	258	9.738 316	547	9.738 560	535	9.738 979	521	9.739 500	545	9.773 944	278	9.775 453	1044
9.728 895	437	9.732 222	258	9.738 317	547	9.738 562	533	9.738 980	521	9.739 607	523	9.773 945	278	9.775 455	1044
9.728 896	437	9.732 223	258	9.738 318	547	9.738 564	533	9.738 981	521	9.739 608	523	9.773 946	278	9.776 396	635
9.728 897	437	9.732 224	258	9.738 319	547	9.738 565	533	9.738 982	521	9.763 381	826	9.773 947	278	9.776 398	635
9.728 898	437	9.732 225	259	9.738 325	529	9.738 566	533	9.738 983	521	9.763 382	826	9.773 948	278	9.776 400	635
9.728 899	437	9.733 060	367	9.738 327	529	9.738 568	533	9.738 984	521	9.764 185	826	9.773 950	278	9.776 401	635
9.728 900	437	9.733 070	367	9.738 340	529	9.738 572	533	9.738 987	521	9.764 186	826	9.773 953	279	9.776 404	635
9.728 901	437	9.733 644	257	9.738 343	529	9.738 574	533	9.738 990	521	9.764 187	826	9.773 959	279	9.776 405	635
9.728 902	437	9.733 653	257	9.738 345	529	9.738 575	533	9.739 001	531	9.764 188	826	9.773 978	279	9.776 406	635
9.729 900	463	9.733 654	257	9.738 354	529	9.738 576	533	9.739 002	531	9.764 189	826	9.773 979	279	9.776 408	635
9.729 901	463	9.733 655	257	9.738 380	530	9.738 578	533	9.739 003	531	9.764 191	826	9.773 981	288	9.776 409	635
9.729 902	463	9.733 658	257	9.738 381	527	9.738 582	533	9.739 006	531	9.764 192	826	9.773 982	279	9.776 451	1202
9.729 914	463	9.733 778	238	9.738 381	530	9.738 584	533	9.739 007	531	9.764 195	826	9.773 987	311	9.776 465	1202
9.729 915	464	9.733 779	238	9.738 382	527	9.738 585	533	9.739 030	525	9.764 196	826	9.773 992	325	9.776 487	630
9.729 931	460	9.733 786	238	9.738 382	530	9.738 586	533	9.739 031	525	9.764 197	826	9.773 993	325	9.776 488	630
9.729 932	460	9.733 787	237	9.738 383	527	9.738 588	533	9.739 032	525	9.764 198	826	9.773 994	288	9.776 488	1202
9.729 933	460	9.733 788	237	9.738 383	530	9.738 770	515	9.739 033	525	9.764 210	826	9.773 995	332	9.776 490	1202
9.729 936	459	9.733 788	236	9.738 384	527	9.738 771	515	9.739 034	525	9.764 211	826	9.773 996	332	9.776 496	1202
9.729 938	462	9.733 793	237	9.738 384	530	9.738 772	515	9.739 064	521	9.764 212	826	9.773 997	326	9.776 500	630
9.729 939	462	9.733 793	236	9.738 385	530	9.738 773	515	9.739 065	521	9.764 213	826	9.773 999	326	9.776 501	630
9.729 942	463	9.733 794	236	9.738 387	527	9.738 774	515	9.739 066	521	9.764 231	826	9.774 117	281	9.776 504	630
9.729 943	463	9.733 808	240	9.738 387	530	9.738 775	530	9.739 067	523	9.764 232	826	9.774 118	281	9.776 504	1202
9.729 944	463	9.733 809	240	9.738 389	530	9.738 776	530	9.739 069	523	9.764 233	826	9.774 317	280	9.776 521	630
9.729 945	463	9.733 810	239	9.738 390	530	9.738 777	530	9.739 074	523	9.764 235	826	9.774 318	281	9.776 522	630
9.729 946	463	9.733 811	239	9.738 394	530	9.738 778	530	9.739 080	526	9.764 503	825	9.774 319	281	9.776 533	1202
9.729 947	463	9.733 812	239	9.738 395	530	9.738 779	530	9.739 080	1267	9.764 504	825	9.774 329	281	9.776 534	1202
9.729 948	463	9.733 816	236	9.738 400	530	9.738 780	530	9.739 083	523	9.764 505	825	9.774 337	281	9.776 620	1202
9.729 949	463	9.733 817	237	9.738 403	527	9.738 781	528	9.739 091	526	9.764 506	825	9.774 340	327	9.776 621	1202
9.729 950	461	9.733 817	236	9.738 414	527	9.738 782	528	9.739 091	1267	9.764 507	825	9.774 343	327	9.776 622	1202
9.729 951	462	9.733 817	236	9.738 417	530	9.738 783	528	9.739 093	515	9.764 508	825	9.774 350	327	9.776 623	1202
9.729 952	462	9.733 819	238	9.738 418	530	9.738 784	528	9.739 098	515	9.764 509	825	9.774 351	327	9.776 624	1202
9.729 953	462	9.733 825	240	9.738 419	527	9.738 785	528	9.739 147	547	9.764 537	825	9.774 354	280	9.776 660	1297
9.729 954	462	9.733 826	235	9.738 419	530	9.738 786	528	9.739 160	533	9.764 538	825	9.774 355	281	9.776 700	632
9.729 955	462	9.733 998	279	9.738 421	536	9.738 787	528	9.739 162	533	9.764 539	825	9.774 356	281	9.776 702	632
9.729 956	462	9.737 780	540	9.738 424	536	9.738 788	528	9.739 163	533	9.764 540	825	9.774 357	327	9.776 705	632
9.729 957	462	9.737 781	540	9.738 425	530	9.738 789	528	9.739 165	533	9.764 541	825	9.774 358	315	9.776 710	633
9.729 958	462	9.737 782	540	9.738 426	530	9.738 790	528	9.739 165	535	9.764 542	825	9.774 367	280	9.776 711	633
9.729 959	462	9.737 783	540	9.738 429	536	9.738 791	528	9.739 166	533	9.764 543	825	9.774 372	315	9.776 712	633
9.729 960	462	9.737 784	540	9.738 429	536	9.738 823	526	9.739 200	547	9.764 575	827	9.774 375	281	9.776 713	633

9.776 723	633	9.777 252	484	9.801 306	1027	9.816 699	441	9.828 355	958	9.837 890	817	9.838 094	476	9.842 429	1098
9.776 724	633	9.777 253	467	9.801 308	1027	9.816 700	442	9.828 356	958	9.837 891	817	9.838 095	476	9.842 430	1098
9.776 730	634	9.777 254	467	9.801 309	1027	9.816 701	442	9.828 357	958	9.837 892	817	9.838 150	474	9.842 431	1098
9.776 731	634	9.777 256	467	9.801 312	1027	9.816 702	442	9.828 358	958	9.837 893	817	9.838 151	474	9.842 432	1098
9.776 732	634	9.777 259	467	9.801 313	1027	9.816 703	442	9.828 359	958	9.837 894	817	9.838 160	474	9.842 433	1098
9.776 733	634	9.777 262	467	9.801 317	1033	9.816 704	442	9.828 360	958	9.837 897	817	9.838 161	474	9.842 801	1094
9.776 734	634	9.777 263	467	9.801 325	1033	9.816 705	442	9.828 361	958	9.837 905	470	9.838 162	474	9.842 802	1095
9.776 735	634	9.777 272	1304	9.801 327	1027	9.816 706	444	9.828 362	958	9.837 906	478	9.838 163	474	9.842 803	1094
9.776 736	634	9.777 274	1304	9.801 333	1027	9.816 707	444	9.828 363	958	9.837 911	486	9.838 175	475	9.842 804	1094
9.776 737	634	9.777 276	1305	9.801 344	1030	9.816 708	444	9.828 364	958	9.837 912	486	9.838 176	475	9.842 805	1095
9.776 740	634	9.777 278	1305	9.801 348	1027	9.816 709	444	9.828 365	958	9.837 913	483	9.838 185	479	9.842 806	1094
9.776 747	634	9.777 280	1305	9.801 351	1027	9.816 710	444	9.828 366	959	9.837 914	483	9.838 191	479	9.842 807	1095
9.776 751	634	9.777 282	1305	9.801 359	1027	9.816 711	444	9.828 367	960	9.837 915	471	9.838 192	479	9.842 808	1094
9.776 760	633	9.777 284	1301	9.801 360	1027	9.816 712	446	9.828 368	967	9.837 916	478	9.838 193	479	9.842 809	1094
9.776 761	633	9.777 286	1301	9.801 361	1027	9.816 713	446	9.828 370	958	9.837 917	471	9.838 195	1296	9.842 810	1095
9.776 762	633	9.777 288	484	9.801 362	1028	9.816 714	446	9.828 371	961	9.837 918	478	9.839 701	466	9.842 811	1094
9.776 763	633	9.777 290	484	9.801 364	1027	9.816 715	445	9.828 372	961	9.837 919	471	9.839 702	466	9.842 812	1095
9.776 775	634	9.777 292	467	9.801 369	1030	9.816 716	445	9.828 373	961	9.837 920	471	9.839 703	466	9.842 813	1094
9.776 776	634	9.777 293	484	9.801 370	1027	9.816 717	445	9.828 375	961	9.837 925	489	9.839 704	466	9.842 814	1094
9.776 777	634	9.777 294	484	9.801 371	1027	9.816 718	445	9.828 376	957	9.837 926	813	9.840 202	261	9.842 815	1094
9.776 778	634	9.778 950	450	9.801 372	1027	9.816 719	445	9.828 376	961	9.837 927	813	9.840 588	262	9.842 816	1095
9.776 780	634	9.778 951	450	9.801 373	1031	9.816 720	445	9.828 377	961	9.837 929	813	9.840 608	269	9.842 817	1094
9.776 902	1307	9.778 952	450	9.801 374	1031	9.816 735	449	9.828 378	957	9.837 931	490	9.840 609	269	9.842 818	1095
9.776 903	1304	9.778 953	450	9.801 375	1028	9.816 736	449	9.828 378	961	9.837 935	473	9.840 612	267	9.842 819	1094
9.776 904	1306	9.778 954	450	9.801 376	1030	9.816 801	1303	9.828 379	961	9.837 936	472	9.840 614	267	9.842 820	1094
9.776 905	1306	9.778 960	450	9.801 377	1030	9.816 802	1303	9.828 380	961	9.837 936	813	9.840 619	267	9.842 821	1095
9.776 906	1307	9.778 961	450	9.801 378	1030	9.816 803	1303	9.828 381	961	9.837 937	473	9.840 626	267	9.843 701	1152
9.776 907	1307	9.778 962	450	9.801 379	1030	9.816 804	1303	9.828 391	957	9.837 938	473	9.840 650	265	9.843 702	1152
9.776 908	1307	9.778 963	450	9.801 381	1028	9.816 805	1303	9.828 391	960	9.837 960	770	9.840 650	267	9.843 703	1152
9.776 909	1307	9.778 964	450	9.801 382	1028	9.816 806	1303	9.828 394	961	9.837 966	770	9.840 650	266	9.843 704	1152
9.776 910	1307	9.779 003	450	9.801 383	1028	9.816 807	1303	9.828 395	960	9.837 967	770	9.840 650	268	9.843 705	1152
9.776 911	1307	9.779 005	450	9.801 386	1031	9.816 808	1303	9.828 396	961	9.837 968	770	9.840 681	265	9.843 706	1152
9.776 912	1307	9.779 006	450	9.801 390	1030	9.816 809	1303	9.828 420	967	9.837 970	472	9.840 682	265	9.843 707	1152
9.776 913	1307	9.779 013	450	9.801 398	1035	9.816 810	1303	9.828 421	967	9.837 971	473	9.840 689	268	9.843 708	1152
9.776 914	1307	9.779 014	450	9.801 473	1027	9.816 811	1303	9.828 422	967	9.837 972	472	9.840 690	268	9.843 709	1152
9.776 915	1307	9.779 052	450	9.801 474	1037	9.816 812	1303	9.828 423	967	9.837 973	473	9.840 691	268	9.843 710	1152
9.776 916	1307	9.779 065	450	9.801 475	1028	9.816 813	1303	9.828 424	967	9.837 974	472	9.840 692	268	9.843 711	1155
9.776 917	1307	9.779 163	451	9.801 476	1028	9.816 814	1303	9.828 425	967	9.837 975	472	9.840 693	267	9.843 741	1107
9.776 918	1307	9.779 164	451	9.801 477	1028	9.816 815	1303	9.828 430	967	9.837 976	472	9.840 694	267	9.843 744	1107
9.776 923	634	9.779 165	451	9.803 717	1089	9.816 816	1303	9.828 432	967	9.837 977	472	9.840 695	266	9.843 745	1107
9.777 000	1232	9.779 320	451	9.803 721	1089	9.816 817	1303	9.828 433	967	9.837 978	472	9.840 696	266	9.843 750	1153
9.777 001	1232	9.779 321	452	9.803 723	1089	9.816 818	1303	9.828 434	967	9.837 979	473	9.840 697	266	9.843 751	1153
9.777 005	1232	9.779 322	452	9.803 724	1089	9.822 551	331	9.828 435	967	9.837 980	472	9.840 698	266	9.843 752	1153
9.777 007	1232	9.779 323	452	9.803 727	1089	9.822 552	312	9.828 470	956	9.837 980	813	9.840 699	265	9.843 753	1153
9.777 008	1232	9.779 324	452	9.803 728	1089	9.822 553	331	9.828 471	956	9.837 981	473	9.840 700	265	9.843 754	1153
9.777 009	1232	9.779 325	452	9.803 729	1089	9.822 560	331	9.828 472	956	9.837 982	473	9.840 701	268	9.843 756	1152
9.777 010	1232	9.779 326	453	9.803 730	1089	9.826 131	544	9.828 473	956	9.837 983	472	9.840 702	268	9.843 757	1152
9.777 120	1306	9.779 331	453	9.803 731	1089	9.826 132	544	9.828 474	956	9.837 983	770	9.841 501	1037	9.843 758	1152
9.777 121	1306	9.779 332	453	9.803 732	1089	9.826 133	544	9.828 475	956	9.837 983	814	9.841 504	1037	9.843 759	1152
9.777 122	1306	9.779 333	453	9.803 734	1089	9.826 134	544	9.828 480	956	9.837 984	472	9.841 601	1106	9.843 760	1152
9.777 123	1306	9.779 334	453	9.803 735	1089	9.826 401	543	9.828 481	956	9.837 984	770	9.841 605	1106	9.843 766	1153
9.777 125	1306	9.801 101	1032	9.803 736	1089	9.826 402	543	9.828 482	956	9.837 984	814	9.842 013	1091	9.843 767	1153
9.777 127	1306	9.801 102	1032	9.803 737	1089	9.826 403	543	9.828 483	956	9.837 985	472	9.842 014	1091	9.843 768	1152
9.777 128	1306	9.801 103	1032	9.803 738	1089	9.826 404	543	9.828 484	956	9.837 985	770	9.842 017	1092	9.843 769	1152
9.777 129	1306	9.801 104	1032	9.803 740	1089	9.826 405	543	9.828 485	956	9.837 985	814	9.842 018	1092	9.843 770	1152
9.777 130	1306	9.801 105	1032	9.803 743	1089	9.826 406	543	9.828 487	957	9.837 986	472	9.842 019	1090	9.843 771	1152
9.777 132	1306	9.801 110	1032	9.803 766	1088	9.826 444	543	9.828 510	960	9.837 986	770	9.842 020	1092	9.843 773	1153
9.777 133	1306	9.801 116	1029	9.803 775	1089	9.826 446	543	9.828 511	967	9.837 986	814	9.842 025	1092	9.843 775	1153
9.777 134	1306	9.801 117	1028	9.803 776	1089	9.826 447	543	9.828 512	959	9.837 987	472	9.842 027	1090	9.843 776	1153
9.777 149	1306	9.801 121	1028	9.803 890	1088	9.826 449	543	9.828 513	957	9.837 987	770	9.842 028	1090	9.843 777	1148
9.777 172	1233	9.801 123	1028	9.812 217	624	9.826 450	543	9.828 514	957	9.837 987	814	9.842 029	1090	9.843 778	1148
9.777 175	1233	9.801 124	1028	9.813 001	619	9.826 939	543	9.828 515	957	9.837 988	472	9.842 030	1090	9.843 779	1148
9.777 176	1233	9.801 127	1028	9.813 002	619	9.826 940	543	9.828 516	957	9.837 988	770	9.842 031	1090	9.843 786	1148
9.777 177	1233	9.801 130	1028	9.813 003	619	9.826 943	543	9.828 520	961	9.837 988	814	9.842 032	1090	9.843 800	1108
9.777 178	1233	9.801 142	1028	9.813 004	621	9.828 142	956	9.828 521	961	9.837 989	472	9.842 033	1092	9.843 801	1109
9.777 179	1233	9.801 149	1028	9.813 005	621	9.828 144	956	9.828 530	960	9.837 989	770	9.842 035	1092	9.843 802	1109
9.777 180	1233	9.801 150	1028	9.813 006	621	9.828 146	956	9.828 533	961	9.837 989	814	9.842 036	1092	9.843 803	1154
9.777 181	1233	9.801 151	1028	9.813 007	621	9.828 152	956	9.828 541	959	9.837 990	813	9.842 037	1092	9.843 806	1108
9.777 185	1233	9.801 185	1029	9.813 008	621	9.828 154	956	9.830 160	410	9.837 991	472	9.842 038	1092	9.843 813	1154
9.777 186	1233	9.801 190	1036	9.813 010	621	9.828 156	956	9.830 430	408	9.837 991	814	9.842 410	1097	9.843 814	1154
9.777 200	1304	9.801 200	1027	9.813 012	620	9.828 215	961	9.830 441	408	9.838 040	475	9.842 411	1097	9.843 815	1154
9.777 202	1304	9.801 241	1027	9.813 014	620	9.828 216	961	9.830 442	408	9.838 040	480	9.842 412	1097	9.843 816	1154
9.777 204	1305	9.801 242	1027	9.813 015	620	9.828 307	966	9.830 443	408	9.838 041	475	9.842 413	1097	9.843 817	1154
9.777 206	1305	9.801 244	1027	9.813 016	621	9.828 308	966	9.830 445	408	9.838 041	480	9.842 414	1097	9.843 818	1154
9.777 208	1305	9.801 246	1027	9.816 622	446	9.828 309	966	9.830 447	408	9.838 045	476	9.842 415	1097	9.843 824	1150
9.777 210	1305	9.801 247	1027	9.816 630	447	9.828 344	966	9.830 447	410	9.838 046	476	9.842 416	1097	9.843 825	1150
9.777 212	1301	9.801 249	1027	9.816 631	447	9.828 344	966	9.830 448	408	9.838 047	476	9.842 417	1097	9.843 826	1150
9.777 214	1301	9.801 250	1027	9.816 632	447	9.828 345	966	9.830 463	408	9.838 048	476	9.842 418	1098	9.843 827	1150
9.777 220	1232	9.801 251	1027	9.816 633	447	9.828 346	958	9.830 463	410	9.838 049	476	9.842 420	1097	9.843 828	1150
9.777 221	1232	9.801 252	1027	9.816 691	440	9.828 347	958	9.837 870	489	9.838 050	476	9.842 421	1097	9.843 830	1154
9.777 222	1232	9.801 254	1027	9.816 692	440	9.828 348	958	9.837 871	489	9.838 063	479	9.842 422	1097	9.843 831	1154
9.777 223	1232	9.801 255	1027	9.816 693	440	9.828 349	958	9.837 881	816	9.838 074	475	9.842 423	1097	9.843 832	1154
9.777 224	1232	9.801 256	1027	9.816 694	440	9.828 350	958	9.837 882	816	9.838 075	475	9.842 424	1097	9.843 833	1151
9.777 225	1232	9.801 257	1032	9.816 695	440	9.828 351	958	9.837 883	816	9.838 080	479	9.842 425	1097	9.843 834	1151
9.777 226	1232	9.801 258	1033	9.816 696	440	9.828 352	958	9.837 884	816	9.838 091	476	9.842 426	1097	9.843 835	1148
9.777 250	484	9.801 301	1027	9.816 697	441	9.828 353	958	9.837 885	816	9.838 092	476	9.842 427	1098	9.843 836	1148
9.777 251	484	9.801 302	1027	9.816 698	441	9.828 354	958	9.837 886	816	9.838 093	476	9.842 428	1098	9.843 837	1148

9.843 838	1148	9.851 998	380	9.857 178	756	9.857 832	741	9.859 107	753	9.863 150	946	9.867 740	811	9.870 340	1379
9.843 839	1148	9.851 999	374	9.857 179	756	9.857 833	741	9.859 108	753	9.863 151	946	9.867 740	1235	9.870 389	1381
9.843 844	1151	9.852 000	397	9.857 180	756	9.857 841	746	9.859 109	754	9.863 152	946	9.867 741	811	9.870 390	1381
9.843 845	1151	9.852 001	397	9.857 181	756	9.857 842	746	9.859 110	754	9.863 153	946	9.867 741	1235	9.870 391	1381
9.843 850	1107	9.852 002	397	9.857 182	756	9.857 843	746	9.859 111	754	9.863 154	946	9.867 742	811	9.870 392	1381
9.843 851	1107	9.852 003	397	9.857 183	756	9.857 844	746	9.859 113	754	9.863 155	946	9.867 742	1235	9.870 393	1381
9.843 852	1107	9.852 004	397	9.857 184	756	9.857 846	746	9.859 115	754	9.863 156	946	9.867 743	811	9.870 394	1381
9.843 900	1153	9.852 005	397	9.857 185	756	9.857 847	746	9.859 116	753	9.863 157	946	9.867 743	1235	9.870 404	1380
9.843 901	1153	9.852 006	397	9.857 186	756	9.857 848	746	9.859 117	753	9.863 158	946	9.867 744	811	9.870 406	1380
9.843 902	1153	9.852 007	397	9.857 187	756	9.857 849	746	9.859 118	753	9.863 159	945	9.867 744	1235	9.870 408	1380
9.843 903	1153	9.852 008	397	9.857 188	756	9.857 857	746	9.859 119	753	9.863 159	946	9.867 745	811	9.870 410	1380
9.843 904	1153	9.852 120	469	9.857 189	756	9.857 858	746	9.859 120	753	9.863 160	946	9.867 745	1235	9.870 412	1380
9.843 905	1153	9.852 120	477	9.857 190	756	9.857 859	746	9.859 121	753	9.863 161	946	9.867 746	811	9.870 414	1380
9.843 922	1151	9.852 121	469	9.857 191	756	9.857 862	746	9.859 122	753	9.863 162	946	9.867 746	1235	9.877 021	1077
9.843 923	1151	9.852 121	477	9.857 192	756	9.857 863	746	9.859 124	754	9.863 163	946	9.867 747	811	9.877 051	1077
9.843 924	1151	9.852 122	469	9.857 193	756	9.857 867	747	9.859 125	754	9.863 168	948	9.867 747	1235	9.877 052	1077
9.843 925	1107	9.852 122	477	9.857 194	756	9.857 870	747	9.859 126	753	9.863 169	948	9.867 748	811	9.877 100	1077
9.843 926	1151	9.852 123	469	9.857 195	756	9.857 872	747	9.859 170	752	9.863 170	947	9.867 748	1235	9.877 101	1077
9.843 927	1151	9.852 123	477	9.857 196	756	9.857 878	747	9.859 171	752	9.863 171	947	9.867 749	811	9.877 103	1077
9.843 928	1109	9.852 125	470	9.857 197	756	9.857 915	754	9.859 201	736	9.863 172	947	9.867 749	1235	9.877 105	546
9.843 929	1109	9.852 126	470	9.857 198	756	9.857 916	754	9.859 202	736	9.863 173	947	9.867 750	811	9.877 105	1082
9.843 930	1109	9.852 127	470	9.857 199	756	9.857 917	754	9.859 203	737	9.863 174	947	9.867 750	1235	9.877 106	546
9.843 931	1109	9.852 128	470	9.857 200	756	9.857 918	754	9.859 204	737	9.863 175	947	9.867 755	811	9.877 106	1077
9.843 932	1109	9.852 129	470	9.857 201	756	9.857 919	754	9.859 205	737	9.863 176	948	9.867 755	1235	9.877 106	1082
9.843 949	1148	9.852 130	470	9.857 202	756	9.857 920	754	9.859 206	737	9.863 177	948	9.867 756	799	9.877 107	546
9.843 950	1148	9.852 131	470	9.857 206	756	9.857 921	754	9.859 207	737	9.863 178	948	9.867 757	799	9.877 107	1082
9.843 963	1150	9.852 133	470	9.857 207	756	9.858 000	739	9.859 208	737	9.863 179	948	9.867 758	799	9.877 108	1077
9.843 964	1150	9.852 134	470	9.857 208	756	9.858 001	739	9.859 209	737	9.863 180	943	9.867 759	799	9.877 114	1077
9.843 965	1150	9.852 135	470	9.857 209	756	9.858 003	739	9.859 210	737	9.863 181	943	9.868 021	821	9.877 155	1077
9.843 966	1150	9.852 136	470	9.857 210	756	9.858 004	739	9.859 211	737	9.863 182	943	9.868 022	821	9.877 156	1077
9.843 967	1150	9.852 137	470	9.857 211	756	9.858 010	740	9.859 212	737	9.863 183	943	9.868 023	821	9.877 256	1077
9.843 968	1150	9.852 138	470	9.857 212	756	9.858 011	740	9.859 213	738	9.863 184	945	9.868 131	789	9.877 510	1077
9.843 969	1153	9.852 139	470	9.857 213	756	9.858 012	740	9.859 220	738	9.863 185	945	9.868 132	789	9.877 511	1077
9.843 970	1149	9.852 140	492	9.857 214	755	9.858 016	740	9.859 221	738	9.863 186	945	9.868 133	789	9.877 512	1077
9.843 971	1149	9.852 141	492	9.857 215	755	9.858 017	740	9.859 222	738	9.863 187	945	9.868 134	789	9.877 515	1077
9.843 972	1149	9.852 142	492	9.857 216	755	9.858 025	740	9.859 223	738	9.863 188	945	9.868 135	789	9.877 516	1077
9.843 973	1149	9.852 143	492	9.857 217	755	9.858 028	740	9.859 224	738	9.863 189	945	9.868 136	789	9.877 528	1077
9.843 974	1149	9.852 144	492	9.857 218	755	9.858 029	740	9.859 225	743	9.863 190	945	9.869 681	788	9.877 528	1082
9.851 018	393	9.852 145	492	9.857 219	755	9.858 030	740	9.859 226	743	9.863 191	945	9.869 682	788	9.877 529	1077
9.851 019	394	9.852 146	470	9.857 220	755	9.858 031	740	9.859 227	742	9.863 210	944	9.869 683	788	9.877 530	1083
9.851 021	392	9.852 300	1302	9.857 299	753	9.858 032	740	9.859 228	742	9.863 211	944	9.869 684	788	9.877 537	1077
9.851 022	372	9.852 301	1302	9.857 315	754	9.858 034	740	9.859 229	742	9.863 212	944	9.869 685	788	9.877 538	1082
9.851 023	381	9.852 302	1302	9.857 316	754	9.858 035	740	9.859 230	742	9.867 403	797	9.869 686	788	9.877 539	1082
9.851 027	390	9.852 303	1302	9.857 317	749	9.858 036	740	9.859 231	743	9.867 405	797	9.869 687	788	9.877 540	1077
9.851 028	374	9.852 305	1300	9.857 318	749	9.858 037	740	9.859 232	743	9.867 702	811	9.869 688	788	9.877 551	1077
9.851 029	374	9.852 306	1300	9.857 361	748	9.858 040	766	9.859 233	743	9.867 702	1235	9.869 689	789	9.877 552	1083
9.851 098	373	9.852 307	1300	9.857 362	748	9.858 044	741	9.859 234	743	9.867 703	810	9.869 690	789	9.877 570	1081
9.851 300	377	9.852 308	1300	9.857 363	748	9.858 047	741	9.859 235	743	9.867 703	1234	9.869 691	789	9.877 571	1081
9.851 324	377	9.852 309	1300	9.857 364	748	9.858 048	741	9.859 236	743	9.867 704	810	9.869 692	789	9.877 572	1081
9.851 352	377	9.852 310	1300	9.857 365	748	9.858 049	741	9.859 237	744	9.867 704	1234	9.869 693	789	9.877 573	1081
9.851 716	377	9.852 311	1300	9.857 366	748	9.858 050	741	9.859 238	744	9.867 705	810	9.869 694	789	9.877 575	1081
9.851 718	380	9.852 312	1300	9.857 367	748	9.858 051	741	9.859 239	744	9.867 705	1234	9.869 695	789	9.877 577	1081
9.851 720	377	9.852 314	1300	9.857 369	748	9.858 052	741	9.859 240	744	9.867 706	811	9.869 696	789	9.877 579	1079
9.851 723	377	9.852 315	1302	9.857 370	748	9.858 054	741	9.859 241	745	9.867 706	1235	9.869 697	788	9.877 582	1081
9.851 871	1093	9.857 045	755	9.857 399	750	9.858 056	740	9.859 242	745	9.867 707	811	9.869 698	788	9.877 583	1081
9.851 872	1094	9.857 046	755	9.857 400	745	9.858 057	740	9.859 243	744	9.867 707	1235	9.869 699	788	9.877 584	1081
9.851 873	1094	9.857 047	755	9.857 401	745	9.858 058	740	9.859 245	745	9.867 708	811	9.869 700	788	9.877 585	1081
9.851 875	1094	9.857 048	755	9.857 402	745	9.858 059	740	9.859 246	745	9.867 708	1235	9.869 701	788	9.877 586	1081
9.851 876	1094	9.857 049	755	9.857 403	744	9.858 062	746	9.859 247	745	9.867 709	811	9.869 702	788	9.877 587	1081
9.851 877	1094	9.857 050	749	9.857 404	742	9.858 063	747	9.859 248	745	9.867 709	1235	9.869 703	788	9.877 597	1080
9.851 879	1094	9.857 053	749	9.857 405	743	9.858 064	747	9.859 249	745	9.867 710	811	9.869 704	788	9.877 600	1080
9.851 885	1094	9.857 121	755	9.857 406	743	9.858 066	746	9.859 250	745	9.867 710	1235	9.869 705	789	9.877 600	1083
9.851 886	1094	9.857 122	755	9.857 407	742	9.858 071	747	9.859 251	745	9.867 711	811	9.869 706	789	9.877 600	1082
9.851 888	1093	9.857 124	755	9.857 408	742	9.858 072	747	9.859 252	745	9.867 711	1235	9.869 707	789	9.877 601	1080
9.851 893	1093	9.857 125	755	9.857 409	742	9.858 075	746	9.859 253	745	9.867 712	811	9.869 708	789	9.877 602	1080
9.851 894	1093	9.857 126	755	9.857 425	737	9.858 086	747	9.859 254	745	9.867 712	1235	9.869 709	789	9.877 603	1080
9.851 895	1093	9.857 127	755	9.857 426	737	9.858 087	747	9.859 255	745	9.867 717	799	9.869 710	789	9.877 604	1080
9.851 896	1093	9.857 128	755	9.857 427	737	9.858 088	747	9.859 256	745	9.867 722	811	9.869 711	789	9.877 605	1080
9.851 897	1093	9.857 129	755	9.857 428	737	9.858 089	747	9.859 257	752	9.867 722	1235	9.869 712	789	9.877 606	546
9.851 898	1093	9.857 130	755	9.857 429	737	9.858 110	739	9.859 258	752	9.867 731	811	9.869 713	789	9.877 606	1080
9.851 919	381	9.857 131	755	9.857 474	737	9.858 111	741	9.859 259	752	9.867 731	1235	9.870 301	1378	9.877 606	1082
9.851 924	397	9.857 132	755	9.857 476	737	9.858 112	741	9.859 301	749	9.867 732	810	9.870 302	1378	9.877 607	1080
9.851 925	397	9.857 145	756	9.857 477	737	9.858 113	741	9.859 302	749	9.867 732	1234	9.870 303	1378	9.877 608	1080
9.851 935	397	9.857 146	756	9.857 478	737	9.858 114	741	9.859 303	749	9.867 733	810	9.870 308	1378	9.877 608	1083
9.851 936	397	9.857 147	756	9.857 479	737	9.858 115	746	9.859 304	749	9.867 733	1234	9.870 311	1378	9.877 610	1080
9.851 937	397	9.857 148	756	9.857 592	748	9.858 117	746	9.859 305	749	9.867 734	810	9.870 312	1378	9.877 611	1080
9.851 938	397	9.857 149	756	9.857 659	748	9.858 121	746	9.859 306	749	9.867 734	1234	9.870 313	1378	9.877 612	1080
9.851 948	397	9.857 150	756	9.857 717	748	9.858 122	746	9.859 307	749	9.867 735	811	9.870 314	1378	9.877 613	1080
9.851 949	397	9.857 151	756	9.857 804	740	9.858 455	747	9.859 308	749	9.867 735	1235	9.870 331	1379	9.877 614	1080
9.851 954	397	9.857 152	756	9.857 805	740	9.858 456	747	9.859 314	749	9.867 736	811	9.870 332	1379	9.877 615	1080
9.851 955	397	9.857 153	756	9.857 806	740	9.858 458	747	9.859 315	749	9.867 736	1235	9.870 333	1379	9.877 616	1080
9.851 959	397	9.857 154	756	9.857 807	740	9.858 459	747	9.859 316	749	9.867 737	811	9.870 334	1379	9.877 617	1080
9.851 961	397	9.857 155	756	9.857 808	740	9.858 460	747	9.859 317	749	9.867 737	1235	9.870 335	1379	9.877 617	1083
9.851 992	397	9.857 156	756	9.857 812	740	9.859 101	753	9.859 318	749	9.867 738	811	9.870 336	1379	9.877 620	1080
9.851 995	397	9.857 157	756	9.857 820	740	9.859 102	753	9.859 319	749	9.867 738	1235	9.870 337	1379	9.877 621	1080
9.851 996	381	9.857 176	756	9.857 824	741	9.859 105	753	9.859 320	749	9.867 739	811	9.870 338	1379	9.877 622	1080
9.851 997	374	9.857 177	756	9.857 831	741	9.859 106	753	9.859 321	749	9.867 739	1235	9.870 339	1379	9.877 622	1083

9.877 622	1085	9.877 851	1078	9.880 569	965	9.880 930	972	9.882 240	981	9.883 163	1203	9.883 604	804	9.900 787	367
9.877 623	1080	9.877 852	1078	9.880 570	965	9.880 931	972	9.882 240	1233	9.883 164	1203	9.883 605	804	9.900 788	366
9.877 624	1080	9.877 853	1078	9.880 597	964	9.880 932	972	9.882 243	1233	9.883 165	1203	9.883 606	804	9.900 789	367
9.877 626	1080	9.877 854	1078	9.880 598	964	9.880 934	973	9.882 401	982	9.883 168	1203	9.883 607	804	9.900 790	364
9.877 626	1083	9.877 855	1078	9.880 599	964	9.880 935	973	9.882 402	982	9.883 169	1203	9.883 625	804	9.900 791	367
9.877 628	1080	9.877 857	1078	9.880 600	964	9.880 936	973	9.882 403	982	9.883 170	1203	9.883 628	823	9.900 800	367
9.877 628	1083	9.877 860	1078	9.880 612	971	9.880 938	972	9.882 404	982	9.883 171	1203	9.883 629	823	9.900 801	366
9.877 630	1079	9.877 862	1078	9.880 613	971	9.880 939	972	9.882 411	982	9.883 172	1203	9.883 630	823	9.900 893	367
9.877 631	1079	9.877 863	1078	9.880 614	971	9.880 940	973	9.882 412	982	9.883 173	1203	9.883 633	805	9.900 894	367
9.877 632	1079	9.877 864	1079	9.880 615	972	9.880 943	974	9.882 413	982	9.883 174	1203	9.883 634	805	9.900 895	367
9.877 633	1079	9.877 865	1078	9.880 616	972	9.880 947	973	9.882 414	982	9.883 175	1203	9.883 663	720	9.900 896	367
9.877 634	1079	9.877 866	1078	9.880 617	972	9.880 948	973	9.882 415	982	9.883 176	1203	9.883 664	720	9.900 938	352
9.877 635	1079	9.877 867	1078	9.880 621	976	9.880 949	973	9.882 416	982	9.883 402	797	9.883 710	824	9.900 939	352
9.877 636	1079	9.877 868	1078	9.880 622	976	9.880 950	973	9.882 417	982	9.883 403	797	9.883 711	824	9.900 940	352
9.877 637	1079	9.877 869	1078	9.880 623	976	9.880 951	973	9.882 418	982	9.883 404	797	9.883 712	824	9.900 955	357
9.877 642	1081	9.877 870	1078	9.880 624	976	9.880 952	973	9.882 419	982	9.883 405	797	9.883 713	824	9.900 956	357
9.877 642	1083	9.877 871	1078	9.880 625	976	9.880 953	973	9.882 420	982	9.883 406	797	9.883 714	824	9.900 957	357
9.877 643	1081	9.877 911	1086	9.880 626	976	9.880 954	973	9.882 421	982	9.883 414	797	9.883 720	812	9.900 958	357
9.877 643	1083	9.877 912	1086	9.880 627	976	9.880 955	974	9.882 441	983	9.883 416	797	9.883 720	1236	9.900 959	357
9.877 644	1080	9.877 914	1086	9.880 628	976	9.880 956	974	9.882 442	983	9.883 417	797	9.883 721	812	9.900 968	350
9.877 645	1080	9.877 915	1086	9.880 629	976	9.880 957	974	9.882 443	983	9.883 418	797	9.883 721	1236	9.900 990	348
9.877 650	1079	9.880 080	972	9.880 631	976	9.880 958	974	9.882 444	983	9.883 419	797	9.883 722	812	9.900 991	348
9.877 651	1080	9.880 083	973	9.880 632	976	9.880 959	974	9.882 451	983	9.883 421	797	9.883 722	1236	9.901 007	351
9.877 653	1080	9.880 101	980	9.880 633	976	9.880 960	974	9.882 452	983	9.883 422	797	9.883 723	812	9.901 008	351
9.877 655	1080	9.880 102	980	9.880 634	976	9.880 968	978	9.882 453	983	9.883 431	797	9.883 723	1236	9.901 009	351
9.877 657	1080	9.880 104	980	9.880 636	976	9.880 969	978	9.882 454	983	9.883 432	797	9.883 738	812	9.901 010	351
9.877 658	1080	9.880 120	980	9.880 637	976	9.880 970	978	9.882 490	983	9.883 480	795	9.883 738	1236	9.901 011	351
9.877 661	1081	9.880 121	980	9.880 638	976	9.880 976	978	9.882 491	983	9.883 482	795	9.883 739	812	9.901 012	351
9.877 664	1081	9.880 123	980	9.880 639	976	9.881 320	975	9.882 492	983	9.883 483	795	9.883 739	1236	9.901 013	351
9.877 666	1081	9.880 123	1004	9.880 640	976	9.881 321	975	9.882 493	983	9.883 484	795	9.883 740	812	9.901 014	351
9.877 667	1081	9.880 124	980	9.880 641	971	9.881 322	975	9.882 494	983	9.883 485	795	9.883 740	1236	9.901 015	351
9.877 680	1081	9.880 124	1005	9.880 642	971	9.881 323	975	9.882 495	983	9.883 486	795	9.883 741	812	9.901 016	351
9.877 681	1081	9.880 125	980	9.880 643	976	9.881 329	975	9.882 496	983	9.883 488	795	9.883 741	1236	9.901 017	351
9.877 682	1081	9.880 300	953	9.880 645	974	9.881 330	975	9.882 497	983	9.883 489	796	9.883 742	812	9.901 018	351
9.877 683	1081	9.880 301	953	9.880 660	971	9.881 333	975	9.882 498	983	9.883 511	796	9.883 742	1236	9.901 019	351
9.877 684	1081	9.880 302	953	9.880 664	971	9.881 334	975	9.882 499	983	9.883 512	796	9.883 743	812	9.901 300	353
9.877 685	1081	9.880 303	953	9.880 670	971	9.881 335	975	9.882 501	982	9.883 513	796	9.883 743	1236	9.901 320	345
9.877 694	1079	9.880 304	953	9.880 675	971	9.881 336	975	9.882 502	982	9.883 514	796	9.883 744	812	9.901 321	345
9.877 697	1079	9.880 305	953	9.880 680	971	9.881 337	975	9.882 503	982	9.883 521	796	9.883 744	1236	9.901 322	345
9.877 698	1079	9.880 310	953	9.880 685	971	9.881 338	975	9.882 504	982	9.883 522	796	9.883 745	812	9.901 323	345
9.877 699	1079	9.880 311	953	9.880 687	971	9.881 339	975	9.882 505	982	9.883 523	796	9.883 745	1236	9.901 324	345
9.877 700	1079	9.880 312	953	9.880 688	971	9.881 346	975	9.882 507	982	9.883 524	796	9.883 746	812	9.901 329	350
9.877 701	1079	9.880 313	953	9.880 828	979	9.881 368	980	9.882 510	982	9.883 528	804	9.883 746	1236	9.901 333	348
9.877 702	1079	9.880 314	953	9.880 828	978	9.881 369	980	9.882 511	982	9.883 529	790	9.883 747	812	9.901 335	348
9.877 702	1083	9.880 315	953	9.880 832	978	9.881 370	980	9.882 512	982	9.883 530	790	9.883 747	1236	9.901 336	348
9.877 703	1079	9.880 350	965	9.880 837	979	9.881 371	980	9.882 513	982	9.883 531	795	9.883 748	812	9.901 354	348
9.877 703	1083	9.880 351	965	9.880 837	978	9.881 380	982	9.882 514	982	9.883 532	795	9.883 748	1236	9.901 356	350
9.877 712	1083	9.880 352	965	9.880 844	978	9.881 381	982	9.882 515	982	9.883 533	795	9.883 749	812	9.901 357	353
9.877 713	1083	9.880 353	965	9.880 852	975	9.881 911	982	9.882 818	983	9.883 535	824	9.883 749	1236	9.901 358	353
9.877 715	1083	9.880 360	954	9.880 883	973	9.881 915	982	9.882 820	983	9.883 540	795	9.883 800	790	9.901 359	353
9.877 716	1083	9.880 361	954	9.880 884	973	9.881 921	982	9.882 821	983	9.883 541	795	9.883 801	790	9.901 371	345
9.877 717	1083	9.880 380	962	9.880 885	973	9.881 922	982	9.882 822	983	9.883 542	795	9.883 802	790	9.901 372	345
9.877 717	1082	9.880 381	962	9.880 886	973	9.881 930	972	9.882 830	983	9.883 543	790	9.883 803	790	9.901 402	350
9.877 720	1080	9.880 382	962	9.880 887	973	9.881 931	972	9.882 832	983	9.883 544	790	9.883 804	790	9.901 403	350
9.877 721	1080	9.880 383	962	9.880 888	973	9.882 101	1145	9.882 848	988	9.883 545	790	9.883 808	790	9.901 404	350
9.877 731	1082	9.880 384	962	9.880 889	973	9.882 102	1145	9.882 849	988	9.883 546	790	9.884 140	828	9.901 405	350
9.877 733	1082	9.880 510	971	9.880 890	973	9.882 103	1145	9.882 850	988	9.883 548	790	9.884 141	828	9.901 406	350
9.877 745	562	9.880 515	971	9.880 891	973	9.882 104	1145	9.882 851	988	9.883 549	790	9.884 142	828	9.901 407	350
9.877 746	1082	9.880 519	971	9.880 892	973	9.882 114	1164	9.882 852	988	9.883 550	790	9.884 143	828	9.901 409	350
9.877 746	1082	9.880 530	971	9.880 893	973	9.882 115	1164	9.882 853	988	9.883 551	790	9.900 501	363	9.901 413	352
9.877 781	1082	9.880 531	971	9.880 894	974	9.882 116	1164	9.882 854	988	9.883 552	790	9.900 502	363	9.901 414	352
9.877 784	546	9.880 532	971	9.880 895	974	9.882 117	1164	9.882 855	985	9.883 553	790	9.900 505	363	9.901 418	352
9.877 784	1082	9.880 533	971	9.880 896	974	9.882 118	1164	9.882 856	985	9.883 554	790	9.900 510	363	9.901 422	352
9.877 784	1082	9.880 534	971	9.880 897	974	9.882 119	1164	9.882 859	988	9.883 555	790	9.900 512	363	9.901 423	351
9.877 800	1082	9.880 535	971	9.880 898	974	9.882 120	1164	9.882 860	987	9.883 556	804	9.900 515	363	9.901 424	351
9.877 801	1082	9.880 536	971	9.880 899	974	9.882 121	1164	9.882 861	987	9.883 557	804	9.900 520	363	9.901 425	351
9.877 802	1082	9.880 537	971	9.880 900	974	9.882 122	1164	9.882 867	988	9.883 563	824	9.900 522	363	9.901 426	351
9.877 803	1082	9.880 538	971	9.880 901	974	9.882 123	1164	9.882 924	982	9.883 564	824	9.900 525	363	9.901 427	351
9.877 804	1083	9.880 539	971	9.880 910	978	9.882 124	1164	9.882 925	982	9.883 565	824	9.900 531	363	9.901 428	351
9.877 804	1082	9.880 540	971	9.880 911	978	9.882 125	1164	9.883 101	163	9.883 566	824	9.900 532	363	9.901 439	361
9.877 806	1082	9.880 541	971	9.880 912	978	9.882 126	1164	9.883 103	163	9.883 567	824	9.900 535	363	9.901 441	360
9.877 830	1078	9.880 543	971	9.880 913	978	9.882 127	1164	9.883 104	163	9.883 568	804	9.900 540	363	9.901 442	352
9.877 831	1078	9.880 544	971	9.880 914	978	9.882 128	1164	9.883 107	163	9.883 569	804	9.900 566	363	9.901 443	352
9.877 832	1078	9.880 545	971	9.880 915	978	9.882 206	986	9.883 108	163	9.883 570	804	9.900 567	363	9.901 444	352
9.877 833	1078	9.880 546	971	9.880 916	978	9.882 207	987	9.883 109	163	9.883 571	804	9.900 568	363	9.901 451	356
9.877 834	1078	9.880 547	971	9.880 917	978	9.882 209	986	9.883 111	163	9.883 572	804	9.900 569	363	9.901 452	356
9.877 835	1078	9.880 548	971	9.880 918	978	9.882 225	1233	9.883 112	163	9.883 573	824	9.900 570	363	9.901 453	356
9.877 836	1078	9.880 549	977	9.880 919	978	9.882 226	1233	9.883 113	163	9.883 574	824	9.900 571	363	9.901 454	356
9.877 837	1078	9.880 550	977	9.880 920	978	9.882 227	1233	9.883 114	163	9.883 575	824	9.900 572	363	9.901 455	356
9.877 838	1078	9.880 551	977	9.880 921	978	9.882 228	1233	9.883 115	163	9.883 576	824	9.900 573	363	9.901 456	356
9.877 839	1078	9.880 552	977	9.880 922	978	9.882 229	1233	9.883 151	1004	9.883 579	823	9.900 574	363	9.901 457	356
9.877 840	1078	9.880 553	971	9.880 923	978	9.882 230	1233	9.883 152	1004	9.883 580	790	9.900 575	363	9.901 460	359
9.877 841	1078	9.880 554	971	9.880 924	978	9.882 235	980	9.883 153	1005	9.883 582	823	9.900 576	363	9.901 461	359
9.877 842	1078	9.880 565	965	9.880 925	978	9.882 235	1004	9.883 154	1202	9.883 583	823	9.900 577	363	9.901 462	359
9.877 848	1078	9.880 566	965	9.880 926	974	9.882 236	980	9.883 155	1203	9.883 584	823	9.900 578	363	9.901 463	359
9.877 849	1078	9.880 567	965	9.880 927	1202	9.882 239	981	9.883 161	1203	9.883 599	804	9.900 785	367	9.901 464	359
9.877 850	1078	9.880 568	965	9.880 928	1203	9.882 240	975	9.883 162	1203	9.883 603	804	9.900 786	367	9.901 465	359

9.901 466	359	9.905 875	760	9.906 594	765	9.914 519	1175	9.920 109	328	9.920 887	1134	9.943 119	637	9.947 300	345
9.901 467	359	9.905 876	760	9.906 595	765	9.914 519	1177	9.920 110	328	9.920 888	1135	9.943 120	639	9.947 302	345
9.901 468	359	9.905 877	760	9.906 596	765	9.914 520	1175	9.920 111	328	9.920 890	1135	9.943 121	639	9.947 316	358
9.902 130	349	9.905 902	762	9.906 601	772	9.914 520	1176	9.920 112	328	9.920 891	1135	9.943 125	640	9.947 334	1123
9.902 131	349	9.905 903	762	9.906 602	772	9.914 521	1176	9.920 113	328	9.920 893	1134	9.943 126	640	9.947 335	1123
9.902 132	349	9.905 904	762	9.906 603	772	9.914 521	1177	9.920 114	321	9.920 896	1135	9.943 129	639	9.947 336	1123
9.902 133	349	9.905 905	762	9.906 604	772	9.914 522	1176	9.920 115	321	9.920 897	1134	9.943 130	639	9.947 340	1122
9.902 134	349	9.905 908	762	9.906 605	772	9.914 522	1177	9.920 116	321	9.920 898	1135	9.943 150	640	9.947 341	1122
9.902 135	349	9.905 912	762	9.906 606	772	9.914 524	1175	9.920 117	321	9.920 899	1135	9.943 152	640	9.947 342	1122
9.902 136	349	9.905 913	762	9.906 650	766	9.914 524	1177	9.920 118	321	9.920 900	1135	9.943 154	640	9.947 343	1122
9.902 137	349	9.905 923	763	9.906 651	766	9.914 527	1177	9.920 119	321	9.920 901	1135	9.943 155	640	9.947 346	1122
9.902 138	349	9.905 931	763	9.908 017	385	9.914 548	1167	9.920 120	340	9.920 902	1135	9.943 250	638	9.947 347	1122
9.902 139	349	9.905 932	763	9.908 017	386	9.914 549	1167	9.920 121	340	9.920 904	1135	9.943 251	638	9.947 500	361
9.902 141	349	9.905 941	763	9.908 018	375	9.914 550	1167	9.920 122	340	9.920 905	1134	9.943 327	638	9.947 538	295
9.902 142	349	9.905 942	763	9.908 021	378	9.914 553	1167	9.920 123	340	9.920 906	1134	9.943 339	637	9.947 539	295
9.902 143	349	9.905 951	1276	9.908 022	378	9.914 587	1166	9.920 124	340	9.920 907	1134	9.943 386	637	9.947 540	295
9.902 144	349	9.905 952	1276	9.908 023	378	9.914 612	1175	9.920 125	340	9.920 908	1134	9.943 386	639	9.947 550	405
9.902 145	349	9.905 957	766	9.908 024	378	9.914 623	1174	9.920 126	340	9.920 909	1134	9.943 399	639	9.947 551	405
9.902 146	349	9.905 958	766	9.908 025	378	9.914 643	1177	9.920 127	340	9.920 910	1134	9.943 467	639	9.947 604	361
9.902 147	349	9.905 959	766	9.908 026	376	9.914 644	1177	9.920 128	340	9.920 911	1134	9.943 468	639	9.947 605	361
9.902 151	357	9.905 970	762	9.908 027	385	9.914 645	1177	9.920 129	340	9.920 914	1134	9.943 474	640	9.950 034	402
9.902 152	357	9.905 971	762	9.908 031	382	9.914 647	1177	9.920 130	340	9.920 915	1134	9.943 475	640	9.950 035	402
9.902 154	357	9.905 972	762	9.908 032	382	9.914 648	1177	9.920 131	340	9.920 916	1134	9.943 477	638	9.950 036	402
9.902 155	357	9.905 983	769	9.908 056	378	9.914 661	1175	9.920 132	340	9.920 917	1134	9.943 479	636	9.950 037	402
9.902 156	357	9.905 984	769	9.908 057	378	9.915 730	1165	9.920 133	340	9.920 918	1134	9.943 486	640	9.950 038	402
9.902 158	357	9.905 985	769	9.908 059	378	9.915 731	1165	9.920 134	341	9.920 919	1134	9.943 487	640	9.950 039	402
9.902 360	358	9.905 986	762	9.908 069	384	9.915 732	1165	9.920 203	1146	9.920 921	1134	9.945 715	641	9.950 065	361
9.902 361	358	9.905 986	770	9.908 070	388	9.915 733	1165	9.920 204	1131	9.920 922	1134	9.945 716	641	9.950 177	408
9.902 362	358	9.905 990	770	9.908 072	384	9.915 734	1165	9.920 204	1135	9.920 924	1134	9.945 717	641	9.950 179	375
9.902 363	358	9.905 996	770	9.908 072	388	9.915 735	1165	9.920 204	1136	9.920 925	1135	9.945 718	641	9.950 180	375
9.902 364	358	9.905 997	770	9.908 073	384	9.915 736	1165	9.920 205	1136	9.920 926	1134	9.945 728	642	9.950 188	409
9.902 365	358	9.906 106	773	9.908 074	388	9.915 737	1165	9.920 493	1146	9.920 927	1135	9.945 729	642	9.950 194	366
9.902 366	358	9.906 121	773	9.908 075	379	9.915 738	1165	9.920 509	1144	9.920 928	1135	9.945 737	642	9.950 195	366
9.902 368	358	9.906 125	773	9.908 076	379	9.920 000	1141	9.920 513	1144	9.920 929	1135	9.945 738	642	9.950 196	366
9.902 370	358	9.906 200	774	9.908 077	379	9.920 001	1141	9.920 514	1144	9.920 930	1135	9.945 739	642	9.950 197	366
9.902 371	358	9.906 383	771	9.908 078	379	9.920 003	1141	9.920 515	1144	9.920 931	1135	9.945 740	642	9.950 222	344
9.902 373	358	9.906 384	771	9.908 079	384	9.920 010	1142	9.920 537	1155	9.920 932	1135	9.945 750	643	9.950 223	344
9.902 375	358	9.906 386	771	9.908 079	388	9.920 011	1142	9.920 538	1155	9.920 933	1135	9.945 752	643	9.950 224	344
9.902 376	358	9.906 387	771	9.908 098	386	9.920 025	1142	9.920 540	1137	9.920 934	1134	9.945 753	643	9.950 296	1359
9.902 378	358	9.906 388	771	9.908 127	1242	9.920 045	331	9.920 541	1137	9.920 935	1134	9.945 760	1310	9.950 297	1359
9.902 379	358	9.906 389	771	9.908 128	1242	9.920 046	339	9.920 542	1137	9.920 936	1134	9.945 761	1310	9.950 298	1359
9.902 381	358	9.906 390	771	9.908 130	47	9.920 047	339	9.920 543	1137	9.920 939	1135	9.945 762	1310	9.950 299	1359
9.902 382	358	9.906 398	761	9.910 319	435	9.920 048	339	9.920 546	1155	9.920 940	1135	9.945 763	1299	9.950 300	1359
9.902 384	358	9.906 399	761	9.910 338	435	9.920 049	339	9.920 547	1155	9.920 941	1135	9.945 764	1299	9.950 301	1359
9.902 385	358	9.906 401	761	9.910 600	1161	9.920 050	339	9.920 548	1155	9.920 942	1135	9.945 765	1299	9.950 302	1359
9.902 387	358	9.906 401	771	9.910 601	1161	9.920 051	339	9.920 584	1154	9.920 943	1135	9.945 771	643	9.950 303	1359
9.902 388	358	9.906 402	771	9.910 602	1161	9.920 052	339	9.920 585	1154	9.920 944	1135	9.945 772	643	9.950 304	1359
9.902 413	344	9.906 410	771	9.910 604	1161	9.920 053	339	9.920 598	1107	9.920 945	1135	9.945 773	643	9.950 305	1359
9.902 414	344	9.906 411	771	9.910 608	1161	9.920 054	339	9.920 599	1107	9.920 946	1134	9.945 780	1298	9.950 306	1359
9.902 415	344	9.906 412	771	9.910 612	1161	9.920 055	339	9.920 600	1107	9.920 948	1135	9.945 781	629	9.950 307	1359
9.902 420	345	9.906 413	771	9.910 642	1162	9.920 056	339	9.920 602	1107	9.920 949	1134	9.945 782	629	9.950 308	1393
9.902 421	345	9.906 414	771	9.910 644	1162	9.920 057	339	9.920 605	1107	9.920 950	1134	9.945 783	629	9.950 309	1393
9.902 422	345	9.906 415	771	9.910 648	1162	9.920 058	339	9.920 606	1107	9.920 951	1134	9.945 789	629	9.950 310	1393
9.902 423	345	9.906 416	771	9.910 661	1163	9.920 059	339	9.920 639	1108	9.920 952	1135	9.945 790	628	9.950 311	1393
9.902 424	345	9.906 417	771	9.910 662	1163	9.920 060	339	9.920 640	1108	9.920 953	1134	9.945 793	631	9.950 312	1393
9.902 425	345	9.906 420	771	9.910 663	1163	9.920 061	339	9.920 641	1108	9.920 954	1135	9.945 794	631	9.950 313	1393
9.902 426	345	9.906 421	771	9.910 664	1163	9.920 062	339	9.920 642	1108	9.920 955	1135	9.945 795	631	9.950 314	1393
9.902 427	345	9.906 422	771	9.910 665	1163	9.920 063	339	9.920 643	1108	9.920 956	1134	9.945 796	631	9.950 315	1393
9.902 428	345	9.906 423	771	9.910 666	1163	9.920 064	339	9.920 644	1108	9.920 957	1134	9.945 797	631	9.950 316	1393
9.902 429	345	9.906 424	761	9.910 667	1163	9.920 065	339	9.920 706	1138	9.920 958	1135	9.945 798	631	9.950 317	1393
9.902 607	362	9.906 425	761	9.910 668	1163	9.920 066	339	9.920 710	596	9.920 959	1135	9.945 799	631	9.950 319	1393
9.902 612	362	9.906 426	761	9.910 669	1163	9.920 067	339	9.920 710	1153	9.920 960	1135	9.945 903	643	9.950 321	1393
9.902 612	362	9.906 431	761	9.910 672	1162	9.920 068	339	9.920 713	1140	9.920 961	1135	9.945 910	643	9.950 322	1393
9.905 718	733	9.906 432	761	9.910 673	1162	9.920 069	339	9.920 721	1137	9.920 962	1135	9.945 912	643	9.950 323	1393
9.905 719	733	9.906 433	761	9.910 674	1162	9.920 070	339	9.920 723	1138	9.920 963	1134	9.945 913	643	9.950 324	1393
9.905 720	733	9.906 434	761	9.910 675	1162	9.920 071	339	9.920 730	1138	9.920 964	1134	9.945 915	642	9.950 325	1393
9.905 721	733	9.906 530	766	9.910 676	1162	9.920 072	339	9.920 747	1140	9.920 965	1134	9.945 916	642	9.950 326	1393
9.905 722	733	9.906 531	766	9.914 432	1166	9.920 073	339	9.920 748	1140	9.920 966	1134	9.945 919	643	9.950 327	1393
9.905 723	735	9.906 532	766	9.914 437	1166	9.920 080	1133	9.920 764	735	9.920 983	1134	9.945 922	641	9.950 328	1393
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9.905 725	735	9.906 534	766	9.914 452	1166	9.920 090	291	9.920 766	735	9.923 601	1132	9.947 060	1131	9.950 330	1393
9.905 726	735	9.906 537	766	9.914 460	1166	9.920 091	291	9.920 806	1136	9.923 602	1132	9.947 062	1131	9.950 331	1393
9.905 771	767	9.906 550	766	9.914 476	1176	9.920 092	291	9.920 808	1136	9.923 624	1132	9.947 065	1131	9.950 332	1393
9.905 772	767	9.906 551	766	9.914 477	1176	9.920 093	291	9.920 862	1134	9.923 625	1132	9.947 066	1131	9.950 333	1393
9.905 809	767	9.906 552	766	9.914 478	1176	9.920 094	291	9.920 864	1134	9.923 626	1132	9.947 079	1123	9.950 334	1393
9.905 860	760	9.906 553	766	9.914 479	1176	9.920 095	291	9.920 866	1135	9.923 631	1133	9.947 080	1123	9.950 371	1393
9.905 861	760	9.906 554	766	9.914 495	1176	9.920 096	321	9.920 868	1135	9.923 632	1133	9.947 081	1123	9.950 372	480
9.905 862	760	9.906 555	766	9.914 496	1176	9.920 097	321	9.920 870	1135	9.923 635	1133	9.947 100	1131	9.950 373	480
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9.905 871	760	9.906 591	765	9.914 516	1166	9.920 106	291	9.920 883	1134	9.943 004	636	9.947 285	1122	9.950 381	490
9.905 872	760	9.906 592	765	9.914 517	1166	9.920 107	291	9.920 885	1134	9.943 117	638	9.947 286	1122	9.950 382	491
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9.950 385	491	9.951 004	665	9.951 063	672	9.951 175	681	9.951 218	672	9.951 335	1148	9.951 624	1302	9.971 732	1187
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9.950 988	665	9.951 042	667	9.951 122	682	9.951 205	674	9.951 264	672	9.951 492	1146	9.971 711	1187	9.971 938	1197
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9.950 994	665	9.951 046	667	9.951 127	682	9.951 209	674	9.951 268	672	9.951 618	1302	9.971 715	1187	9.972 070	292
9.950 995	665	9.951 047	667	9.951 128	682	9.951 210	674	9.951 269	672	9.951 619	1302	9.971 716	1187		
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9.951 002	665	9.951 061	672	9.951 131	682	9.951 215	672	9.951 277	673	9.951 622	1302	9.971 720	1187		
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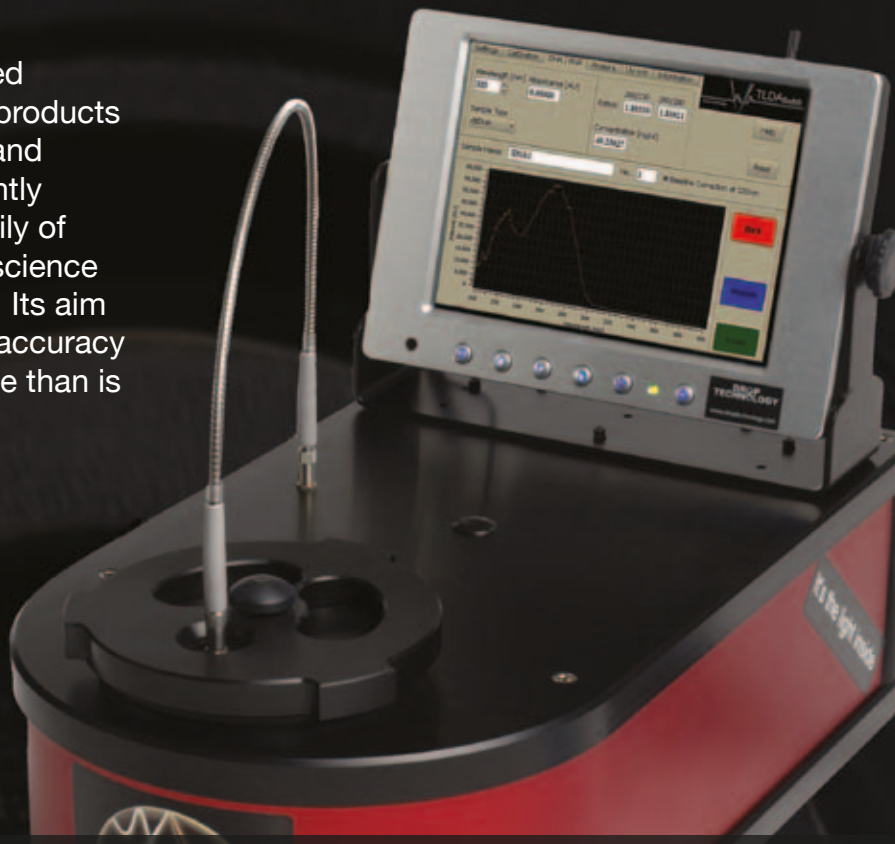
It's the light inside

The Decisive Step Towards the Future, *tiny* drops yield oceans of data

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Drop Technology

Drop Technology Ltd is a newly formed company which develops innovative products based on fundamental drop science and empirical research knowledge. Presently the company is launching its first family of patented products based on proven science and techniques around drop analysis. Its aim is to offer the market higher levels of accuracy and reproducibility in its product range than is available presently.



TLDA® (Transmitted Light Drop Analyser)

The TLDA® (transmitted light drop analyser) from Drop Technology is an innovative microvolume UV-Visible drop spectrophotometer that is new to the market whereby the cuvette is replaced with a small volume drop. It is a patented drop sample retention technology that uses the surface tension of liquids to hold and measure microvolume samples on an optical plinth without the use of cuvettes or capillaries. Volumes as small as 1µL are pipetted onto the optical surface.

Upon closing the lid, the light source and spectrometer are aligned through the focusing drop and a vertical optical path is formed. The TLDA® systems are designed for a wide range of applications, from nucleic acids and protein quantification to any general UV-Visible measurements.

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$TLDA_{\mu V}$®

This instrument uses drop science and a unique sampling method to provide microvolume UV-Visible analysis.



$TLDA_{Ocean}$®

This system is a unique microvolume accessory to existing OEM spectrometer and light source instruments.



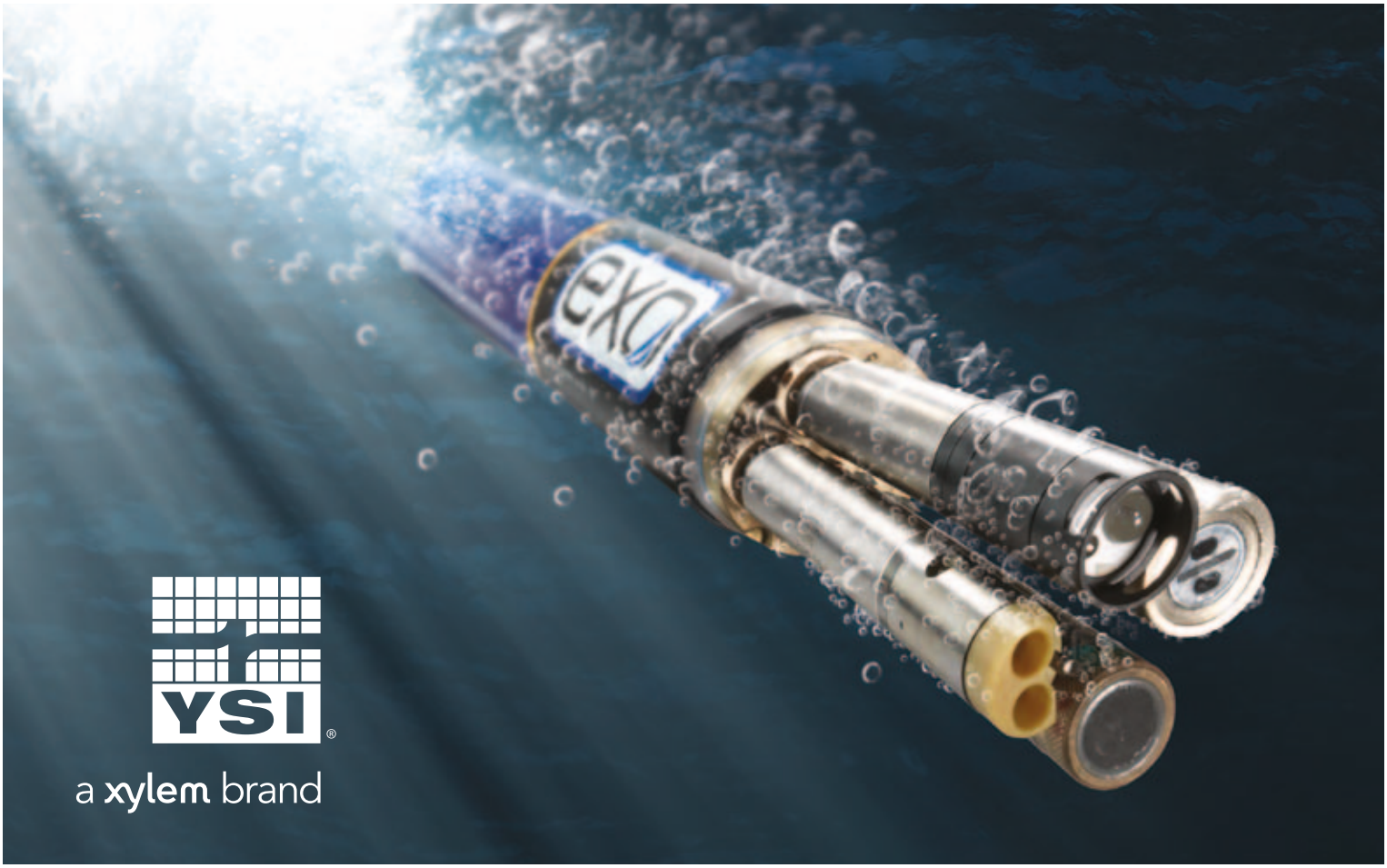
$TLDA_{C50}$®

This is an accessory to the Cary50 / Cary60 spectrophotometer which enhances its capability to allow microvolume analysis.

The TLDA® instruments offer the following:

- Quality Instrumentation and Measurements
- Simple to use
- Very high accuracy and reproducibility of results
- Spectral range is 200 to 800nm
- Require a small sample volume - down to 1µL
- Less than 5 Second detection time
- Rotating lid design for operation by either right or left handed users
- No cuvettes or capillaries are required
- The samples are also recoverable after quantitation
- No regular recalibration required
- Minimal maintenance and set-up requirements due to the robust hardware and precision engineered optics
- No measurable sample carryover
- Cleaning kit and calibration standards (traceable to NIST primary materials) available
- Developed and based on the theory of drop science
- Small instrument footprint

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