

# LABORATORY CONSUMABLES

**TOP-PRODUCTS FOR YOU** 











#### **CONSUMABLES AND LAB EQUIPMENT**

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In your daily work you need reliable laboratory consumables and equipment so that you can concentrate on what is most important.

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You're on the safe side with LABSOLUTE® consumables.

- All products are manufactured under stringent conditions and are subjected to regular quality controls
- Top quality at attractive prices this is one thing you can always rely on with LABSOLUTE®
- · Our portfolio is constantly expanding

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All products are listed starting from page 171.



#### **GET YOUR LABSOLUTE® SAMPLE**

Are you still wondering which LABSOLUTE® products suit you? You are welcome to ask your personal contact for a sample of your desired product to test it for your specific applications in the laboratory.

If you have any further questions, please do not hesitate to contact us at <code>pmlabsolute@thgeyer.de</code>



LABSOLUTE®

#### **OUR CONSTANTLY GROWING PRODUCT RANGE**

#### SELECTED PRODUCTS FOR YOU



DISPOSABLE GLOVES
Occupational safety/security
from page 48



CENTRIFUGE TUBES
Distillation, separation, filtration
from page 80



SYRINGE FILTERS

Distillation, separation, filtration
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VOLUMETRIC FLASKS
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PIPETTE TIPS
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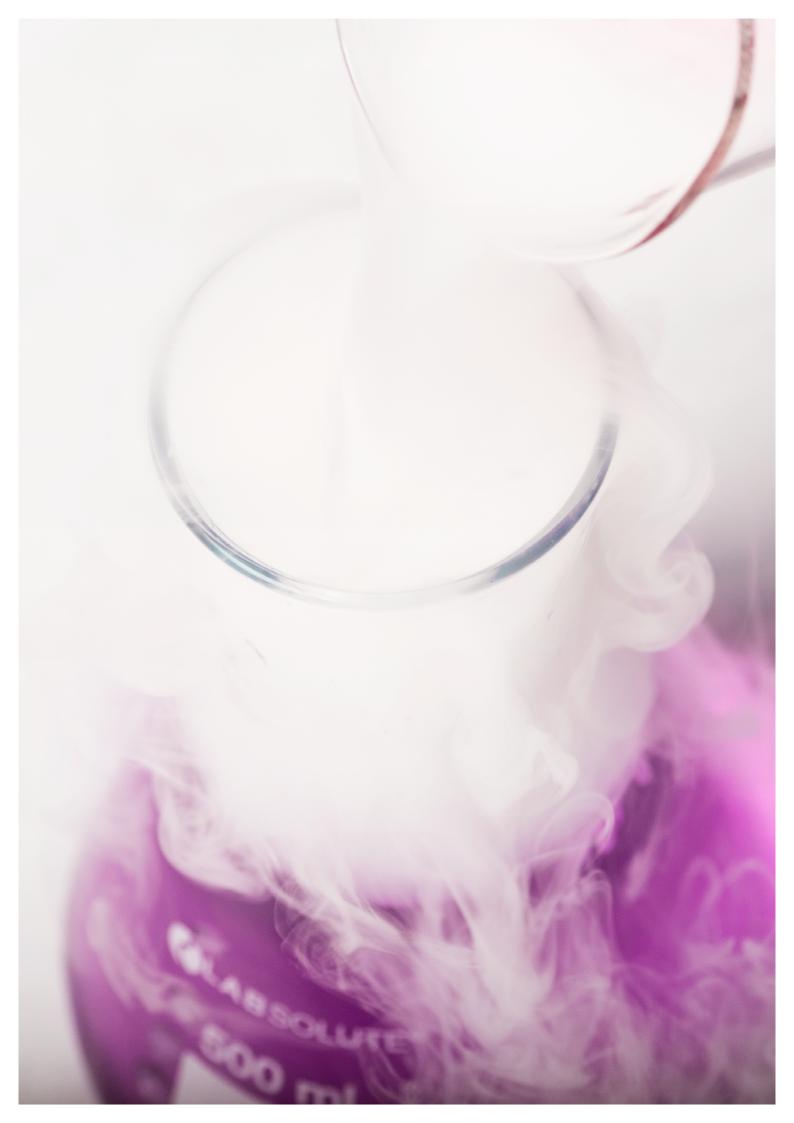
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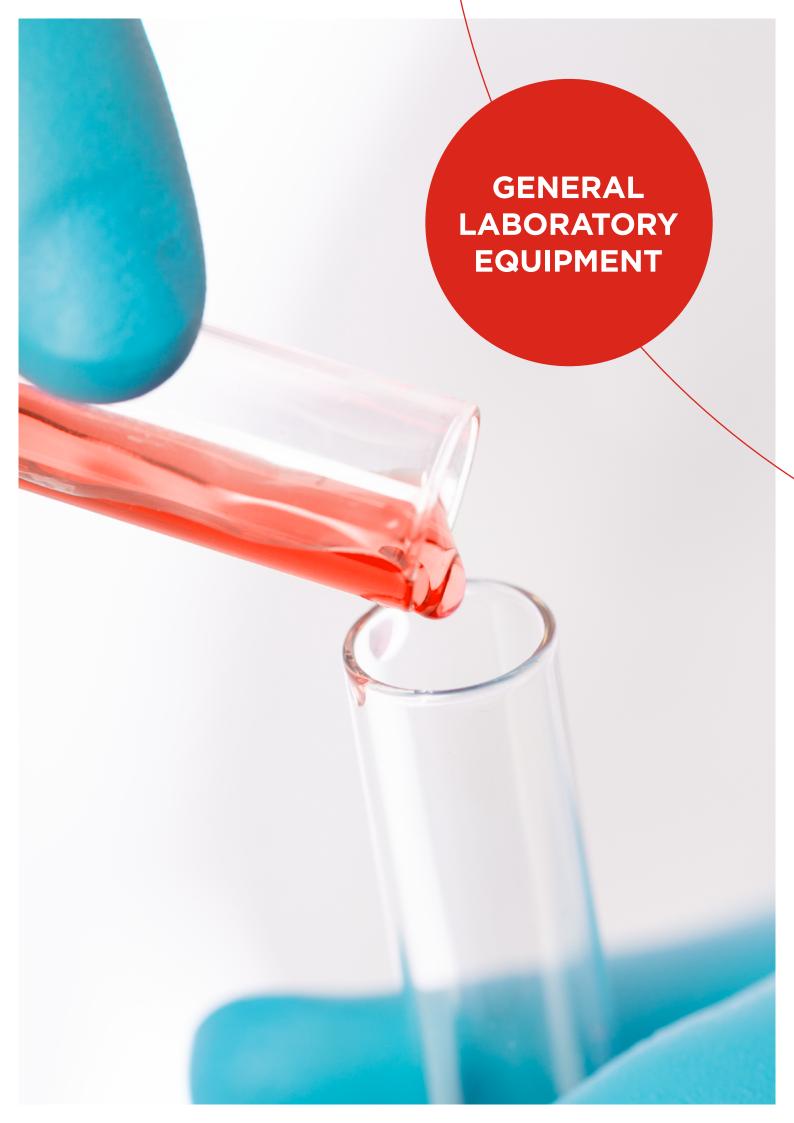
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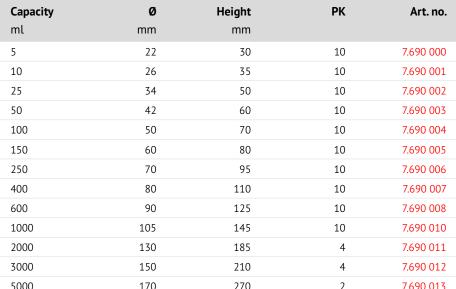
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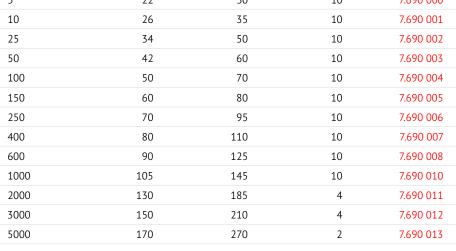


#### **BEAKERS**

LABSOLUTE® beakers with durable volume scale and spout are made of high-quality borosilicate glass 3.3 and are therefore extremely temperature-resistant up to 500 °C. The beakers in low and high form comply with DIN 12331 and ISO 3819. They are resistant to cold lyes/alkaline solutions and strong acids, with the exception of hydrofluoric acid and hot, concentrated phosphoric acid.

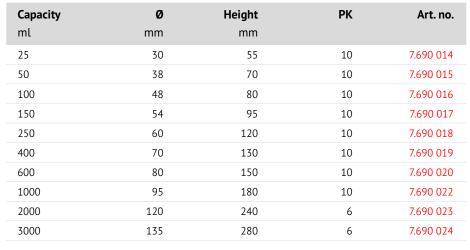
#### BEAKERS, LOW FORM, BOROSILICATE GLASS 3.3





External beaker diameter, without spout

#### BEAKERS, HIGH FORM, BOROSILICATE GLASS 3.3



External beaker diameter, without spout





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#### **MEASURING AND GRIFFIN BEAKERS**

The LABSOLUTE® measuring and griffin beakers made of transparent PP comply with ISO 7056 and are therefore particularly lightweight. The beakers have an excellent resistance to strong, concentrated acids and alkaline solutions/lyes as well as aliphatic alcohols. Their resistance to ketones, aldehydes and aliphatic or aromatic hydrocarbons is also good.

- Smooth surface for quick and easy cleaning
- Autoclavable at 121 °C
- Can be used in direct contact with food
- Clearly legible printed scale
- Functional spout

#### MEASURING BEAKERS WITH CLOSED HANDLE, PP

<b>Capacity</b> ml	<b>Grad.</b> ml	<b>Ø</b> mm	<b>Height</b> mm	PK	Art. no.
100	10	71	73	1	7.693 020
250	25	91	93	1	7.693 021
600	50	118	128	1	7.693 022
1000	50	141	150	1	7.693 023
2000	100	172	192	1	7.693 024
5000	500	223	262	1	7.693 025



### GRIFFIN BEAKERS (MEASURING BEAKERS WITHOUT HANDLE), PP

<b>Capacity</b> ml	<b>Grad.</b> ml	<b>Ø</b> mm	<b>Height</b> mm	PK	Art. no.
50	5	54	58	1	7.693 030
100	10	71	73	1	7.693 031
250	25	91	93	1	7.693 032
600	50	118	128	1	7.693 033
1000	50	141	150	1	7.693 034
2000	100	172	192	1	7.693 035
5000	500	223	262	1	7.693 036

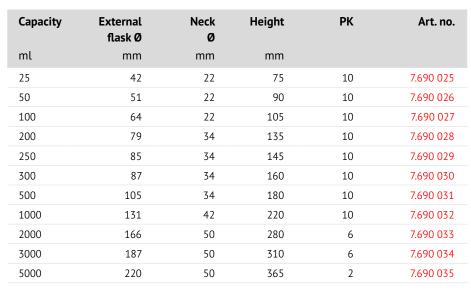


#### **ERLENMEYER FLASKS**

The LABSOLUTE® Erlenmeyer flasks with a durable volume scale are made of high-quality borosilicate glass 3.3 and are therefore extremely temperature-resistant up to 500 °C. The wide-neck and narrow-neck flasks, as well as the flasks with standard ground joint comply with the valid standards. The flasks are resistant to cold lyes/alkaline solutions and strong acids, with the exception of hydrofluoric acid and hot, concentrated phosphoric acid.

### ERLENMEYER FLASKS, NARROW-NECK, BOROSILICATE GLASS 3.3

Comply with ISO 1773.



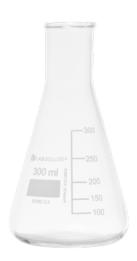
Outer neck diameter without rim

### ERLENMEYER FLASKS, WIDE-NECK, BOROSILICATE GLASS 3.3

Comply with DIN EN ISO 24450.

Capacity	External flask Ø	Neck Ø	Height	PK	Art. no.
ml	mm	mm	mm		
25	42	32	70	10	7.690 036
50	51	34	85	10	7.690 037
100	64	34	105	10	7.690 038
200	79	50	131	10	7.690 039
250	85	50	140	10	7.690 040
300	87	50	156	10	7.690 041
500	105	50	175	10	7.690 042
1000	131	50	220	10	7.690 043
2000	153	72	280	6	7.690 044

Outer neck diameter without rim





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#### KJELDAHL FLASKS, BEADED RIM, BOROSILICATE GLASS 3.3

LABSOLUTE® Kjeldahl flasks with a beaded rim without standard ground joint are made of high-quality borosilicate glass 3.3. The neck diameter including rim is around 40 mm for all volumes. The flasks correspond to the standards of the European Pharmacopoeia 7 for glass type I.

<b>Capacity</b> ml	<b>Diam.</b> mm	<b>Height</b> mm	РК	Art. no.
100	60	200	1	7.690 070
250	81	270	1	7.690 071
500	101	300	1	7.690 072





#### **TEST TUBES, RIMLESS, SODA-LIME GLASS**

LABSOLUTE® test tubes made of soda-lime glass are rimless with a wall thickness of 0.7-0.9 mm. Compared to the borosilicate tubes they are less resistant against temperature changes and aggressive chemicals.

Ext. Ø	Height	Wall thickness	РК	Art. no.
mm	mm	mm		
12	75	0.75	144	7.690 501
12	100	0.8	144	7.690 502
16	100	0.9	78	7.690 503
16	160	0.9	100	7.690 504

#### **TEST TUBES, BEADED RIM, BOROSILICATE GLASS 4.9**

LABSOLUTE® test tubes made of borosilicate glass 4.9 have a beaded rim and a wall thickness of 0.5-0.6 mm. Despite their thin walls they are relatively unaffected by major changes in temperature and local heating. They are resistant to cold lyes/ alkaline solutions and strong acids, with the exception of hydrofluoric acid and hot, concentrated phosphoric acid.

Ext. Ø mm	<b>Height</b> mm	Wall thickness mm	РК	Art. no.
8	70	0.5	100	7.690 080
10	100	0.5	100	7.690 081
12	75	0.5	100	7.690 082
12	100	0.5	100	7.690 083
14	130	0.5	100	7.690 084
16	130	0.6	100	7.690 085
16	160	0.6	100	7.690 086
18	180	0.6	100	7.690 087
20	180	0.6	100	7.690 088

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#### **DISPOSABLE TEST TUBES, PLASTIC**

The disposable LABSOLUTE® test tubes are ideal for a variety of laboratory work. The tubes made of PP are characterized by a high thermal and mechanical strength. The crystal-clear tubes made of high-quality PS allow optimum visibility of the samples.

Ø	Height	Capacity	Bottom design	Material	PK	Art. no.
mm	mm	ml				
12	75	5	Round	PS	4000	7.696 450
12	75	5	Round	PP	4000	7.696 451
16	100	12	Round	PS	2000	7.696 452
16	100	12	Conical	PS	2000	7.696 453
16	100	12	Round	PP	2000	7.696 454

#### WINGED CAPS FOR TEST TUBES, PE

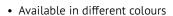
The LABSOLUTE® push-in plugs guarantee high tightness thanks to the two sealing lamellas.

For tubes diam. mm	Colour	PK	Art. no.
12	Transparent	1000	7.696 460
16	Transparent	1000	7.696 466



#### **RACKS FOR PCR TUBES, 96 WELLS, PP**

The autoclavable LABSOLUTE® racks made of PP are suitable both for 96 (Ø well 5.2 mm) single 0.2 ml tubes and for strips of PCR tubes. The individual positions are marked with figures and letters which simplifies organization of your samples. With or without lid – the decision is yours: the hinged lid can be completely removed.



• Dimensions (W x H x D): 130 x 33 x 98 mm



Colour	PK	Art. no.
Blue, yellow, green, orange, pink	5	7.696 360
Blue	1	7.696 361
Green	1	7.696 362
Transparent	1	7.696 363

#### **RACK FOR MICRO TUBES, 20 WELLS, PP**

The LABSOLUTE® rack for micro tubes has 20 wells for 1.5 ml and 2.0 ml reaction vessels.

- Dimensions (W x H x D): 209 x 35 x 71 mm
- Autoclavable

Array	PK	Art. no.
2x 10	1	7.696 350



#### **RACKS FOR MICRO TUBES, 80 WELLS, PP**

The stable, autoclavable LABSOLUTE $^{\circ}$  racks made of PP provide space for up to 5x 16 tubes (Ø well 11 mm). The wells are suitable both for 1.5 ml and 2.0 ml tubes and individually marked.

- Available in different colours
- Dimensions (W x H x D): 225 x 28 x 67 mm

Colour	PK	Art. no.
Blue, yellow, green, orange, pink	5	7.696 351
Blue	1	7.696 352
Yellow	1	7.696 353
Green	1	7.696 354
Orange	1	7.696 355
Pink	1	7.696 356



#### FLOATING RACKS, 16 OR 20 WELLS, PP

The white LABSOLUTE® racks made of PP offer several options simultaneously. The samples can be safely stored either in a water bath, on ice or simply on the bench. The legs are detachable.

- Suitable for 1.5 ml and 2.0 ml micro tubes
- Available in round or square shape
- Well Ø: 10.9 mm

Form	Wells	<b>Size</b> cm	PK	Art. no.
Round	20	Ø 9.8	4	7.696 358
Square	16	10.2 x 10.2	4	7.696 359





#### TUBE RACK FOR 5 ML MICRO TUBES, WHITE, PS

The LABSOLUTE® tube rack has 16 wells for 5 ml micro tubes or 15 ml centrifuge tubes. The places are numbered for easy identification.

Description	PK	Art. no.
For 5 and 15 ml tubes	2	7.696 349



#### UNIVERSAL RACKS FOR DIFFERENT TUBE SIZES, PP

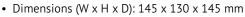
The practical, autoclavable LABSOLUTE® racks made of PP offer space for four different sizes of tubes: 4x 50 ml (Ø well 30 mm) and 12x 15 ml (Ø well 17.5 mm) conical centrifuge tubes, 32x 1.5/2.0 ml (Ø well 11.6 mm) and 32x 0.5 ml (Ø well 8.2 mm) tubes. The racks feature side links so that single racks can be united to one big entity.

- Available in different colours
- Dimensions (W x H x D): 174 x 95 x 52 mm

Colour	PK	Art. no.
Blue, yellow, green, orange, pink	5	7.696 370
Blue	1	7.696 371
Yellow	1	7.696 372
Green	1	7.696 373
Orange	1	7.696 374
Pink	1	7.696 375
Transparent	1	7.696 376

#### **BOXES FOR CENTRIFUGE TUBES, PP**

The LABSOLUTE® boxes made of PP are ideal for storage of 15 and 50 ml centrifuge tubes. The transparent lid provides good visibility of the tube, and the numerical index ensures rapid sample identification.



- Suitable for storage at -80 °C
- Autoclavable at 121 °C

Description	Array	PK	Art. no.
For 15 ml tubes	6 x 6	1	7.696 300
For 50 ml tubes	4 x 4	1	7.696 301

LABSOLUTE®



#### **RACKS FOR CENTRIFUGE TUBES**

The LABSOLUTE  $^{\circ}$  racks for 15 ml (Ø 17 mm) and 50 ml (Ø 30 mm) centrifuge tubes are made of reinforced nylon and moulded in one piece.

- Flat labelling area
- Suitable for use in water bath
- Available in two sizes
- Autoclavable at 121 °C

#### RACKS FOR 15 ML CENTRIFUGE TUBES, PA

Array	Colour	Width mm	<b>Height</b> mm	<b>Depth</b> mm	PK	Art. no.
6 x 6	White	126	58	126	1	7.696 320
6 x 6	Blue	126	58	126	1	7.696 321
6 x 6	Red	126	58	126	1	7.696 322
6 x 6	Green	126	58	126	1	7.696 323
6 x 6	Yellow	126	58	126	1	7.696 324
6 x 12	White	248	70	127	1	7.696 310
6 x 12	Blue	248	70	127	1	7.696 311
6 x 12	Red	248	70	127	1	7.696 312
6 x 12	Green	248	70	127	1	7.696 313
6 x 12	Yellow	248	70	127	1	7.696 314



#### RACKS FOR 50 ML CENTRIFUGE TUBES, PA

Array	Colour	Width	Height	Depth	PK	Art. no.
		mm	mm	mm		
3 x 3	White	109	84	109	1	7.696 325
3 x 3	Blue	109	84	109	1	7.696 326
3 x 3	Red	109	84	109	1	7.696 327
3 x 3	Green	109	84	109	1	7.696 328
3 x 3	Yellow	109	84	109	1	7.696 329
3 x 8	White	283	83	108	1	7.696 315
3 x 8	Blue	283	83	108	1	7.696 316
3 x 8	Red	283	83	108	1	7.696 317
3 x 8	Green	283	83	108	1	7.696 318
3 x 8	Yellow	283	83	108	1	7.696 319



#### **SAMPLE BEAKERS, PP**

The transparent LABSOLUTE® multi-purpose beakers are made of PP and suitable for the storage of solids and fluids. Delivery including screw caps made of HDPE.

- Can be used in direct contact with food
- Autoclavable at 121 °C (without lid)
- 120 ml / 60 ml: with graduation and labelling field (last graduation mark: 100 ml / 50 ml)
- 200 ml: without graduation and labelling field

#### SAMPLE BEAKERS, NON STERILE, BULK PACKAGING

Capacity	Colour screw cap	Height	Ø lid, external	Pre-mounted screw cap	PK	Art. no.
ml		mm	mm			
60	Red	65.5	42.5	Yes	600	7.696 278
120	Red	72.5	62.5	No	500	7.696 280
120	Yellow	72.5	62.5	No	500	7.696 284
120	Blue	72.5	62.5	No	500	7.696 287
120	Blue	72.5	62.5	Yes	300	7.696 302
120	Green	72.5	62.5	Yes	300	7.696 303
120	Red	72.5	62.5	Yes	300	7.696 304
120	White	72.5	62.5	Yes	300	7.696 305
200	Red	80.0	64.0	Yes	200	7.696 282

Height including lid

#### SAMPLE BEAKERS, STERILE, INDIVIDUALLY PACKED

Capacity	Colour screw cap	Height	Ø lid, external	Pre-mounted screw cap	PK	Art. no.
ml		mm	mm			
60	Red	65.5	42.5	Yes	500	7.696 279
120	Red	72.5	62.5	Yes	250	7.696 281
120	Yellow	72.5	62.5	Yes	250	7.696 285
120	Blue	72.5	62.5	Yes	250	7.696 288
200	Red	80.0	64.0	Yes	150	7.696 283

Height including lid



# SAMPLE BEACKERS, STERILE, BULK PACKAGING

Capacity	Colour screw cap	Height	Ø lid, external	Pre-mounted screw cap	PK	Art. no.
ml		mm	mm			
120	Red	72.5	62.5	Yes	300	7.696 275
120	Yellow	72.5	62.5	Yes	300	7.696 286
120	Blue	72.5	62.5	Yes	300	7.696 289

Height including lid



#### **SAMPLE BEAKER GRADUATED, PP**

LABSOLUTE® sample beakers with graduation made of PP are very well suited for the storage und transport of solid and liquid samples.

- Highly transparent, non-cytotoxic PP beaker with green HDPE cap
- Very stable design
- Leak-proof due to double threaded cap and silicone ring in the cap (250 ml and 500 ml)
- Ribbed edge on bottom and cap for good grip even with gloves
- With graduation on two sides

Capacity	Height	Ø lid, external	Graduation to	Sterile	Pre-mounted screw cap	PK	Art. no.
ml	mm	mm	ml				
250	58.7	98.2	150	No	No	154	7.696 290
500	112.0	98.2	350	No	No	132	7.696 291
1000	140.0	121.1	700	No	No	64	7.696 292



Height including lid

#### **SAMPLE CONTAINERS, PP**

The LABSOLUTE® containers are ideal for storing and transporting paste-like, powdery and liquid samples.

- Highly resistant to many chemicals
- Including screw lids
- Can be used in direct contact with food
- Autoclavable at 121 °C

<b>Capacity</b> ml	<b>Ø</b> mm	<b>Height</b> mm	PK	Art. no.
30	58	19	10	7.696 270
75	58	47	10	7.696 271
310	81	81	10	7.696 272
600	119	67	10	7.696 273
1250	119	130	5	7.696 274



Height including lid



#### **CARBOYS**

The stable, natural coloured LABSOLUTE® balloon flasks are made of LDPE. The lids and the stopcock are made of PP. They are ideal for mixing, transporting and storing liquids. The carboys are extremely tight and have useful handles on both sides. They can be ordered with or without stopcock.

#### CARBOYS WITHOUT STOPCOCK, LDPE

Volume	<b>Ø</b> Тор	Ø Body	Height	PK	Art. no.
litres	mm	mm	mm		
10	65	249	390	1	7.696 190
20	65	285	535	1	7.696 191
50	65	376	682	1	7.696 192



#### CARBOYS WITH STOPCOCK, LDPE

Stopcock for easy removal of the liquids.

<b>Volume</b> litres	<b>Ø Top</b> mm	<b>Ø Body</b> mm	<b>Height</b> mm	PK	Art. no.
10	65	249	390	1	7.696 193
20	65	285	535	1	7.696 194
50	65	376	682	1	7.696 195



#### STOPCOCK FOR CARBOYS

Fits accurately on all types of the LABSOLUTE $^{\circ}$  carboys 7.696 193, 7.696 194 and 7.696 195.

Description	PK	Art. no.
Stopcock for 7.696 193, 7.696 194 and 7.696 195	1	7.696 196

#### WIDE-MOUTH BOTTLES, SQUARE, NATURAL, HDPE

The square LABSOLUTE® wide-mouth bottles made of HDPE are ideal to store liquid, powdery and paste-like samples. Due to their wide-opening the bottles can be easily filled. The angular shape ensures that the storage space in cupboards and drawers is used optimally.

The black lids made of PP (7.664 458) with a diameter of 60 mm and PE foam insert must be ordered separately.

Capacity	Internal mouth Ø	External dimensions (W x D x H)	PK	Art. no.
ml	mm	mm		
500	46.4	87.5 x 68.5 x 124	44	7.664 457
1000	46.4	89 x 89 x 173	135	7.664 455
2000	46.4	125 x 90.5 x 234	36	7.664 456
PP lid			100	7.664 458





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#### LABORATORY BOTTLES, GL45, BOROSILICATE GLASS 3.3

LABSOLUTE® laboratory bottles are made of high-quality borosilicate glass 3.3 and are therefore extremely temperature-resistant up to 500 °C. They comply with EN ISO 4796-1. The bottles have a retrace code, a durable volume scale as well as a GL45 thread (GL32 thread for 50 ml bottles). The bottles as well as the closures are resistant against a wide range of chemicals.

#### LABORATORY BOTTLES, CLEAR, WITH PP SCREW CAPS

With blue pouring rings and screw caps made of PP with integrated lip seal. Autoclavable at 121  $^{\circ}$ C.

<b>Capacity</b> ml	Ext. Ø mm	<b>Height</b> mm	Neck thread GL	PK	Art. no.
50	46	88	32	10	7.690 060
100	56	100	45	10	7.690 045
250	70	138	45	10	7.690 046
500	86	176	45	10	7.690 047
1000	101	225	45	10	7.690 048
2000	136	260	45	10	7.690 049
5000	181	330	45	1	7.690 050
10000	227	410	45	1	7.690 051

Height without screw cap



With red pouring rings and screw caps made of PBT with additional PTFE-coated silicone seal. The seal prevents highly volatile substances from diffusing through the lid. Sterilisable with hot air at  $180\,^{\circ}\text{C}$ .

Capacity	Ext. Ø	Height	Neck thread	PK	Art. no.
ml	mm	mm	GL		
100	56	100	45	10	7.690 053
250	70	138	45	10	7.690 054
500	86	176	45	10	7.690 055
1000	101	225	45	10	7.690 056
2000	136	260	45	10	7.690 057
5000	181	330	45	1	7.690 058
10000	227	410	45	1	7.690 059

Height without screw cap





### LABORATORY BOTTLES, CLEAR, WITH PP SCREW CAPS, PUR COATED

With blue pouring rings and screw caps made of PP with integrated lip seal. Autoclavable at 121 °C. The transparent coating leads to a higher resistance of the bottles against strikes and shocks, and prevents leaking in case of bottle breaking.

Capacity	Ext. Ø	Height	Neck thread	PK	Art. no.
ml	mm	mm	GL		
250	70	138	45	1	7.690 401
500	86	176	45	1	7.690 402
1000	101	225	45	1	7.690 403
2000	136	260	45	1	7.690 404
5000	181	330	45	1	7.690 405





#### LABORATORY BOTTLES, AMBER, WITH PP SCREW CAPS

Especially for storing light-sensitive samples. Amber glazed. With blue pouring rings and screw caps made of PP with integrated lip seal. Autoclavable at 121 °C.

Capacity	Ext.	Height	Neck thread	PK	Art. no.
ml	mm	mm	GL		
100	56	100	45	10	7.690 061
250	70	138	45	10	7.690 062
500	86	176	45	10	7.690 063
1000	101	225	45	10	7.690 064
2000	136	260	45	10	7.690 065

Height without screw cap



#### **SCREW CAPS, PP**

The LABSOLUTE® screw caps with integrated lip seal made of PP are the perfect complement for all clear and amber laboratory glass bottles with GL32 or GL45 thread. There is no additional seal required. Autoclavable at 121 °C.

Colour	<b>Neck</b> <b>thread</b> GL	РК	Art. no.
Blue	32	1	7.690 391
Blue	45	1	7.690 066
Yellow	45	1	7.690 073
Green	45	1	7.690 074
Purple	45	1	7.690 075
Grey	45	1	7.690 076



#### **POURING RINGS, PP**

The LABSOLUTE® pouring rings made of PP are the perfect complement to all clear and amber laboratory glass bottles with GL32 or GL45 thread. Autoclavable at 121 °C.



Colour	<b>Neck thread</b> GL	РК	Art. no.
Blue	32	1	7.690 392
Blue	45	1	7.690 067
Yellow	45	1	7.690 077
Green	45	1	7.690 078
Purple	45	1	7.690 079
Grey	45	1	7.690 089
Transparent	45	1	7.690 090

#### POURING RINGS AND SCREW CAPS, PBT



The red LABSOLUTE® screw caps and pouring rings made of PBT are the perfect complement to all clear and amber laboratory glass bottles. Both the caps, delivered with a PTFE-coated silicone seal, as well as the pouring rings are temperature-resistant up to 200 °C. Therefore it is possible to sterilize them with hot air at 180 °C. Evaporation of highly volatile substances is avoided by the additional seal.



Description	<b>Neck thread</b> GL	РК	Art. no.
Screw cap	32	1	7.690 393
Screw cap	45	1	7.690 068
Pouring ring	32	1	7.690 394
Pouring ring	45	1	7.690 069



The differences and similarities of LABSOLUTE® screw caps are listed on page 245

#### **WIDE-MOUTH BOTTLES, PLASTIC**

The practical LABSOLUTE® wide-mouth bottles made of LDPE, HDPE or PP are particularly easy to fill and clean due to their wide opening. With 100% tightly closing screw lids made of PP, they are ideal for shipping and storing liquid, powdery and pastelike samples.

#### WIDE-MOUTH BOTTLES, NATURAL, LDPE

Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
30	21.5	36.5	62.5	12	7.696 135
60	21.5	38.5	85.0	12	7.696 136
125	28.5	50.5	99.0	12	7.696 137
250	32.5	61.5	133.0	12	7.696 138
500	43.5	72.5	170.0	12	7.696 139
1000	53.0	91.5	199.0	6	7.696 140



#### WIDE-MOUTH BOTTLES, NATURAL, HDPE

Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
30	21.5	36.5	62.5	12	7.696 141
60	21.5	38.5	85.0	12	7.696 142
125	28.5	50.5	99.0	12	7.696 143
250	32.5	61.5	133.0	12	7.696 144
500	43.5	72.5	170.0	12	7.696 145
1000	53.0	91.5	199.0	6	7.696 146



#### WIDE-MOUTH BOTTLES, BIG PACK, NATURAL, HDPE

Lids are seperate.

Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
15	13.0	25.0	60.0	2000	7.696 177
30	21.5	36.5	62.5	1000	7.696 178
60	21.5	38.5	85.0	1000	7.696 179
125	28.5	50.5	99.0	500	7.696 180
250	32.5	61.5	133.0	250	7.696 181
500	43.5	72.5	170.0	125	7.696 182
1000	53.0	91.5	199.0	50	7.696 183



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#### WIDE-MOUTH BOTTLES, AMBER, HDPE

Perfect for light-sensitive samples.

Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
30	21.5	36.5	62.5	12	7.696 147
60	21.5	38.5	85.0	12	7.696 148
125	28.5	50.5	99.0	12	7.696 149
250	32.5	61.5	133.0	12	7.696 150
500	43.5	72.5	170.0	12	7.696 151
1000	53.0	91.5	199.0	6	7.696 152

#### WIDE-MOUTH BOTTLES, NATURAL, PP

Autoclavable at 121 °C.

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Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
30	21.5	36.5	62.5	12	7.696 153
60	21.5	38.5	85.0	12	7.696 154
125	28.5	50.5	99.0	12	7.696 155
250	32.5	61.5	133.0	12	7.696 156
500	43.5	72.5	170.0	12	7.696 157
1000	53.0	91.5	199.0	6	7.696 158

#### NARROW-MOUTH BOTTLES, PLASTIC

The versatile LABSOLUTE° narrow-mouth bottles made of LDPE, HDPE or PP with their screw lids made of PP are  $100\,\%$  tight and therefore perfect, especially for storing and transporting liquids.



#### NARROW-MOUTH BOTTLES, NATURAL, LDPE

Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
8	13.0	25.0	44.5	12	7.696 109
15	13.0	25.0	60.0	12	7.696 110
30	13.5	36.5	62.0	12	7.696 111
60	13.5	40.5	85.0	12	7.696 112
125	17.5	51.5	101.0	12	7.696 113
250	17.5	61.5	133.0	12	7.696 114
500	21.3	73.4	170.0	12	7.696 115
1000	28.0	93.0	216.0	6	7.696 116

#### NARROW-MOUTH BOTTLES, NATURAL, HDPE

Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
4	8.2	16.0	41.0	12	7.696 100
8	13.0	25.0	44.5	12	7.696 101
15	13.0	25.0	60.0	12	7.696 102
30	13.5	36.5	62.0	12	7.696 103
60	13.5	40.5	85.0	12	7.696 104
125	17.5	51.5	101.0	12	7.696 105
250	17.5	61.5	133.0	12	7.696 106
500	21.3	73.5	170.0	12	7.696 107
1000	28.0	92.0	216.0	6	7.696 108



#### NARROW-MOUTH BOTTLES, AMBER, HDPE

Perfect for light-sensitive samples.

Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
4	8.2	16.0	41.0	12	7.696 117
8	13.0	25.0	44.5	12	7.696 118
15	13.0	25.0	60.0	12	7.696 119
30	13.5	36.5	62.0	12	7.696 120
60	13.5	40.5	85.0	12	7.696 121
125	17.5	51.5	101.0	12	7.696 122
250	17.5	61.5	133.0	12	7.696 123
500	21.3	73.5	170.0	12	7.696 124
1000	28.0	93.0	216.0	6	7.696 125



#### NARROW-MOUTH BOTTLES, NATURAL, PP

Autoclavable at 121 °C.

Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
4	8.2	16.0	41.0	12	7.696 126
8	13.0	25.0	44.5	12	7.696 127
15	13.0	25.0	60.0	12	7.696 128
30	13.5	36.5	62.0	12	7.696 129
60	13.5	40.5	85.0	12	7.696 130
125	17.5	51.5	101.0	12	7.696 131
250	17.5	61.5	133.0	12	7.696 132
500	21.3	73.5	170.0	12	7.696 133
1000	28.0	93.0	216.0	6	7.696 134



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#### NARROW-MOUTH BOTTLES, WITH FLAP CAP, NATURAL, HDPE

The LABSOLUTE® narrow-mouth bottles made of HDPE with PP flap cap can be used for a variety of liquids. The bottles can be used in direct contact with food. Due to the conical shoulder the bottles are perfectly drainable.

The DIN 28 screw thread has an additional sealing cone. The spout has a diameter of 3 mm.

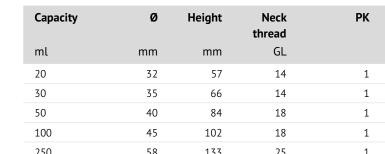
Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
500	22.0	64.0	210.0	1	7.696 090
1000	22.0	80.0	264.0	1	7.696 091

#### NARROW-MOUTH BOTTLES, NATURAL, LDPE

The versatile LABSOLUTE® narrow-mouth bottles made of LDPE can be combined with different closure types. In combination with the screw caps the bottles are 100 % tight and therefore perfect for storing and transporting liquids. They can be used in direct contact with food according to the EU regulations 10/2011, 1282/2011, 1183/2012 and 1935/2004.

Capacity	Ø	Height	Neck thread	PK	Art. no.
ml	mm	mm	GL		
20	32	57	14	1	7.696 161
30	35	66	14	1	7.696 162
50	40	84	18	1	7.696 163
100	45	102	18	1	7.696 164
250	58	133	25	1	7.696 165

Height without closure



#### SCREW CAPS FOR NARROW-MOUTH BOTTLES, LDPE

The LABSOLUTE® screw caps made of LDPE are perfectly adapted for the narrow-mouth bottles 7.696 161 to 7.696 165 and close them 100 % tight.



<b>Thread</b> GL	For	PK	Art. no.
14	7.696 161, 7.696 162	1	7.696 170
18	<mark>7.696 163</mark> , 7.696.164	1	7.696 171
25	7.696 165	1	7.696 172

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#### DROPPING CAPS FOR NARROW-MOUTH BOTTLES, LDPE

The LABSOLUTE® dropping caps made of LDPE are perfectly adapted for the narrow-mouth bottles 7.696 161 to 7.696 165. The fine, long drip tip enables precise work. The red protection cap preserves the tip and the liquid inside the bottle.

<b>Thread</b> GL	For	PK	Art. no.
14	7.696 161, 7.696 162	1	7.696 174
18	7.696 163, 7.696 164	1	7.696 175
25	7.696 165	1	7.696 176



#### **WASH BOTTLES**

The LABSOLUTE® tightly closing wash bottles made of LDPE are ideal for dispensing liquids. The precisely shaped outlet opening on the wash bottle ensures that the right quantity of liquid is dispensed and the target of the jet is focused. The wash bottles are available with a narrow-mouth and a wide-mouth design.

#### WASH BOTTLES, NARROW-MOUTH, LDPE

Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
250	18.0	61.5	178.0	6	7.696 200
500	28.0	74.5	240.0	6	7.696 201
1000	28.0	93.0	280.0	6	7.696 202



#### WASH BOTTLES, WIDE-MOUTH, LDPE

Capacity	Internal mouth Ø	Ext. Ø	Height	PK	Art. no.
ml	mm	mm	mm		
250	28.0	61.5	215.0	6	7.696 203
500	43.0	74.0	228.0	6	7.696 204
1000	43.0	91.0	276.0	6	7.696 205





The LABSOLUTE® short-stem funnels are made of high-quality borosilicate glass 3.3. They can also be used to decant and filter hot liquids. The LABSOLUTE® funnels with diameter from 35–150 mm fit to almost every application. All funnels are manufactured on the basis of ISO 4798.

Ø	Length stem	For filter paper Ø	PK	Art. no.
mm	mm	mm		
35	35	45-55	1	7.692 012
40	40	55-70	1	7.692 015
50	50	70-90	1	7.692 016
55	55	70-90	1	7.692 013
60	60	70-90	1	7.692 017
70	70	110-125	1	7.692 018
80	80	125-150	1	7.692 019
100	100	150-185	1	7.692 020
150	150	240-270	1	7.692 014

#### **FUNNELS, SHORT-STEM, PP**

The LABSOLUTE® funnels made of transparent PP are autoclavable at 121 °C. Compared to glass funnels, the shatterproof PP funnels are a good and cheap alternative for almost every filtration of low-viscosity liquids. Standard filter paper fits into the funnels. Ribs on the inside ensure fast filtration. Ribs on the outside avoid air bubbles between the filter paper and the funnel's surface.

(	Ø	Length stem	For filter paper Ø	PK	Art. no.
ı	mm	mm	mm		
	35	52	45-55	12	7.692 021
	55	61	70-90	12	7.692 022
	75	80	110-125	6	7.692 023
	100	99	150-180	4	7.692 024
	160	151	240-270	2	7.692 025

#### **POWDER FUNNELS, PP**

The LABSOLUTE® powder funnels made of transparent PP are unbreakable and very economic. The funnels are suitable to transfer powders, granulated materials and highly viscous liquids. The parallel stem prevents blockage in the funnel. There are also ribs on the inside for fast filtration and ribs on the outside to prevent air blockage. They are autoclavable at 121 °C.

Ø	Length stem	Ø Stem	РК	Art. no.
mm	mm	mm		
65	22	16	1	7.696 230
80	29	17	1	7.696 231
100	33	22	1	7.696 232
150	30	28	1	7.696 233

LABSOLUTE®







#### **FUNNEL HOLDER, PP**

LABSOLUTE® funnel holders made of PP are suitable for funnels with a diameter from 25 up to 150 mm. They can be used for powder funnels with a stem diameter of up to 35 mm without an adapter. A clamp adapter is provided for use with rods from 8 to 12 mm.

Description	PK	Art. no.
Single	1	7.696 235
Double	1	7.696 236



#### **CRYSTALLIZING DISHES, BOROSILICATE GLASS 3.3**

LABSOLUTE® crystallizing dishes with or without spout are made of high-quality borosilicate glass 3.3 and are therefore extremely temperature-resistant up to 500 °C. Therefore the dishes can be easily autoclaved. They have a functional labelling field and are resistant to cold alkaline solutions/lyes and strong acids, with the exception of hydrofluoric acid and hot, concentrated phosphoric acid.

### CRYSTALLIZING DISHES, WITHOUT SPOUT, BOROSILICATE GLASS 3.3

Comply with DIN 12337.

Capacity	Ø	Height	РК	Art. no.
ml	mm	mm		
20	40	25	1	7.690 260
40	50	30	1	7.690 261
60	60	35	1	7.690 262
100	70	40	1	7.690 263
150	80	45	1	7.690 264
300	95	55	1	7.690 265
500	115	65	1	7.690 266
900	140	75	1	7.690 267
2000	190	90	1	7.690 268



### CRYSTALLIZING DISHES, WITH SPOUT, BOROSILICATE GLASS 3.3

Comply with DIN 12338.

Capacity	Ø	Height	PK	Art. no.
ml	mm	mm		
20	40	25	1	7.690 250
40	50	30	1	7.690 251
60	60	35	1	7.690 252
100	70	40	1	7.690 253
150	80	45	1	7.690 254
300	95	55	1	7.690 255
500	115	65	1	7.690 256
900	140	75	1	7.690 257
2000	190	90	1	7.690 258



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LABSOLUTE® evaporating dishes with a flat bottom and a functional spout are made of high-quality borosilicate glass 3.3 and are therefore extremely temperature-resistant up to 500 °C. The autoclavable evaporating dishes comply with DIN 12336 and are resistant to cold alkaline solutions/lyes and strong acids, with the exception of hydrofluoric acid and hot, concentrated phosphoric acid.

**EVAPORATING DISHES, BOROSILICATE GLASS 3.3** 

<b>Capacity</b> ml	<b>Ø</b> mm	<b>Height</b> mm	РК	Art. no.
15	50	25	1	7.690 270
45	60	30	1	7.690 271
60	70	35	1	7.690 272
90	80	45	1	7.690 273
170	95	55	1	7.690 274
320	115	65	1	7.690 275

#### **EVAPORATING DISHES, PORCELAIN**

LABSOLUTE® evaporating dishes are ideal for drying, concentrating and ashing sample material and comply with DIN 12903. They are glazed on the inside, temperature-resistant up to 1000  $^{\circ}$ C and have a useful spout. All LABSOLUTE® evaporating dishes are characterized by their high resistance to alkaline solutions and acids with the exception of hydrofluoric acid.

## EVAPORATING DISHES, HALF-DEPTH SHAPE WITH ROUND BOTTOM, PORCELAIN

Capacity	Ø	Height	PK	Art. no.
ml	mm	mm		
10	40	16	5	7.694 926
20	50	20	5	7.694 927
30	63	25	5	7.694 928
60	80	32	5	7.694 929
150	100	40	5	7.694 930
300	132	55	5	7.694 931
580	160	64	5	7.694 932
1000	200	80	1	7.694 933
6000	320	140	1	7.694 934

### EVAPORATING DISHES, LOW SHAPE WITH FLAT BASE, PORCELAIN

<b>Capacity</b> ml	<b>Ø</b> mm	<b>Height</b> mm	РК	Art. no.
20	60	14	5	7.694 935
28	75	15	5	7.694 936
55	80	20	5	7.694 937
110	100	25	5	7.694 938
250	130	30	5	7.694 939
450	160	40	5	7.694 940







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#### **CRUCIBLES, PORCELAIN**

The LABSOLUTE® crucibles made of high-quality laboratory porcelain are glazed on the inside and comply with DIN 12904. Due to their temperature resistance up to 1000 °C and the excellent resistance against alkaline solutions and acids with the exception of hydrofluoric acid, they are suitable for ashing a wide variety of samples.

#### CRUCIBLES, LOW FORM, PORCELAIN

Capacity	Ø	Height	РК	Art. no.
ml	mm	mm		
5	30	19	5	7.694 900
10	35	22	5	7.694 901
17	40	25	5	7.694 902
21	45	28	5	7.694 903
34	50	32	5	7.694 904
62	60	38	5	7.694 905
91	70	44	5	7.694 906



#### CRUCIBLES, MEDIUM FORM, PORCELAIN

Capacity	Ø	Height	PK	Art. no.
ml	mm	mm		
12	35	28	5	7.694 907
20	40	32	5	7.694 908
30	45	36	5	7.694 909
45	50	40	5	7.694 910
80	60	48	5	7.694 911
120	70	56	5	7.694 912



#### CRUCIBLES, HIGH FORM, PORCELAIN

<b>Capacity</b> ml	<b>Ø</b> mm	<b>Height</b> mm	PK	Art. no.
13	26	34	5	7.694 981
15	30	38	5	7.694 913
26	35	44	5	7.694 914
35	40	50	5	7.694 915
50	45	56	5	7.694 916
72	50	62	5	7.694 917
120	60	75	5	7.694 918



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#### LIDS FOR CRUCIBLES, PORCELAIN

The glazed LABSOLUTE® lids, which comply with DIN 12904, are made of high-quality laboratory porcelain - the perfect addition to the crucibles with low, medium and high form from LABSOLUTE®. The lids are temperature-resistant up to 1000 °C and have an excellent resistance to alkaline solutions and acids with the exception of hydrofluoric acid.



Int. Ø	Ext. Ø	For	PK	Art. no.
mm	mm			
30	34	7.694 900, 7.694 913	5	7.694 919
35	39	7.694 901, 7.694 907, 7.694 914	5	7.694 920
40	44	7.694 902, 7.694 908, 7.694 915	5	7.694 921
45	49	7.694 903, 7.694 909, 7.694 916	5	7.694 922
50	54	7.694 904, 7.694 910, 7.694 917	5	7.694 923
60	64	7.694 905, 7.694 911, 7.694 918	5	7.694 924
70	74	7.694 906, 7.694 912	5	7.694 925

#### **COMBUSTION BOATS, PORCELAIN**

The unglazed LABSOLUTE® combustion boats made of porcelain are resistant to temperatures up to 1350 °C. Their eyelets allow them to be removed from the oven particularly easy after the combustion process.



<b>Length</b> mm	Width mm	<b>Height</b> mm	РК	Art. no.
40	12	10	50	7.694 974
90	13	8	50	7.694 973
75	13	8	50	7.694 972
85	13	8	50	7.694 971
105	14	9	50	7.694 970



The LABSOLUTE® sample spoons made of PS are ideal for the sampling of powders, pastes, granulates and liquids. The white spoons are sterilized and wrapped individually. They can be used in direct contact with food.







#### **OPENING AIDS**

The practical CHEMSOLUTE® opening aids enable effortless and convenient opening of canisters.

Description	PK	Art. no.
Universal opening aid for canister	1	1295.0001
Opening aid for canister with 45 mm thread	1	1298.0001
Opening aid for screw caps*	1	1299.0001

#### **GAS LIGHTER, PIEZO IGNITION**

The white LABSOLUTE® gas lighter with aluminium shaft is characterized by simple and safe handling. It can be used not only to light gas burners in laboratories. The lighter stands out with an adjustable flame with Piezo ignition, a safety lock and a window to see the gas filling level easily. Due to the integrated eyelet, the LABSOLUTE® lighter can be stored quickly and is within reach at all times. The lighter is already filled and includes a protection cap.

Description	PK	Art. no.
Gas lighter	1	7.699 990



#### LABORATORY SUPPORT JACKS, ALUMINIUM

The LABSOLUTE® laboratory support jacks are the perfect assistance in the laboratory. The practical helpers made from anodized aluminium are corrosion-resistant and can be infinitely adjusted in height. The high static load capacity ensures the safe support of chemical apparatus and the safe lifting of lab devices.

Colour	Width	Depth	Min. height	Max. height	Max.	PK	Art. no.
	mm	mm	mm	mm	kg		
Red	120	140	58	242	50	1	7.696 890
Gold	121	150	78	278	80	1	7.696 891



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<sup>\*</sup> Suitable for DIN 32, 45, 54, 80 and barrel closures from 3/4" to 2"

#### **LABELLING TAPES**

The LABSOLUTE® labelling tapes can be used to label test tubes or colour code laboratory utensils. The tapes are easy to label and leave no sticky residue when removed. They are temperature resistant from -23-121 °C.

#### LABELLING TAPES, 54 M

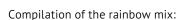
Core diameter of 76 mm.



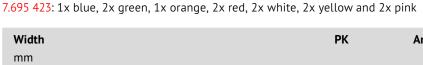
Width mm	Colour	РК	Art. no.
19.1	White	1	7.695 178
19.1	Yellow	1	7.695 179
19.1	Green	1	7.695 180
19.1	Red	1	7.695 181
19.1	Orange	1	7.695 182
19.1	Blue	1	7.695 183
19.1	Pink	1	7.695 184
19.1	Purple	1	7.695 192
19.1	Lime	1	7.695 193

#### LABELLING TAPES, RAINBOW MIX, 12 M

Core diameter 25 mm.



7.695 407: 3x blue, 3x green, 3x orange, 3x red, 5x white, 4x yellow and 3x pink 7.695 415: 2x blue, 2x green, 2x orange, 2x red, 4x white, 2x yellow and 2x pink



Width	PK	Art. no.
mm		
12.7	24	7.695 407
19.1	16	7.695 415
25.4	12	7.695 423

#### **LABELLING TAPE DISPENSERS**



The LABSOLUTE® labelling tape dispensers are ideal for organizing the labelling tapes. Single tapes can be replaced without having to remove all tapes.

Description	Material	PK	Art. no.
Dispenser for 54 m rolls	Metal	1	7.695 445
Dispenser for 12 m rolls	Metal	1	7.695 446
Dispenser for one 12 m roll	Plastic	1	7.695 447

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LABJOURNAL

#### LABORATORY NOTEBOOKS

The LABJOURNAL offers all criteria for documenting data and experimental processes most efficiently. Each page is numbered serially and includes space for title, signature and date. In addition, you can create a table of contents and write notes on the first pages of the notebook. The acid-free pages are ageing resistant and therefore suitable for long-term archiving. Combined with the waterproof and chemical-resistant cover, these conditions guarantee safe documentation of your notes over many years.



- Three colours
- Lined or grid version
- Dimensions (W x H): 218 x 281 mm

Description	Туре	Colour	PK	Art. no.
Laboratory notebook, 100 pages	Grid	Black	1	7.699 980
Laboratory notebook, 200 pages	Grid	Blue	1	7.699 981
Laboratory notebook, 200 pages	Lined	Red	1	7.699 982



Thanks to its handy format the LABSOLUTE® notebook is ideal for both the office and the laboratory. Due to the bright red cover it is a real eye-catcher and cannot be missed.

- 160 pages, grid
- Paperweight: 80 g/m<sup>2</sup>
- Acid-free, ageing resistant paper
- Book mark and elastic strap
- Red cover made from synthetic leather with LABSOLUTE® imprint
- Dimensions (W x H): 130 x 210 mm

Description	PK	Art. no.
Notebook	1	7.699 985





#### **ALUMINIUM FOILS**

The LABSOLUTE® aluminium foils are made from an alloy of pure aluminium (>98 %).

- Can be used in direct contact with food
- Oxygen gas and water vapor tight
- Resistant to fat, moisture and water
- Heat-resistant, fireproof and non-flammable
- Resistant to most chemicals
- Available in different lengths, widths and strengths
- Refilling of dispenser boxes with large rolls possible

#### SMALL ROLLS IN CARTON DISPENSERS

The handy carton dispensers have a tear-off edge made from carton.

Length	Width	Thickness	PK	Art. no.
m	cm	μm		
10	30	15	1	7.696 850
10	30	30	1	7.696 851
10	45	15	1	7.696 852
10	45	30	1	7.696 853
20	30	13	1	7.696 854
20	30	15	1	7.696 855

#### LARGE ROLLS IN DISPENSER BOXES

The stable dispenser boxes have a tear-off edge made from plastic. They can be used several times with the appropriate refill rolls.

Length	Width	Thickness	PK	Art. no.
m	cm	μm		
100	30	13	1	7.696 856
100	30	30	1	7.696 857
100	45	30	1	7.696 858
100	50	30	1	7.696 859
150	45	15	1	7.696 860

#### REFILL ROLLS FOR DISPENSER BOXES

For refilling of dispenser boxes with large rolls. Delivery without cutter box.



<b>Length</b> m	<b>Width</b> cm	Thickness µm	For	PK	Art. no.
100	30	30	7.696 857	1	7.696 861
100	45	30	7.696 858	1	7.696 862
100	50	30	7.696 859	1	7.696 863
150	45	15	7.696 860	1	7.696 864

#### **ALUMINIUM DISHES**

The LABSOLUTE® dishes are made from aluminium and exhibit a stable form. All models have a smooth bottom which guarantees a safe standing. They can be used in direct contact with food.

Description	<b>Capacity</b> ml	Top ring Ø mm	Lower ring Ø mm	Int. height mm	PK	Art. no.
Smooth side walls	28	64	51	13	100	7.696 240
Crimped side walls	110	80	56	34	100	7.696 241
Crimped side walls	110	99	70	25	100	7.696 242
Smooth side walls	125	96	78	24	100	7.696 243
Crimped side walls	280	114	58	50	50	7.696 244
Crimped side walls	520	192	157	23	50	7.696 245



#### **ALUMINIUM ROUND DISCS**

The LABSOLUTE® round discs made from pure aluminium are delivered with tissue paper liner.

Ø	Thickness	PK	Art. no.
mm	μm		
29	30	1000	7.696 870
80	30	1000	7.696 871
100	30	1000	7.696 872
120	30	1000	7.696 873
130	30	1000	7.696 874
150	30	1000	7.696 875



#### PRESSURE SEAL BAGS, LDPE

The LABSOLUTE® sample bags are made from tear-proof, transparent LDPE and have a common but safe pressure seal.

#### PRESSURE SEAL BAGS, EURO HOLE, LDPE

With euro hole for easy hang up.

Length	Width	Thickness	PK	Art. no.
mm	mm	μm		
100	70	50	100	7.696 490
120	80	50	100	7.696 491
150	100	50	100	7.696 492
170	120	50	100	7.696 493
250	180	50	100	7.696 494
300	200	50	100	7.696 495



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#### PRESSURE SEAL BAGS, LABELLING FIELD, LDPE

With labelling field for fast and clear marking.

Length	Width	Thickness	PK	Art. no.
mm	mm	μm		
100	70	50	100	7.696 496
120	80	50	100	7.696 497
150	100	50	100	7.696 498
170	120	50	100	7.696 499

#### LABORATORY MAT, SILICONE

The LABSOLUTE® laboratory mat is the ideal protection of surfaces from liquids, heat and wear. The mat is made of food-grade, flexible silicone with a raised lip around the edge.

- Reversible with a blue and white site
- Integrated metal strip prevents the rolling of magnetic stirring bars
- Raised lip holds back up to 300 ml of liquid
- Autoclavable at 121 °C for 15 min
- Protects surfaces from hot objects up to 200 °C
- · Anti-skid and noise dampening
- Reusable and environmentally friendly
- Compact storage by rolling up the mat

Width	Depth	Wall thickness	PK	Art.
cm	mm	mm		
35	60	0.2	1	7.696



#### MAGNETIC STIRRING BARS, CYLINDRICAL, PTFE

The cylindrical LABSOLUTE® magnetic stirring bars have a smooth surface. The PTFE coating makes them particularly resistant to chemicals and temperatures.



10       6       10       7.695 100         15       6       10       7.695 101         20       6       10       7.695 102         25       6       10       7.695 103         30       6       10       7.695 104         35       6       10       7.695 105         40       8       10       7.695 106         45       8       10       7.695 107         50       8       10       7.695 108         60       9       10       7.695 109         70       9       10       7.695 110         80       9       10       7.695 111	<b>Length</b> mm	<b>Ø</b> mm	РК	Art. no.
20       6       10       7.695 102         25       6       10       7.695 103         30       6       10       7.695 104         35       6       10       7.695 105         40       8       10       7.695 106         45       8       10       7.695 107         50       8       10       7.695 108         60       9       10       7.695 109         70       9       10       7.695 110	10	6	10	7.695 100
25       6       10       7.695 103         30       6       10       7.695 104         35       6       10       7.695 105         40       8       10       7.695 106         45       8       10       7.695 107         50       8       10       7.695 108         60       9       10       7.695 109         70       9       10       7.695 110	15	6	10	7.695 101
30       6       10       7.695 104         35       6       10       7.695 105         40       8       10       7.695 106         45       8       10       7.695 107         50       8       10       7.695 108         60       9       10       7.695 109         70       9       10       7.695 110	20	6	10	7.695 102
35       6       10       7.695 105         40       8       10       7.695 106         45       8       10       7.695 107         50       8       10       7.695 108         60       9       10       7.695 109         70       9       10       7.695 110	25	6	10	7.695 103
40     8     10     7.695 106       45     8     10     7.695 107       50     8     10     7.695 108       60     9     10     7.695 109       70     9     10     7.695 110	30	6	10	7.695 104
45     8     10     7.695 107       50     8     10     7.695 108       60     9     10     7.695 109       70     9     10     7.695 110	35	6	10	7.695 105
50     8     10     7.695 108       60     9     10     7.695 109       70     9     10     7.695 110	40	8	10	7.695 106
60     9     10     7.695 109       70     9     10     7.695 110	45	8	10	7.695 107
70 9 10 7.695 110	50	8	10	7.695 108
	60	9	10	7.695 109
80 9 10 7.695 111	70	9	10	7.695 110
	80	9	10	7.695 111

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# SET OF MAGNETIC STIRRING BARS, CYLINDRICAL, 10 PIECES, PTFE

The set of LABSOLUTE® magnetic stirring bars is a perfect assortment of the most common sizes for almost all applications. The cylindrical, smooth, PTFE-coated stirring bars come in a solid box with a transparent, hinged lid.

The set consists of the following 10 stirring bars: 1x 15 x 6 mm, 2x 20 x 7 mm, 2x 25 x 7 mm, 1x 30 x 7 mm, 2x 40 x 7 mm, 1x 50 x 7 mm and 1x 60 x 7 mm.

Description	PK	Art. no.
Set of magnetic stirring bars	1	7.695 125



#### STIRRING BAR RETRIEVERS, PTFE

The LABSOLUTE® stirring bar retrievers in the lengths of 150, 250 and 350 mm are suitable for removing magnetic stirring bars from vessels of all kinds. They have a strong permanent magnet (Alnico 5) with a 10 mm diameter. Due to the PTFE coating the stirring bar retrievers are particularly resistant to chemicals and temperatures.

Length	Ø	PK	Art. no.
mm	mm		
150	10	1	7.695 120
250	10	1	7.695 121
350	10	1	7.695 122

#### **TAP**

CHEMSOLUTE® taps allow safe, fast and clean transfer from canisters. The aeration ensures a steady flow of liquid.

Description	PK	Art. no.
DIN 45, narrow	1	140.0001
DIN 45, flexible tube	1	141.0001
DIN 45, wide	1	154.0001
DIN 50	1	143.0001
DIN 51	1	151.0001
DIN 61	1	142.0001





#### **SAFETY SPECTACLES**

The sporty safety spectacles from LABSOLUTE® comply with EN 166 and EN 170. They match even the strictest regulations in terms of occupational protection and safety. The lenses of all spectacle models are made of high-quality polycarbonate UV 2 - 1.2. Special coating of the crystal-clear lens guarantees a scratch-proof and permanent non-fogging viewing surface. Innovative technologies and ultra-modern materials also ensure an excellent fit, distortion-free vision and 100 % UV protection – for, quite simply, comfort of the highest order.

#### SAFETY SPECTACLES WAVE

Safe and pleasant working with the LABSOLUTE® wave spectacles, which guarantee a healthy environment for your eyes thanks to the innovative ventilation system and are also impressive due to their modern design.



#### High wearing comfort with innovative technology

- Especially wide viewing angle and all-round protection for the eyes and eyebrows thanks to the rimless, angled design
- Slimline arms for a comfortable position, even when wearing hearing protectors and a helmet
- Metal-free clip fastening: particularly easy to operate
- Openings on the non-slip arm ends for securing a spectacles cord
- Simple cleaning thanks to the rimless frame

Description	PK	Art. no.
Safety spectacles wave	1	7.696 003



#### SAFETY SPECTACLES LIGHT

Occupational safety and comfort of the highest order – and all for a weight of just 21 grams. LABSOLUTE® light combines innovative technology with ultra-modern materials to create sensationally lightweight safety spectacles.

#### Innovative concept for high levels of acceptance among users

- Extremely lightweight safety spectacles
- Sporty design
- Excellent comfort and secure grip thanks to a perfect fit and soft plastic on the arm ends

Description	PK	Art. no.
Safety spectacles light	1	7.696 000

#### SAFETY SPECTACLES COMPLUS

Reliable protection with superb versatility: The LABSOLUTE® safety spectacles complus are well suited for perfect, lightning-fast adaptation to different or frequently changing users.

#### **Excellent user-friendliness and flexibility**

- Simple adaptation thanks to the adjustable arm length and angle
- Low weight
- Excellent wearing comfort thanks to 2-component technology and soft rests on the nose, ears and forehead

Description	PK	Art. no.
Safety spectacles complus	1	7.696 001



#### SAFETY SPECTACLES VISION

Ideal for spectacle wearers: LABSOLUTE® vision. These lightweight over spectacles are also impressive due to their reliable protection, unrestricted lateral view and user-friendly wearing comfort.

#### Lightweight over-spectacles for your safety

- Unrestricted lateral view
- Excellent comfort and secure grip thanks to soft plastic on the arm ends

Description	PK	Art. no.
Safety spectacles vision	1	7.696 002



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#### **DISPOSABLE GLOVES, LATEX, POWDER-FREE**

The powder-free, natural-coloured LABSOLUTE® disposable latex gloves made of natural rubber with a rolled cuff offer excellent elasticity and wearing comfort. The gloves with textured fingers can be used in a wide variety of areas such as in pharmaceutical and chemical laboratories or the food industry.

## The LABSOLUTE® latex gloves with an AQL value of 1.5 comply with the following standards and directives

- EN 420, EN ISO 374-1, -2, -4, -5 and EN 16523-1
- (EU) 2016/425 (PPE in accordance with CE category III for complex risks)
- 1935/2004 (can be used in direct contact with food)
- ASTM 1671 / ISO 16604 (viral penetration)

#### Further properties:

- Delivered in handy dispenser boxes of 100 (S, M, L) or 90 pieces (XL)
- · Free from phthalates and softeners
- Storage life: 3 years
- Length: approx. 240 mm
- Thickness (double): finger min. 0.24 mm, palm min. 0.20 mm, cuff min. 0.12 mm
- Easy to put on and off
- · Skin-friendly
- Can be worn on the left or right hand

Size	PK	Art. no.
S	100	7.696 911
М	100	7.696 912
L	100	7.696 913
XL	90	7.696 914











The chemical resistance of LABSOLUTE® disposable gloves is listed on page 236–237

#### **DISPOSABLE GLOVES, NITRILE SENSITIVE, POWDER-FREE**

The powder-free, lavender blue LABSOLUTE® disposable gloves Sensitive made of nitrile are flat with a rolled cuff and offer excellent elasticity and wearing comfort. A special after-treatment makes these LABSOLUTE® disposable gloves skin friendly and easy to put on. The gloves have textured finger tips.

## The LABSOLUTE® nitrile gloves with an AQL value of 1.5 comply with the following standards and directives

- EN 420, EN ISO 374-1, -2, -4, -5 and EN 16523-1
- (EU) 2016/425 (PPE in accordance with CE category III for complex risks)
- 1935/2004 (can be used in direct contact with food)
- ASTM 1671 / ISO 16604 (viral penetration)

#### Further properties:

- Approved for the use within Hazard Analysis and Critical Control Points (HACCP) concepts
- Resistance against ethidium bromide (1 %) for more than 480 min (level 6)
- Delivered in handy dispenser boxes of 200 (XS, S, M, L) or 180 pieces (XL)
- Free from phthalates, softeners and allergenic latex proteins
- Storage life: 3 years
- Length: approx. 240 mm
- Thickness (double): finger min. 0.14 mm, palm min. 0.12 mm, cuff min. 0.10 mm
- Can be worn on the left or right hand

XS     200     7.696 904       S     200     7.696 900       M     200     7.696 901       L     200     7.696 902       XL     180     7.696 903	Size	PK	Art. no.
M 200 7.696 901 L 200 7.696 902	XS	200	7.696 904
L 200 7.696 902	S	200	7.696 900
	М	200	7.696 901
XL 180 7.696 903	L	200	7.696 902
	XL	180	7.696 903













The powder-free LABSOLUTE® disposable gloves nitrile GREEN are flat with a rolled cuff and offer excellent elasticity and wearing comfort. The gloves have textured finger tips.

They are extremly skin-friendly, because they are free from chlorine and natural rubber proteins. The gloves use less water, energy and carbon dioxide during the production process as similar disposable gloves making these gloves a more sustainable option.

#### The LABSOLUTE® nitrile gloves with an AQL value of 1.5 comply with the following standards and directives

- EN 420, EN ISO 374-1, -2, -4, -5 and EN 16523-1
- (EU) 2016/425 (PPE in accordance with CE category III for complex risks)
- 1935/2004 (can be used in direct contact with food)
- ASTM 1671 / ISO 16604 (viral penetration)

#### **Further properties:**

- Resistance against ethidium bromide (1 %) for more than 480 min (level 6)
- Delivered in handy dispenser boxes of 200 (S, M, L) or 180 pieces (XL)
- Free from phthalates, softeners and allergenic latex proteins
- Free from rubber accelerators
- Storage life: 3 years
- Length: approx. 240 mm
- Thickness (double): finger min. 0.14 mm, palm min. 0.12 mm, cuff min. 0.10 mm
- Easy to don thanks to a synthetic inner coating
- Can be worn on the left or right hand



Size	PK	Art. no.
S	200	7.696 915
М	200	7.696 916
L	200	7.696 917
XL	180	7.696 918





#### **DISPOSABLE GLOVES, NITRILE PROTECTIVE, POWDER-FREE**

The powder-free, blue LABSOLUTE® disposable gloves Protective made of nitrile with a rolled cuff are the best supplement to the LABSOLUTE® Sensitive gloves for a higher protection level.

## The silicone-free gloves with an AQL value of 1.5 are textured on the outside and comply with the following standards and directives

- EN 420, EN 421, EN ISO 374-1, -2, -4, -5 and EN 16523-1
- (EU) 2016/425 (PPE in accordance with CE category III for complex risks)
- 1935/2004 (can be used in direct contact with food)
- ASTM 1671 / ISO 16604 (viral penetration)

#### **Further properties:**

- Approved for the use within Hazard Analysis and Critical Control Points (HACCP) concepts
- UV transmission less than 0.1 % at 360 nm
- Delivered in handy dispenser boxes of 100 (S, M, L) or 90 pieces (XL)
- Free from phthalates, softeners and allergenic latex proteins
- Storage life: 3 years
- Length: approx. 240 mm
- Thickness (double): finger min. 0.30 mm, palm min. 0.22 mm, cuff min. 0.20 mm
- Can be worn on the left or right hand

Size	PK	Art. no.
S	100	7.696 906
М	100	7.696 907
L	100	7.696 908
XL	90	7.696 909











#### **HOLDER FOR GLOVE BOXES, STAINLESS STEEL**

Holder for hygienic and easy accessible storage of glove boxes. Also suitable for laboratory wipes (7.695 251) and disposable bags (7.696 994, 7.697 000) in dispenser boxes.

- Stainless steel, electrolytically polished
- Wall mounting material included
- Depth of the brackets: 85 mm

Description	Width mm	<b>Height</b> mm	<b>Depth</b> mm	PK	Art. no.
For one box	210	140	90	1	7.696 920
For three boxes	245	480	100	1	7.696 921





#### HAND PROTECTOR GRIP HEATGUARD

The LABSOLUTE® hand protector grip HeatGuard made of red silicone rubber is temperature-resistant from -50–250 °C and is the best protection for your hands against hot and cold surfaces. The two pockets for thumb and fingers fit every hand size. The nobs on the HeatGuard ensure that there is a safe, slip-resistant grip at all times. You can store the hand protector grip using one of the two eyelets.

Description	PK	Art. no.
Hand protector grip HeatGuard	1	7.696 925



#### **SKIN CARE CREAM, SKIN CARE 1**

The LABSOLUTE® Skin Care 1 is a high-quality, easily absorbable, gently moisturising skincare cream containing natural oils and beeswax. The emulsion is silicone-free and is therefore also suitable for use within Hazard Analysis and Critical Control Points (HACCP) concepts. The product encourages skin regeneration and can also be used on the face.

For best effects, use regularly after washing your hands, on dry skin, or also while working in the laboratory or office. The cream is suitable for all skin types.

Description	<b>Capacity</b> ml	PK	Art. no.
Skin Care 1, unperfumed	100	1	7.695 201





#### OIL AND CHEMICAL ABSORBENT CHEMSOLUTE' SORB

CHEMSOLUTE® Sorb is a fine granular chemical binding agent on a polymer-mineral basis. The fast and effective binding of chemicals and oils significantly reduces the impact on personnel and the environment as well as the risk of fire, even in the case of liquids with high vapour pressure.

- Easy to dispense
- · For all liquids except mercury
- Very high binding capacity (up to 75 times its own weight)
- With barrier-forming function
- Indicator function colour change: acids (yellow)/bases (red)
- Saturation recognisable by colour intensity
- Non-dusting, suitable for indoor use
- Skin compatible
- Registered oil binder under guideline Type III R (MPA NRW 22 000 8388 10) with suitability for traffic areas

Package	Content	PK	Art. no.
Dosing container	1,000 ml	1	2410.0001
Wide-mouth container	4,000 ml	1	2440.0001
Storage bucket	5 kg	1	2450.0001
Barrel (60 l)	20 kg	1	2460.0001





More information on CHEMSOLUTE® Sorb is listed on page 246-247

#### LAB COAT, 100% COTTON

The white LABSOLUTE® lab coat is made of 100 % cotton fabric with a weight of 305 g/m². It features a lapel collar, two patch pockets, a breast pocket, and a concealed placket. The long-sleeved coat is suitable for all kind of standard laboratory application. Due to its UPF 50+ function it keeps off more than 98 % of the ultraviolet rays. Our comfortable LABSOLUTE® lab coat is available in women's cut from XS to 2XL size, as well as in men's cut from S to 4XL size. The individual embroidery of the lab coat with personal lettering or the company logo is available on request.

Description	Size	PK	Art. no.
Men's cut	S	1	7.695 335
Men's cut	М	1	7.695 336
Men's cut	L	1	7.695 337
Men's cut	XL	1	7.695 338
Men's cut	2XL	1	7.695 339
Men's cut	3XL	1	7.695 340
Men's cut	4XL	1	7.695 341
Women's cut	XS	1	7.695 342
Women's cut	S	1	7.695 343
Women's cut	М	1	7.695 344
Women's cut	L	1	7.695 345
Women's cut	XL	1	7.695 346
Women's cut	2XL	1	7.695 347





#### **VISITOR COATS, PP**

The LABSOLUTE® disposable coats made of white, breathable PP fleece are easy and comfortable to wear and are ideally suited for visitors.

- Shirt collar
- Without pockets
- With snaps
- Individually packed in a polybag

Size	PK	Art. no.
Universal	50	7.695 310



#### **OVERALLS, PP**

The LABSOLUTE® latex-free disposable overalls with a hood, an elastic cuff and a front zipper are made of white PP fleece. They provide good protection, barrier properties, and durability due to the taped seams.

Size	PK	Art. no.
L	10	7.695 315
XL	10	7.695 316
XXL	10	7.695 317



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#### **BOUFFANT CAPS, PP**

The LABSOLUTE® bouffant caps with a diameter of 52 cm and an elastic strap are made of soft and breathable PP fleece with a grammage of 10 g/m² only.

Colour	PK	Art. no.
Green	100	7.695 320
White	100	7.695 321
Blue	100	7.695 322

#### **SLEEVE GUARDS, PE**

The LABSOLUTE® disposable sleeve guards are approximately 40 cm long, free of latex and made of strong PE film.

Colour	Thickness µm	РК	Art. no.
White	20	100	7.695 325
Blue	20	100	7.695 326
Blue	40	100	7.695 327



#### **SHOE COVERS, CPE**

The LABSOLUTE® shoe covers made of CPE offer protection against contamination and sensitive floors in visitor traffic, as well as the classical applications in medicine and the food industry.



- Fits all shoe sizes
- Length approx. 41 cm

Description	PK	Art. no.
Shoe covers, CPE	100	7.695 330



#### SHOE COVERS, PP, WITH CPE OUTSOLES

The white LABSOLUTE® shoe covers made of PP fleece with blue and stable CPE outsoles are suitable for use in hospitals, day care centres and the food industry.

- Fits all shoe sizes
- Length approx. 40 cm

Description	PK	Art. no.
Shoe covers, PP with CPE outsole	50	7.695 331



#### **GHS LABELS, PE**

LABSOLUTE® labels are self-adhesive and have a size of 26 x 37 mm. They are used to designate your materials using the universally applicable hazard symbols of the GHS system (Globally Harmonized System of classification and labelling of chemicals).

- Made of PE (thickness: 0.1 mm) with additional protective lacquer
- Signal word in three languages (German, English and Danish)
- Waterproof and solvent-resistant
- Available in handy dispenser boxes

Description	Signal word	PK	Art. no.
GHS 01 Exploding Bomb	Caution	500	7.695 365
GHS 01 Exploding Bomb	Danger	500	7.695 366
GHS 02 Flame	Caution	500	7.695 367
GHS 02 Flame	Danger	500	7.695 368
GHS 03 Flame Over Circle	Caution	500	7.695 369
GHS 03 Flame Over Circle	Danger	500	7.695 370
GHS 04 Gas Cylinder	Caution	500	7.695 371
GHS 05 Corrosion	Caution	500	7.695 372
GHS 05 Corrosion	Danger	500	7.695 373
GHS 06 Skull & Crossbones	Danger	500	7.695 374
GHS 07 Exclamation Mark	Caution	500	7.695 375
GHS 08 Health Hazard	Caution	500	7.695 376
GHS 08 Health Hazard	Danger	500	7.695 377
GHS 09 Environment	Caution	500	7.695 378





GHS 07















#### **DISPOSAL BAGS, PP**

With the LABSOLUTE® autoclavable bags made of PP contaminated labware can be disposed of safely. Thanks to the strong PP film (50  $\mu$ m) and an extra broad seam at the bottom, the bags are particularly tear-resistant. The bag size 200 x 300 mm is delivered for both versions in a handy dispenser box.

#### DISPOSAL BAGS, STANDARD, PP

Autoclavable up to 134 °C. For autoclaving, the bags must only be slightly closed.

Volume	WxH	Film thickness	PK	Art. no.
ca. l	mm	μm		
2.5	200 x 300	50	100	7.697 000
8.0	300 x 500	50	500	7.697 001
38.0	400 x 780	50	500	7.697 003
60.0	600 x 800	50	100	7.697 002
110.0	700 x 1100	50	75	7.697 004
110.0	700 x 1100	50	350	7.697 005



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#### DISPOSAL BAGS, HIGHLY TRANSPARENT, PP

Autoclavable at 121  $^{\circ}\text{C}.$  For autoclaving, the bags must only be slightly closed. Highly transparent.

Volume	WxH	Film thickness	PK	Art. no.
ca. l	mm	μm		
2.5	200 x 300	50	100	7.696 994
8.0	300 x 500	50	500	7.696 995
38.0	400 x 780	50	500	7.696 996
60.0	600 x 800	50	100	7.696 997
60.0	600 x 800	50	500	7.696 998
110.0	700 x 1100	50	350	7.696 999



#### **HOLDER FOR DISPOSAL BAGS**

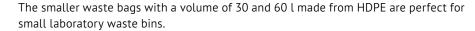
The LABSOLUTE® holder for disposables bags is made of steel wire and coated with a PE resin.

- With rubber feet
- Suitable for 200 x 300 mm disposable bags (7.696 994, 7.697 000)

Height	Lower ring Ø	Top ring Ø	PK	Art. no.
mm	mm	mm		
250	160	125	1	7.697 010

#### **WASTE BAGS**

The blue LABSOLUTE® waste bags made from LDPE with a wall thickness of 35  $\mu m$  are tear resistant, flexible and offer a wide range of applications. The red waste bags with a material thickness of 150  $\mu m$  are ideal for medical practices, hospitals or laboratories to dispose hazardous waste. All LABSOLUTE® LDPE waste bags are made from 100 % recycled material.





Description	Material	Colour	Thickness	Dimensions (W x H)	PK	Art. no.
			μm	mm		
Waste bags 120 l, type 60	LDPE	Blue	35	700 x 1100	25	7.697 030
Waste bags 70 l, type 60	LDPE	Blue	35	575 x 1000	25	7.697 031
Waste bags 70 l	LDPE	Red	150	575 x 1000	100	7.697 022
Waste bags 60 l	HDPE	Transparent	8	600 x 720	50	7.697 033
Waste bags 30 l	HDPE	Transparent	8	500 x 600	50	7.697 034





#### **CONDUCTIVITY SOLUTIONS**

The ready-to-use CHEMSOLUTE® conductivity solutions are suitable for calibrations.

- Values stated at 25 °C, accuracy ±1 %
- Traceable to the National Institute of Standards and Technology (NIST)
- Tested by an ISO 17025 accredited Test Method

<b>Capacity</b> ml	PK	Art. no.
500	1	1565.0500
500	1	1570.0500
250	1	1571.0250
500	1	1572.0500
500	1	1573.0500
500	1	1575.0500
1000	1	1575.1011
500	1	1580.0500
	ml 500 500 250 500 500 500 1000	ml 500 1 500 1 250 1 500 1 500 1 500 1 500 1 1000 1



#### **ELECTRODE FILLING SOLUTIONS**

These high-quality CHEMSOLUTE® electrolyte solutions are perfectly suited to the secure and reliable maintenance and care of electrodes.

- Ideal for topping up and replacing reference electrolyte solution in pH electrodes
- Suitable for long-term wet storage of the electrodes
- Traceable to Standard Reference Material (SRM) from the National Institute of Standards and Technology (NIST)

Description	<b>Capacity</b> ml	PK	Art. no.
Lithium chloride solution 1 mol/l in ethanol	100	1	2230.0100
Potassium chloride solution 3 mol/l, free from silver ions	1000	1	1619.1000
Potassium chloride solution 3 mol/l, free from silver ions	5000	1	1619.5000
Potassium chloride solution 3 mol/l, saturated with AgCl	1000	1	1633.1000
Potassium chloride solution 5 % dissolved oxygen electrolyte	100	1	2265.0100



#### **ELECTRODE STORAGE SOLUTIONS**

The high-quality electrode storage solutions from CHEMSOLUTE® are perfectly suited for the safe and reliable storage of electrodes.

• Traceable to the Standard Referee Material (SRM) of the National Institute of Standards and Technology (NIST)

Description	<b>Capacity</b> ml	PK	Art. no.
Potassium chloride solution 2.9-3.1 mol/l	500	1	2239.0500
Potassium chloride solution 2.9-3.1 mol/l	1000	1	2239.1000

#### **ELECTRODE CLEANING SOLUTIONS**

The CHEMSOLUTE® range offers the best solutions for the cleaning and regeneration of your electrodes.

- Pepsin/HCl cleaning solution for cleaning pH combined electrodes of organic contamination such as proteins
- Thiourea/HCl cleaning solution for removing silver sulphide from diaphragms

Description	<b>Capacity</b> ml	PK	Art. no.
Pepsin/HCl cleaning solution	1000	1	2213.1000
Thiourea/HCl cleaning solution	1000	1	2247.1000



#### **TOTAL HARDNESS TESTKIT**

The CHEMSOLUTE $^{\circ}$  total hardness testkit is suitable for the convenient determination of water hardness in the range of 0–2  $^{\circ}$ dH and 0–30  $^{\circ}$ dH.

It contains one graduated measuring tube with stopper, one bottle of indicator solution and one bottle each of titration solution  $0-2~^{\circ}dH$  and  $0-30~^{\circ}dH$ , as well as two measuring syringes.

Description	PK	Art. no.
CHEMSOLUTE® total hardness testkit	1	2499.0001



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#### **ANALYTICAL MEASUREMENT AND TESTING**

#### **TEST STRIPS FOR WATER ANALYSIS**

CHEMSOLUTE® test strips are ideal for determining water hardness and for the semi-quantitative detection of ions and acids.

- Fast and reliable detection
- Dip, compare done
- Certified quality

Parameter	Measuring range	PK	Art. no.
Ascorbic acid	0 - 50 - 100 - 200 - 300 - 500 - 700 - 1000 - 2000 mg/l	100	2920.0001
Nitrate	0 - 10 - 25 - 50 - 100 - 250 - 500 mg/l	100	2935.0001
Nitrite	0 - 0.5 - 1 - 5 - 10 - 25 mg/l	100	2925.0001
Nitrite	0 - 2 - 5 - 10 - 20 - 40 - 80 mg/l	100	2930.0001
Peroxide	0 - 0.5 - 2 - 5 - 10 - 25 mg/l	100	2940.0001
Peroxide	0 - 1 - 3 - 10 - 30 - 100 mg/l	100	2955.0001
Phosphate	0 - 3 - 10 - 50 - 100 - 250 - 300 mg/l	100	2950.0001
Total hardness	3 - 4 - 7 - 14 - 21 °dH	100	2915.0001
Combined test strips 3 in 1 (pH, chlorine, alkalinity)	pH 6.4 - 6.8 - 7.2 - 7.6 - 8.4 Chlorine 0 - 0.5 - 1 - 3 - 5 - 10 mg/l Alkalinity 0 - 80 - 120 - 180 - 240 mg/l CaCO₃	50	3090.0001
Combined test strips 5 in 1 (pH, free and total chlorine, alkalinity, total hardness)	pH 6.4 - 6.8 - 7.2 - 7.6 - 8.4 Free chlorine $0$ - $0.5$ - $1$ - $3$ - $5$ - $10$ mg/l Cl $_2$ Total chlorine $0$ - $1$ - $3$ - $5$ - $10$ mg/l Cl $_2$ Alkalinity $0$ - $1$ - $3$ - $5$ - $10$ mg/l CaCO $_3$ Total hardness $0$ - $100$ - $250$ - $500$ - $1000$ mg/l CaCO $_3$	50	3091.0001



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#### **PH MEASUREMENT**

#### pH INDICATOR PAPER

CHEMSOLUTE® Universal pH-indicator paper is a cost-effective alternative for the rapid determination of the pH value and consists of high-quality filter papers impregnated with indicator solution.

- pH value determination in 1.0 pH steps
- With colour scale
- Roll (L x W): 5 m x 7 mm

<b>Range</b> pH	Description	PK	Art. no.
1-11	Box with 1 roll	1	2811.0001
1-11	Refill pack with 3 rolls	1	2811.0003
1-14	Box with 1 roll	1	2814.0001
1-14	Refill pack with 3 rolls	1	2814.0003



#### pH INDICATOR STRIPS

The CHEMSOLUTE® pH indicator strips enable fast and accurate pH value determination. The range offers suitable products for a wide variety of pH value intervals.

- High accuracy and easy legibility
- Stable carrier strips with coloured test fields
- Non-bleeding, no contamination of the medium
- 100 strips per pack

<b>Range</b> pH	pH steps	PK	Art. no.
0-14	1.0	100	2714.0001
0-14 *	1.0	100	2717.0001
0-6.0	0.5	100	2730.0001
2.0-9.0	0.5	100	2740.0001
4.0-7.0	**	100	2760.0001
5.0-10.0	0.5	100	2770.0001
7.5 – 14.0	0.5	100	2790.0001



<sup>\*</sup> in flip-top vial

<sup>\*\* 4.0-4.4-4.7-5.0-5.3-5.5-5.8-6.1-6.3-7.0</sup> 

#### **pH BUFFER SOLUTIONS**

The ready-to-use buffer solutions from CHEMSOLUTE® are renowned for their quality and ease of use.

#### pH BUFFER SOLUTIONS WITH COLOUR CODING (20 °C)

- Accuracy ±0.02 pH units, reference temperature 20 °C
- Traceable to the National Institute of Standards and Technology (NIST)
- In PP bottles
- The dyed buffer solutions allow easy identification

Description	Colour	<b>Capacity</b> ml	PK	Art. no.
pH 4.00	Red	1000	1	1124.1000
pH 7.00	Green	1000	1	1127.1000
pH 9.00	Blue	1000	1	1129.1000
pH 10.00	Orange	1000	1	1130.1000

#### pH BUFFER SOLUTIONS WITH COLOUR CODING (25 °C)

- Accuracy ±0.01 pH units, reference temperature 25 °C
- Traceable to the National Institute of Standards and Technology (NIST)
- · In PP bottles
- The dyed buffer solutions allow easy identification

Description	Colour	<b>Capacity</b> ml	PK	Art. no.
pH 4.00	Red	1000	1	1103.1000
pH 7.00	Yellow	1000	1	1135.1000
pH 10.00	Blue	1000	1	1143.1000

#### pH BUFFER SOLUTIONS WITHOUT COLOUR CODING (25 °C)

- Accuracy ±0.01 pH units, reference temperature 25 °C
- Traceable to the National Institute of Standards and Technology (NIST)
- In PP bottles

Description	<b>Capacity</b> ml	PK	Art. no.
pH 1.68	500	1	1101.0500
pH 4.00	500	1	1122.0500
pH 6.86	500	1	1169.0500
pH 7.00	500	1	1139.0500
pH 10.00	500	1	1151.0500







#### pH BUFFER SOLUTIONS WITHOUT COLOUR CODING (20 °C)

- Accuracy: ±0.02 pH units, reference temperature 20 °C
- Traceable to the National Institute of Standards and Technology (NIST)
- In PP bottles (500 ml & 1000 ml) or polytainers (5000 ml)

Description	<b>Capacity</b> ml	РК	Art. no.
pH 1.00	1000	1	1111.1000
pH 2.00	1000	1	1112.1000
pH 3.00	1000	1	1113.1000
pH 4.00	1000	1	1114.1000
pH 4.00	5000	1	1114.5000
pH 5.00 *	1000	1	1115.1000
pH 6.00 **	1000	1	1116.1000
pH 7.00	1000	1	1117.1000
pH 7.00	5000	1	1117.5000
pH 8.00	1000	1	1118.1000
pH 9.00	1000	1	1119.1000
pH 9.00	5000	1	1119.5000
pH 10.00	1000	1	1120.1000
pH 10.00	5000	1	1120.5000
pH 11.00	1000	1	1121.1000



#### **PH BUFFER SOLUTIONS IN A TWIN NECK BOTTLE**

The calibration vessel, integrated into the CHEMSOLUTE® twin neck dispensing bottles, allows the particularly economical dispensing of solution and prevents contamination.

# pH BUFFER SOLUTIONS IN A TWIN NECK BOTTLE WITHOUT COLOUR CODING (25 °C)

- Accuracy ±0.010 pH units, reference temperature 25 °C
- Traceable to the National Institute of Standards and Technology (NIST)
- Comply with DIN 19266

Description	<b>Capacity</b> ml	РК	Art. no.
pH 3.776	250	1	1123.0252
pH 4.005	250	1	1125.0252
pH 4.005	1000	1	1125.1012
pH 6.865	1000	1	6626.1012
pH 6.881 *	1000	1	1126.1012
pH 7.413	250	1	1128.0252
pH 7.413	1000	1	1128.1012
pH 9.180	250	1	1131.0252
pH 9.180	1000	1	1131.1012
pH 10.012	250	1	1132.0252
pH 10.012	1000	1	1132.1012



\*pH ±0.010 (20 °C)



# TECHNICAL pH BUFFER SOLUTIONS IN A TWIN NECK BOTTLE WITH COLOUR CODING (25 °C)

- Accuracy ±0.02 pH units, reference temperature 25 °C
- Traceable to the National Institute of Standards and Technology (NIST)
- The dyed buffer solutions allow easy identification

Description	Colour	<b>Capacity</b> ml	PK	Art. no.
pH 2.00	Red	1000	1	1161.1012
pH 4.01	Red	250	1	1165.0252
pH 4.01	Red	1000	1	1165.1012
pH 7.00	Yellow	250	1	1167.0252
pH 7.00	Yellow	1000	1	1167.1012
pH 10.01	Blue	250	1	1173.0252
pH 10.01	Blue	1000	1	1173.1012

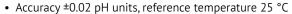
#### pH CALIBRATION KIT (20 °C)

The pH calibration kit from CHEMSOLUTE® contains six ready-to-use buffer solutions with colour coding and is characterized by its easy handling.

- Content: 2x pH 4.01 (red), 2x pH 7.01 (yellow), 2x pH 10.01 (blue)
- Accuracy ±0.01 pH units, reference temperature 20 °C
- Traceable to the National Institute of Standards and Technology (NIST)
- In PP tubes (30 ml)

Description	PK	Art. no.
pH calibration kit	1	11111.0001
Refill pack 4.01 - 7.01 - 10.01	6	11100.0001
Refill pack 4.01	10	11103.0001
Refill pack 7.01	10	11101.0001
Refill pack 10.01	10	11102.0001

# pH BUFFER SOLUTIONS IN SEALED-EDGE POUCH WITH COLOUR CODING (25 °C)



- Traceable to the National Institute of Standards and Technology (NIST)
- $\bullet\,$  In 30 ml sealed-edge pouch with coloured tear-off edge
- The dyed buffer solutions allow easy identification

Description	Colour	PK	Art. no.
pH 4.00	Red	30	11400.0030
pH 7.00	Green	30	11700.0030
pH 9.21	Light blue	30	11921.0030
pH 10.01	Dark blue	30	11001.0030
pH 4.00 - 7.00 - 9.21*		30	11000.0001
pH 4.00 - 7.00 - 10.01*		30	11005.0001

<sup>\* 10</sup> pouches per pH value





#### pH BUFFER TABLETS WITH COLOUR CODING (20 °C)

Dissolving the buffer tablet in 20 ml purified water (20  $^{\circ}$ C) quickly produces a coloured buffer solution.

- Accuracy ±0.05 pH units, reference temperature 20 °C
- Low storage space requirement and easy handling
- Environmentally friendly: reduction of CO<sub>2</sub> emissions due to reduced transport weight and volume, as well as plastic waste
- 10 tablets each in a blister pack

Description	Colour	PK	Art. no.
Buffer tablet pH 4	Pink	1	11040.0010
Buffer tablet pH 4	Pink	5	11040.0050
Buffer tablet pH 4	Pink	10	11040.0100
Buffer tablet pH 7	Yellow	1	11070.0010
Buffer tablet pH 7	Yellow	5	11070.0050
Buffer tablet pH 7	Yellow	10	11070.0100
Buffer tablet pH 10	Green	1	11010.0010
Buffer tablet pH 10	Green	5	11010.0050
Buffer tablet pH 10	Green	10	11010.0100



#### SAMPLE DISHES WITH HANDLE, ALUMINIUM

The LABSOLUTE® sample dishes made of aluminium are stable in form but yet of low weight. The smooth and flat bottom guarantees a firm stand. With practicle hand grip. Temperature resistance guaranteed up to 210 °C.

Dimensions (Ø x H) mm	PK	Art. no.
43 x 12	100	7.696 265
57 x 14	100	7.696 266
70 x 16	100	7.696 267



#### SAMPLE DISHES WITHOUT HANDLE, ALUMINIUM

The LABSOLUTE® sample dishes made of high-grade aluminium are perfectly suited for moisture analysis.

Dimensions (Ø x H) mm	PK	Art. no.
90 x 7	80	7.696 269
101 x 8	50	7.696 268



#### **WEIGHING BOATS**

The LABSOLUTE® weighing boats made of PS feature smooth surfaces to transfer each kind of sample easily with minimal sample loss. The material is antistatic, biologically inert and resistant to both weak and diluted acids, lyes and alcohols and to temperatures from -10 °C up to 70 °C. All dishes can be used in direct contact with food and with microwave moisture analyzers.

#### WEIGHING BOATS, SQUARE, PS

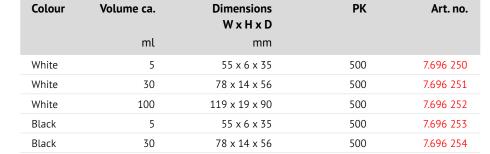
The antistatic dishes feature a flat bottom for a secure stand. The round corners simplify the transfer of any sample.

Colour	<b>Volume ca.</b> ml	Dimensions W x H x D mm	PK	Art. no.
White	10	46 x 8 x 46	500	7.696 256
White	100	85 x 24 x 85	500	7.696 257
White	330	140 x 22 x 140	500	7.696 258
Black	10	46 x 8 x 46	500	7.696 259
Black	100	85 x 24 x 85	500	7.696 260
Black	330	140 x 22 x 140	500	7.696 261



#### WEIGHING BOATS, DIAMOND-SHAPED, PS

The flexible design of these antistatic weighing dishes is ideally suited to transfer even small amounts of samples precisely.



119 x 19 x 90

500

7.696 255



#### **WEIGHING BOATS, BOROSILICATE GLASS 3.3**

100

The LABSOLUTE® weighing boats are made of borosilicate glass 3.3 and resistant against a wide range of chemicals. The funnel shape allows a lost-free ejection of the sample. Additionally the weighing sample can be transferred to a flask easily using any kind of liquid.



<b>Capacity</b> ml	<b>Length</b> mm	PK	Art. no.
3	46	1	7.696 262
6	60	1	7.696 263
10	70	1	7.696 264

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Black

#### **WEIGHING PAPER**

The smooth surface of the weighing papers quarantees a good sample recovery.

- Dimensions (W x D): 95 x 110 mm
- Weight: 45 g/m<sup>2</sup>

Description	PK	Art. no.
Weighing paper	250	7.697 925



#### **TIME MEASUREMENT**

The LABSOLUTE® range offers you a practical selection of precise chronometers which provide functions geared towards the requirements of the laboratory sector.

#### JUMBO TIMER

The LABSOLUTE® jumbo timer has an extra large display and a combination of an audible and visual alarm. During the countdown, the start and stop button lights up green; once the time has expired, the audible signal and the red light both indicate the end of the countdown.

- Dimensions (W x H x D): 90 x 60 x 20 mm
- 2x AAA batteries included
- Four-digit display up to 99 minutes, 59 seconds
- Countdown and countup function
- Triple memory function
- Alarm volume has three level settings
- Simple fastening with magnet, clip and stand

Description	PK	Art. no.
Jumbo timer	1	7.695 453



#### **DUAL TIMER**

The LABSOLUTE® dual timer is ideal for comparing different countdown or countup times. The elapsed time is indicated both audibly and visibly by the T1 and T2 buttons lighting up green and then red during the countdown. The timer is easy to operate and can be read without errors thanks to the large display and the clearly visible digits.

- Dimensions (W x H x D): 90 x 75 x 20 mm
- 2x AAA batteries included
- Large display with two-part display, each six-digit, up to 99 hours, 59 minutes, 59 seconds
- Audible alarm volume with three level settings
- Visual alarm
- Memory function
- Simple fastening with magnet, clip and stand

Description	РК	Art. no.
Dual timer	1	7.695 454



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#### **BASIC TIMER**

The LABSOLUTE® basic timer is a handy, lightweight and functional timer with a simple design.

- Dimensions (W x H x D): 50 x 69 x 8 mm
- LR-54 battery included
- Countdown function
- Four-digit display up to 99 minutes, 59 seconds
- With magnet on the back
- With power switch on the back for longer battery life

Description	PK	Art. no.
Basic timer	1	7.695 455



#### MECHANICAL TIMER

The LABSOLUTE® mechanical timer has a robust white casing with a white rotary knob and black scale.

- Dimensions (W x H x D): 68 x 68 x 40 mm
- Variable attachment options for mounting or hanging with a sticker that allows the timer to be secured to smooth surfaces
- Available as a 60- or 120-minute timer

Description	PK	Art. no.
Mechanical timer 0–60 min	1	7.695 452
Mechanical timer 0-120 min	1	7.695 451

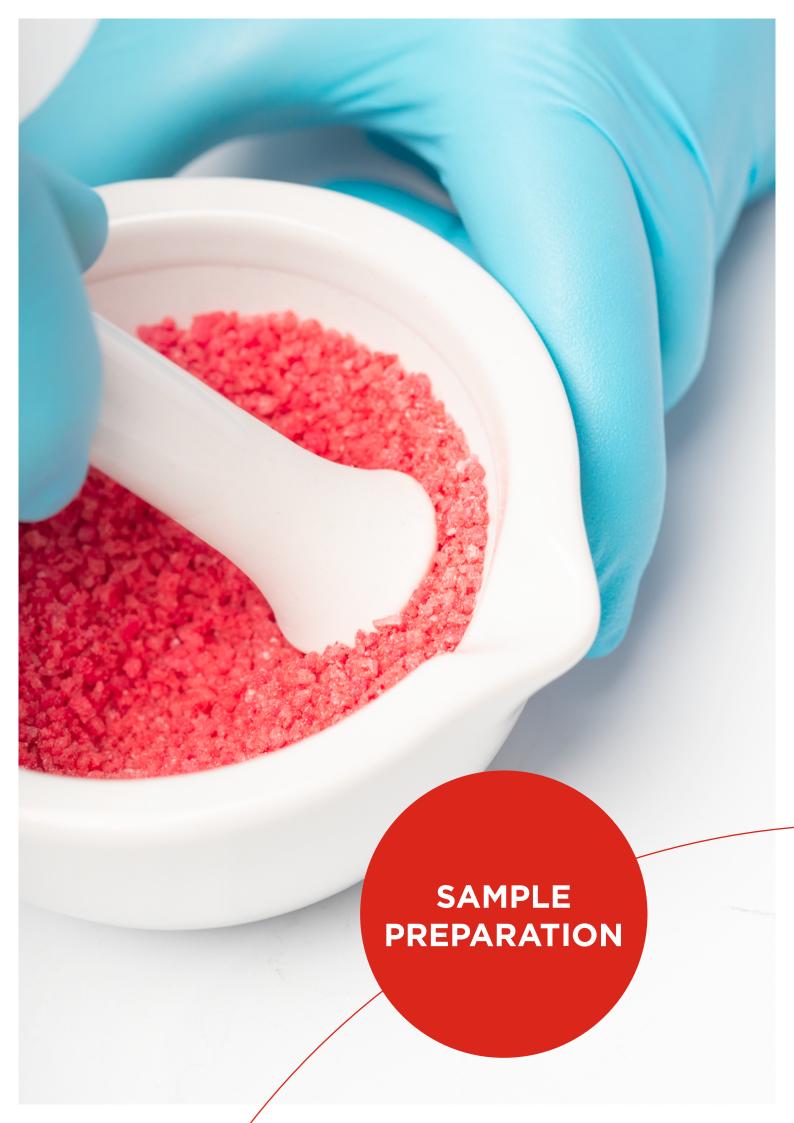


#### ELECTRONIC STOPWATCH WITH DUAL DISPLAY

The LABSOLUTE® dual display stopwatch displays cumulative split time and interval split times simultaneously. The housing made of ABS plastic is waterproof and extremely robust.

- Time and calendar display
- Memory function for up to 30 lap times
- · CR2032 battery included

Description	PK	Art. no.
Electronic stopwatch with dual display	1	7.695 460





#### **MORTARS, PORCELAIN**

The LABSOLUTE® mortars are made of high-quality porcelain and comply with DIN 12906. They are temperature resistant up to 1000 °C. The inner surface and base are unglazed. The rough pounding surface leads to the best possible grinding result.

<b>Capacity</b> ml	<b>Ø</b> mm	<b>Height</b> mm	PK	Art. no.
70	63	41	1	7.694 941
160	90	56	1	7.694 942
400	125	71	1	7.694 943
650	150	90	1	7.694 944
1000	180	104	1	7.694 945
2250	224	127	1	7.694 946

#### **PESTLES, PORCELAIN**

The LABSOLUTE® pestles are made of high-quality porcelain and comply with DIN 12906. They are temperature resistant up to 1000 °C. The pestles have an unglazed head and a glazed handle as well as a rough pounding surface.

Head Ø	Length	РК	Art. no.
mm	mm		
24	115	1	7.694 947
30	135	1	7.694 948
36	150	1	7.694 949
42	175	1	7.694 950
55	210	1	7.694 951
74	250	1	7.694 952
85	280	1	7.694 953

#### **BLENDER BAGS, STERILE, PE**

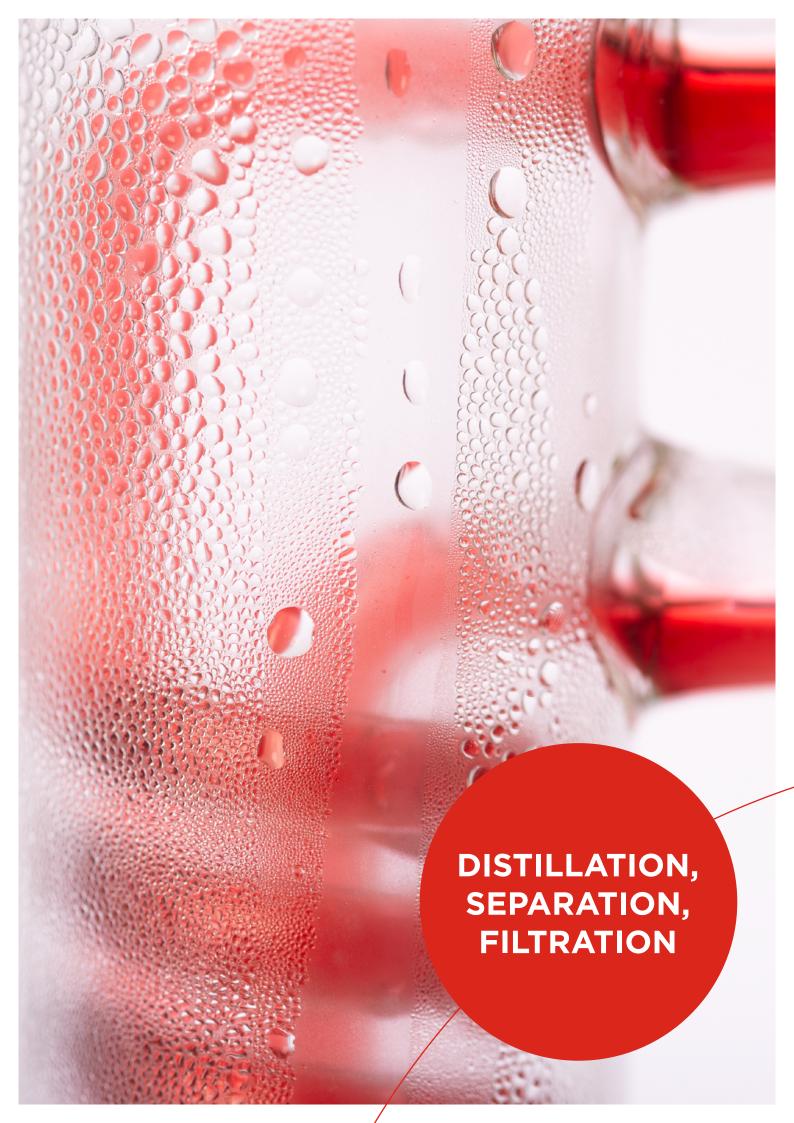
The LABSOLUTE® blender bags made of high-quality pure PE are designed for safe and rapid homogenization of solid samples prior to microbiological and chemical analysis. The homogenising bags can be used in direct contact with food. They are available in three versions: without filter, with side fleece filter with a pore size of <250  $\mu m$  or with a full-page fleece filter with a pore size of <280  $\mu m$ .

- Suitable for all standard 400 ml laboratory homogenizers
- Temperature resistant from -40-100 °C
- Gamma sterile

Description	Dimensions (W x H) mm	РК	Art. no.
Without filter	180 x 300	500	7.696 480
Lateral filter	190 x 300	500	7.696 481
Full page filter	190 x 300	500	7.696 482





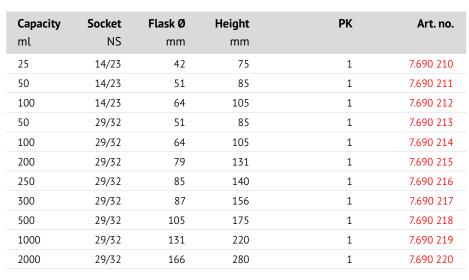


#### **ERLENMEYER FLASKS**

The LABSOLUTE® Erlenmeyer flasks with a durable volume scale are made of high-quality borosilicate glass 3.3 and are therefore extremely temperature-resistant up to 500 °C. The wide-neck and narrow-neck flasks, as well as the flasks with standard ground joint comply with the valid standards. The flasks are resistant to cold lyes/alkaline solutions and strong acids, with the exception of hydrofluoric acid and hot, concentrated phosphoric acid.

## ERLENMEYER FLASKS, WITH STANDARD GROUND JOINT, BOROSILICATE GLASS 3.3

Comply with DIN EN ISO 4797. Without stopper. Compatible with all stoppers with standard ground joint made of glass or plastic.





### **ROUND BOTTOM FLASKS**

LABSOLUTE® round bottom flasks made of high-quality borosilicate glass 3.3 comply with the valid standards. They are available in different volumes and have the common ground joint sizes. All LABSOLUTE® round bottom flasks are characterized by very good chemical and temperature resistance. Because of the round shape, the flasks are ideal for consistent heating of liquids. Due to the standard ground joints, the flasks can be easily combined with other glass labware such as condensers.

## ROUND BOTTOM FLASKS, WITH STANDARD GROUND JOINT, BOROSILICATE GLASS 3.3

Comply with DIN EN ISO 4797.

<b>Capacity</b> ml	<b>Socket</b> NS	Flask Ø mm	<b>Height</b> mm	РК	Art. no.
10	14/23	33	70	1	7.690 100
25	14/23	41	85	1	7.690 101
50	14/23	51	90	1	7.690 102
50	29/32	51	90	1	7.690 103
100	14/23	64	105	1	7.690 104
100	29/32	64	105	1	7.690 105
250	29/32	85	140	1	7.690 106
500	29/32	105	163	1	7.690 107
1000	29/32	131	200	1	7.690 108
2000	29/32	165	240	1	7.690 109



## TWO NECK ROUND BOTTOM FLASKS, SIDE NECK 20°, BOROSILICATE GLASS 3.3

Comply with DIN 12394.

Capacity	Centre neck	Side neck	Flask Ø	Height	PK	Art. no.
ml	NS	NS	mm	mm		
25	14/23	14/23	41	85	1	7.690 130
50	14/23	14/23	51	90	1	7.690 131
100	14/23	14/23	64	105	1	7.690 132
100	29/32	14/23	64	105	1	7.690 133
250	29/32	14/23	85	140	1	7.690 134
500	29/32	14/23	105	163	1	7.690 135
1000	29/32	14/23	131	200	1	7.690 136



# THREE NECK ROUND BOTTOM FLASKS, SIDE NECKS PARALLEL, BOROSILICATE GLASS 3.3

Comply with DIN 12394.

MS 29/32	
<b>⊘</b> LABSOLUTE <sup>®</sup> 500mL	

Capacity	Centre neck	Side neck	Flask Ø	Height	PK	Art. no.
ml	NS	NS	mm	mm		
100	29/32	14/23	64	105	1	7.690 160
250	29/32	14/23	85	140	1	7.690 161
250	29/32	29/32	85	140	1	7.690 170
500	29/32	14/23	105	163	1	7.690 162
500	29/32	29/32	105	163	1	7.690 171
1000	29/32	14/23	131	200	1	7.690 163
1000	29/32	29/32	131	200	1	7.690 172
2000	29/32	14/23	165	240	1	7.690 164
2000	29/32	29/32	165	240	1	7.690 173
3000	29/32	29/32	185	260	1	7.690 174
5000	29/32	29/32	223	305	1	7.690 175

# THREE NECK ROUND BOTTOM FLASKS, SIDE NECKS 20°, BOROSILICATE GLASS 3.3

Comply with DIN 12394.



Capacity	Centre neck	Side neck	Flask Ø	Height	PK	Art. no.
ml	NS	NS	mm	mm		
50	29/32	14/23	51	90	1	7.690 140
100	29/32	14/23	64	105	1	7.690 141
250	29/32	14/23	85	140	1	7.690 142
250	29/32	29/32	85	140	1	7.690 150
500	29/32	14/23	105	163	1	7.690 143
500	29/32	29/32	105	163	1	7.690 151
1000	29/32	14/23	131	200	1	7.690 144
1000	29/32	29/32	131	200	1	7.690 152
2000	29/32	14/23	166	240	1	7.690 145
2000	29/32	29/32	166	240	1	7.690 153

### FLAT BOTTOM FLASKS, WITH STANDARD GROUND JOINT, BOROSILICATE GLASS 3.3

The LABSOLUTE® one neck flat bottom flasks are made of high-quality borosilicate glass 3.3 and therefore extremely temperature-resistant up to 500 °C. The flasks comply with DIN EN ISO 4797. They are resistant to cold lyes/alkaline solutions and strong acids with the exception of hydrofluoric acid and concentrated, hot phosphoric acid. Because of the round shape the flasks are ideal for a consistent heating of liquids. The flat bottom guarantees a secure stand on the lab bench. Due to the standard ground joints, the flasks can be easily combined with other glass labware such as condensers.

<b>Capacity</b> ml	<b>Socket</b> NS	Flask Ø mm	<b>Height</b> mm	РК	Art. no.
50	29/32	51	85	1	7.690 110
100	29/32	64	103	1	7.690 111
250	29/32	85	130	1	7.690 112
500	29/32	105	160	1	7.690 113
1000	29/32	131	187	1	7.690 114
2000	29/32	166	230	1	7.690 115



### PEAR SHAPED FLASKS, WITH STANDARD GROUND JOINT, BOROSILICATE GLASS 3.3

The LABSOLUTE® one neck pear shaped flasks are made of high-quality borosilicate glass 3.3 and therefore extremely temperature-resistant up to 500 °C. The flasks comply with DIN 12383. They are resistant to cold lyes/alkaline solutions and strong acids with the exception of hydrofluoric acid and concentrated, hot phosphoric acid.

<b>Capacity</b> ml	<b>Socket</b> NS	Flask Ø mm	<b>Height</b> mm	PK	Art. no.
10	14/23	31	74	1	7.690 120
25	14/23	42	90	1	7.690 121
50	14/23	51	100	1	7.690 122
50	29/32	51	100	1	7.690 123
100	14/23	64	130	1	7.690 124
100	29/32	64	130	1	7.690 125
250	14/23	85	150	1	7.690 126







The LABSOLUTE® reflux condensers are made of high-quality borosilicate glass 3.3 and comply with the common valid standards. You can choose between condensers according to Allihn, Dimroth and Liebig in several lengths and with different socket and cone connections. The water connection is made via a GL14 screw thread in combination with PP olives or via simple glass olives. All reflux condensers have a very good chemical resistance and a high temperature resistance. You can use our LABSOLUTE® condensers for distillation, chemical synthesis, and many more laboratory applications.

## CONDENSERS ACC. TO ALLIHN, PP OLIVES, BOROSILICATE GLASS 3.3

Comply with DIN 12581. Water connectors with GL14 thread.

Effective length mm	<b>Cone</b> NS	<b>Socket</b> NS	РК	Art. no.
160	29/32	29/32	1	7.690 330
250	29/32	29/32	1	7.690 331
400	29/32	29/32	1	7.690 332



# CONDENSERS ACC. TO DIMROTH, GLASS OLIVES, BOROSILICATE GLASS 3.3

Comply with DIN 12591. Water connectors with glass olives.

Effective length	<b>Cone</b> NS	<b>Socket</b> NS	PK	Art. no.
160	14/23	14/23	1	7.690 310
160	29/32	14/23	1	7.690 311
250	14/23	14/23	1	7.690 312
250	29/32	29/32	1	7.690 313
400	29/32	29/32	1	7.690 314



# CONDENSERS ACC. TO DIMROTH, PP OLIVES, BOROSILICATE GLASS 3.3

Comply with DIN 12591. Water connectors with GL14 thread.

Effective length mm	<b>Cone</b> NS	<b>Socket</b> NS	PK	Art. no.
160	14/23	14/23	1	7.690 300
250	29/32	29/32	1	7.690 301
400	29/32	29/32	1	7.690 302

## CONDENSERS ACC. TO LIEBIG, PP OLIVES, BOROSILICATE GLASS 3.3

Comply with DIN 12576. Water connectors with GL14 thread.

Effective length mm	<b>Cone</b> NS	<b>Socket</b> NS	РК	Art. no.
160	14/23	14/23	1	7.690 350
250	29/32	29/32	1	7.690 351
400	29/32	29/32	1	7.690 352

## CONDENSERS ACC. TO DIMROTH FOR SOXHLET, PP OLIVES, BOROSILICATE GLASS 3.3

The LABSOLUTE® Dimroth condensers for Soxhlet application comply with DIN 12591. Water connectors with GL14 thread.

For volume	Cone	РК	Art. no.
ml	NS		
30	29/32	1	7.690 320
70	34/35	1	7.690 321
100	45/40	1	7.690 322



The LABSOLUTE® GL14 screw caps with PP olive are the ideal and economic spare part for all LABSOLUTE® reflux condensers according to Allihn, Dimroth, and Liebig, that are supplied with such a connection. Due to the additional silicone ring the connection is 100 % tight.

Description	PK	Art. no.
GL14, straight	2	7.690 390

## **EVAPORATING FLASKS, PEAR-SHAPED, BOROSILICATE GLASS 3.3**

The LABSOLUTE® evaporating flasks are made of high-quality borosilicate glass 3.3 and are therefore extremely temperature-resistant up to 500 °C. They are resistant to cold lyes/alkaline solutions and strong acids with the exception of hydrofluoric acid and concentrated, hot phosphoric acid. The pear-shaped flasks are especially designed for the use with all common rotary evaporators.

<b>Capacity</b> ml	Flask Ø mm	<b>Socket</b> NS	PK	Art. no.
100	62	29/32	1	7.690 180
250	83	29/32	1	7.690 181
500	101	29/32	1	7.690 182
1000	128	29/32	1	7.690 183
2000	160	29/32	1	7.690 184









### **SEPARATING FUNNELS ACC. TO SQUIBB**

The LABSOLUTE® separating funnels according to Squibb are made of high-quality borosilicate glass 3.3 and are therefore extremely temperature-resistant up to 500 °C as well as chemical resistant. The funnels are available with and without graduation. They comply with DIN ISO 4800, and are sold including a PTFE stopcock as well as a PE stopper. The chemical resistance mainly depends on the resistance of the PE stopper.

## SEPARATING FUNNELS ACC. TO SQUIBB, BOROSILICATE GLASS 3.3

<b>Capacity</b> ml	<b>Socket</b> NS	<b>Bore</b> mm	РК	Art. no.
50	19/26	2.5	1	7.690 240
100	19/26	2.5	1	7.690 241
250	29/32	4.0	1	7.690 242
500	29/32	4.0	1	7.690 243
1000	29/32	6.0	1	7.690 244
2000	29/32	6.0	1	7.690 245



## SEPARATING FUNNELS ACC. TO SQUIBB, GRADUATED, BOROSILICATE GLASS 3.3

Graduation in white enamel colour.

<b>Capacity</b> ml	<b>Socket</b> NS	<b>Bore</b> mm	PK	Art. no.
50	19/26	2.5	1	7.690 230
100	19/26	2.5	1	7.690 231
250	29/32	4.0	1	7.690 232
500	29/32	4.0	1	7.690 233
1000	29/32	6.0	1	7.690 234
2000	29/32	6.0	1	7.690 235

### **SEPARATING FUNNEL HOLDERS, PP**



The LABSOLUTE® funnel holders are made of PP for all types of laboratory funnels with a diameter up to 150 mm as well as separating funnels. A clamp adapter is provided for use with rods from 8 to 12 mm.

Description	PK	Art. no.
Single	1	7.696 237

## EXPANSION AND REDUCTION ADAPTERS, BOROSILICATE GLASS 3.3

The LABSOLUTE® expansion and reduction adapters are made of high-quality borosilicate glass 3.3. They are the perfect addition, if you want to expand a 14/23 to a 29/32 ground joint or vice versa.

Description	<b>Socket</b> NS	<b>Cone</b> NS	PK	Art. no.
Reduction adapter	14/23	29/32	1	7.690 225
Expansion adapter	29/32	14/23	1	7.690 226



### STOPPERS, HDPE

The white, octagonal LABSOLUTE® stoppers are made of HDPE and comply with DIN 12254. They are the perfect complement to all laboratory glassware with a standard ground joint. The joint sizes 34/35, 45/40 and 60/46 are in addition to the standard.

NS	PK	Art. no.
7/16	1	7.691 081
10/19	1	7.691 082
12/21	1	7.691 083
14/23	1	7.691 084
19/26	1	7.691 085
24/29	1	7.691 086
29/32	1	7.691 087
34/35	1	7.691 088
45/40	1	7.691 089
60/46	1	7.691 090



## HOLLOW GLASS STOPPERS, TYPE C, BOROSILICATE GLASS 3.3

The hexagonal LABSOLUTE® hollow glass stoppers with standard ground joint and pointed bottom are made of high-quality borosilicate glass 3.3 and are therefore extremely temperature-resistant up to 500 °C. The stoppers comply with DIN 12252 form C. They are resistant to cold lyes/alkaline solutions and strong acids with the exception of hydrofluoric acid and concentrated, hot phosphoric acid. The stoppers can be easily combined with all glass products that have a ground joint such as measuring flasks, Erlenmeyer flasks or round bottom flasks.

NS	PK	Art. no.
10/19	1	7.691 091
12/21	1	7.691 092
14/23	1	7.691 093
19/26	1	7.691 094
24/29	1	7.691 095
29/32	1	7.691 096



### **CENTRIFUGE TUBES**

The LABSOLUTE® tubes have very good thermal, mechanical and chemical stability and are made of high-quality PP (equivalent to US pharmacopoeia USP Class VI). Caps are made of PE.

### CENTRIFUGE TUBES, PP

- Centrifugation: conical up to 16000 x g and with rim up to 3000 x g
- Free from DNase and RNase
- Endotoxin level: <0.5 EU/ml
- Gammasterile (SAL 10<sup>-6</sup>)
- Available in bags or racks

Description	<b>Capacity</b> ml	Sterile	<b>Ø</b> mm	<b>Height</b> mm	PK	Art. no.
Conical, in bags	15	No	16	120	500	7.696 712
Conical, separate tubes and caps	15	No	16	120	500	7.696 713
Conical, in bags	15	Yes	16	120	500	7.696 714
Conical, in racks	15	Yes	16	120	500	7.696 715
Conical, in bags	50	No	28	115	500	7.696 717
Conical, separate tubes and caps	50	No	28	115	500	7.696 718
Conical, in bags	50	Yes	28	115	500	7.696 719
Conical, in racks	50	Yes	28	115	300	7.696 720
Self standing, in bags	50	No	28	115	500	7.696 722
Self standing, separate tubes and caps	50	No	28	115	500	7.696 723
Self standing, in bags	50	Yes	28	115	500	7.696 724
Self standing, in bags, red lid	50	Yes	28	115	500	7.696 725





### CENTRIFUGE TUBES, AMBER, PP

The amber centrifuge tubes from LABSOLUTE® are ideal for lightsensitive samples.

- Centrifugation: up to 16000 x g
- Free from DNase and RNase
- Endotoxin level: <0.5 EU/ml
- Gammasterile (SAL 10<sup>-6</sup>)
- Subpackaged: 20 bags with 25 pieces each

<b>Capacity</b> ml	<b>Ø</b> mm	<b>Height</b> mm	PK	Art. no.
15	16	120	500	7.696 716
50	28	115	500	7.696 721

# HIGH PERFORMANCE CENTRIFUGE TUBES, WITH SEALING RING, PP

High performance centrifuge tubes from LABSOLUTE® withstand high centrifugal forces and are leak-proof due to an integrated sealing ring:

- Centrifugation: up to 20000 x g
- Free from DNase and RNase
- Free from endotoxins
- Gammasterile (SAL 10<sup>-6</sup>)

Description	Capacity	Ø	Height	PK	Art. no.
	ml	mm	mm		
Conical, in bags	50	29	114	500	7.696 930



### **EXTRACTION THIMBLES, CELLULOSE**

The LABSOLUTE® extraction thimbles are made of 100% cellulose. They have a high mechanical stability and are free from binders. The extraction thimbles have a wall thickness of about 1 mm and a pore size of approximately 5  $\mu$ m. They are perfect for all kind of Soxhlet extractions as well as for the separation of liquid and solid particles out of air and gases.

Int. diam.	Length	PK	Art. no.
mm	mm		
22	80	25	7.699 210
30	80	25	7.699 211
33	80	25	7.699 212
33	94	25	7.699 213



#### **QUALITATIVE FILTER PAPERS**

The qualitative filter papers are manufactured from pure cellulose with a proportion of alpha-cellulose of almost  $100\,\%$ . The ash content is about  $0.06\,\%$ .

### TECHNICAL DATA

Grade	Description	Particle retention µm	Filtration velocity  S*	<b>Weight</b> g/m²	<b>Thickness</b> mm
2005	Fast filtering	12-15	10	84	0.20
2010	Medium fast filtering	8-12	20	84	0.17
2015	Medium fast/slow filtering	5-8	50	87	0.16
2020	Medium fast/slow filtering	5-13	88	73	0.16
2025	Slow filtering	3-5	100	84	0.15
2030	Very slow filtering	2-3	180	84	0.14
2035	Very slow filtering	2	300	80	0.14

<sup>\*</sup> according to DIN 53137



LABSOLUTE® Laboratory consumables **81** 



Grade 2005, fast filtering, particle retention 12–15  $\mu$ m, filtration speed 10 s complies with DIN 53137, basis weight 84 g/m², thickness 0.20 mm

For large-volume or gel-like deposits (e.g. hydroxides of iron and copper or sulphides of iron and cobalt).

Ø	PK	Art. no.
mm		
42.5	100	7.697 990
55	100	7.697 991
70	100	7.697 992
90	100	7.697 993
110	100	7.697 994
125	100	7.697 995
150	100	7.697 996
185	100	7.697 997
210	100	7.697 998
240	100	7.697 999

### FOLDED FILTERS, QUALITATIVE, GRADE 2005



Grade 2005, fast filtering, particle retention 12–15  $\mu$ m, filtration speed 10 s complies with DIN 53137, basis weight 84 g/m², thickness 0.20 mm

For large-volume or gel-like deposits (e.g. hydroxides of iron and copper or sulphides of iron and cobalt).

Ø	PK	Art. no.
mm		
70	100	7.697 907
90	100	7.697 904
110	100	7.697 905
125	100	7.697 906
150	100	7.697 900
185	100	7.697 901
240	100	7.697 902
320	100	7.697 903



Grade 2010, medium fast filtering, particle retention 8-12  $\mu$ m, filtration speed 20 s complies with DIN 53137, basis weight 84 g/m², thickness 0.17 mm

The most frequently used filter for analytical work, e.g. malt analyses according to EBC, precipitation of silver sulphide, precipitation of chromates (iron, lead, arsenic).

Ø	PK	Art. no.
mm		
42.5	100	7.698 090
55	100	7.698 091
70	100	7.698 092
90	100	7.698 093
110	100	7.698 094
125	100	7.698 095
150	100	7.698 096
185	100	7.698 097
210	100	7.698 098
240	100	7.698 099

### FOLDED FILTERS, QUALITATIVE, GRADE 2010



Grade 2010, medium fast filtering, particle retention 8-12  $\mu$ m, filtration speed 20 s complies with DIN 53137, basis weight 84 g/m², thickness 0.17 mm

The most frequently used filter for analytical work, e.g. malt analyses according to EBC, precipitation of silver sulphide, precipitation of chromates (iron, lead, arsenic).

Ø	PK	Art. no.
mm		
70	100	7.697 865
90	100	7.697 866
110	100	7.697 867
125	100	7.697 860
150	100	7.697 868
185	100	7.697 861
240	100	7.697 862
320	100	7.697 869
500	100	7.697 863
580 x 580	100	7.697 864



Grade 2015, medium to slow filtering, particle retention 5–8  $\mu$ m, filtration speed 50 s complies with DIN 53137, basis weight 87 g/m², thickness 0.16 mm

For fast filtration with fine particles, when the filtration speed plays a minor role.

Ø	PK	Art. no.
mm		
42.5	100	7.697 980
55	100	7.697 981
70	100	7.697 982
90	100	7.697 983
110	100	7.697 984
125	100	7.697 985
150	100	7.697 986
185	100	7.697 987
210	100	7.697 988
240	100	7.697 989

### FOLDED FILTERS, QUALITATIVE, GRADE 2015



Grade 2015, medium to slow filtering, particle retention 5–8  $\mu$ m, filtration speed 50 s complies with DIN 53137, basis weight 87 g/m², thickness 0.16 mm

For fast filtration with fine particles, when the filtration speed plays a minor role.

Ø	PK	Art. no.
mm		
70	100	7.697 899
90	100	7.697 870
110	100	7.697 871
125	100	7.697 872
150	100	7.697 873
185	100	7.697 874
240	100	7.697 875
270	100	7.697 876
320	100	7.697 877
385	100	7.697 878
500	100	7.697 879



Grade 2020, medium to slow filtering, particle retention 5–13  $\mu$ m, filtration speed 88 s complies with DIN 53137, basis weight 73 g/m², thickness 0.16 mm

For fast filtration with fine particles for general, electrolytic application in schools, research, health care, food and cosmetics industry.

Ø	PK	Art. no.
mm		
42.5	100	7.697 970
55	100	7.697 971
70	100	7.697 972
90	100	7.697 973
110	100	7.697 974
125	100	7.697 975
150	100	7.697 976
185	100	7.697 977
210	100	7.697 978
240	100	7.697 979

### FOLDED FILTERS, QUALITATIVE, GRADE 2020



Grade 2020, medium to slow filtering, particle retention 5–13  $\mu$ m, filtration speed 88 s complies with DIN 53137, basis weight 73 g/m², thickness 0.16 mm

For fast filtration with fine particles for general, electrolytic application in schools, research, health care, food and cosmetics industry.

Ø	PK	Art. no.
mm		
70	100	7.699 063
90	100	7.697 889
110	100	7.697 881
125	100	7.697 882
150	100	7.697 883
185	100	7.697 884
240	100	7.697 885
270	100	7.697 886
320	100	7.697 887
385	100	7.697 888



Grade 2025, slow filtering, particle retention 3–5  $\mu$ m, filtration speed 100 s complies with DIN 53137, basis weight 84 g/m², thickness 0.15 mm

For precipitation such as zinc, nickel and tin sulphide, calcium fluoride and calcium hydroxide.

Ø	PK	Art. no.
mm		
42.5	100	7.697 960
55	100	7.697 961
70	100	7.697 962
90	100	7.697 963
110	100	7.697 964
125	100	7.697 965
150	100	7.697 966
185	100	7.697 967
210	100	7.697 968
240	100	7.697 969

### FOLDED FILTERS, QUALITATIVE, GRADE 2025



Grade 2025, slow filtering, particle retention 3–5  $\mu$ m, filtration speed 100 s complies with DIN 53137, basis weight 84 g/m², thickness 0.15 mm

For precipitation such as zinc, nickel and tin sulphide, calcium fluoride and calcium hydroxide.

0	PK	Art. no.
mm		
70	100	7.698 040
90	100	7.698 041
110	100	7.698 042
125	100	7.698 043
150	100	7.698 044
185	100	7.697 853
240	100	7.697 854
320	100	7.698 045



Grade 2030, very slow filtering, particle retention 2–3  $\mu$ m, filtration speed 180 s complies with DIN 53137, basis weight 84 g/m², thickness 0.14 mm

For difficult filtration requirements or very fine precipitates (e.g. barium sulphate, copper oxide, tin oxide).

Ø	PK	Art. no.
mm		
42.5	100	7.697 950
55	100	7.697 951
70	100	7.697 952
90	100	7.697 953
110	100	7.697 954
125	100	7.697 955
150	100	7.697 956
185	100	7.697 957
210	100	7.697 958
240	100	7.697 959

### FOLDED FILTERS, QUALITATIVE, GRADE 2030



Grade 2030, very slow filtering, particle retention 2–3  $\mu$ m, filtration speed 180 s complies with DIN 53137, basis weight 84 g/m², thickness 0.14 mm

For difficult filtration requirements or very fine precipitates (e.g. barium sulphate, copper oxide, tin oxide).

Ø	PK	Art. no.
mm		
70	100	7.698 050
90	100	7.698 051
110	100	7.698 052
125	100	7.698 053
150	100	7.697 855
185	100	7.697 852
240	100	7.698 054
320	100	7.698 055

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Grade 2035, very slow filtering, particle retention 2  $\mu$ m, filtration speed 300 s complies with DIN 53137, basis weight 80 g/m², thickness 0.14 mm

For fine and very fine precipitates, e.g. in sample preparation, beverage industry for residual sugar determination and HPLC.

Ø	PK	Art. no.
mm		
42.5	100	7.699 010
55	100	7.699 011
70	100	7.699 012
90	100	7.699 013
110	100	7.699 014
125	100	7.699 015
150	100	7.699 016
185	100	7.699 017
210	100	7.699 018
240	100	7.699 019

### QUALITATIVE FILTER PAPERS, WET-STRENGTHENED

The wet-strengthened filter papers exhibit a very high degree of mechanical stability. They are resistant against acidic and alkaline solutions and are suitable for pressure and vacuum filtration. The qualitative filter papers are manufactured from pure cellulose with a proportion of alpha-cellulose of almost  $100\,\%$ . The ash content is about  $0.06\,\%$ .

#### **TECHNICAL DATA**

Grade	Description	Particle retention	Filtration velocity	Weight	Thickness
		μm	s*	g/m²	mm
2105	Fast filtering	12-15	10	84	0.20
2110	Medium fast filtering	17-30	22	73	0.17
2115	Medium fast/slow filtering	5-8	50	84	0.15
2130	Very slow filtering	2-3	180	84	0.14

<sup>\*</sup> according to DIN 53137



## CIRCLES, QUALITATIVE, WET STRENGTHENED, GRADE 2105



Grade 2105, fast filtering, particle retention 12–15  $\mu$ m, filtration speed 10 s complies with DIN 53137, basis weight 84 g/m², thickness 0.20 mm, wet strengthened

For large-volume or gel-like deposits (e.g. hydroxides of iron and copper or sulphides of iron and cobalt). Especially high mechanical strength and resistance to acids and alkalis.

0	PK	Art. no.
mm		
42.5	100	7.699 040
55	100	7.699 041
70	100	7.699 042
90	100	7.699 043
110	100	7.699 044
125	100	7.699 045
150	100	7.699 046
185	100	7.699 047
210	100	7.699 048
240	100	7.699 049

## FOLDED FILTERS, QUALITATIVE, WET STRENGTHENED, GRADE 2105



Grade 2105, fast filtering, particle retention 12–15  $\mu$ m, filtration speed 10 s complies with DIN 53137, basis weight 84 g/m², thickness 0.20 mm, wet strengthened

For large-volume or gel-like deposits (e.g. hydroxides of iron and copper or sulphides of iron and cobalt). Especially high mechanical strength and resistance to acids and alkalis.

Ø	PK	Art. no.
mm		
70	100	7.697 898
90	100	7.697 896
110	100	7.697 897
125	100	7.697 890
150	100	7.697 891
185	100	7.697 892
240	100	7.697 893
270	100	7.697 894
320	100	7.697 895

## CIRCLES, QUALITATIVE, WET STRENGTHENED, GRADE 2110



Grade 2110, medium fast filtering, particle retention 17–30  $\mu$ m, filtration speed 22 s complies with DIN 53137, basis weight 73 g/m², thickness 0.17 mm, wet strengthened

For large volume or gel-like precipitation. Especially high mechanical strength and resistance to acids and alkalis.

0	PK	Art. no.
mm		
42.5	100	7.699 020
55	100	7.699 021
70	100	7.699 022
90	100	7.699 023
110	100	7.699 024
125	100	7.699 025
150	100	7.699 026
185	100	7.699 027
210	100	7.699 028
240	100	7.699 029

# FOLDED FILTERS, QUALITATIVE, WET STRENGTHENED, GRADE 2110



Grade 2110, medium fast filtering, particle retention 17–30  $\mu$ m, filtration speed 22 s complies with DIN 53137, basis weight 73 g/m², thickness 0.17 mm, wet strengthened

For large volume or gel-like precipitation. Especially high mechanical strength and resistance to acids and alkalis.

Ø	PK	Art. no.
mm		
70	100	7.697 917
100	100	7.697 910
110	100	7.697 911
130	100	7.697 912
150	100	7.697 913
190	100	7.697 914
250	100	7.697 915
270	100	7.697 918
330	100	7.697 916

## CIRCLES, QUALITATIVE, WET STRENGTHENED, GRADE 2115



Grade 2115, medium to slow filtering, particle retention 5–8  $\mu$ m, filtration speed 50 s complies with DIN 53137, basis weight 84 g/m², thickness 0.15 mm, wet strengthened

For fast filtration with fine particles, when the filtration speed plays a minor role. Especially high mechanical strength and resistance to acids and alkalis.

Ø	PK	Art. no.
mm		
42.5	100	7.698 020
55	100	7.698 021
70	100	7.698 022
90	100	7.698 023
110	100	7.698 024
125	100	7.698 025
150	100	7.698 026
185	100	7.698 027
210	100	7.698 028
240	100	7.698 029

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### **QUANTITATIVE FILTER PAPERS, ASHLESS**

The filter papers for quantitative analyses are made of  $100\,\%$  cotton linters. For maximum purity the papers are acid-washed and cleaned with demineralized water. Ash content is  $0.007\,\%$ .

### TECHNICAL DATA

Grade	Colour code	Description	Particle retention	Filtration velocity	Weight	Thickness
			μm	s*	g/m²	mm
1005	Black ribbon	Fast filtering	12-15	10	84	0.18
1010	White ribbon	Medium fast filtering	8-12	20	84	0.17
1015	Red ribbon	Medium fast/ slow filtering	5-8	50	84	0.16
1020	Green ribbon	Slow filtering	3-5	100	84	0.15
1025	Blue ribbon	Very slow filtering	2-3	180	84	0.14

<sup>\*</sup> according to DIN 53137

# CIRCLES, QUANTITATIVE, BLACK RIBBON EQUIVALENT, GRADE 1005



Grade 1005, fast filtering, particle retention 12–15  $\mu$ m, filtration speed 10 s complies with DIN 53137, basis weight 84 g/m², thickness 0.18 mm

For coarse, voluminous precipitates (e.g. iron, aluminium and chrome hydroxide).

Ø	PK	Art. no.
mm		
42.5	100	7.697 827
55	100	7.697 828
70	100	7.697 820
90	100	7.697 821
110	100	7.697 822
125	100	7.697 823
150	100	7.697 824
185	100	7.697 825
210	100	7.699 050
240	100	7.697 826

## CIRCLES, QUANTITATIVE, WHITE RIBBON EQUIVALENT, GRADE 1010



Grade 1010, medium fast filtering, particle retention 8–12  $\mu$ m, filtration speed 20 s complies with DIN 53137, basis weight 84 g/m², thickness 0.17 mm

For relatively coarse-flaked precipitates (lead, iron, silver sulphides, alkali metal carbonate, lead chromate, arsenic, antimony, cadmium, foodstuffs).

Ø	РК	Art. no.
mm		
42.5	100	7.697 840
55	100	7.697 841
70	100	7.697 842
90	100	7.697 843
110	100	7.697 844
125	100	7.697 845
150	100	7.697 846
185	100	7.697 847
210	100	7.697 848
240	100	7.697 849

## CIRCLES, QUANTITATIVE, RED RIBBON EQUIVALENT, GRADE 1015



Grade 1015, medium to slow filtering, particle retention 5–8  $\mu$ m, filtration speed 50 s complies with DIN 53137, basis weight 84 g/m², thickness 0.16 mm

For fine precipitates (magnesium phosphate, ammonium phosphate, calcium oxalate, coarser flaked forms of barium sulphate).

Ø mm	PK	Art. no.
42.5	100	7.697 818
55	100	7.697 810
70	100	7.697 811
90	100	7.697 812
110	100	7.697 813
125	100	7.697 814
150	100	7.697 815
185	100	7.697 816
210	100	7.699 051
240	100	7.697 817

## CIRCLES, QUANTITATIVE, GREEN RIBBON EQUIVALENT, GRADE 1020



Grade 1020, slow filtering, particle retention 3–5  $\mu$ m, filtration speed 100 s complies with DIN 53137, basis weight 84 g/m², thickness 0.15 mm

For fine-grained precipitates (e.g. lead oxide, calcium fluoride, nickel sulphide, zinc sulphide).

0	PK	Art. no.
mm		
42.5	100	7.697 830
55	100	7.697 831
70	100	7.697 832
90	100	7.697 833
110	100	7.697 834
125	100	7.697 835
150	100	7.697 836
185	100	7.697 837
210	100	7.697 838
240	100	7.697 839

# CIRCLES, QUANTITATIVE, BLUE RIBBON EQUIVALENT, GRADE 1025



Grade 1025, very slow filtering, particle retention 2–3  $\mu$ m, filtration speed 180 s complies with DIN 53137, basis weight 84 g/m², thickness 0.14 mm

For difficult filtration requirements or very fine precipitates (e.g. barium sulphate, copper oxide, tin oxide).

Ø	PK	K Art. no.
mm		
42.5	100	7.697 808
55	100	7.697 809
70	100	7.697 800
90	100	7.697 801
110	100	7.697 802
125	100	7.697 803
150	100	7.697 804
185	100	7.697 805
210	100	7.699 052
320	100	7.697 807
240	100	7.697 806

### **QUANTITATIVE FILTER PAPERS, ASHLESS, WET-STRENGTHENED**

The wet-strengthened filter papers exhibit a very high degree of mechanical stability. They are resistant against acidic and alkaline solutions and are suitable for pressure and vacuum filtration. They are made of 100 % cotton linters. For maximum purity the papers are acid-washed and cleaned with demineralized water. Ash content is 0.007 %.

### **TECHNICAL DATA**

Grade	Description	Particle retention	Filtration velocity	Weight	Thickness
		μm	5	g/m²	mm
1105	Fast filtering	12-15	10	84	0.18
1110	Medium fast filtering	8-12	20	84	0.17
1115	Medium fast/slow filtering	5-8	50	84	0.16
1125	Very slow filtering	2,5	180	84	0.15

<sup>\*</sup> according to DIN 53137



Grade 1105, fast filtering, particle retention 12–15  $\mu$ m, filtration speed 10 s complies with DIN 53137, basis weight 84 g/m<sup>2</sup>, thickness 0.18 mm, wet strengthened

For coarse, voluminous precipitates (e.g. iron, aluminium and chrome hydroxide). Especially high mechanical strength and resistance to acids and alkalis.

Ø	PK	Art. no.
mm		
42.5	100	7.697 940
55	100	7.697 941
70	100	7.697 942
90	100	7.697 943
110	100	7.697 944
125	100	7.697 945
150	100	7.697 946
185	100	7.697 947



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## CIRCLES, QUANTITATIV, WET STRENGTHENED, GRADE 1125



Grade 1125, very slow filtering, particle retention 2.5  $\mu$ m, filtration speed 180 s complies with DIN 53137, basis weight 84 g/m², thickness 0.15 mm, wet strengthened

For difficult filtration requirements or very fine precipitates (e.g. barium sulphate, copper oxide, tin oxide). Especially high mechanical strength and resistance to acids and alkalis.

0	PK	Art. no.
mm		
42.5	100	7.697 921
55	100	7.697 922
70	100	7.697 923
90	100	7.697 924
110	100	7.697 926
125	100	7.697 927
150	100	7.697 928
185	100	7.697 929

### **MICRO GLASS FIBRE FILTERS**

The glass fibre filters from LABSOLUTE® are made of borosilicate glass without binder and are thus biologically inert. The filters provide a high retention power and simultaneously enable elevated flow rates, which makes them applicable for almost every area of laboratory filtration. Among other things, they are used for clarification of protein solutions, air or water monitoring and for gravimetric and waste water analyses. Furthermore, they can be ideally used as prefilters for membranes.



• Temperature-resistant up to 500 °C

• Autoclavable up to 134 °C



Particle retention: 0.7 µm
Thickness: 0.45 mm
Weight: 75 g/m²

110

Ø	PK	Art. no.
mm		
25	100	7.699 900
47	100	7.699 901
70	50	7.699 902
90	25	7.699 903



7.699 904

25

### MICRO GLASS FIBRE FILTERS, MEDIUM FAST FILTERING

Particle retention: 1.2 μm
Thickness: 0.26 mm
Weight: 53 g/m²

Ø mm	РК	Art. no.
25	100	7.699 905
47	100	7.699 906
70	100	7.699 907
90	100	7.699 908
110	100	7.699 909
102 x 254	50	7.699 910



### MICRO GLASS FIBRE FILTERS, FAST FILTERING

Particle retention: 1.6 μm
Thickness: 0.26 mm
Weight: 52 g/m²

0	PK	Art. no.
mm		
25	100	7.699 911
47	100	7.699 912
70	100	7.699 913
90	100	7.699 914
110	100	7.699 915
125	100	7.699 916
150	100	7.699 917

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#### **MEMBRANE FILTERS**

LABSOLUTE® offers a wide selection of membrane filters for microfiltration. Different membrane materials, diameters and pore sizes can be selected. Usage of membrane filters is recommended both for filtration of air and fluid and is optimally suited in particular for retention of very small particles. Precisely defined micro pores and exceeding stability – this combination makes it a good choice for applications in the microbiological sector, as well as in the pharmaceutical, food and water analysis industry.

### CELLULOSE ACETATE MEMBRANE FILTERS, WHITE

Cellulose acetate membranes are characterized by an extraordinary high flow capacity and dimensional stability. The filters have good thermal resistance and can be used in various applications.

- Hydrophilic
- Low protein binding capacity
- Maximum operating temperature: 135 °C
- Non-sterile
- Autoclavable at 121 °C



Ø	Pore size	РК	Art. no.
mm	μm		
47	0.22	100	7.699 920
50	0.22	100	7.699 921
142	0.22	25	7.699 922
47	0.45	100	7.699 925
50	0.45	100	7.699 926
142	0.45	25	7.699 927

### **NITROCELLULOSE MEMBRANE FILTERS**

The uniform pore structure of the LABSOLUTE® nitrocellulose membranes allow high throughput and diffusion rates and guarantee ultrapure and consistent results due to a very low extent of extractables.

- Hydrophilic
- High protein binding capacity
- Maximum operating temperature: 180 °C
- Autoclavable at 121 °C

### NITROCELLULOSE MEMBRANE FILTERS, WHITE

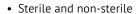
#### • Non-sterile

Ø	Pore size	РК	Art. no.
mm	μm		
25	0.45	100	7.699 930
47	0.45	100	7.699 931
50	0.45	100	7.699 932
142	0.45	25	7.699 933
47	0.80	100	7.699 934
50	0.80	100	7.699 935
47	1.20	100	7.699 936
50	1.20	100	7.699 937
47	8.00	100	7.699 938
50	8.00	100	7.699 939



### NITROCELLULOSE MEMBRANE FILTERS, GRID PATTERN

Membranes featuring a grid pattern are ideally suited for determination of colony count, particle analysis and microscopy. Differently coloured filters guarantee a best possible contrast and easy colony counting.



Ø mm	Pore size µm	Sterile	Membrane colour	PK	Art. no.
50	0.45	No	Black, white grid	100	7.699 942
50	0.45	Yes	White, black grid	100	7.699 946







### REGENERATED CELLULOSE MEMBRANE FILTERS, WHITE

Filters made of regenerated cellulose membrane provide excellent resistance to almost all kinds of organic solvents and high temperatures.

- Hydrophilic
- Low protein binding capacity
- Maximum operating temperature: 134 °C
- Non-sterile
- Autoclavable at 121 °C

Ø	Pore size	PK	Art. no.
mm	μm		
47	0.22	100	7.699 950
47	0.45	100	7.699 951



# POLYCARBONATE TRACK ETCHED (PCTE) MEMBRANE FILTERS, WHITE

PCTE membrane filters are produced in a two-step manufacturing process which complies with high quality standards. The membrane consists of a thin PC film with precisely defined pores ensuring ultrapure and consistent filtration results.

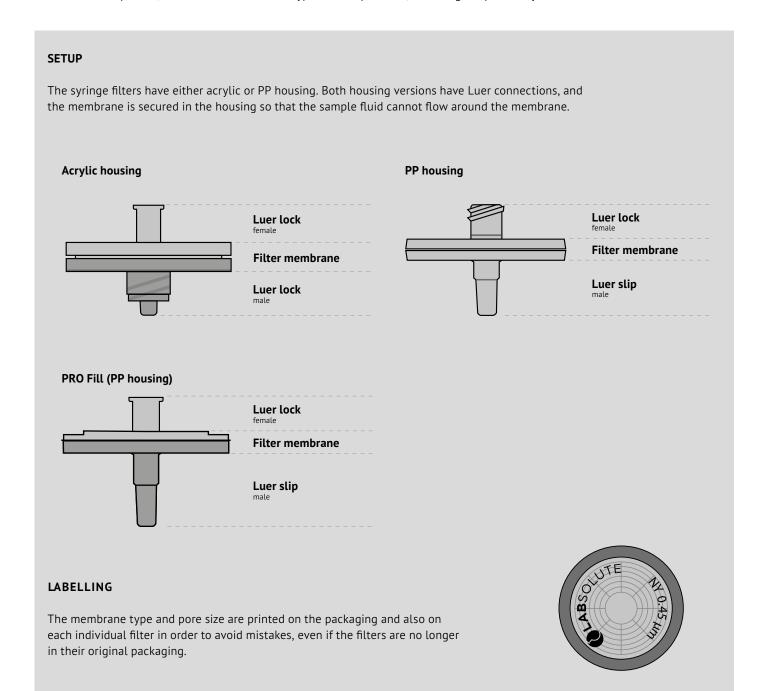
- Hydrophilic
- Low protein binding capacity
- Maximum operating temperature: 140 °C
- Non-sterile
- Autoclavable at 121 °C

Ø	Pore size	РК	Art. no.
mm	μm		
25	0.45	100	7.699 955
47	0.45	100	7.699 956

#### **SYRINGE FILTERS**

LABSOLUTE® offers a comprehensive range of syringe filters that have been developed especially for the efficient filtration of aqueous and organic solutions and for ventilation. The range of different housing diameters, membrane types and pore sizes offers the ideal solution for your applications. Intensive quality checks ensure consistent high quality, both of the membrane material and the filter unit as a whole, for all of the filters we supply.

- Made without the use of adhesives: the housing and membrane are welded
- Sterile versions: 100 % sterility thanks to gamma radiation
- Equipped with Luer connections
- The filters are printed, both with the membrane type and the pore size, excluding the possibility of confusion



### **DISTILLATION, SEPARATION, FILTRATION**



### SYRINGE FILTERS, 13 MM

LABSOLUTE® syringe filters with a filter membrane diameter of 13 mm are ideal for the preparation of small-volume samples in which a very small dead volume is particularly important. The non-sterile filters are packed in pouches, while sterile filters are packaged individually in blisters.

Membrane diameter: 13 mm
Filtering surface: 0.6 cm²
Housing diameter: 18 mm
Pressure rating: 5.0 bar

• Luer connections: acrylic housing with female Luer lock and male Luer lock

Filter material	Sterile	Pore size	Colour	PK	Art. no.
		μm			
Cellulose acetate (CA)	No	0.22	Blue	500	7.699 800
Cellulose acetate (CA)	No	0.45	Yellow	500	7.699 801
Cellulose acetate (CA)	Yes	0.22	Blue	50	7.699 802
Cellulose acetate (CA)	Yes	0.45	Yellow	50	7.699 803



### SYRINGE FILTERS, PROFILL, 17 MM

The colour-coded ring enables easy identification of the filter's membrane type. Furthermore, membrane type and pore size are printed onto the PE bag in which the filters are tamper-proof packed. An additional reclosable PP box offers further protection for the filters during transportation.

Membrane diameter: 17 mm
Filtering surface: 1.33 cm<sup>2</sup>
Housing diameter: 22.3 mm
Pressure rating: 7.9 bar

 $\bullet\,$  Luer connections: PP housing with female Luer lock and male Luer slip



Filter material	Pore size	Colour	PK	Art. no.
	μm			
Nylon (PA)	0.20	Purple	100	7.629 086
Nylon (PA)	0.45	Green	100	7.670 320
Polytetrafluoroethylene (PTFE)	0.20	Blue	100	7.629 127
Polytetrafluoroethylene (PTFE)	0.45	Yellow	100	7.656 547
Regenerated cellulose (RC)	0.20	Grey	100	7.636 877
Regenerated cellulose (RC)	0.45	Brown	100	7.629 480
Glass fibre prefilter/ polyvinylidene difluoride (PVDF)	0.45	Red	100	7.629 934

### SYRINGE FILTERS, 25 MM

LABSOLUTE® syringe filters with a filter membrane diameter of 25 mm are ideal for the preparation of samples with a volume ranging from 1.5 to 100 ml. The non-sterile filters are packed in pouches, while sterile filters are packaged individually in blisters.

Housing diameter: 33 mm
 Membrane diameter: 25 mm
 Filtering surface: 4.6 cm²
 Pressure rating: 5.0 bar

• Luer connections: acrylic housing with female Luer lock and male Luer lock; PP housing with female Luer lock and male Luer slip

Filter material	Housing	Sterile	Pore size µm	Colour	PK	Art. no.
Cellulose acetate (CA)	Acrylic	No	0.22	Blue	500	7.699 820
Cellulose acetate (CA)	Acrylic	No	0.45	Yellow	500	7.699 821
Cellulose acetate (CA)	Acrylic	Yes	0.22	Blue	50	7.699 822
Cellulose acetate (CA)	Acrylic	Yes	0.45	Yellow	50	7.699 823
Nylon (NY)	PP	No	0.20	Transparent	500	7.699 814
Nylon (NY)	PP	No	0.45	Transparent	500	7.699 815
Polyethersulfone (PES)	PP	No	0.22	Transparent	500	7.699 818
Polyethersulfone (PES)	PP	No	0.45	Transparent	500	7.699 819
Polyethersulfone (PES)	PP	Yes	0.22	Transparent	50	7.699 824
Polyvinylidene difluoride (PVDF)	PP	No	0.22	Transparent	500	7.699 816
Polyvinylidene difluoride (PVDF)	PP	No	0.45	Transparent	500	7.699 817
Polytetrafluoroethylene (PTFE)	PP	No	0.20	Transparent	500	7.699 810
Polytetrafluoroethylene (PTFE)	PP	No	0.45	Transparent	500	7.699 811
Regenerated cellulose (RC)	PP	No	0.20	Transparent	500	7.699 812
Regenerated cellulose (RC)	PP	No	0.45	Transparent	500	7.699 813





The colour-coded ring enables easy identification of the filter's membrane type. Furthermore, membrane type and pore size are printed onto the PE bag in which the filters are tamper-proof packed. An additional reclosable PP box offers further protection for the filters during transportation.

• Membrane diameter: 30 mm • Filtering surface: 4.91 cm<sup>2</sup> • Housing diameter: 35.6 mm • Pressure rating: 6.2 bar

• Luer connections: PP housing with female Luer lock and male Luer slip

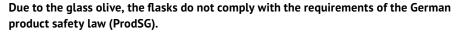




### FILTER FLASKS, WITH GLASS OLIVE, BOROSILICATE GLASS 3.3

The LABSOLUTE® Erlenmeyer shaped filter flasks with glass olive are made of high-quality borosilicate glass 3.3 and comply with ISO 6556 and DIN 12476. Together with the LABSOLUTE® Buchner funnels and suitable rubber gaskets, they form a perfect unit for almost all kinds of filtration applications in chemical laboratories. All LABSOLUTE® filter flasks are autoclavable and, because of their high wall thickness, also vacuum-proof.

We recommend a vacuum tube with an inner diamater of 8 mm to connect the filter flasks to a vacuum pump.



<b>Capacity</b> ml	Neck Ø mm	<b>Height</b> mm	PK	Art. no.
100	17	107	1	7.690 200
250	28	158	1	7.690 201
500	34	188	1	7.690 202
1000	37	242	1	7.690 203
2000	41	288	1	7.690 204



### **RUBBER GASKETS**

The LABSOLUTE® conical gaskets made of grey natural rubber are the ideal seal between a filter flask and a Buchner funnel. The gaskets are available indiviually in eight different sizes with a bottom diameter between 12–66 mm or in a useful set.

### **RUBBER GASKETS**

Description	Top Ø	Bottom Ø	Height	Wall thickness	PK	Art. no.
	mm	mm	mm	mm		
Size 1	21	12.0	18	2.5	1	7.690 091
Size 2	27	17.0	20	3.0	1	7.690 092
Size 3	33	21.0	24	3.0	1	7.690 093
Size 4	41	27.5	27	4.0	1	7.690 094
Size 5	53	33.0	34	5.0	1	7.690 095
Size 6	68	48.0	35	5.5	1	7.690 096
Size 7	78	58.0	35	6.0	1	7.690 097
Size 8	89	66.0	40	6.5	1	7.690 098



### **RUBBER GASKET SET**

The set consists of one gasket each with the following bottom diameters: 12, 17, 21, 27.5, 33, 48, 58 and 66 mm.

Description	PK	Art. no.
Rubber gasket set	1	7.690 099



### **BUCHNER FUNNELS, PORCELAIN**

The LABSOLUTE® Buchner funnels are made of high-quality porcelain and comply with DIN 12905. They are glazed on the inside and outside and are characterized by an excellent resistance to lyes and acids with the exception of hydrofluoric acid.



Int. Ø	Filter Ø	РК	Art. no.
mm	mm		
48	45	1	7.694 954
62	55	1	7.694 955
77	70	1	7.694 956
97	90	1	7.694 957
116	110	1	7.694 958
130	125	1	7.694 959
156	150	1	7.694 960
192	180	1	7.694 961
248	240	1	7.694 962
296	270	1	7.694 963
334	320	1	7.694 964

### FILTER CRUCIBLES, BOROSILICATE GLASS 3.3



The LABSOLUTE® filter crucibles are made of borosilicate glass 3.3 and are therefore extremely resistant against high temperatures and chemicals. The crucibles are autoclavable and can be perfectly used for applications in qualitative analysis and preparative chemistry. The sintered glass filter disc has a porosity of 4 which equals a pore size of  $5-15~\mu m$ .

Capacity	Ø	Porosity	PK	Art. no.
ml	mm			
30	36	4	1	7.699 220
50	44	4	1	7.699 221



#### **CRYO TUBES**

The LABSOLUTE® cryo tubes are designed for optimal storage and preservation of biological sample materials in the gas phase of liquid nitrogen or in deep-freeze devices. The cryo tubes are produced under clean room conditions as defined by ISO 14644-1 Class 8 and US FED STD 209 Class 100000 from high-quality PP.

The integrated sealing surface of the screw caps made of HDPE is innovative and particularly practical. Leaks from the cryo tubes are therefore 100 % excluded – incorrectly positioned O-rings are a thing of the past.

The cryo tubes are available in various sizes and with inner and outer threads.

- Certified sterility through beta irradiation
- Free from human DNA, RNase, DNase, ATP and pyrogens
- Large labelling field
- Simple removal and secure storage: supplied in a handy dispenser box with 10 resealable pouches of 50 cryo tubes

1.2     Self-standing     External     4.13     12.60     500     7.696 6       1.2     Self-standing     Internal     4.25     12.60     500     7.696 6	rt. no.
1.2 Self-standing Internal 4.25 12.60 500 7.696 6	6 650
	6 651
2.0 Self-standing External 4.69 12.60 500 <b>7.696</b> 6	6 652
2.0 Self-standing Internal 4.77 12.60 500 <b>7.696</b> 6	6 653



### **PRODUCT PROPERTIES**





Internal thread



External thread



Self-standing



Graduation



Barcode for unique identification



Large labelling field



Dispenser box

## **COLOURED CAP INSERTS**

The LABSOLUTE® cap inserts are very easy to insert into the screw caps and are used to colour-code your samples.

Colour	PK	Art. no.
Blue	100	7.696 644
White	100	7.696 645
Yellow	100	7.696 646
Purple	100	7.696 647
Red	100	7.696 648
Green	100	7.696 649



## **CRYO BOXES, CARDBOARD**

The LABSOLUTE® cryo boxes are made of cold-resistant cardboard and well suited for cryogenic temperatures.

- Temperature-resistant up to -80 °C
- Lid included
- Delivery without grid insert

## CRYO BOXES, STANDARD, CARDBOARD

The standard cryo boxes have a water repellent finish.

<b>Width</b> mm	<b>Depth</b> mm	Int. height mm	РК	Art. no.
67	134	50	10	7.696 670
136	136	50	10	7.696 671
136	136	100	10	7.696 672
133	133	50	10	7.696 675
133	133	75	10	7.696 676
133	133	100	10	7.696 677



## CRYO BOXES, PLASTIC COATED, CARDBOARD

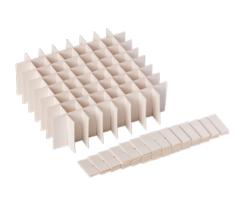
Due to a water-proof plastic coating these cryo boxes are especially durable.



<b>Width</b> mm	<b>Depth</b> mm	<b>Int. height</b> mm	Colour	PK	Art. no.
133	133	32	White	1	7.696 820
133	133	50	White	1	7.696 821
133	133	50	Yellow	1	7.696 822
133	133	50	Green	1	7.696 823
133	133	75	White	1	7.696 824
133	133	100	White	1	7.696 825
136	136	32	White	1	7.696 830
136	136	50	White	1	7.696 831
136	136	50	Yellow	1	7.696 832
136	136	50	Green	1	7.696 833
136	136	75	White	1	7.696 834
136	136	100	White	1	7.696 835

## **GRID INSERTS FOR CRYO BOXES**

Multiple formats and heights allow to combine individually. The inserts are characterized by their freezing-resistant, water-repellent texture.



Array	For cryo box dimensions	Tube Ø	Height	PK	Art. no.
	mm	mm	mm		
10 x 5	134 x 67	11.0	30	10	7.696 687
8 x 4	134 x 67	14.5	30	10	7.696 680
8 x 8	136 x 136	14.5	30	10	7.696 681
9 x 9	136 x 136	14.2	30	10	7.696 682
10 x 10	136 x 136	11.0	30	10	7.696 683
8 x 8	136 x 136	14.5	40	10	7.696 684
9 x 9	136 x 136	14.2	40	10	7.696 685
10 x 10	136 x 136	11.0	40	10	7.696 686
8 x 8	133 x 133	14.0	30	10	7.696 688
9 x 9	133 x 133	11.5	30	10	7.696 689
10 x 10	133 x 133	10.5	30	10	7.696 690
8 x 8	133 x 133	14.0	40	10	7.696 691
9 x 9	133 x 133	11.5	40	10	7.696 692
10 x 10	133 x 133	10.5	40	10	7.696 693

## CRYO BOXES FOR 50 ML AND 15 ML CENTRIFUGE TUBES, CARDBOARD

The white LABSOLUTE® cryo boxes are made of water-repellent and freezing-resistant cardboard and suitable for sample storage up to -80 °C.

- Suitable for 15 and 50 ml centrifuge tubes
- Lid and grid insert included
- Dimensions (W x H x D): 148 x 130 x 148 mm

Array	Tube Ø mm	PK	Art. no.
4 x 4	30.0	5	7.696 678
6 x 6	17.0	5	7.696 679

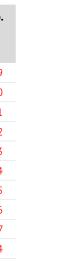


## **CRYO BOXES, PC**

LABSOLUTE® stackable cryo boxes in various designs, colours and sizes offer a handy and space-saving system for storing samples.

- Made of high-quality PC, suitable for temperatures between -196 °C and 121 °C
- Autoclavable at 121 °C for 20 minutes
- Stackable
- Lids and inserts at the top with 45°-angled corners for easier closing
- Transparent lid with white grid sectioning and numbering
- Various versions, sizes and colours available

For tubes	No. of tubes	Colour	Width	Height	Depth	PK	Art. no.
ml			mm	mm	mm		
1.2/2.0	25	Blue	76	52	76	1	7.696 619
1.2/2.0	25	Red	76	52	76	1	7.696 620
1.2/2.0	25	Green	76	52	76	1	7.696 621
1.2/2.0	81	Blue	132	52	132	1	7.696 622
1.2/2.0	81	Red	132	52	132	1	7.696 623
1.2/2.0	81	Green	132	52	132	1	7.696 624
4.0/5.0	81	Blue	132	94	132	1	7.696 625
4.0/5.0	81	Red	132	94	132	1	7.696 626
4.0/5.0	81	Green	132	94	132	1	7.696 627
1.2/2.0	100	Blue	132	52	132	1	7.696 634
1.2/2.0	100	Red	132	52	132	1	7.696 635
1.2/2.0	100	Green	132	52	132	1	7.696 636





Boxes with 100 positions are suitable for tubes with internal thread only  $\ensuremath{\mathsf{I}}$ 

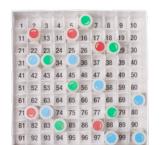


## **CRYO BOXES FOR 5 ML MICRO TUBES, PC**

The LABSOLTUE® cryo boxes are especially suitable for the storage of 5 ml reaction tubes. The boxes are made of high quality PC and provide space for 25 tubes.

- Suitable for temperatures between -196 °C and 121 °C
- With black numbering of the places

Description	PK	Art. no.
For 5 ml micro tubes	4	7.696 643



## **NUMBERING CARDS, CARDBOARD**

The LABSOLUTE® numbering cards made of cardboard facilitate the retrieval of samples. Each storing position is marked by a number and can thus be easily identified. The cards are placed on the bottom of the cryo boxes followed by a partition insert (9  $\times$  9 or 10  $\times$  10) to arrange the samples clearly. Fits in each cryo box with the dimensions (W  $\times$  D) 133  $\times$  133 mm or 136  $\times$  136 mm.

Description	For grid insert	Positions	PK	Art. no.
Numbering cards	9 x 9	81	10	7.696 696
Numbering cards	10 x 10	100	10	7.696 697



#### **CRYO LABELS**

With the help of the different coloured LABSOLUTE® cryo labels, you can clearly mark your cryo boxes. At the same time, you can use the generous labelling field for writing on your boxes. Every packing unit includes 50 labels in five different colours: red, yellow, green, blue and violet.

- Temperature-resistant up to -150 °C on cryo boxes made of cardboard
- Delivery includes one permanent marker

Description	WxH	PK	Art. no.
	mm		
Cryo labels	200 x 40	50	7.696 695

## **CRYO RACKS**

Simple and useful: the LABSOLUTE® cryo racks permit one-handed opening and secure screw closure of tubes. This effectively prevents contamination.



- Available in three different colours
- With rubber feet for secure stand

Colour	PK	Art. no.
Blue	1	7.696 637
Red	1	7.696 638
Green	1	7.696 639



## **MINI COOLERS**

The LABSOLUTE® mini coolers allow effective cooling of reagents and solutions. Mini coolers can be used very conveniently directly on the workbench and impress with a controllable cooling process and reproducible results.

## MINI COOLER 0 °C, PC

The red LABSOLUTE® mini cooler 0 °C made of robust PC is filled with a non-toxic cooling gel. Pre-cool for at least 24 hours at -5 °C to -10 °C before use.

• Maintains the temperature of 0 °C for at least 2 hours

Description	Array	PK	Art. no.
For 15 ml centrifuge tubes	12	1	7.696 220



## MINI COOLERS -20 °C, PC

The yellow LABSOLUTE® mini coolers -20 °C made of robust PC are filled with a non-toxic cooling gel. Pre-cool for at least 24 hours at -20 °C to -25 °C before use.

• Maintains the temperature of -20 °C for at least 1 hour

Description	Array	PK	Art. no.
For 0.5 ml to 1.5 ml micro tubes and cryo tubes	12	1	7.696 221
For 0.5 ml to 2.0 ml micro tubes and cryo tubes	20	1	7.696 222
For 5 ml micro tubes	12	1	7.696 219









LABSOLUTE® offers two effective options for cryo preservation. LABSOLUTE® Precision Freeze for an even, particularly gentle freezing process and LABSOLUTE® Quick Freeze for the rapid cooling of samples.

#### PRECISION FREEZE

Protection against freezing too quickly: the LABSOLUTE® Precision Freeze, made of PC and filled with 100% isopropyl alcohol, guarantees a slow, reproducible freezing process of -1 °C/min. The samples are protected against contact with the isopropyl alcohol thanks to the internal tube holders made of HDPE, and even the labelling of the samples remains undamaged. For thawing, the handy tube holder can also be used as a floating stand in the water bath when thawing the samples.

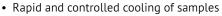
- Constant cooling rate of -1 °C/min
- Stackable container with foam inlay
- Housing made of PC
- Lid and tube holder made of HDPE

Description	Array	PK	Art. no.
For 1.2 ml to 2.0 ml cryo tubes	18	1	7.696 223



#### QUICK FREEZE, PC

A handy alternative to the dry ice solvent bath: the LABSOLUTE $^{\circ}$  Quick Freeze was developed for the rapid cooling of samples – 1.5 ml H $_2$ O, for example, only needs approx. 3 minutes to be cooled down to 0  $^{\circ}$ C. Pre-cool for at least 24 hours at max. -80  $^{\circ}$ C before use.



- Delivery includes 12 adapters for converting the 2.0 ml hole to 0.5 ml tubes
- · Housing and lid made of PC
- Filled with non-toxic insulation solution

Description	Array	PK	Art. no.
For 0.5 ml to 2.0 ml micro tubes and cryo tubes	12	1	7.696 224



## **ICE BUCKETS, PU**

The red LABSOLUTE® ice buckets are made of polyurethane foam and ideal for the cooling of samples, solutions or cultures. The ice buckets have excellent insulating properties and are suitable for use with dry ice, water ice, brine and acetone.

- Extremely robust and light
- With lid

Capacity	Width	Height	Depth	PK	Art. no.
l	mm	mm	mm		
2.5	283	130	283	1	7.696 225
4.5	280	185	280	1	7.696 226



## **COOLING PACK, REUSABLE**

The reusable cooling packs are very handy due to their dimensions (W x H x D) of only  $168 \times 24 \times 85$  mm and their weight of 260 g. They can be used for all laboratory and transport applications. The packs are delivered filled, welded, and can be used several times. The cooling packs can be ordered individually or in cartons of 50 pieces for larger requirements. They can be used in direct contact with food according to Directive 2005/79/EU and Regulation (EU) 10/2011.

Description	PK	Art. no.
Cooling pack, reusable	1	7.696 210



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## MEASURING AND MIXING CYLINDERS, BOROSILICATE GLASS 3.3

All LABSOLUTE $^{\circ}$  measuring and mixing cylinders made of borosilicate glass 3.3 comply with DIN EN ISO 4788. They are calibrated to "In" (20  $^{\circ}$ C) and have a solid hexagonal glass base for a secure stand.

## MEASURING CYLINDERS, HIGH FORM, CLASS A, BLUE GRADUATION

With functional spout and batch number. A batch-specific certificate of conformity is available on request.

<b>Capacity</b> ml	<b>Grad.</b> ml	<b>Tolerance</b> ± ml	<b>Height</b> mm	PK	Art. no.
5	0.1	0.05	115	1	7.691 000
10	0.2	0.1	135	1	7.691 001
25	0.5	0.25	160	1	7.691 002
50	1	0.5	195	1	7.691 003
100	1	0.5	240	1	7.691 004
250	2	1.0	320	1	7.691 005
500	5	2.5	380	1	7.691 006
1000	10	5.0	465	1	7.691 007
2000	20	10.0	565	1	7.691 008

# MEASURING CYLINDERS, HIGH FORM, CLASS B, WHITE GRADUATION

With functional spout.

<b>Capacity</b> ml	<b>Grad.</b> ml	<b>Tolerance</b> ± ml	<b>Height</b> mm	PK	Art. no.
5	0.1	0.1	115	1	7.691 160
10	0.2	0.2	140	1	7.691 161
25	0.5	0.5	170	1	7.691 162
50	1	1	200	1	7.691 163
100	1	1	260	1	7.691 164
250	2	2	335	1	7.691 165
500	5	5	390	1	7.691 166
1000	10	10	470	1	7.691 167
2000	20	20	570	1	7.691 168



Accuracy classes and error limits are listed on page 144





## MEASURING CYLINDERS, LOW FORM, CLASS B, AMBER GRADUATION

With functional spout.

<b>Capacity</b> ml	<b>Grad.</b> ml	<b>Tolerance</b> ± ml	<b>Height</b> mm	PK	Art. no.
10	1	0.3	97	1	7.691 010
25	1	0.5	120	1	7.691 011
50	1	1.0	145	1	7.691 012
100	2	1.0	165	1	7.691 013
250	5	2.0	215	1	7.691 014
500	10	5.0	250	1	7.691 015
1000	20	10.0	290	1	7.691 016
2000	50	20.0	340	1	7.691 017



## **MEASURING CYLINDERS, PP & PMP**

All LABSOLUTE $^{\circ}$  measuring cylinders made of PP or fully transparent PMP comply with DIN 12681 and ISO 6706. They are calibrated to "In" (20  $^{\circ}$ C), have a solid hexagonal base for a secure stand, an embossed scale, as well as a functional spout.

## MEASURING CYLINDERS, HIGH FORM, CLASS A, PMP

Dishwasher-proof and autoclavable. A batch-specific certificate of conformity is available on request.

Even after repeated autoclaving at 121 °C according to DIN EN ISO 285 the tolerances of class A are still maintained. Cleaning at max. 60 °C and the use of soft cleaning agents is recommended to preserve the embossed scale.

<b>Capacity</b> ml	<b>Grad.</b> ml	<b>Tolerance</b> ± ml	<b>Height</b> mm	PK	Art. no.
25	0,5	0.25	170	1	7.693 110
50	1	0.5	200	1	7.693 111
100	1	0.5	250	1	7.693 112
250	2	1	325	1	7.693 113
500	5	2.5	388	1	7.693 114
1000	10	5	459	1	7.693 115
2000	20	10	533	1	7.693 116





## MEASURING CYLINDERS, HIGH FORM, CLASS B, PP

<b>Capacity</b> ml	<b>Grad.</b> ml	<b>Tolerance</b> ± ml	<b>Height</b> mm	PK	Art. no.
10	0.2	0.2	147	1	7.693 100
25	0.5	0.5	170	1	7.693 101
50	1	1	200	1	7.693 102
100	1	1	250	1	7.693 103
250	2	2	327	1	7.693 104
500	5	5	389	1	7.693 105
1000	10	10	458	1	7.693 106
2000	20	20	534	1	7.693 107

## MEASURING AND MIXING CYLINDERS, BOROSILICATE GLASS 3.3

All LABSOLUTE $^{\circ}$  measuring and mixing cylinders made of borosilicate glass 3.3 comply with DIN EN ISO 4788. They are calibrated to "In" (20  $^{\circ}$ C) and have a solid hexagonal glass base for a secure stand.

## MIXING CYLINDERS, CLASS A, WITH PP STOPPER, BLUE GRADUATION

With standard ground joint and batch number. Delivered with a suitable PP stopper. A batch-specific certificate of conformity is available on request.

<b>Capacity</b> ml	<b>Grad.</b> ml	<b>Joint size</b> NS	<b>Height</b> mm	PK	Art. no.
10	0.1	10/19	137	1	7.691 120
25	0.2	14/23	167	1	7.691 121
50	1.0	19/26	195	1	7.691 122
100	1.0	24/29	257	1	7.691 123
250	2.0	29/32	330	1	7.691 124
500	5.0	34/35	385	1	7.691 125
1000	10.0	45/40	460	1	7.691 126
2000	20.0	45/40	565	1	7.691 127





Accuracy classes and error limits are listed on page 144

## **VOLUMETRIC FLASKS**

All LABSOLUTE® clear and amber volumetric flasks with accuracy class A comply with DIN EN ISO 1042. They are made of high-quality borosilicate glass 3.3 and calibrated to "In" (20 °C). All volumetric flasks are supplied with suitable stoppers made of glass or PE. A batch-specific certificate of conformity can be supplied on request.

## VOLUMETRIC FLASKS, CLASS A, WITH PE STOPPER, BLUE GRADUATION

5       7/16       0.025       1       7.691 036         5       10/19       0.040       1       7.691 020         10       7/16       0.025       1       7.691 033         10       10/19       0.040       1       7.691 021         20       10/19       0.040       1       7.691 022         20       12/21       0.060       1       7.691 034         25       10/19       0.040       1       7.691 023         25       12/21       0.060       1       7.691 023         50       12/21       0.060       1       7.691 024         50       14/23       0.100       1       7.691 025         100       12/21       0.100       1       7.691 025         100       14/23       0.100       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 032	<b>Capacity</b> ml	<b>Joint size</b> NS	<b>Tolerance</b> ± ml	PK	Art. no.
10       7/16       0.025       1       7.691 033         10       10/19       0.040       1       7.691 021         20       10/19       0.040       1       7.691 022         20       12/21       0.060       1       7.691 034         25       10/19       0.040       1       7.691 023         25       12/21       0.060       1       7.691 035         50       12/21       0.060       1       7.691 024         50       14/23       0.100       1       7.691 025         100       12/21       0.100       1       7.691 026         100       14/23       0.150       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	5	7/16	0.025	1	7.691 036
10       10/19       0.040       1       7.691 021         20       10/19       0.040       1       7.691 022         20       12/21       0.060       1       7.691 034         25       10/19       0.040       1       7.691 023         25       12/21       0.060       1       7.691 035         50       12/21       0.060       1       7.691 024         50       14/23       0.100       1       7.691 025         100       12/21       0.100       1       7.691 026         100       14/23       0.100       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	5	10/19	0.040	1	7.691 020
20       10/19       0.040       1       7.691 022         20       12/21       0.060       1       7.691 034         25       10/19       0.040       1       7.691 023         25       12/21       0.060       1       7.691 035         50       12/21       0.060       1       7.691 024         50       14/23       0.100       1       7.691 025         100       12/21       0.100       1       7.691 026         100       14/23       0.100       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	10	7/16	0.025	1	7.691 033
20       12/21       0.060       1       7.691 034         25       10/19       0.040       1       7.691 023         25       12/21       0.060       1       7.691 035         50       12/21       0.060       1       7.691 024         50       14/23       0.100       1       7.691 025         100       12/21       0.100       1       7.691 026         100       14/23       0.100       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	10	10/19	0.040	1	7.691 021
25       10/19       0.040       1       7.691 023         25       12/21       0.060       1       7.691 035         50       12/21       0.060       1       7.691 024         50       14/23       0.100       1       7.691 025         100       12/21       0.100       1       7.691 026         100       14/23       0.100       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	20	10/19	0.040	1	7.691 022
25       12/21       0.060       1       7.691 035         50       12/21       0.060       1       7.691 024         50       14/23       0.100       1       7.691 025         100       12/21       0.100       1       7.691 026         100       14/23       0.100       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	20	12/21	0.060	1	7.691 034
50       12/21       0.060       1       7.691 024         50       14/23       0.100       1       7.691 025         100       12/21       0.100       1       7.691 026         100       14/23       0.100       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	25	10/19	0.040	1	7.691 023
50       14/23       0.100       1       7.691 025         100       12/21       0.100       1       7.691 026         100       14/23       0.100       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	25	12/21	0.060	1	7.691 035
100       12/21       0.100       1       7.691 026         100       14/23       0.100       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	50	12/21	0.060	1	7.691 024
100       14/23       0.100       1       7.691 027         200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	50	14/23	0.100	1	7.691 025
200       14/23       0.150       1       7.691 028         250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	100	12/21	0.100	1	7.691 026
250       14/23       0.150       1       7.691 029         500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	100	14/23	0.100	1	7.691 027
500       19/26       0.250       1       7.691 030         1000       24/29       0.400       1       7.691 031         1000       29/32       0.600       1       7.691 037	200	14/23	0.150	1	7.691 028
1000     24/29     0.400     1     7.691 031       1000     29/32     0.600     1     7.691 037	250	14/23	0.150	1	7.691 029
1000 29/32 0.600 1 7.691 037	500	19/26	0.250	1	7.691 030
	1000	24/29	0.400	1	7.691 031
2000 29/32 0.600 1 7.691 032	1000	29/32	0.600	1	7.691 037
	2000	29/32	0.600	1	7.691 032



# VOLUMETRIC FLASKS, CLASS A, WITH HOLLOW GLASS STOPPER, BLUE GRADUATION

<b>Capacity</b> ml	Joint size	<b>Tolerance</b> ± ml	PK	Art. no.
5	10/19	0.040	1	7.691 100
10	10/19	0.040	1	7.691 101
20	10/19	0.040	1	7.691 102
25	10/19	0.040	1	7.691 103
50	14/23	0.100	1	7.691 104
100	14/23	0.100	1	7.691 105
200	14/23	0.150	1	7.691 106
250	14/23	0.150	1	7.691 107
500	19/26	0.250	1	7.691 108
1000	24/29	0.400	1	7.691 109
2000	29/32	0.600	1	7.691 110





# VOLUMETRIC FLASKS, AMBER, CLASS A, WITH PE STOPPER, WHITE GRADUATION

Ideal for light-sensitive samples.

<b>Capacity</b> ml	<b>Joint size</b> NS	<b>Tolerance</b> ± ml	РК	Art. no.
5	10/19	0.040	2	7.691 070
10	7/16	0.025	2	7.691 180
10	10/19	0.040	2	7.691 071
20	10/19	0.040	2	7.691 072
25	10/19	0.040	2	7.691 073
50	14/23	0.100	2	7.691 074
100	14/23	0.100	2	7.691 075
200	14/23	0.150	2	7.691 076
250	14/23	0.150	2	7.691 077
500	19/26	0.250	2	7.691 078
1000	24/29	0.400	2	7.691 079
2000	29/32	0.600	1	7.691 080

# VOLUMETRIC FLASKS, TRAPEZOIDAL, CLASS A, WITH PE STOPPER, BLUE GRADUATION

<b>Capacity</b> ml	<b>Joint size</b> NS	<b>Tolerance</b> ± ml	РК	Art. no.
1	7/16	0.025	1	7.691 130
2	7/16	0.025	1	7.691 131
5	10/19	0.04	1	7.691 132
10	10/19	0.04	1	7.691 133
20	10/19	0.04	1	7.691 134
25	10/19	0.04	1	7.691 135
50	12/21	0.06	1	7.691 136



#### **GRADUATED AND VOLUMETRIC PIPETTES**

The LABSOLUTE® graduated and volumetric pipettes are made of soda-lime glass and have a batch identification. A batch-specific certificate of conformity is available on request.

#### Calibration

The graduated and volumetric pipettes are calibrated to "Ex" (+5 seconds) so that the draining volume of liquid corresponds to the printed volume specification after five seconds.

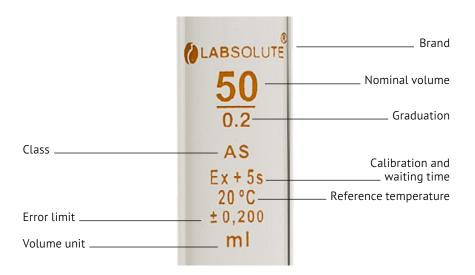
#### **Accuracy class AS**

All LABSOLUTE® graduated and volumetric pipettes satisfy the criteria of the highest accuracy class A. The tolerance lies within the standard defined for class A. The suffix "S" means rapid draining. The draining time is between 5 and 20 seconds, depending on the nominal volume, as opposed to 10 to 60 seconds with class A.

#### **Durable labelling**

All information is imprinted in brown diffusion dye. This dye is burned into the surface of the glass and can only be destroyed by glass erosion. The inscription is therefore unaffected by chemicals and cleaning agents.

## IDENTIFICATION OF LABSOLUTE® GRADUATED AND VOLUMETRIC PIPETTES





# VOLUMETRIC PIPETTES, CLASS AS, 1 MARK, AMBER GRADUATION

Comply with DIN EN ISO 648. 3, 4 and 15 ml in addition to DIN EN ISO 648.

<b>Volume</b> ml	<b>Length</b> mm	Colour code	PK	Art. no.
1	350	Blue	6	7.691 040
2	330	Orange	6	7.691 041
3	360	Black	6	7.691 042
4	360	Red stripes	6	7.691 048
5	400	White	6	7.691 043
10	440	Red	6	7.691 044
15	455	Green	3	7.691 049
20	510	Yellow	3	7.691 045
25	520	Blue	3	7.691 046
50	540	Red	3	7.691 047
100	585	Yellow	3	7.691 057

# GRADUATED PIPETTES, CLASS AS, TYPE 3, AMBER GRADUATION

Comply with DIN EN ISO 835.

<b>Capacit</b> y ml	y <b>Length</b> mm	Colour code	<b>Graduation</b> ml	PK	Art. no.
1	360	Yellow	0.01	6	7.691 050
2	360	Black	0.02	6	7.691 051
5	360	Red	0.05	6	7.691 052
10	360	Orange	0.10	6	7.691 053
20	360	Yellow stripes	0.10	3	7.691 054
25	450	White	0.10	3	7.691 055
50	450	Black	0.20	3	7.691 056

Length ± 10 mm



Accuracy classes and error limits are listed on page 144



## **PASTEUR PIPETTES, LDPE**

The LABSOLUTE® Pasteur pipettes made of transparent LDPE guarantee a comfortable and safe handling of fluids. Due to the constant drop volume the transfer pipettes are perfectly suited to aliquot larger volumes of liquids. The soft suction ball and precisely finished tip guarantee pleasant, clean working.

- Can be used in direct contact with food
- Free of BSE

Capacity	Sterile	Package	Length	Grad.	Drop volume	PK	Art. no.
ml			mm	ml	ml		
1	No	Bulk	154	0.25	0.040	500	7.691 200
1	Yes	Individually, blistered	154	0.25	0.040	500	7.691 201
1	Yes	Packed per 10 pcs., blistered	154	0.25	0.040	500	7.691 206
3	No	Bulk	154	0.5	0.040	500	7.691 202
3	Yes	Individually, blistered	154	0.5	0.040	500	7.691 203
3	Yes	Packed per 10 pcs., blistered	154	0.5	0.040	500	7.691 207
10	No	Bulk	170	-	0.056	200	7.691 204
10	No	Bulk	300	-	0.045	100	7.691 205

## **PASTEUR PIPETTES, SODA-LIME GLASS**

The LABSOLUTE® Pasteur pipettes made of soda-lime glass with elongated, fine tips, are designed for single use. There is a narrowing at the end of the suction tube that guarantees secure positioning of a cotton wool ball. The pipettes have a volume of about 2 ml independent of their length.

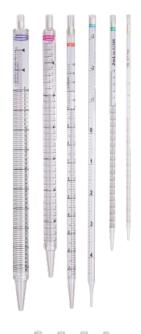
Length	Capillary-Ø	Outer suction tube-Ø	PK	Art. no.
mm	mm	mm		
150	1.1	7.1	1000	7.691 060
230	1.1	7.1	1000	7.691 061

## **PIPETTE TEATS, NATURAL RUBBER**

The transparent LABSOLUTE® pipette teats are made of latex. The soft material makes handling them especially easy. The pipette teats are suitable for use with Pasteur pipettes made of soda-lime glass in 150 and 230 mm lengths.

Description	PK	Art. no.
Pipette teats, natural rubber	100	7.691 310





## SEROLOGICAL PIPETTES, STERILE, PS

The standard serological pipettes from LABSOLUTE® are individually packaged in an easy-to-open paper/plastic blister.

<b>Capacity</b> ml	<b>Grad.</b> ml	Colour	<b>Negative</b> <b>grad.</b> ml	PK	Art. no.
1	1/100	Yellow	0.3	500	7.695 550
2	1/100	Green	0.6	500	7.695 551
5	1/10	Blue	3	200	7.695 552
10	1/10	Orange	3	200	7.695 553
25	2/10	Red	8	150	7.695 554
50	5/10	Purple	10	100	7.695 555



## SEROLOGICAL PIPETTES, STERILE, PS, BULK

The sterile serological pipettes from LABSOLUTE® are now also available in practical bulk packaging. The pipettes are supplied in vacuum bags of 25 pieces (for 2, 5 and 10 ml) or 10 pieces (for 25 ml).

Capacity	Grad.	Colour	Negative grad.	PK	Art. no.
ml	ml		ml		
2	1/100	Green	0.6	1000	7.695 564
5	1/10	Blue	3	500	7.695 565
10	1/10	Orange	3	400	7.695 566
25	2/10	Red	8	150	7.695 567



## SEROLOGICAL PIPETTES, SHORT VERSION, STERILE, PS

The short version of the serological pipettes from LABSOLUTE® with 23.5 cm is significantly shorter than the normal pipette. It is specially designed for liquid handling operation in limited working spaces and ensures a comfortable and safe working.

<b>Capacity</b> ml	<b>Grad.</b> ml	Colour	<b>Negative</b> <b>grad.</b> ml	PK	Art. no.
5	1/10	Blue	3	200	7.695 556
10	2/10	Orange	10	150	7.695 557
25	5/10	Red	9	100	7.695 558

## **DEMETER PIPETTES, STERILE, PS**

The LABSOLUTE® Demeter pipettes are special serological pipettes for milk analysis to create dilution series for bacteriological tests. The Demeter pipettes made of crystal-clear PS are supplied packed in vacuum bags with 25 pieces each.

- Free of DNase, RNase and pyrogens
- Not cytotoxic
- Gamma sterilized (SAL 10<sup>-6</sup>)

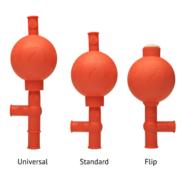
Volume	Grad.	PK	Art. no.
ml	ml		
1.1	1/50	1000	7.695 570



The red LABSOLUTE® safety pipette fillers Universal, Standard and Flip, made of natural rubber are the perfect complement for the LABSOLUTE® graduated and volumetric pipettes as well as all other graduated, volumetric and serological pipettes.

Especially the version Flip with its integrated automatic valve and only two operating points is very easy to handle.

Description	PK	Art. no.
Universal	1	7.691 068
Standard	1	7.691 069
Flip	1	7.691 067



## PIPETTE STAND, VERTICAL, 94 POSITIONS, PP

The vertical, turnable LABSOLUTE® pipette stand made of PP with 94 positions of different sizes is the best choice for space-saving and secure storage of your graduated and volumetric pipettes. The pipette stand is autoclavable at 121 °C and has a solid base and an additional rotating plate to protect the pipette tips.

Description	PK	Art. no.
Pipette stand, vertical, 94 positions	1	7.695 718



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#### **PIPETTE STAND**

The LABSOLUTE® pipette stand is the ideal laboratory aid to keep the pipettes securely and within easy reach at all times. Differences in size or model of the pipettes do not matter.

- Convenient storage of up to eight single or multichannel pipettes
- · Easy to clean
- Non-rotatable

Description	PK	Art. no.
Pipette stand	1	7.695 717



## PIPETTE STAND WITH DUAL BINS FOR PIPETTE TIPS, ACRYLIC

This acrylic LABSOLUTE® pipette rack keeps the pipettes and tips together in one convenient stand. Up to four pipettes can be stored within the provided openings. The dual reservoirs offer space for different sizes of pipette tips which can easily be taken out even while wearing gloves. The transparent lid allows for dust-free storage of the tips. Universally compatible with different pipette models.

• Dimensions (W x H x D): 244 x 246 x 165 mm

Description	PK	Art. no.
Pipette stand with dual bins for pipette tips	1	7.695 716

## **REAGENT RESERVOIRS, PS**

The white LABSOLUTE® solution reservoirs made of PS for multichannel pipettes offer several advantages. The bottom features a narrow trough to aid full sample recovery. The inside walls have graduation marks which enable you to determine the fluid level. Furthermore, the basins have thicker walls and thus are very stable. A special shaping prevents the reservoirs from sticking together. Last but not least, the spouts guarantee a safe transfer of fluid.



#### • Non-sterile

Dimensions W x H x D	PK	Art. no.
mm		
140 x 24 x 61	100	7.695 725
143 x 32 x 83	100	7.695 726
	W x H x D mm 140 x 24 x 61	W x H x D mm 140 x 24 x 61 100

#### **PIPETTE CONTROLLER**

Pipetting made easy – the wireless LABSOLUTE® Pipette assistant ensures comfortable working with glass and plastic pipettes (0.1–100 ml).

- Effortless pipetting thanks to the ergonomic grip and smooth-running buttons
- · Simple operation with one hand
- High working speed: a 25 ml pipette is filled in less than four seconds
- Extremely quiet and powerful motor with three speed settings
- The charging device prevents overloading or heating of the battery
- Exchangeable membrane filters protect the device mechanism against contamination
- Differently coloured autoclavable cones allow customization

#### **Specifications:**

- Volume range: 0.1 to 100 ml
- Power supply: 2 x 1.2 V/ 1,000 mAh NiMH rechargeable batteries
- Battery life: 8 hours continuous operation
- Battery charging time: 2 to 3 hours

The supplied package includes charger, batteries, desktop stand, wall mount bracket and two spare membrane filters (PTFE 0.2  $\mu$ m, PTFE 0.45  $\mu$ m). You will also receive three differently coloured pipette holder cones (blue, green and orange). Accessories can be ordered separately if required.

Description	PK	Art. no.
Pipette controller with accessories	1	7.696 030



## **MOLECULAR SIEVE**

The spherical molecular sieves from CHEMSOLUTE® made of metal aluminosilicate are suitable for drying as well as for cleaning or separating liquids and gases.

- Particle size 3-5 mm
- Regeneration temperature 300 °C

Form	Package	Quantity	PK	Art. no.
		kg		
0,3 nm (3 A)	Plastic bottle	0.25	1	1433.0250
0,3 nm (3 A)	Plastic bottle	1	1	1433.1000
0,4 nm (4 A)	Plastic bottle	0.25	1	1444.0250
0,4 nm (4 A)	Plastic bottle	1	1	1444.1000



#### **MICROLITRE PIPETTES**

Ergonomical and lightweight: the LABSOLUTE® range of microlitre pipettes offers models in various volumes with one, eight and twelve channels. The pipettes boast extreme precision and accuracy whilst being superbly convenient. They are perfectly suitable for long-term use in all laboratory applications and facilitate fatigue-free working. The calibration tool included in the scope of delivery allows easy recalibration.

#### Double volume adjustment

The push button or the thumbwheel can be used to adjust the volume. This makes the adjustment process especially comfortable.

#### Soft-spring system

Easy-running, soft pipetting minimizes the exertion required and adds comfort to everyday laboratory practices.

#### Easy-to-read volume display

The display has a vertical structure. As a result, there is no need to rotate the pipette to read off the set volume – an additional comfort that makes work easier.

#### Colour coding

For easy identification of the pipette's volume range the push buttons are colour-coded.

#### High-quality materials

- Stable shaft
- UV-resistant
- Autoclavable at 121 °C



#### SINGLE-CHANNEL PIPETTES

User-friendliness and superlative quality make the LABSOLUTE® single-channel pipettes the perfect instrument for your laboratory. The colour coding on the push button allows the volume range of the pipettes to be recognized at a glance.

#### **Easy customisation**

The pack contains seven coloured rings (in red, white, yellow, black, pink, violet and green). These allow to mark the pipette and thereby visually assign them at a glance.

#### Stable shaft

The high-quality material ensures particular stability and longevity for the pipettes, even in high-use situations.

#### Contamination-free working

The pipettes in the larger volume range (7.695 706 and 7.695 707) have an exchangeable sterile filter in the shaft which protects against cross-contamination and must be removed before autoclaving. All other models are fully autoclavable at 121 °C.

<b>Volume range</b> μl	Colour code	<b>Grad.</b> μl	PK	Art. no.
0.1-2	White	0.002	1	7.695 700
0.5-10	White	0.02	1	7.695 701
2-20	Yellow	0.02	1	7.695 702
10-100	Yellow	0.2	1	7.695 703
20-200	Yellow	0.2	1	7.695 704
100-1000	Blue	2.0	1	7.695 705
500-5000	White	10	1	7.695 706
1000-10000	White	20	1	7.695 707

## **ACCESSORIES FOR SINGLE-CHANNEL PIPETTES**

Description	PK	Art. no.
Shaft filters for 7.695 706 and 7.695 707	10	7.695 719

## SINGLE-CHANNEL PIPETTE STARTER SETS

The LABSOLUTE® starter sets offer a handy, inexpensive and uniform all-in-one solution. The sets contain three pipettes each and a rack of pipette tips for each pipette size contained in the set.

Description	<b>Pipette with volume range</b> μl	PK	Art. no.
Starter set 1	0.1-2, 0.5-10 and 10-100	3	7.695 720
Starter set 2	0.5-10, 10-100 and 100-1000	3	7.695 721
Starter set 3	2-20, 20-200 and 100-1000	3	7.695 722





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## **MULTICHANNEL PIPETTES**

LABSOLUTE® offers both eight-channel and twelve-channel pipettes with different volume ranges. As with the single-channel pipettes, the colour codes on the push button help you to quickly and reliably recognize the volume ranges at a glance.

#### Revolutionary spring system

The individual shafts can glide back separately as soon as they are pressed against a pipette tip. This ensures that each pipette tip is firmly and tightly attached.

#### Innovative ejection mechanism

The ejection is designed in such a way that the tips can be taken off in stages. This reduces the amount of force required considerably – providing a noticeable comfort in daily use.

#### Individual 360° adjustment

The pipetting unit can be rotated around 360°, allowing optimized and comfortable working.

## **EIGHT-CHANNEL PIPETTES**

<b>Volume range</b> μl	Colour code	<b>Grad.</b> μl	PK	Art. no.
5-50	Yellow	0.1	1	7.695 710
20-200	Yellow	0.2	1	7.695 711
50-300	White	1.0	1	7.695 712



## TWELVE-CHANNEL PIPETTES

Volume range	Colour code	Grad.	PK	Art. no.
μΙ		μΙ		
5-50	Yellow	0.1	1	7.695 713
20-200	Yellow	0.2	1	7.695 714
50-300	White	1.0	1	7.695 715

#### **PIPETTE TIPS**

LABSOLUTE® offers a complete assortment for your pipetting tasks – no matter whether packed in bags, within racks or as an efficient refill system: all pipette tips are part of a system in which the components can be exchanged. The pipette tips are made of pure PP and comply with EN ISO 8655. In combination with the LABSOLUTE® pipettes, they constitute the perfect pipetting unit.

Thanks to their universal fit and the high-quality material, the tips guarantee a firm and absolutely tight hold on various pipette models. And all this with much less attachment and ejection forces. The fully automated production and packaging of the pipette tips under clean room conditions guarantee completely contamination-free working conditions with products which are certified free of DNase, RNase, human DNA and pyrogens – to ensure reproducible and consistent results.

- High quality standard
- Graduated tips: the volume is visible at first glance
- 200 and 1000 µl tips are available in yellow or blue, respectively
- Autoclavable

#### Our pipette tips boxes for comfortable and efficient pipetting:

- Simple-to-use closure for single-handed opening
- The transparent design provides a complete overview of the tips
- Coloured trays enable fast recognition of the volume
- Refill system: easy and fast removal and replacement of the trays
- Stackable boxes for space-saving and safe storage
- Autoclavable at 121 °C

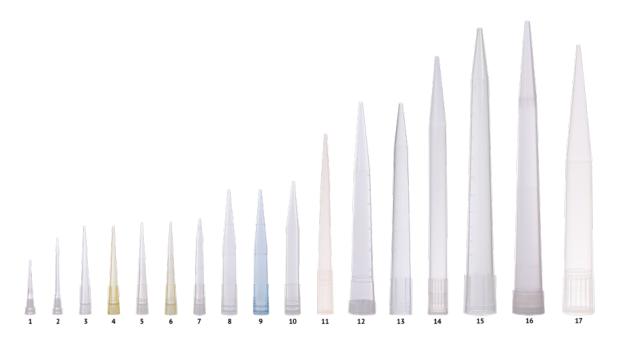


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## PIPETTE TIPS WITHOUT AEROSOL BARRIER IN BAGS, NON-STERILE

The 0.1-10~XL /  $20~\mu$ l tips (7.695 841) are compatible with  $20~\mu$ l Eppendorf Reference®, Eppendorf Research® Plus and Brand Transferpette®. Bevelled tips (7.695 842 and 7.695 843): due to the bevelled end the contact surface of the pipetted liquid is reduced and less residual liquid remains at the tip. Item 7.695 856 is delivered in a useful folded box.

<b>Volume range</b> µl	Figure	Colour	Overall length mm	<b>Grad.</b> μl	PK	Art. no.
0,1-10	1	Transparent	31	2, 10	1000	7.695 840
0,1-10 XL/20	2	Transparent	44	1, 5, 10, 20	1000	7.695 841
2-200 (bevelled tip)	3	Transparent	51	-	1000	7.695 842
2-200 (bevelled tip)	4	Yellow	51	-	1000	7.695 843
2-200	5	Transparent	53	10, 50, 100	1000	7.695 844
2-200	6	Yellow	53	10, 50, 100	1000	7.695 845
20-300	7	Transparent	55	50, 100, 200	1000	7.695 846
100-1000	8	Transparent	71	100, 500	500	7.695 847
100-1000	9	Blue	71	100, 500	500	7.695 848
100-1250	10	Transparent	76	-	500	7.695 849
100-1250 XL	11	Transparent	98	200, 500, 1000	500	7.695 854
500–5000, Eppendorf Fit	12	Transparent	120	1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000	250	7.695 850
500–5000, Gilson Fit	13	Transparent	120	1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000	250	7.695 933
500-5000, Thermo Fit	14	Transparent	147	-	250	7.695 855
500-5000, Thermo Fit	14	Transparent	147	-	100	7.695 856
1000–10000, Eppendorf/ Gilson Fit	15	Transparent	160	1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500, 6000, 6500, 7000, 7500, 8000, 8500, 9000, 9500, 10000	200	7.695 934
1000–10000, Eppendorf Fit	16	Transparent	165	1000, 5000, 10000	100	7.695 851
2000-10000, Thermo Fit	17	Transparent	150	-	100	7.695 857



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## PIPETTE TIPS WITHOUT AEROSOL BARRIER IN RACKS, NON-STERILE

The 0.1–10 XL/20 µl tips (7.695 861) are compatible with 20 µl Eppendorf Reference®, Eppendorf Research® Plus and Brand Transferpette®.

Volume range	Figure	Colour	Overall length	Grad.	Pack size	PK	Art. no.
μΙ			mm	μΙ	pieces		
0.1-10	1	Transparent	31	2, 10	10 x 96	960	7.695 860
0.1-10 XL/20	2	Transparent	44	1, 5, 10, 20	10 x 96	960	7.695 861
2-200	5	Transparent	53	10, 50, 100	10 x 96	960	7.695 862
2-200	6	Yellow	53	10, 50, 100	10 x 96	960	7.695 863
20-300	7	Transparent	55	50, 100, 200	10 x 96	960	7.695 864
100-1000	8	Transparent	71	100, 500	10 x 96	960	7.695 865
100-1000	9	Blue	71	100, 500	10 x 96	960	7.695 866
100-1250	10	Transparent	76	-	10 x 96	960	7.695 867
100-1250 XL	11	Transparent	98	200, 500, 1000	10 x 96	960	7.695 868

## PIPETTE TIPS WITHOUT AEROSOL BARRIER IN RACKS, STERILE

The 0.1–10 XL/20 µl tips (7.695 871) are compatible with 20 µl Eppendorf Reference®, Eppendorf Research® Plus and Brand Transferpette®.

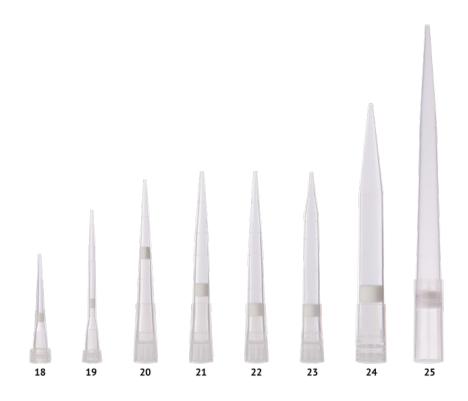
Volume range	Figure	Colour	Overall length	Grad.	Pack size	PK	Art. no.
μΙ			mm	μΙ	pieces		
0.1-10	1	Transparent	31	2, 10	10 x 96	960	7.695 870
0.1-10 XL/20	2	Transparent	44	1, 5, 10, 20	10 x 96	960	7.695 871
2-200	5	Transparent	53	10, 50, 100	10 x 96	960	7.695 872
2-200	6	Yellow	53	10, 50, 100	10 x 96	960	7.695 873
20-300	7	Transparent	55	50, 100, 200	10 x 96	960	7.695 874
100-1000	8	Transparent	71	100, 500	10 x 96	960	7.695 875
100-1000	9	Blue	71	100, 500	10 x 96	960	7.695 876
100-1250	10	Transparent	76	-	10 x 96	960	7.695 877
100-1250 XL	11	Transparent	98	200, 500, 1000	10 x 96	960	7.695 878

## FILTER TIPS IN RACKS, STERILE

The LABSOLUTE® filter tips offer dual protection: the fine-pored filter made of PE serves as a defence to protect the samples from aerosols and biomolecules. At the same time, the hydrophobic material prevents the pipette from contamination.

The 0.1–10 XL/20 µl tips (7.695 881) are compatible with 20 µl Eppendorf Reference®, Eppendorf Research® Plus and Brand Transferpette®.

Volume range	Figure	Colour	Overall length	Grad.	Pack size	PK	Art. no.
μΙ			mm	μι	pieces		
0.1-10	17	Transparent	31	2, 10	10 x 96	960	7.695 880
0.1-10 XL/20	18	Transparent	44	1, 5, 10, 20	10 x 96	960	7.695 881
0.5-20	19	Transparent	53	20	10 x 96	960	7.695 882
2-100	20	Transparent	55	10, 50, 100	10 x 96	960	7.695 883
2-200	21	Transparent	55	10, 50, 100, 200	10 x 96	960	7.695 884
20-300	22	Transparent	55	50, 100, 200	10 x 96	960	7.695 885
100-1000	23	Transparent	76	-	10 x 96	960	7.695 886
100-1250 XL	24	Transparent	98	200, 500, 1000	10 x 96	960	7.695 887



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## REFILL SYSTEMS, PIPETTE TIPS WITHOUT AEROSOL BARRIER, NON-STERILE

The environmental and buget friendly LABSOLUTE® pipette tip boxes provide trays which can be easily replaced and directly indicate the respective volume due to their colour. To safely store the pipette tips, the refill systems are delivered in the form of two individually shrink-wrapped towers. The outer packaging made of cardboard additionally guarantees that the pipette tips remain dust-free. Last but not least each refill system contains **two refillable pipette tip boxes for free!** 

The 0.1–10 XL/20 µl tips (7.695 891) are compatible with 20 µl Eppendorf Reference®, Eppendorf Research® Plus and Brand Transferpette®.

Volume range	Figure	Colour	Overall length	Grad.	Pack size	PK	Art. no.
μΙ			mm	μΙ	pieces		
0.1-10	1	Transparent	31	2, 10	10 x 96	960	7.695 890
0.1-10 XL/20	2	Transparent	44	1, 5, 10, 20	10 x 96	960	7.695 891
2-200	5	Transparent	53	10, 50, 100	10 x 96	960	7.695 892
20-300	7	Transparent	55	50, 100, 200	10 x 96	960	7.695 893
100-1000	8	Transparent	71	100, 500	10 x 96	960	7.695 894

#### PIPETTE TIPS BOXES

The unfilled trays of the LABSOLUTE® refillable pipette tips boxes hold up to 96 tips and are coloured differently according to the volume of the appropriate tips. The trays are autoclavable at 121 °C and can be replaced easily as it is the case for all LABSOLUTE® pipette tips boxes. The boxes are suitable for the LABSOLUTE® pipette tips (7.695 840–7.695 894).

Description	Suitable for	PK	Art. no.
Pipette tips boxes	10 μl, 10 μl XL/20 μl	10	7.695 897
Pipette tips boxes	20 μl-300 μl	10	7.695 898
Pipette tips boxes	1000 µl, 1250 µl	10	7.695 899

## RACKS FOR 5 ML AND 10 ML PIPETTE TIPS

The LABSOLUTE® boxes made of PP offer space for 18 pieces of 5 ml (7.695 850) or 10 ml (7.695 851) pipette tips from LABSOLUTE®, respectively. Tips are not included.

Suitable for	Height Box	0	PK	Art. no.
	mm	mm		
5 ml pipette tips	188	102	2	7.695 852
10 ml pipette tips	188	102	2	7.695 853









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#### **MANUAL DISPENSER PRO**

A perfect ergonomic design to ensure maximum comfort. The LABSOLUTE® manual dispenser Pro offers long-lasting dispensing action and an ergonomic shape, a lightweight design and smooth dispensing mechanism. Another benefit is the clear view through the window of the stroke setting and dispensing volume which is dependent on the dispenser tips used.

Included with delivery: manual dispenser Pro, 1x 5 ml dispenser tip, 1x 1 ml dispenser tip, adapter.

### High compatibility with

- LABSOLUTE® dispenser tips and dispenser tips Plus
- Ritips® and Ritips® Professional (Ritter GmbH)
- PD-Tips TM (Brand GmbH & Co. KG)
- Combitips®, Combitips Plus® and Combitips Advanced® (Eppendorf AG)

#### Maximum comfort

With perfect ergonomic style, the LABSOLUTE® manual dispenser Pro fits perfectly in the hand. The easy-to-operate dispensing button and light weight ensure maximum comfort, even with longer dosing series. The easy operation of the dispensing button makes volume selection, pick-up and drop possible with just one hand.

#### Maximum flexibility

LABSOLUTE® manual dispenser Pro allows 120 programming steps – handy and flexible for 12 different tip sizes and with 10 stroke settings.

#### Independent and maintenance-free

LABSOLUTE® manual dispensers have an entirely mechanical structure. This makes them maintenance-free and independent of additional resources, such as power packs or batteries.

#### Our guarantee

Each individual device is checked after production for its functionality and precision. Only when all requirements of the DIN EN ISO 8655 standard have been met, does LABSOLUTE® manual dispenser Pro receive its serial number.

Description	PK	Art. no.
Manual dispenser Pro	1	7.695 800

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#### **DISPENSER TIPS**

The dispenser tips work according to the positive displacement principle and are available in three sizes, each in a non-sterile or sterile version. Suitable for volumes of 1 to  $12500 \, \mu l$ .

- Complete safety and reproducibility each individual tip is mechanically checked
- Purity as follows has been confirmed by independent laboratories: free of endotoxins, ATP, RNase and DNA
- Certificate available on request

## High compatibility with:

- LABSOLUTE® manual dispenser Pro
- Ripette®, Ripette® pro (Ritter GmbH)
- Multipette® 4780 (Eppendorf AG)
- HandyStep®, HandyStep® S, HandyStep® electronic (Brand GmbH & Co.KG)
- Minilab 100, Minilab 201 (HTL)
- RepeatOne® (Starlab AG)
- Distriman® Stepper, Repetman® (Gilson AG)

<b>Volume</b> ml	Sterile	PK	Art. no.
0.05	No	100	7.695 950
1.25	No	100	7.695 951
12.5	No	100	7.695 952
0.05	Yes	100	7.695 953
1.25	Yes	100	7.695 954
12.5	Yes	100	7.695 955

When dispensing with tip size 0.05 ml, please use a suitable pipette tip (10 or 20  $\mu$ l).









#### **DISPENSER TIPS PLUS**

The universally compatible dispenser tips Plus from LABSOLUTE® come in nine sizes and are suitable for volumes of 1 to  $50000~\mu$ l. The tips work according to the positive displacement principle: this means safe dispensing without the risk of contamination, even with infectious solutions. Irrespective of viscosity and volatility, the desired volume will be dispensed at all time – without forming aerosols. The dispenser tips are available in sterile and non-sterile designs.

- Rapid identification thanks to individual colour coding
- Complete safety and reproducibility each individual tip is mechanically checked
- The sterile dispenser tips are individually packaged
- · Free of endotoxins, ATP, RNase and DNA
- Ultra-fine conical tips increase precision, especially when dispensing in the single-digit  $\mu l$  range
- Thanks to their elongated shape, ideally suited for working with long laboratory vessels
- Certificate available on request
- Lot number on each packaging unit
- · Autoclaving is not recommended

#### Universal compatibility with:

- LABSOLUTE® manual dispenser Pro
- Ripette®, Ripette® pro (Ritter GmbH)
- Multipette® 4780, Multipette® plus, Multipette® M4\*, Multipette® stream (Eppendorf AG)
- HandyStep®, HandyStep® S, HandyStep® electronic (Brand GmbH & Co.KG)
- RepeatOne® (Starlab AG)
- Repetman® (Gilson AG)

\*When used with these dispensers, no indication in the display

<b>Volume</b> ml	Sterile	PK	Art. no.
0.1	No	100	7.695 670
0.2	No	100	7.695 671
0.5	No	100	7.695 672
1.0	No	100	7.695 673
2.5	No	100	7.695 674
5.0	No	100	7.695 675
10.0	No	100	7.695 676
25.0	No	25	7.695 677
50.0	No	25	7.695 678
0.1	Yes	100	7.695 680
0.2	Yes	100	7.695 681
0.5	Yes	100	7.695 682
1.0	Yes	100	7.695 683
2.5	Yes	100	7.695 684
5.0	Yes	100	7.695 685
10.0	Yes	100	7.695 686
25.0	Yes	25	7.695 687
50.0	Yes	25	7.695 688
Adapter for 25 ml tips		1	7.695 689
Adapter for 50 ml tips		1	7.695 690

#### **TEST PACKAGE DISPENSER TIPS**

The test package offers the ideal solution for testing all LABSOLUTE® dispenser tips available. It contains all 12 sizes from 0.05 to 50 ml (non-sterile). There are five dispenser tips of each size in the package – making a total of 60 tips to test. For the 25 and 50 ml sizes, the matching adapters are included in the package.

Description	PK	Art. no.
Test package dispenser tips	60	7.695 691



#### **BOTTLE TOP DISPENSERS**

The LABSOLUTE® bottle top dispenser series is impressive with its high quality and unlimited reliability in combination with a high degree of safety and user-friendliness. Exceptionally high-quality materials guarantee a long service life and superlative chemical resistance.

#### No compromises on quality or reliability

All wetted parts of the LABSOLUTE® bottle top dispensers are made of PTFE, fluorinated ethylene propylene and borosilicate glass. The constant ejection volume and completely bubble-free dispensing make them the number one choice in terms of precision and reproducibility. Each of the LABSOLUTE® dispensers comes with an individual certificate, since all devices are calibrated complying with DIN ISO 8655.

#### Extra security when handling liquids and maximum handling comfort

- Protection of the borosilicate dispensing cylinder with PP material
- Safety closure valve prevents uncontrolled dripping, air contact or drying out
- Free-running mechanism thanks to specially constructed PTFE piston with silicon O-ring
- Telescopic suction tube to different bottle heights
- Rapid and easily visible volume adjustment with handy adjustment screw
- Autoclavable at 121 °C

Adapters with 28, 30, 38, 40 or 45 mm thread for securing the dispensers to bottles are included in the supplied package.

#### BOTTLE TOP DISPENSERS WITH RECIRCULATION VALVE

The LABSOLUTE® dispenser with recirculation valve allows a uniform, precise and reliable bubble-free dosing without reagent loss. The specially designed bottle adapter allows a 360° rotation of the dispenser on the mounted bottle.

<b>Volume range</b>	<b>Grad.</b> ml	Accuracy max. vol. ≤ ± R %	Precision max. vol.	PK	Art. no.
0.25-2.5	0.05	0.6	0.2	1	7.695 540
0.5-5	0.10	0.5	0.1	1	7.695 541
1.0-10	0.20	0.5	0.1	1	7.695 542
2.5 – 30	0.50	0.5	0.1	1	7.695 543
5.0-60	1.00	0.5	0.1	1	7.695 544
10.0-100	2.00	0.5	0.1	1	7.695 545





## **BURETTES**

The LABSOLUTE® burettes made of borosilicate glass 3.3 comply with DIN EN ISO 385. They are available with straight and lateral stopcock with glass plug or PTFE needle valve. The class AS burettes are a very economic way to get reliable values in volumetric analysis quickly and easily. They are calibrated to "Ex" and have a blue graduation and inscription as well as a Schellbach stripe on the backside to be able to read the meniscus precisely.

## BURETTES, STRAIGHT STOPCOCK, CLASS AS

<b>Capacity</b> ml	<b>Grad.</b> ml	<b>Tolerance</b> ± ml	Stopcock with	PK	Art. no.
10	0.02	0.02	Glass key	1	7.691 144
25	0.05	0.05	Glass key	1	7.691 145
50	0.1	0.10	Glass key	1	7.691 146
10	0.02	0.02	PTFE spindle	1	7.691 147
25	0.05	0.03	PTFE spindle	1	7.691 148
50	0.1	0.05	PTFE spindle	1	7.691 149



## BURETTES, LATERAL STOPCOCK, CLASS AS

Capacity	Grad.	Tolerance	Stopcock with	PK	Art. no.
ml	ml	± ml			
10	0.02	0.02	Glass key	1	7.691 150
25	0.05	0.03	Glass key	1	7.691 151
50	0.1	0.05	Glass key	1	7.691 152
10	0.02	0.02	PTFE spindle	1	7.691 153
25	0.05	0.03	PTFE spindle	1	7.691 154
50	0.1	0.05	PTFE spindle	1	7.691 155

#### **GLASS KEYS FOR BURETTES**

The LABSOLUTE® glass keys for burettes made of borosilicate glass 3.3 are compatible with the respective LABSOLUTE® burettes with straight or lateral stopcock. Delivery includes O-ring and plastic parts.

For burette	PK	Art. no.
7.691 144, 7.691 145, 7.691 146	1	7.691 170
7.691 150	1	7.691 171
7.691 151	1	7.691 172
7.691 152	1	7.691 173

## **AUTOMATIC BURETTES ACC. TO DR. SCHILLING, CLASS B**

The automatic LABSOLUTE® burettes according to Dr. Schilling can be used for several applications in many areas, such as electroplating, water treatment or sewage plants. They are impressing through their precise dosing, the possibility of fine titration and an exact draining tip. The class B burettes are justified to "Ex" and come with a LDPE bottle and solid stand. The tolerances comply with DIN EN ISO 385. There is a Schellbach stripe on the backside of the burettes that makes it easier to read the exact filling level. The bottle and the burette are fixed together by the titrating armature.

The burettes are delivered dismantled, but can be easily installed without additional tools.

On request, the burettes can also be offered with a plastic coating for better shatter protection at an extra charge.

Burette capacity	Grad.	Tolerance	Bottle capacity	PK	Art. no.
ml	ml	± ml	ml		
10	0.05	0.03	500	1	7.691 140
15	0.1	0.04	1000	1	7.691 141
25	0.1	0.05	1000	1	7.691 142
50	0.1	0.08	1000	1	7.691 143



## **ACCURACY CLASSES**

With volumetric measurement, the subsequent analysis is only as precise as your sample preparation. However with some applications, absolute precision is needed, whereas in other cases a higher error limit can be tolerated. As a result, the LABSOLUTE® range includes volumetric flasks of accuracy class A, measuring cylinders of classes A and B, mixing cylinders of class A and graduated and volumetric pipettes of class AS.

The greatest deviations at each point on the scale are defined as the error limits. They also define the maximum permissible differences between the deviations at any two points on the scale. The differences between the classes are defined by the German Calibration Directive.

#### Error limits for measuring & mixing cylinders, high form

Nominal volume	Scale division	Error limit class A
5 ml	0.1 ml	± 0.05 ml
10 ml	0.2 ml	± 0.1 ml
25 ml	0.5 ml	± 0.25 ml
50 ml	1 ml	± 0.5 ml
100 ml	1 ml	± 0.5 ml
250 ml	2 ml	± 1 ml
500 ml	5 ml	± 2.5 ml
1000 ml	10 ml	± 5 ml
2000 ml	20 ml	± 10 ml

#### Error limits for measuring cylinders, low form

Nominal volume	Scale division	Error limit class B
5 ml	0.5 ml	± 0.2 ml
10 ml	1 ml	± 0.3 ml
25 ml	1 ml	± 0.5 ml
50 ml	1 ml	± 1 ml
100 ml	2 ml	± 1 ml
250 ml	5 ml	± 2 ml
500 ml	10 ml	± 5 ml
1000 ml	20 ml	± 10 ml
2000 ml	50 ml	± 20 ml

#### Error limits for graduated pipettes

Scale division	Error limit class AS
0.01 ml	± 0.007 ml
0.02 ml	± 0.010 ml
0.05 ml	± 0.030 ml
0.1 ml	± 0.05 ml
0.1 ml	± 0.1 ml
0.1 ml	± 0.1 ml
	0.01 ml 0.02 ml 0.05 ml 0.1 ml 0.1 ml

#### Error limits for volumetric flasks with wide neck

Nominal volume	Neck size NS	Error limit class A
5 ml	10/19	± 0.040 ml
10 ml	10/19	± 0.040 ml
20 ml	12/21	± 0.060 ml
25 ml	12/21	± 0.060 ml
50 ml	14/23	± 0.100 ml
100 ml	14/23	± 0.100 ml
1000 ml	29/32	± 0.600 ml

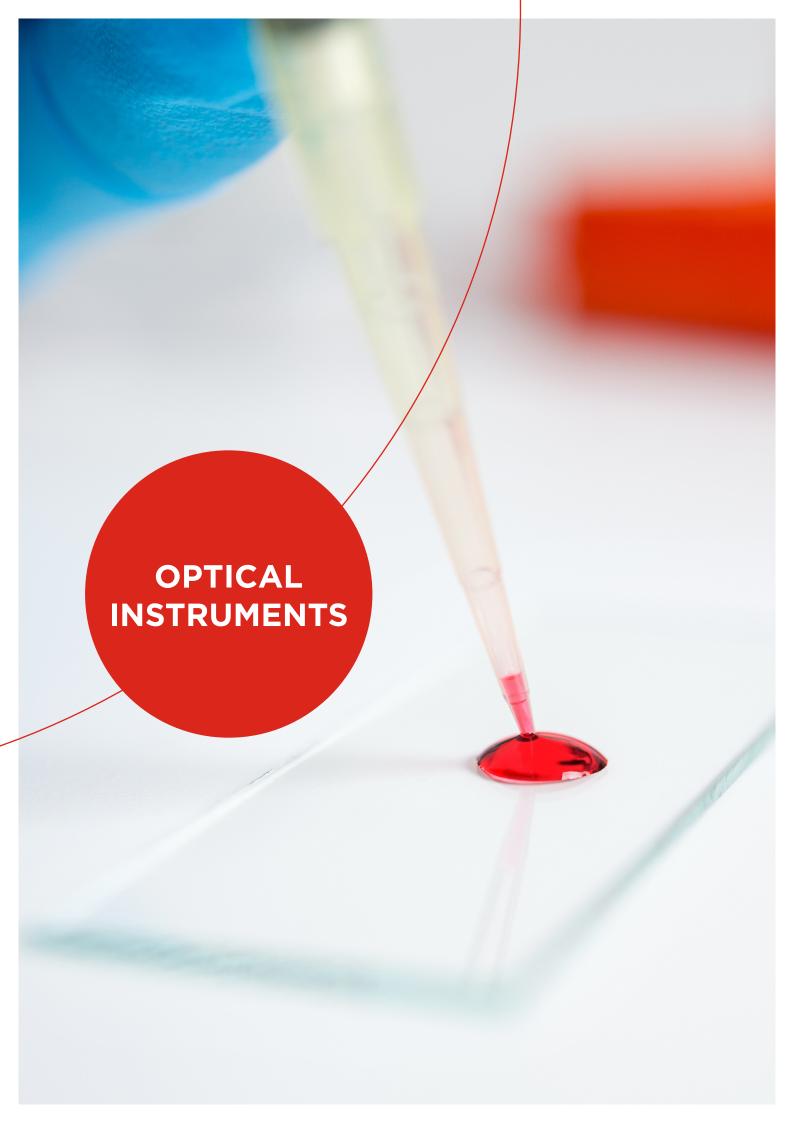
#### Error limits for volumetric flasks with narrow neck

Neck size NS	Error limit class A
7/16	± 0.025 ml
10/19	± 0.040 ml
10/19	± 0.040 ml
12/21	± 0.060 ml
12/21	± 0.100 ml
14/23	± 0.150 ml
14/23	± 0.150 ml
19/26	± 0.250 ml
24/29	± 0.400 ml
29/32	± 0.600 ml
34/35	± 1.200 ml
	7/16 7/16 7/16 7/16 7/16 10/19 10/19 12/21 12/21 14/23 14/23 14/23 19/26 24/29 29/32

#### **Error limits for volumetric pipettes**

Nominal volume	Error limit class AS
1 ml	± 0.008 ml
2 ml	± 0.010 ml
5 ml	± 0.015 ml
10 ml	± 0.02 ml
20 ml	± 0.03 ml
25 ml	± 0.03 ml
50 ml	± 0.05 ml
100 ml	± 0.08 ml

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#### **MICROSCOPE SLIDES**

The LABSOLUTE® microscope slides made of soda-lime glass comply with DIN ISO 8037-1 and 8037-2. They are therefore the ideal solution for excellent and reproducible microscopy results. The microscope slides, measuring approx. 76 x 26 mm, have a thickness of around 1 mm and are delivered pre-cleaned and ready for use. The 20 mm wide, coloured or colourless frosted area is at the end of one side.

#### MICROSCOPE SLIDES, CUT EDGES

Cut microscope slides are particularly economical and therefore represent an excellent alternative to the ground versions, for routine tasks. The corners and edges are 90° for all cut microscope slides.

Description	Writing area	PK	Art. no.
Without frosted area		50	7.695 001
With frosted area		50	7.695 002
With frosted area	White	50	7.695 005
With frosted area	Blue	50	7.695 006
With frosted area	Yellow	50	7.695 008
With frosted area	Green	50	7.695 009

# MICROSCOPE SLIDES, GROUND EDGES

The ground version of the slides is used to avoid cutting injuries or glass breakages during automated processing. Microscope slides have corners with either 45° or 90°. The edges are 90° for all ground microscope slides.

Description	Writing area	PK	Art. no.
90° corners, with frosted area		50	7.695 003
45° corners, without frosted area		50	7.695 004
45° corners, with frosted area	White	50	7.695 012
45° corners, with frosted area	Yellow	50	7.695 015
45° corners, with frosted area	Green	50	7.695 016

#### ADHESION SLIDES FOR TISSUE SECTIONS

Adhesion slides ensure quicker flatness and better adhesion of the samples. The microscope slides with a white frosted area and ground edges are supplied in shrink-wrapped plastic boxes of 72 pieces. The angle of the edges and corners for both items is 90°.

Description	PK	Art. no.
(+) positively charged	72	7.695 019
Silanized surface	72	7.695 021







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# **COVER GLASSES, THICKNESS 1 (0.13-0.16 MM)**

The LABSOLUTE® cover glasses made of highly resistant borosilicate glass 3.3 of the first hydrolytic class are the perfect addition to every microscopy system. They are guaranteed free of contamination, bubbles or smears and comply with DIN ISO 8255-1 and 8255-2. The cover glasses are supplied in especially handy and secure boxes.

<b>Dimensions</b> mm	РК	Art. no.
15 x 15	200	7.695 022
18 x 18	200	7.695 023
20 x 20	200	7.695 024
22 x 22	200	7.695 025
24 x 24	200	7.695 026
21 x 26	200	7.695 027
24 x 32	100	7.695 028
24 x 40	100	7.695 029
24 x 50	100	7.695 030
24 x 60	100	7.695 031



# **MICROSCOPE SLIDE BOXES, PS**

The LABSOLUTE® slide storage boxes are made of stable PS and will be delivered with a dustproof lid. The boxes can be stacked for space-saving and safe storage. Numbered positions on the bottom and an index table facilitate the identification and organization of your preparations.

- For 50 microscope slides (76 x 26 mm)
- Available in different colours
- Temperature-resistant down to -40 °C
- Dimensions (W x H x D): 170 x 30 x 83 mm

Colour	PK	Art. no.
Blue	1	7.695 040
Yellow	1	7.695 041
Green	1	7.695 042
Red	1	7.695 044
Black	1	7.695 045
White	1	7.695 047



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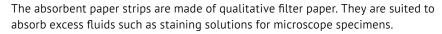
# MICROSCOPE SLIDE FOLDERS, CARDBOARD

The LABSOLUTE® folders are made of cardboard and available in two different sizes. The slides lie safely in recesses which feature thumb cuts for easy removal. The lid provides further protection against damage and contamination and a practicable overview of your preparations thanks to a printed index.

- For 20 or 30 microscope slides (76 x 26 mm)
- Available in black

Capacity	Dimensions W x H x D	PK	Art. no.
	mm		
20 slides	208 x 9 x 341	1	7.695 060
30 slides	281 × 10 × 328	1	7.695 061

### **ABSORBENT PAPER FOR MICROSCOPIC PURPOSES**



Dimensions D x W mm	PK	Art. no.
37 x 100	50	7.698 031



#### **CLEANING TISSUES**

Fine silk papers for cleaning of lenses and optical surfaces.





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### **CUVETTES**

The LABSOLUTE® disposable cuvettes for the VIS and UV range feature optimised photometric properties and high transparency thanks to modern manufacturing methods. All cuvettes within one packing unit are sorted according to their numbered cavities of origin. Thus the cuvettes are technically identical and extinction deviations can be avoided. Supplied in practical, reclosable styrofoam racks.

- Increased heat transfer thanks to optimized form and small wall thickness
- Recessed measuring fields: reduced risk of scratching by the cuvette holder
- Arrow marker points to transmission direction
- Path length: 10 mm
- Outer dimensions (W x H x D): 12.5 x 45 x 12.5 mm

#### DISPOSABLE CUVETTES FOR THE VIS RANGE

Description	Material	<b>Volume</b> ml	<b>Range</b> nm	PK	Art. no.
Macro	PS	2.5-4.5	340-900	100	7.697 100
Semi-micro	PS	1.5-3.0	340-900	100	7.697 101
Macro	PMMA	2.5-4.5	300-900	100	7.697 102
Semi-micro	PMMA	1.5-3.0	300-900	100	7.697 103



Description	<b>Volume</b> ml	<b>Range</b> nm	PK	Art. no.
Macro	2.5-4.5	220-900	100	7.697 104
Semi-micro	1.5-3.0	220-900	100	7.697 105



# **MULTICELL CUVETTE, PMMA**

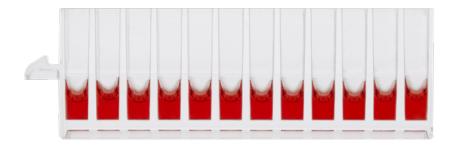
The LABSOLUTE® multicell cuvettes dispose of 12 cells. They are suitable for Thermo Scientific automated analysers and can be used for quality check and photometric analysis of different substances.

Total cell volume: 0.4 mlWorking volume: 0.1 ml

# Compatible with following Thermo Scientific analyzers:

- Arena 20
- Arena 20XT
- Arena 30
- Arena 60
- Konelab 30
- Konelab Arena 30
- Konelab Prime 30

Description	<b>Range</b> nm	Pack size pieces	PK	Art. no.
Multicell cuvettes, 12 cells	340-700	40 x 25	1000	7.697 106







#### CHEMSOLUTE' UNIVERSAL LIQUID CLEANER

The alkaline CHEMSOLUTE® universal liquid cleaner ensures thorough, residue-free cleaning of equipment and surfaces.

Description	Content	PK	Art. no.
Alkaline universal liquid cleaner	2.5 l	1	2864.2500

GHS05 Danger H290 H315 H318 P280 P302+P352 P305+P351+P338



### **SURFACE DISINFECTANT CLEANER**

The CHEMSOLUTE® surface disinfectant cleaner is a gentle and quick-drying disinfectant for the lasting and safe disinfection of all water resistant and clean surfaces. It is highly effective against bacteria, fungi, germs and has limited virucidal properties and complies with the guidelines of the DGHM (German Society for Hygiene and Microbiology).

Biocide, BAuA Reg. No. N-25330

Package	Content	PK	Art. no.
Plastic canister	5 l	1	2891.5000

GHS05 GHS07 GHS09 Danger H302 H315 H318 H411 P273 P280 P305+P351+P338 P310 P501



#### CHEMSOLUTE DISINFECT 2

CHEMSOLUTE® Desinfekt 2 contains at least 80 % ethanol (w/w) and is suitable for alcohol-based hand and surface disinfection.

Ingredients: Ethanol (denatured), hydrogen peroxide (approx. 0.125 %), glycerine (approx. 1.45 %) and ultrapure water.

Biocidal product, BAuA Reg. No. N-92100

Description	Content	PK	Art. no.
CHEMSOLUTE® Disinfect 2	250 ml	1	2895.0250
CHEMSOLUTE® Disinfect 2	5 l	1	2895.5000

GHS02 GHS07 Danger H225 H319 P210 P243 P280 P305+P351+P388 P403+P235 P501



#### **ETHANOL 70% V/V BIOCIDE**

CHEMSOLUTE $^{\circ}$  Ethanol 70 % biocide is ideal for cleaning and decontamination of laboratory surfaces, production areas and equipment. Biocide, BAuA Reg. No. N-92166

Package	Capacity	PK	Art. no.
Plastic bottle	1 l	1	2207.1000
Plastic canister	5 l	1	2207.5000

GHS02 GHS07 Danger H225 H319 P210 P233 P241 P243 P280 P337+P313 P403+P235

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#### **ISOPROPANOL 70 BIOCIDE**

CHEMSOLUTE® Isopropanol 70 Biocide is suitable for hand and surface disinfection. The ready-to-use liquid contains 70 % 2-propanol and is bactericidal, levurocidal and limited virucidal.

Complying with efficacy studies EN 1276 (bacteria), EN 1500 (bacteria), EN 1650 (yeasts), EN 13624 (yeasts), EN 13697 (bacteria & yeasts), EN 13727 (bacteria), EN 14348 (mycobacteria), EN 14476 (Rota-, Influenza-, Adeno-, Vaccinia-, Norovirus). Biocide, BAuA Reg. No. N-103210

Package	Content	PK	Art. no.
Plastic bottle	1 l	1	1150.1000
Plastic canister	5 l	1	1150.5000
Plastic canister	10 l	1	1150.9010
Plastic canister	25 l	1	1150.9025





## **2-PROPANOL 70%**

CHEMSOLUTE® 2-Propanol 70 % (Isopropanol) is ideal for the cleaning and decontamination of lab surfaces, production areas and processing equipment.

Description	Content	PK	Art. no.
Spray bottle	1 l	1	1199.1009
Plastic bottle	1 l	1	1199.1000
Plastic canister	5 l	1	1199.5000

GHS02 GHS07 Danger H225 H319 H336 P210 P240 P280 P304+P340 P305+P351+P388 P501



# **LABORATORY WIPES, 2-PLY**

The LABSOLUTE® laboratory wipes made of non-chlorine bleached cellulose are especially low-lint and soft.

The holder is suitable for hygienic and easily accessible storage of the laboratory wipes. It is delivered including wall mounting material.

Description	Width mm	<b>Length</b> mm	PK	Art. no.
30 boxes with 150 wipes	210	220	30	7.695 251
Wall holder made of stainless steel			1	7.696 920



### **CLEANING AND STERILISATION**



# **WIPE ROLL, 2-PLY**

The LABSOLUTE $^{\circ}$  wipe roll is absorbent and tear-resistant. Two rolls of 50 tear-offs each, 20 x 26 cm, are packed in a shrink film.

- White
- Grammage: 2 x 18 g/m<sup>2</sup>
- Inner core Ø: 45 mm

Description	PK	Art. no.
Roll with 50 sheets	2	7.695 253



# HAND TOWELS, BRIGHT WHITE, 3-PLY

The LABSOLUTE® folded towels with full deployment, high absorbency and convenient size are particularly economical to use. They are suitable for the LABSOLUTE® towel dispenser (7.695 261).

Description	Width	Length	PK	Art. no.
	mm	mm		
20 packs with 100 towels	220	420	2000	7.695 262



### **TOWEL DISPENSER**

The LABSOLUTE® towel dispenser made of white, robust plastic is particularly stable and hard-wearing, even with high frequency of use. Mounted on the wall, the dispenser offers quick and easy access to the wipes at any time.

- Maintenance-free
- Easy to refill
- Lockable

Description	Height	Width	Depth	PK	Art. no.
	mm	mm	mm		
Towel dispenser	290	295	165	1	7.695 261

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### **CLEANING SPONGES**

LABSOLUTE® sponges are high quality and ideal for cleaning and removing stubborn dirt from sensitive surfaces.

- Household sponge in three different colours
- Cleaning sponge with strong scrubbing surface and handy grip groove

Description	Dimensions W x H x D	PK	Art. no.
Sponge set, threepart	mm 143 x 40 x 90	3	7.695 270
Cleaning sponge with handle	95 x 45 x 70	3	7.695 271





#### **ALL PURPOSE CLOTHS**

The LABSOLUTE® all purpose cloths can absorb large quantities of liquid quickly and are suitable for universal use.

Description	Dimensions W x L	PK	Art. no.
	mm		
All purpose cloths	38 x 38	3	7.695 272



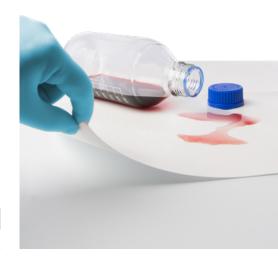
# **BENCH PROTECTION PAPER**

The double-layered surface protector from LABSOLUTE $^{\circ}$  is ideally suited to protect all working surfaces from chemicals and radioactive, corrosive and toxic substances. The upper layer is made of 100 % cellulose which is highly absorbent. The bottom layer made of PE provides high tear resistance and prevents liquids leaking through in order to protect work surfaces from contamination.

• Dimensions (W x D): 460 x 570 mm

Thickness: 0.24 mm
Weight: 125 g/m²
Absorption: 170 g/m²

Туре	РК	Art. no.
Sheets	100	7.697 920



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# MICRO TUBE WITH FLIP CAP, PP

The 1.5 ml LABSOLUTE® micro tubes have a special flip cap that allows one-handed opening without touching the inside of the cap with your hand. This significantly reduces the contamination risk of the sample.

- Non sterile
- DNase, RNase and pyrogen-free
- Autoclavable at 121°C

Volume	PK	Art. no.
ml		
1.5	500	7.696 758

# **MICRO TUBES, PP**

The LABSOLUTE® micro tubes are made of high-quality PP and are resistant to mechanical and chemical stress. Simple and safe opening and closing of the vessel allow safe handling for greater comfort.

- Certified DNase, RNase and pyrogen-free
- Non-sterile
- Guaranteed metal-free
- Precise graduations lines on 1.5 and 2.0 ml reaction vessels
- Puncturable cap
- Matted cap with labelling field
- Can be centrifuged up to 25000 x g (1.5 and 2.0 ml) and 20000 x g (0.5 ml)
- Autoclavable at 121 °C

<b>Volume</b> ml	PK	Art. no.
0.5	1000	7.696 734
1.5	500	7.696 753
2.0	500	7.696 754



### SAFE SEAL MICRO TUBES, PP

The safe seal micro tubes from LABSOLUTE® have a special locking mechanism preventing unintentional opening of the lid during applications with thermal stress.

- Frosted cover and labelling field
- Graduation for easy volume determination
- Non-sterile
- Can be centrifuged up to 18000 x g (0.5 and 2.0 ml) and 30000 x g (1.5 ml)
- Autoclavable at 121 °C

<b>Volume</b> ml	PK	Art. no.
0.5	1000	7.696 755
1.5	1000	7.696 756
2.0	1000	7.696 757



# **MICRO TUBES 5 ML, PP**

The LABSOLUTE® 5 ml micro tubes with attached snap-on cap are ideal for working with volumes up to 5 ml. For incubations above 80 °C, it is recommended to close the tube with the clip (7.696 749).

- · Low binding variant for maximum sample recovery
- Amber vessels are ideal for lightsensitive materials
- Free from DNase, RNase and pyrogens
- Centrifugation up to 20000 x g
- Cold-resistant up to -86 °C
- Autoclavable at 121 °C

Description	PK	Art. no.
Transparent	100	7.696 740
Transparent, low binding	50	7.696 741
Amber	100	7.696 742
Clip	100	7.696 749



#### **PCR CONSUMABLES**

LABSOLUTE® offers a comprehensive range in the field of PCR consumables. These include tubes, strips of 8 tubes, 96-well plates and sealing films. In addition to the standard profile variants with 0.2 ml working volume, we also offer some low-profile versions with a working volume of 0.1 ml in the case of strips and plates.

- Suitable for all common thermal cyclers
- Optimal heat transfer and short cycle times through very thin and uniform wall thickness

### PCR TUBES 0.2 ML, PP

The LABSOLUTE® PCR tubes offer optimum heat transfer between the thermal cycler and the reaction mix through their extra thin and uniform vessel walls.

- Compatible with all major thermal cyclers
- Available with flat and domed caps
- Easy and safe opening and closing with one hand
- High-quality PP (metal-free)
- Free from DNase, RNase, human DNA, pyrogens and PCR inhibitors
- Autoclavable at 121 °C

Description	PK	Art. no.
Flat caps	1000	7.696 502
Domed caps	1000	7.696 503







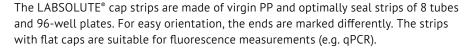
# STRIPS OF 4/8 PCR TUBES, PP

The LABSOLUTE® strips of 4/8 PCR tubes offer optimum heat transfer between the thermal cycler and the reaction mix through their extra thin and uniform vessel walls.

- Secure sealing reduces evaporation
- Available with flat and domed caps
- High quality PP
- Free from DNase, RNase and human DNA
- Standard profile with 0.2 ml working volume
- Low profile with 0.1 ml working volume
- Autoclavable at 121 °C

Description	<b>Capacity</b> ml	Colour	PK	Art. no.
Strips of 4 PCR tubes for Qiagen/ Corbett Rotor-Gene®	0.1	Transparent	250	7.696 519
Strips of 8 PCR tubes with flat caps	0.2	Transparent	125	7.696 510
Strips of 8 PCR tubes with domed caps	0.2	Transparent	125	7.696 511
Strips of 8 PCR tubes with flat caps	0.1	Transparent	120	7.696 512
Strips of 8 PCR tubes without caps	0.2	Transparent	125	7.696 514
Strips of 8 PCR tubes with flat caps	0.1	White	120	7.696 515
Strips of 8 PCR tubes with flat, attached caps	0.2	Transparent	120	7.696 516
Strips of 8 PCR tubes with flat, attached caps	0.1	Transparent	120	7.696 517
Strips of 8 PCR tubes with domed, attached caps	0.2	Transparent	120	7.696 518

# PCR CAP STRIPS, PP



Description	PK	Art. no.
Flat caps	300	7.696 520
Domed caps	300	7.696 521



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### PCR 96-WELL PLATES, PP

The LABSOLUTE® 96-well PCR plates offer optimum heat transfer between the thermal cycler and the reaction mix through their extra thin and uniform vessel walls. The plates are sealable with adhesive films, heat sealing films and cover strips with flat and domed caps. The slightly raised rims of the individual wells reduce cross-contamination and evaporation of the samples. The black alphanumeric coding allows optimal sample distinction. All plates are free of DNase, RNase and human DNA.

### 96-well, skirted, low profile

Skirted 96-well PCR plates are rigid and suited for processing and transportation by automatic pipetting systems. Cut corner: H1.

#### 96-well, semi-skirted

96-well semi-skirted PCR plates can be easily labelled or tagged with a barcode. Cut corner: A12.

#### 96-well, for Roche® LightCycler® 480

The plates are perfect for use in LC480. Homogeneous white coloration with titanium dioxide and a smooth surface reduce interfering autofluorescence signals. Cut corner: H12.

#### 96-well, non-skirted

96-well non-skirted PCR plates are suitable for a broad spectrum of thermal cyclers. Cut corner: H12.

Description	<b>Capacity</b> ml	Colour	PK	Art. no.
Skirted, low profile	0.15	Transparent	50	7.696 530
Non-skirted, standard profile	0.20	Transparent	50	7.696 535
Semi-skirted, standard profile	0.20	Transparent	50	7.696 540
Semi-skirted, standard profile, ABI® style	0.20	Opaque	50	7.696 541
Semi-skirted, low profile, for Roche LC480®	0.15	White	50	7.696 545



#### PCR ADHESIVE FOILS

Self-adhesive foils for safe sealing of 96-well PCR plates from LABSOLUTE® are free from human DNA and RNA, nucleases and pyrogens.

**PCR** adhesive foil: Polyester film with an acrylic-based adhesive, which is suitable for PCR, qPCR and other colorimetric assays, but has a low autofluorescence.

**Cover and storage foil:** PP foil with acrylic-based adhesive for universal closing of 96-well plates. Reliably protects the samples against evaporation and dust; removable, non-pierceable.

**PCR and storage foil:** The 20  $\mu$ m thick aluminium foil with acrylic-based adhesive is easily pierceable without sticking the pipette tips or creating a vacuum.

**qPCR** adhesive foil: This qPCR foil is specially developed for qPCR applications. The pressure-sensitive adhesive is only released when the film comes into contact with the raised rims of the individual wells, thereby ensuring reliable sealing with high transparency and minimal autofluorescence.

Description	Material	Temp. range °C	PK	Art. no.
PCR adhesive foil	Polyester	-20-110	100	7.696 570
Cover and storage foil	Polypropylene	-20-80	100	7.696 571
PCR and storage foil	Aluminium	-40-120	100	7.696 572
qPCR adhesive foil	Polyolefin with pressure-sensitive adhesive	-80-100	100	7.696 573

#### **DEEP WELL PLATES, PP AND PS**

The LABSOLUTE® deep well plates meet all the important requirements for a wide variety of applications in cell culture, pharmacy and molecular biology. In addition to the long-term storage of samples, the deep well plates are suitable for the cultivation of microorganisms, screening tests and extraction of nucleic acids and proteins.

- The plates are made of 100 % pure polymer without additives
- Manufactured in a class 8 clean room
- Free of RNase, DNase, human DNA, endotoxins, PCR inhibitors and ATP
- Due to the precise production complying with ANSI/SLAS 2004 standard, the plates are ideally suited for use with robots and automated liquid handling systems
- The plates made of PP offer high chemical resistance (e.g. to DMSO) and are autoclavable at 121 °C

Description	Material	<b>Capacity</b> ml	PK	Art. no.
Round bottom, round wells	PP	0.5	56	7.696 546
Round bottom, round wells	PP	1.2	32	7.696 547
Round bottom, round wells	PS	1.2	32	7.696 548
Round bottom, square wells	PP	2.2	32	7.696 549





# **SEALING MATS FOR DEEP WELL PLATES**

The LABSOLUTE® sealing mats for deep well plates protect the samples against contamination and evaporation. The alphanumeric grid allows easy sample identification.

Description	For	Material	PK	Art. no.
Round caps, piercable	7.696 546 / 7.696 547 / 7.696 548	TPE	50	7.696 575
Square caps, non- piercable	7.696 549	EVA	50	7.696 576



# **PETRI DISHES, PS**

The LABSOLUTE® petri dishes are made of crystal-clear PS and offer high optical clarity. The dishes with three vents support gas exchange and are ideal for short incubation times. Dishes without vents are best suited for anaerobic and long-term work. The Petri dishes are prepared and packed under aseptic conditions. Sterilisation for the sterile dishes is done by beta rays.

- Perfectly stackable
- Heat-resistant up to 80 °C

## PETRI DISHES, PS

Packed in sub-units of 10 plates ( $\emptyset$  = 60 and 150 mm), 15 plates ( $\emptyset$  = 55 mm) or 20 plates ( $\emptyset$  = 94 mm).

Outer Ø mm	Vents	Sterile	PK	Art. no.
55	Yes	Yes	1005	7.696 409
60	Yes	Yes	1080	7.696 410
60	No	Yes	1080	7.696 411
94	Yes	No	480	7.696 400
94	Yes	Yes	480	7.696 402
94	No	No	480	7.696 401
94	No	Yes	480	7.696 403
150	Ja	Ja	160	7.696 412



### CONTACT PLATES, STERILE, PS

The contact plates with counting grid are packed in sub-units of 10 plates.

Outer Ø	Height	Vents	PK	Art. no.
mm	mm			
55	17	Yes	800	7.696 413



# PETRI DISHES, SODA-LIME GLASS

The LABSOLUTE® petri dishes are made of soda-lime glass and supplied in two parts. The inner diameter and the height refer to the bottom plate, the outer diameter refers to the upper plate. They are autoclavable at 121 °C.

	1	

Int. diam.	Ext. Ø	Height	PK	Art. no.
mm	mm	mm		
34	40	12	1	7.692 000
55	60	15	1	7.692 001
75	80	15	1	7.692 002
95	100	10	1	7.692 003
95	100	15	1	7.692 004
84	90	15	1	7.692 005
95	100	20	1	7.692 006
115	120	20	1	7.692 007
142	150	25	1	7.692 008
172	180	30	1	7.692 009
193	200	30	1	7.692 010
193	200	50	1	7.692 011



# **RACK FOR PETRI DISHES, ACRYLIC**

The LABSOLUTE® rack for petri dishes is suitable for 30 dishes up to a diameter of 100 mm and designed to be used on the bench or mounted on the wall.

- Dimensions (W x H x D): 107 x 236 x 222 mm
- Fastening material included

Description	PK	Art. no.
Rack for Petri dishes	1	7.696 365

# **COTTON SWABS, WOODEN**

The LABSOLUTE® wooden sticks and cotton swabs are ideal for taking samples in the laboratory and for cleaning purposes.

- Wooden stick 2.2 x 150 mm
- Cotton wool head approx. 5 mm diameter
- Compact, firm cotton wool head

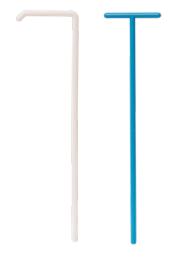
Head L	<b>ength</b> mm	PK	Art. no.
One sided	150	100	7.695 280
Without	150	1000	7.695 281

# **DISPOSABLE SPATULAS, L- AND T-SHAPED, PS**

The L- and T-shaped spatulas from LABSOLUTE® are ideally suited for the uniform plating of large volumes.

- Packed individually or 5 pieces each
- Smooth, rounded surface
- Gamma sterile

Descrip- tion	Sterile Sub-PK	PK	Art. no.
	Pieces		
L-shape	1	500	7.696 435
L-shape	5	2000	7.696 436
T-shape	1	500	7.696 437
T-shape	5	2000	7.696 438



# **DISPOSABLE INOCULATION LOOPS, STERILE**

The LABSOLUTE® disposable inoculation loops have a flexible loop at one end to inoculate soft agar culture media and a needle for picking individual colonies at the other end. The disposable inoculation loops are packed sterile in a paper/plastic blister of 20 pieces.

• Length: 195 mm

<b>Capacity</b> μl	Colour	PK	Art. no.
10	Blue	2000	7.696 430
1	White	2000	7.696 431



### **BAFFLED FLASKS, BOROSILICATE GLASS 3.3**

The LABSOLUTE® baffled flasks are made of high-quality borosilicate glass 3.3 and are therefore especially temperature and chemical resistant. The four baffles on the bottom cause a turbulent flow increasing the gas exchange surface and producing a higher oxygen transfer. The autoclavable flasks can be used with all common laboratory shakers.

# BAFFLED FLASKS, STRAIGHT NECK, BOROSILICATE GLASS 3.3

Erlenmeyer shape.

Capacity	Bottom diam.	Neck diam. approx.	Height	PK	Art. no.
ml	mm	mm	mm		
100	62	38	117	1	7.690 430
250	82	38	138	1	7.690 431
500	101	38	186	1	7.690 432
1000	129	38	222	1	7.690 433
2000	161	38	282	1	7.690 434





# BAFFLED FLASKS, GL45 SCREW NECK, BOROSILICATE GLASS 3.3

Erlenmeyer shape. Including PP screw cap.

Capacity	Bottom diam.	Neck thread	Height	PK	Art. no.
ml	mm	GL	mm		
250	82	45	130	1	7.690 441
500	101	45	165	1	7.690 442
1000	129	45	205	1	7.690 443
2000	166	45	265	1	7.690 444

### **PETRIFILM RACK**

The LABSOLUTE® petrifilm rack is suitable for the storage of 3M petrifilms. Using the rack the films can be stored space-saving and economic in every common incubator. The rack is made of white powder-coated metal wire.

- Capacity for up to 100 petrifilms
- Heat-resistant
- Dimensions (W x H x D) 82 x 97 x 93 mm

Description	PK	Art. no.
Petrifilm rack	1	7.697 011

# **CELL CULTURE FLASKS, TREATED, STERILE, PS**

The cell culture flasks from LABSOLUTE® are made exclusively of PS, corresponding to the highest international standards (USP Class VI). A short, wide and angled neck allows an easy handling while the risk of contamination is minimized. The treatment of surfaces allows adherent cells a uniform and even cell adhesion.

- Short and wide sloping neck for easy access
- Easily stackable
- Both flasks sides have engraved graduation with a labelling area
- Screw cap with a hydrophobic 0.22 µm filter for ventilation
- Packed upright in resealable bags
- Surface is treated with vacuum gas plasma
- Sterilized by radiation (SAL 10<sup>-6</sup>)

Cover type	Growth area cm²	Working volume ml	<b>Total</b> <b>volume</b> ml	Sterile Sub-PK Pieces	PK	Art. no.
Filter screw cap	12.5	20	25	10	200	7.696 780
Filter screw cap	25.0	40	50	10	200	7.696 781
Filter screw cap	75.0	175	250	5	100	7.696 782
Filter screw cap	182.5	400	600	5	40	7.696 783



# **CELL CULTURE DISHES, TREATED, STERILE, PS**

All LABSOLUTE® cell culture dishes are made of high-quality, optically clear PS, so that they are also suitable for microscopy. The treatment of surfaces allows adherent cells a uniform and even cell adhesion.

- Effective gas exchange
- · Easily stackable
- 60 mm and 100 mm dishes with grip ring
- Surface is treated with vacuum gas plasma
- Sterilized by radiation (SAL 10<sup>-6</sup>)

Ø	Height	Growth area	Sterile Sub-PK	PK	Art. no.
mm	mm	cm <sup>2</sup>	Pieces		
35	12	8.5	10	960	7.696 770
60	18	21.2	10	600	7.696 771
90	17	55.0	10	500	7.696 773
100	22	60.8	10	300	7.696 774
150	22	143.0	1	120	7.696 775



# **CELL CULTURE MULTIWELL PLATES, TREATED, STERILE, PS**

The LABSOLUTE® multiwell tissue culture plates are suitable for handling multiple samples in a single experiment. From 4-well up to 96-well plates, we offer you the appropriate multiwell plate for every experiment. Numbered wells and a rounded corner in the cover reduce misplacement and facilitate identification. The treatment of surfaces allows adherent cells a uniform and even cell adhesion.

- Evaporation is reduced by condensation rings
- Easily stackable
- Individually wrapped in paper/plastic blister pack
- Surface is treated with vacuum gas plasma
- Sterilized by radiation (SAL 10<sup>-6</sup>)

No. of wells	Total volume per well	Working volume per well	Growth area per well	PK	Art. no.
	ml	ml	cm <sup>2</sup>		
4	1.50	0.18-0.28	1.96	100	7.696 789
6	17.00	1.90-2.90	9.60	100	7.696 790
12	6.80	0.76-1.14	3.85	100	7.696 791
24	3.50	0.38-0.57	1.93	100	7.696 792
48	1.55	0.19-0.29	0.84	100	7.696 793
96	0.39	0.075-0.20	0.33	100	7.696 794



# **CELL SCRAPERS AND CELL LIFTERS, STERILE**



The LABSOLUTE® cell scrapers and lifters enable easy and efficient cell harvest. Optimize your cell harvest by using the cell scraper for cell culture flasks and cell lifter for dishes. The handle is made of ABS and allows the controlled use of the thin, flexible blade made of TPE.

- Scraper in two different handle lengths
   (25 cm with 2 cm blade and 39 cm with 3 cm blade)
- Two blade positions: scraper and lifter
- Individually wrapped in paper/plastic blister packs

Description	Length	Blade length	PK	Art. no.
	mm	mm		
Cell scraper	250	20	100	7.696 760
Cell lifter	250	20	100	7.696 761
Cell scraper	390	30	100	7.696 762

#### **CELL STRAINERS**

The LABSOLUTE® cell strainers are made of a strong nylon mesh and are characterized by an even distribution of the mesh pores. With the sterile cell sieves, cell suspensions can be quickly and easily filtered to collect primary cells or prepare samples for flow cytometry.



- Available in three mesh sizes: 40, 70 and 100  $\mu m$
- Color coded for easy distinction
- Extended edge allows easy handling even with tweezers
- Designed to fit standard 50 ml centrifuge tubes
- DNase, RNase and pyrogen-free
- Individually packed, gamma-irradiated (SAL 10-6)

Mesh size μm	Colour	PK	Art. no.
40	Blue	50	7.696 767
70	White	50	7.696 768
100	Yellow	50	7.696 769

# **SPOT PLATES, PORCELAIN**



The LABSOLUTE® spot plates are made of high-quality porcelain. The surface is completely glazed. Compared to the reaction plates made from plastics, the porcelain spot plates are much more resistant against influences of temperature and chemicals. Finally the spot plates are easy to clean and autoclavable at 121 °C.

Number of	Width	Length	Bore diam.	PK	Art. no.
cavities	mm	mm	mm		
6	112	81	25	1	7.694 985
12	115	91	17	1	7.694 986

#### **VACUUM FILTRATION**

The LABSOLUTE® filtration units are ideal for filtration of buffer solutions, cell culture media, microbiological media and other biological fluids. The PES membrane guarantees good flow through times and low protein binding.

- High traceability thanks to expiry date and Lot. no. on each filter
- 0.2 µm: Ideal for sterilization applications
- 0.45 µm: Ideal for clarifying buffer solutions and nutrient media preparation
- Filtrate bottle with lid for convenient storage of the filtered solution
- Individually packaged
- Different volumes available
- Pyrogen free and not cytotoxic
- Quick connection for hoses with an inside diameter of 8 to 12 mm
- Gamma sterilized (SAL 10<sup>-6</sup>)

### FILTRATION UNITS, STERILE, PES

The complete filtration unit consists of a filter funnel with vacuum connection and lid, the filtrate bottle and the associated screw cap.

Capacity	Pore size	PK	Art. no.
ml	μm		
150	0.22	12	7.697 200
250	0.22	12	7.697 201
500	0.22	12	7.697 202
1000	0.22	12	7.697 203
500	0.45	12	7.697 206
1000	0.45	12	7.697 207



# FILTER FUNNEL, STERILE, PES

The filter funnels from LABSOLUTE® can be easily screwed onto all standard bottles with a 45 mm thread. The membrane type and pore size are imprinted for easy identification.

Capacity	Pore size	РК	Art. no.
ml	μm		
150	0.22	24	7.697 220
250	0.22	24	7.697 221
500	0.22	24	7.697 222
1000	0.22	24	7.697 223
500	0.45	24	7.697 226
1000	0.45	24	7.697 227





### FILTRATE BOTTLE, STERILE, PS

The LABSOLUTE® filtrate bottles made of PS have ergonomic design and are ideal to store sterile solutions. The caps are made of PE.

<b>Capacity</b> ml	РК	Art. no.
150	24	7.697 240
250	24	7.697 241
500	24	7.697 242
1000	24	7.697 243

# **DISPOSABLE SYRINGES, NON-STERILE, PP**

The two-part, non-sterile LABSOLUTE® disposable syringes, with Luer lock connection complying with DIN EN 1707 or Luer slip connection complying with DIN EN 20594-1, are fully manufactured from robust, chemical resistant PP. They are free of latex, plasticizers and PVC. There are no rubber plunger seals or silicone lubricants that can cause contamination of the samples. The syringes are also impressive due to the safe functional back-stop feature and an easy-to-read permanent graduation.



### DISPOSABLE SYRINGES, LUER LOCK, NON-STERILE, PP

<b>Capacity</b> ml	РК	Art. no.
2	100	7.672 433
5	100	7.643 933
10	100	6.259 211
20	100	7.672 432



# DISPOSABLE SYRINGES, LUER SLIP, NON-STERILE, PP

<b>Capacity</b> ml	PK	Art. no.
1	100	7.657 545
2	100	7.644 125
5	100	7.644 126
10	100	7.644 127
20	100	7.644 128





### **CRIMP NECK VIALS AND MICRO-VIALS ND8**

Crimp neck vials and micro-vials ND8 are available in clear and amber first hydrolytic class glass. They can be sealed with 8 mm crimp caps, 9 mm PE caps or 8 mm push-on caps. The micro-vials often require an adapter so that they can be used in an autosampler.

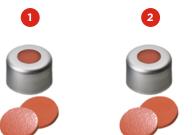
These vials are especially used with autosamplers made by Beckman, CTC, Gilson, Knauer, Shimadzu, Spark, Varian and VWR/Hitachi.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, flat bottom	1.2	40 x 8.2	100	7.622 387
(2)	Amber glass, flat bottom	1.2	40 x 8.2	100	7.616 830
(3)	Clear glass, flat bottom	0.7	40 x 7	1000	7.622 388
(4)	Amber glass, flat bottom	0.7	40 x 7	1000	7.630 552
(5)	Clear glass, round bottom	0.3	31.5 x 5.5	1000	7.615 704
(6)	Clear glass, conical tip	0.2	31.5 x 5.5	1000	7.614 045
(7)	Clear glass, conical tip	0.6	40 x 7	1000	7.631 599
(8)	Amber glass, conical tip	0.6	40 x 7	1000	7.616 831
(9)	Amber glass, conical tip	0.4	30 x 7	100	7.616 832

### **CRIMP SEALS ND8**

Crimp seals ND8 are made of aluminium. They are plain lacquered with a 4 mm hole and supplied with fitted septa made of a variety of materials.

### WITH NATURAL RUBBER / TEF SEPTA



These septa are temperature-resistant from -40  $^{\circ}$ C to 120  $^{\circ}$ C and ideal for multiple injections thanks to their excellent resealability properties.

Туре	Description	Hardness	<b>Thickness</b> mm	PK	Art. no.
(1)	Natural rubber red-orange / TEF transparent	60° shore A	1.0	100	7.619 110
(2)	Natural rubber red-orange / TEF transparent, IM-Quality	60° shore A	1.0	100	7.630 551





These septa are temperature-resistant from -40  $^{\circ}$ C to 110  $^{\circ}$ C and easier to penetrate and have lower particle formation than septa made of natural rubber.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	RedRubber / PTFE beige	45° shore A	1.0	100	7.659 895

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# WITH SILICONE / PTFE SEPTA

These septa are temperature-resistant from -60 °C to 200 °C and have better purity than septa made of natural rubber or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications. Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	PTFE virginal	53° shore D	0.25	100	7.615 706
(2)	Silicone white / PTFE red, UltraClean	45° shore A	1.3	100	6.205 575
(3)	PTFE red / silicone white / PTFE red	45° shore A	1.0	100	7.620 889
(4)	Silicone white / PTFE red, slitted	45° shore A	1.3	100	7.616 833























### **SPECIAL SEALS FOR CRIMP NECK ND8**

The blue Push-On caps made of PE have a thinned penetration point, but no additional septum. They are an inexpensive alternative to crimp caps for non-critical applications.

The transparent PE caps are 9 x 5.9 mm and have a 4 mm centre hole.

Septa made of natural rubber are temperature-resistant from -40  $^{\circ}$ C to 120  $^{\circ}$ C and ideal for multiple injections thanks to their excellent resealability properties.

Туре	Description	Hardness	Thickness	PK	Art. no.
			mm		
(1)	PE Push-On cap, blue, thinned penetration point			100	7.616 836
(2)	PE cap, transparent, natural rubber red-orange / TEF transparent	60° shore A	1.3	100	7.616 837













Suitable LABSOLUTE® crimping tools are listed from page 221

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# SCREW NECK VIALS AND MICRO-VIALS ND8, SMALL OPENING

Screw neck vials and micro-vials ND8 are available in clear and amber first hydrolytic class glass. They have a 8-425 thread and are used as standard in GC and HPLC applications. A large selection of micro-inserts with a 5 mm diameter is available for these vials. The micro-vials often require an adapter so that they can be used in an autosampler.

These vials are especially used with autosamplers made by Beckman, Shimadzu, Spark, Varian and VWR/Hitachi.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, conical tip	1.1	32 x 11.6	100	7.631 774
(2)	Clear glass, flat bottom*	1.5	32 x 11.6	100	6.401 175
(3)	Clear glass, flat bottom "silanized"	1.5	32 x 11.6	100	7.677 377
(4)	Amber glass, flat bottom*	1.5	32 x 11.6	100	7.615 163
(5)	Clear glass, flat bottom, with label	1.5	32 x 11.6	100	7.613 087
(6)	Amber glass, flat bottom, with label	1.5	32 x 11.6	100	7.613 388
(7)	Amber glass, flat bottom "silanized"	1.5	32 x 11.6	100	7.648 597

<sup>\*</sup> Especially suitable for VWR (Merck®) / Hitachi instruments



# MICRO-INSERTS FOR SCREW NECK VIALS ND8, SMALL OPENING

Micro-inserts made of clear first hydrolytic class glass are suitable for screw neck vials ND8 with small opening.

Туре	Description	<b>Usable</b> <b>volume</b> μl	<b>Nominal</b> <b>volume</b> μl	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, conical tip 15 mm**	150	200	31 x 5	1000	7.613 389
(2)	Clear glass, conical tip 9 mm	200	250	31 x 5	1000	7.616 846
(3)	Clear glass, conical tip, with polymer foot	150	200	29 x 5	1000	7.614 073
(4)	Clear glass, flat bottom	260	300	31 x 5	1000	7.616 845
(5)	Clear glass, conical tip*	110	200	27.5 x 4	1000	7.632 176
(6)	Metal spring			36 x 5	100	7.632 175

<sup>\*</sup> Metal spring 7.632 175 required

<sup>\*\*</sup> Especially suitable for VWR (Merck\*) / Hitachi instruments

### **SCREW SEALS ND8**

Screw seals ND8 are made of PP and are supplied without or with fitted septa made of a variety of materials. They have a 8-425 thread, a 5.5 mm centre hole or are closed.

# WITH NATURAL RUBBER / TEF SEPTA

These septa are temperature-resistant from -40 °C to 120 °C and ideal for multiple injections thanks to their excellent resealability properties.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Natural rubber red-orange / TEF transparent*	60° shore A	1.3	100	7.612 928
(2)	Natural rubber red-orange / TEF transparent, closed	60° shore A	1.3	100	6.802 991

<sup>\*</sup> Especially suitable for VWR (Merck®) / Hitachi instruments







# WITH REDRUBBER / PTFE SEPTA

These septa are temperature-resistant from -40  $^{\circ}$ C to 110  $^{\circ}$ C and easier to penetrate and have lower particle formation than septa made of natural rubber.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	RedRubber / PTFE beige	45° shore A	1.3	100	7.654 401
(2)	RedRubber / PTFE beige, closed	45° shore A	1.3	100	7.659 896











# WITH BUTYL / PTFE SEPTA

These septa are temperature-resistant from -40  $^{\circ}$ C to 120  $^{\circ}$ C and have excellent chemical properties with regard to cleanliness.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Butyl red / PTFE grey	55° shore A	1.3	100	7.616 773
(2)	Butyl red / PTFE grey, closed	55° shore A	1.3	100	7.616 149









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# WITH SILICONE / PTFE SEPTA

These septa are temperature-resistant from -60 °C to 200 °C and have better purity than septa made of natural rubber, butyl or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications. Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Silicone cream / PTFE red, UltraClean	55° shore A	1.5	100	7.630 256
(2)	Silicone white / PTFE red, UltraClean	45° shore A	1.3	100	7.604 778
(3)	Silicone white / PTFE red, UltraClean, closed	45° shore A	1.3	100	7.621 679
(4)	Silicone blue transparent / PTFE white	45° shore A	1.3	100	7.613 320
(5)	Silicone dark blue / PTFE white	45° shore A	1.3	100	7.631 775
(6)	Silicone white / PTFE red, slitted	45° shore A	1.3	100	7.614 038
(7)	PTFE red / silicone white / PTFE red	45° shore A	1.0	100	7.630 523









Septa made from Viton have a very high resistance against a wide range of solvents. These septa are highly recommended for use with chlorinated solvents. Viton septa are not suitable for multiple injections or high injection speeds.

Туре	Description	Hardness	Thickness	PK	Art. no.
			mm		
(1)	Viton 1A black	70° shore A	1.5	100	7.646 553

















# WITHOUT SEPTA

Suitable septa with a diameter of 8 mm made of different materials are available on request.

Туре	Description	PK	Art. no.
(1)	Screw cap, black*	100	6.051 375
(2)	Screw cap, black, closed	100	7.621 592
(3)	Screw cap, white	100	7.613 312
(4)	Screw cap, white, closed	100	7.639 608

<sup>\*</sup> Especially suitable for VWR (Merck®) / Hitachi instruments

# **KITS ND8**

The LABSOLUTE® kits ND8 contain shrink-wrapped screw vials ND8 with small opening made of clear or amber first hydrolytic class glass and corresponding screw caps made of PP. In some cases, caps are already pre-screwed on the vials.

- Many kits are especially adjusted for use with an autosampler of one defined manufacturer
- Kits with pre-screwed seals reduce the risk of sample contamination
- Kits with pre-assembled micro inserts are available on request

Description	<b>Capacity</b> ml	For Sampler	PK	Art. no.
Clear glass, black cap, 5.5 mm hole, natural rubber red-orange / TEF transparent, 60° shore A, 1.3 mm	1.5	Merck®/Hitachi	100	7.618 022
Clear glass, black cap, 5.5 mm hole, silicone white / PTFE blue, 55° shore A, 0.9 mm, slitted	1.5	Merck®/Hitachi	100	7.621 198
Clear glass, small opening, black cap, 5.5 mm hole, <b>pre-screwed</b> , silicone white / PTFE red, 45° shore A, 1.3 mm, UltraClean	1.5	Merck®/Hitachi	100	7.647 530
Clear glass, black cap, 5.5 mm hole, pre-screwed, silicone white / PTFE blue, 55° shore A, 0.9 mm, slitted	1.5	Merck®/Hitachi	100	7.632 650
Clear glass, black cap, 5.5 mm hole, silicone white / PTFE red, 45° shore A, 1.3 mm, UltraClean	1.5	Varian	100	7.629 515
Clear glass, label and filling lines, black cap, 5.5 mm hole, silicone white / PTFE red, 45° shore A, 1.3 mm, UltraClean	1.5	Varian	100	9.003 559
Amber glass, black cap, 5.5 mm hole, silicone white / PTFE red, 45° shore A, 1.3 mm, UltraClean	1.5	Varian	100	9.003 557
Amber glass, label and filling lines, black cap, 5.5 mm hole, silicone white / PTFE red, 45° shore A, 1.3 mm, UltraClean	1.5	Varian	100	9.003 558





Further LABSOLUTE® ND8 vials, caps, septa and kits available on request

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# SHORT THREAD VIALS AND MICRO-VIALS ND9, WIDE OPENING

Short thread vials and micro-vials ND9 are available in clear and amber first hydrolytic class glass and can be used on almost all autosamplers. You can replace other 1.5 ml vial Types like 11 mm crimp neck vials, 8-425 and 10-425 screw neck vials, which can help rationalize stocks.

The wide opening requires matching micro-inserts with 6 mm diameter.

Due to the technical geometry, the vails can be used on all common autosamplers, but preferentially on instruments made by Agilent, HTA, Shimadzu, Thermo Scientific, Varian and Waters.



Туре	Description	<b>Capacity</b> ml	Size mm	PK	Art. no.
(1)	Clear glass, flat bottom, with integrated micro-insert, with label	0.2	32 x 11.6	100	7.616 849
(2)	Amber glass, flat bottom, with integrated micro-insert, with label	0.2	32 x 11.6	100	7.660 024
(3)	Clear glass, flat bottom, with integrated micro-insert "Base Bonded"	0.3	32 x 11.6	100	7.629 622
(4)	Amber glass, flat bottom, with integrated micro-insert "Base Bonded"	0.3	32 x 11.6	100	7.648 146
(5)	Amber glass, flat bottom, with integrated micro-insert, with label "Base Bonded"	0.3	32 x 11.6	100	7.647 478
(6)	Clear glass, flat bottom, with inner cone	0.9	32 x 11.6	100	7.677 368
(7)	Clear glass, flat bottom, with inner cone	1.1	32 x 11.6	100	7.616 848
(8)	Clear glass, flat bottom, with inner cone "silanized"	1.1	32 x 11.6	100	7.648 599
(9)	Amber glass, flat bottom, with inner cone	1.1	32 x 11.6	100	7.647 480
(10)	Clear glass, flat bottom	1.5	32 x 11.6	100	7.663 231
(11)	Clear glass, flat bottom "silanized"	1.5	32 x 11.6	100	7.630 175
(12)	Amber glass, flat bottom	1.5	32 x 11.6	100	7.663 233
(13)	Clear glass, flat bottom, with label	1.5	32 x 11.6	100	7.663 232
(14)	Clear glass, flat bottom, with label "silanized"	1.5	32 x 11.6	100	7.643 512
(15)	Amber glass, flat bottom, with label	1.5	32 x 11.6	100	7.645 571
(16)	Amber glass, flat bottom, with label "silanized"	1.5	32 x 11.6	100	7.616 003

# MICRO-INSERTS FOR VIALS WITH WIDE OPENING, GLASS

The micro-inserts made of first hydrolytic class glass are suitable for

- Short thread vials ND9, with wide opening made of glass or plastic
- Screw neck vials ND10, with wide opening
- Crimp neck vials ND11, with wide opening
- Snap ring vials ND11, with wide opening
- Shell vials, with a nominal volume of 2 ml

The micro-inserts with polymer foot are not suitable for shell vials.

Туре	Description	Usable volume µl	Nominal volume µl	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, conical tip 15 mm	250	340	31 x 6	1000	7.615 290
(2)	Clear glass, conical tip 15 mm "silanized"	250	340	31 x 6	1000	7.616 933
(3)	Clear glass, conical tip 12 mm	300	350	31 x 6	1000	7.620 929
(4)	Clear glass, conical tip, with polymer foot	250	300	29 x 5.7	1000	7.614 088
(5)	Clear glass, conical tip, with polymer foot "silanized"	250	300	29 x 5.7	1000	7.615 561
(6)	Clear glass, flat bottom	350	500	31 x 6	1000	6.803 175
(7)	Clear glass, flat bottom "silanized"	350	500	31 x 6	1000	7.646 457



# SHORT THREAD VIALS AND MICRO-VIALS ND9, PMP OR PP

Short thread vials and micro-vials ND9 with wide opening made of natural or amber PMP or PP are a shatterproof alternative to glass vials.

Туре	Description	<b>Capacity</b> ml	Material	<b>Size</b> mm	PK	Art. no.
(1)	Clear, flat bottom, with glass micro-insert, TopSert	0.2	PMP	32 x 11.6	100	7.631 401
(2)	Clear, flat bottom, with glass micro-insert, TopSert "silanized"	0.2	PMP	32 x 11.6	100	7.616 934
(3)	Amber, flat bottom, with glass micro-insert, TopSert	0.2	PMP	32 x 11.6	100	7.616 850
(4)	Amber, flat bottom, with glass micro-insert, TopSert "silanized"	0.2	PMP	32 x 11.6	100	7.616 935
(5)	Clear, flat bottom	0.3	PMP	32 x 11.6	100	7.616 859
(6)	Clear, flat bottom	0.3	PP	32 x 11.6	100	7.618 897
(7)	Amber, flat bottom	0.3	PP	32 x 11.6	100	7.631 798
(8)	Clear, flat bottom	0.7	PP	32 x 11.6	100	7.618 914
(9)	Clear, flat bottom, with filling lines	1.5	PP	32 x 11.6	100	6.205 647
(10)	Amber, flat bottom, with filling lines	1.5	PP	32 x 11.6	100	7.616 851



# MICRO-INSERTS FOR VIALS WITH WIDE OPENING, PP

The micro-inserts made of transparent PP are suitable for

- Short thread vials ND9, with wide opening made of glass or plastic
- Screw neck vials ND10, with wide opening
- Crimp neck vials ND11, with wide opening
- Snap ring vials ND11, with wide opening
- Shell vials, with a nominal volume of 2 ml

The micro-inserts with polymer foot are not suitable for shell vials.

Туре	Description	<b>Usable</b> <b>volume</b> μl	Nominal volume	<b>Size</b>	PK	Art. no.
(1)	PP, transparent, conical tip 10 mm	250	300	29 x 6	1000	7.654 481
(2)	PP, transparent, conical tip, with polymer foot	250	300	29 x 6	1000	7.648 594

### SHORT THREAD VIALS AND MICRO-VIALS ND9, SURESTOP™

The short thread vials ND9 SureStop™ are available in clear and amber first hydrolytic class glass and 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.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, flat bottom	1.5	32 x 11.6	100	7.639 476
(2)	Clear glass, flat bottom, with label	1.5	32 x 11.6	100	7.639 477
(3)	Amber glass, flat bottom, with label	1.5	32 x 11.6	100	7.639 478

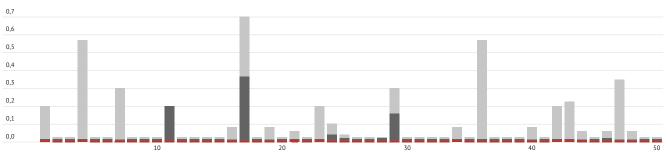




### SEAL TIGHTNESS STUDY

50 short thread vials and short thread SureStop™ vials were screwed or screwed and over-tightened by multiple test subjects. After 24 hours, the volume of evaporated solvent (methanol) was measured.

#### Deviation [g]



■ SureStop<sup>™</sup> via (over-tightening impossible due to twist stop function)

Common vial (over-tightened)

■ Common vial (tightened perfectly)

180

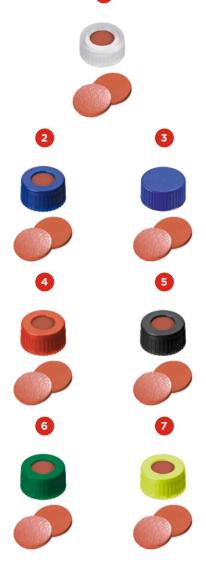
#### **SHORT THREAD SCREW SEALS ND9**

Short thread screw seals ND9 are made of PP and are supplied with fitted septa made of a variety of materials. They have a 6 mm centre hole and are available in different colours. The screw caps are similar in shape to the crimp caps and are therefore also suitable for robotic handling.

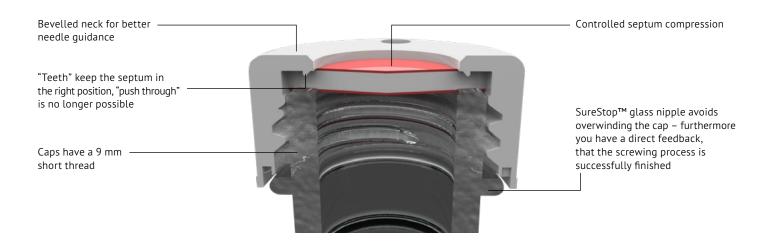
#### WITH NATURAL RUBBER / TEF SEPTA

These septa are temperature-resistant from -40 °C to 120 °C and are ideal for multiple injections thanks to their excellent resealability properties.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Natural rubber red-orange / TEF transparent, transparent cap	60° shore A	1.0	100	6.088 872
(2)	Natural rubber red-orange / TEF transparent, blue cap	60° shore A	1.0	100	7.663 239
(3)	Natural rubber red-orange / TEF transparent, blue cap, closed	60° shore A	1.0	100	7.618 912
(4)	Natural rubber red-orange / TEF transparent, red cap	60° shore A	1.0	100	7.621 157
(5)	Natural rubber red-orange / TEF transparent, black cap	60° shore A	1.0	100	7.616 538
(6)	Natural rubber red-orange / TEF transparent, green cap	60° shore A	1.0	100	7.631 765
(7)	Natural rubber red-orange / TEF transparent, yellow cap	60° shore A	1.0	100	7.616 729



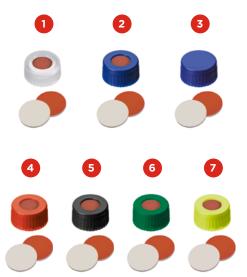
#### A DEVELOPMENT FOR YOUR SAFETY - SURESTOP™-VIALS



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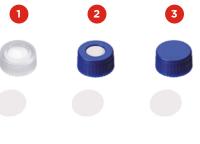
#### WITH REDRUBBER / PTFE SEPTA

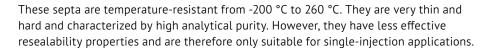
These septa are temperature-resistant from -40 °C to 110 °C. They are easier to penetrate and have lower particle formation than septa made of natural rubber.

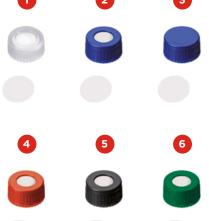


Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	RedRubber / PTFE beige, transparent cap	45° shore A	1.0	100	7.636 712
(2)	RedRubber / PTFE beige, blue cap	45° shore A	1.0	100	7.663 240
(3)	RedRubber / PTFE beige, blue cap, closed	45° shore A	1.0	100	7.646 874
(4)	RedRubber / PTFE beige, red cap	45° shore A	1.0	100	7.651 190
(5)	RedRubber / PTFE beige, black cap	45° shore A	1.0	100	7.654 495
(6)	RedRubber / PTFE beige, green cap	45° shore A	1.0	100	7.634 402
(7)	RedRubber / PTFE beige, yellow cap	45° shore A	1.0	100	7.636 713

#### WITH PURE PTFE SEPTA







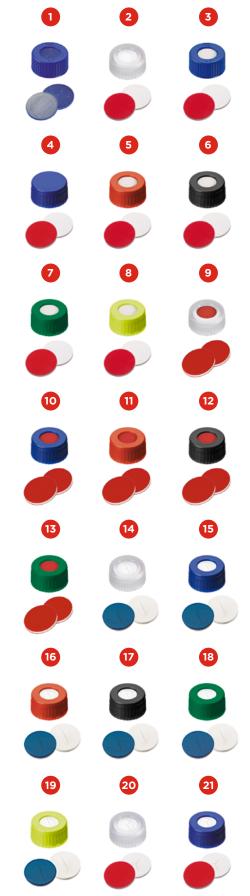
Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	PTFE virginal, transparent cap	53° shore D	0.2	100	7.612 019
(2)	PTFE virginal, blue cap	53° shore D	0.2	100	7.612 018
(3)	PTFE virginal, blue cap, closed	53° shore D	0.2	100	7.618 911
(4)	PTFE virginal, red cap	53° shore D	0.2	100	7.646 560
(5)	PTFE virginal, black cap	53° shore D	0.2	1000	6.238 920
(6)	PTFE virginal, green cap	53° shore D	0.2	100	7.646 561

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## WITH SILICONE / PTFE SEPTA

These septa are temperature-resistant from -60 °C to 200 °C and have better purity than septa made of natural rubber, butyl or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications. Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Silicone dark-blue transparent / PTFE natural, transparent cap	35° shore A	1.0	100	7.646 562
(2)	Silicone white / PTFE red, UltraClean, transparent cap	55° shore A	1.0	100	7.612 027
(3)	Silicone white / PTFE red, UltraClean, blue cap	55° shore A	1.0	100	7.663 241
(4)	Silicone white / PTFE red, UltraClean, blue cap, closed	55° shore A	1.0	100	7.633 658
(5)	Silicone white / PTFE red, UltraClean, red cap	55° shore A	1.0	100	7.630 473
(6)	Silicone white / PTFE red, UltraClean, black cap	55° shore A	1.0	100	7.616 539
(7)	Silicone white / PTFE red, UltraClean, green cap	55° shore A	1.0	100	7.618 875
(8)	Silicone white / PTFE red, UltraClean, yellow cap	55° shore A	1.0	100	7.617 539
(9)	PTFE red / silicone white / PTFE red, transparent cap	45° shore A	1.0	100	7.630 691
(10)	PTFE red / silicone white / PTFE red, blue cap	45° shore A	1.0	100	7.615 823
(11)	PTFE red / silicone white / PTFE red, red cap	45° shore A	1.0	100	7.630 477
(12)	PTFE red / silicone white / PTFE red, black cap	45° shore A	1.0	100	7.616 853
(13)	PTFE red / silicone white / PTFE red, green cap	45° shore A	1.0	100	7.636 888
(14)	Silicone white / PTFE blue, slitted, transparent cap	55° shore A	1.0	100	7.615 326
(15)	Silicone white / PTFE blue, slitted, blue cap	55° shore A	1.0	100	7.645 303
(16)	Silicone white / PTFE blue, slitted, red cap	55° shore A	1.0	100	7.616 852
(17)	Silicone white / PTFE blue, slitted, black cap	55° shore A	1.0	100	7.616 854
(18)	Silicone white / PTFE blue, slitted, green cap	55° shore A	1.0	100	7.643 812
(19)	Silicone white / PTFE blue, slitted, yellow cap	55° shore A	1.0	100	7.677 363
(20)	Silicone white / PTFE red, pre-cut (Y), transparent cap	55° shore A	1.0	100	7.654 493
(21)	Silicone white / PTFE red, pre-cut (Y), blue cap	55° shore A	1.0	100	7.654 494



#### WITH SILICONE / PTFE SEPTA, MAGNETIC

These short thread screw seals have a mounted magnetic sleeve (gold colour). They are more convenient and secure to handle than 11 mm magnetic crimp seals. The septa are temperature-resistant from -60  $^{\circ}$ C to 200  $^{\circ}$ C. The caps have been officially tested and approved for CTC.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Silicone white / PTFE red, UltraClean	55° shore A	1.0	100	7.618 913
	Silicone white / PTFE blue, slitted	55° shore A	1.0	100	7.673 794











#### WITH VITON SEPTA

Septa made of Viton have a very high resistance against a wide range of solvents. These septa are highly recommended for use with chlorinated solvents. Viton septa are not suitable for multiple injections or high injection speeds.

Туре	Description	Hardness	<b>Thickness</b> mm	PK	Art. no.
(1)	Viton 1A black, transparent cap	70° shore A	1.0	100	7.616 025

#### SHORT THREAD SCREW SEALS ND9, ULTRABOND

Short thread screw seals ND9 are made of PP and are supplied with fitted septa made of a variety of materials. The caps have a 6 mm centre hole and are available in different colours. The screw caps are similar in shape to the crimp caps and are therefore also suitable for robotic handling.

In this case, caps and septa form an inseparable unit (Ultrabond), which means that even a blunt needle is unable to push the septa into the vial.

#### WITH REDRUBBER / PTFE SEPTA, ULTRABOND

These septa are temperature-resistant from -40 °C to 110 °C. They are easier to penetrate and have lower particle formation than septa made of natural rubber.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	RedRubber / PTFE beige, blue cap	45° shore A	1.0	100	7.646 374

#### WITH SILICONE / PTFE SEPTA, ULTRABOND

These septa are temperature-resistant from -60 °C to 200 °C and have better purity than septa made of red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Silicone white / PTFE red, black cap	45° shore A	1.3	100	7.616 855
(2)	Silicone beige / PTFE white, blue cap	45° shore A	1.3	100	7.616 856
(3)	Silicone beige / PTFE white, slitted, blue cap	45° shore A	1.3	100	7.616 857













#### MS SHORT THREAD SCREW SEAL ND9

This transparent seal is certified for GC/MS and LC/MS applications. It has a thinned penetration area and a diaphragm. There is no bleeding, and the seal is fully inert. Therefore a contamination of the sample is impossible. Nevertheless the screw cap is as easy to penetrate as a normal septum and just as tight.

Туре	Description	PK	Art. no.
(1)	MS short thread screw cap, transparent	100	7.618 910







#### **KITS ND9**

The LABSOLUTE® kits ND9 contain shrink-wrapped short thread vials ND9 made of clear or amber first hydrolytic class glass and corresponding short thread screw caps made of PP.

Kits containing Ultrabond seals are especially for the use with Waters autosamplers.

Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
Clear glass, transparent caps, 6 mm centre hole, natural rubber red-orange / TEF transparent, 60° shore A, 1.0 mm	1.5	32 x 11.6	100	7.620 724
Clear glass, blue caps, 6 mm centre hole, natural rubber red-orange / TEF transparent, 60° shore A, 1.0 mm	1.5	32 x 11.6	100	7.614 249
Clear glass, transparent caps, 6 mm centre hole, silicone white / PTFE red, 55° shore A, 1.0 mm, UltraClean	1.5	32 x 11.6	100	9.003 561
Clear glass, blue caps, 6 mm centre hole, silicone white / PTFE red, 55° shore A, 1.0 mm, UltraClean	1.5	32 x 11.6	100	9.003 560
Clear glass, with label, blue caps, 6 mm centre hole, silicone white / PTFE red, 55° shore A, 1.0 mm, UltraClean	1.5	32 x 11.6	100	7.661 859
Amber glass, with label, blue caps, 6 mm centre hole, silicone white / PTFE red, 55° shore A, 1.0 mm, UltraClean	1.5	32 x 11.6	100	7.614 414
Clear glass, blue caps, 6 mm centre hole, PTFE red / silicone white / PTFE red, 45° shore A, 1.0 mm	1.5	32 x 11.6	100	7.647 533
Clear glass, blue caps, 6 mm centre hole, silicone white / PTFE blue, 55° shore A, 1.0 mm, slitted	1.5	32 x 11.6	100	7.621 765
Clear glass, with label, blue caps, 6 mm centre hole, silicone white / PTFE blue, 55° shore A, 1.0 mm, slitted	1.5	32 x 11.6	100	7.651 823
Amber glass, with label, blue caps, 6 mm centre hole, silicone white / PTFE blue, 55° shore A, 1.0 mm, slitted	1.5	32 x 11.6	100	7.647 534
PP, transparent, blue caps, 6 mm centre hole, silicone white / PTFE blue, 55° shore A, 1.0 mm, slitted	0.3	32 x 11.6	100	7.620 723
PP, transparent, blue caps, 6 mm centre hole, silicone beige / PTFE white, 45° shore A, 1.3 mm, slitted, Ultrabond	0.3	32 x 11.6	100	7.638 940
Amber glass, with label, blue caps, 6 mm centre hole, silicone white / PTFE beige, 45° shore A, 1.3 mm, slitted	1.5	32 x 11.6	100	9.003 563
Clear glass, blue caps, 6 mm centre hole, silicone white / PTFE beige, 45° shore A, 1.3 mm, Ultrabond, manufacturer quality	1.5	32 x 11.6	100	7.643 632
Clear glass, blue caps, 6 mm centre hole, silicone white / PTFE beige, 45° shore A, 1.3 mm, slitted, Ultrabond, manufacturer quality	1.5	32 x 11.6	100	7.643 625
Amber glass, blue caps, 6 mm centre hole, silicone white / PTFE beige, 45° shore A, 1.3 mm, Ultrabond, manufacturer quality	1.5	32 x 11.6	100	7.643 633
Clear glass, with label, blue caps, 6 mm centre hole, silicone beige / PTFE white, 45° shore A, 1.3 mm, Ultrabond	1.5	32 x 11.6	100	7.638 941
Clear glass, with label, blue caps, 6 mm centre hole, silicone white / PTFE beige, 45° shore A, 1.3 mm, slitted, Ultrabond, manufacturer quality	1.5	32 x 11.6	100	6.266 923

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#### KITS ND9, CERTIFIED

These kits correspond to the standard ND9 kits with regard to their setup (shrink-wrapped short thread vials ND9 made of clear or amber first hydrolytic class glass with corresponding short thread screw caps made of PP). But there is a batch-specific test certificate with HPLC and GC chromatographs for every kit available on request. Certified kits are delivered completely shrink-wrapped. This means additional safety for the end user.

Each batch of HPLC and GC certified kits is tested on 15 critical parameters. In a method corresponding as far as possible to real laboratory conditions, an HPLC/UV and GC/MS test of a vial and seal combination will be carried out.

Kits containing Ultrabond seals are especially for the use with Waters autosamplers.

Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
Clear glass, with label, blue caps, 6 mm centre hole, silicone white / PTFE red, 55° shore A, 1.0 mm, UltraClean	1.5	32 x 11.6	100	7.658 886
Amber glass, with label, blue caps, 6 mm centre hole, silicone white / PTFE red, 55° shore A, 1.0 mm, UltraClean	1.5	32 x 11.6	100	7.658 887
Clear glass, with label, blue caps, 6 mm centre hole, silicone beige / PTFE white, slitted, 45° shore A, 1.3 mm, Ultrabond	1.5	32 x 11.6	100	7.644 568







Further LABSOLUTE® ND9 vials, caps, septa and kits available on request



## SCREW NECK VIALS AND MICRO-VIALS ND10, WIDE OPENING

Screw neck vials ND10 with 10-425 thread facilitate easy filling with viscous substances thanks to their wide opening. The vials are available in clear and amber first hydrolytic class glass.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, flat bottom	1.5	32 x 11.6	100	7.615 291
(2)	Amber glass, flat bottom	1.5	32 x 11.6	100	7.677 365
(3)	Clear glass, flat bottom, with label	1.5	32 x 11.6	100	7.615 715
(4)	Amber glass, flat bottom, with label	1.5	32 x 11.6	100	7.621 171



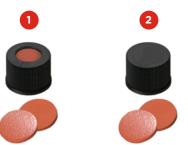
Suitable LABSOLUTE® micro inserts are listed on page 179–180

#### **SCREW SEALS ND10**

Screw seals ND10 are made of PP and have a 10-425 thread. They have a 7 mm centre hole or are closed. Screw seals are supplied with fitted septa made of a variety of materials or without any septa.

#### WITH NATURAL RUBBER / TEF SEPTA

These septa are temperature-resistant from -40 °C to 120 °C and ideal for multiple injections thanks to their excellent resealability properties.

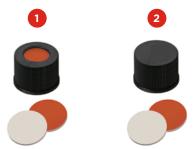


Туре	Description	Hardness	Thickness mm	PK	Art. no.
			111111		
(1)	Natural rubber red- orange / TEF transparent	60° shore A	1.3	100	7.615 292
(2)	Natural rubber red- orange / TEF transparent, closed	60° shore A	1.3	100	7.618 915

#### WITH REDRUBBER / PTFE SEPTA

These septa are temperature-resistant from -40  $^{\circ}$ C to 110  $^{\circ}$ C and easier to penetrate and have lower particle formation than septa made of natural rubber.





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Art. no.

7.646 569

7.670 616

PΚ

100

100

#### WITH SILICONE / PTFE SEPTA

These septa are temperature-resistant from -60  $^{\circ}$ C to 200  $^{\circ}$ C and have better purity than septa made of natural rubber, butyl or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications.

Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Silicone white / PTFE red, UltraClean	45° shore A	1.3	100	7.631 600
(2)	Silicone white / PTFE beige	45° shore A	1.5	100	7.621 568
(3)	PTFE red / silicone white / PTFE red	45° shore A	1.0	100	7.615 766
(4)	Silicone white / PTFE blue, slitted	55° shore A	1.5	100	7.615 716







#### WITHOUT SEPTA

Suitable septa with a diameter of  $10\ \text{mm}$  made of different materials are available on request.

Туре	Description	PK	Art. no.
(1)	Screw cap, black	100	7.615 719
(2)	Screw cap, black, closed	100	7.677 364

















































#### **CRIMP NECK VIALS AND MICRO-VIALS ND11, WIDE OPENING**

Crimp neck vials and micro-vials ND11 made of clear and amber first hydrolytic class glass are used as standard in GC and HPLC. A large selection of micro-inserts is available for these vials.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, flat bottom	1.5	32 x 11.6	100	7.663 226
(2)	Clear glass, flat bottom "silanized"	1.5	32 x 11.6	100	7.677 379
(3)	Clear glass, flat bottom	2.5	41 x 11.6	100	7.677 367
(4)	Amber glass, flat bottom	1.5	32 x 11.6	100	7.663 230
(5)	Clear glass, flat bottom, with label	1.5	32 x 11.6	100	7.663 229
(6)	Amber glass, flat bottom, with label	1.5	32 x 11.6	100	7.664 225
(7)	Amber glass, flat bottom, with label "silanized"	1.5	32 x 11.6	100	7.647 476
(8)	Clear glass, flat bottom, small opening	1.5	32 x 11.6	100	7.620 829
(9)	Clear glass, flat bottom, integrated micro-insert, with label "Top Bonded"	0.2	32 x 11.6	100	7.620 898
(10)	Amber glass, flat bottom, integrated micro-insert, with label "Top Bonded"	0.2	32 x 11.6	100	7.651 116
(11)	Clear glass, flat bottom, integrated micro-insert "Base Bonded"	0.3	32 x 11.6	100	7.648 519
(12)	Amber glass, flat bottom, integrated micro-insert "Base Bonded"	0.3	32 x 11.6	100	7.648 520
	Amber glass, flat bottom, with label, with integrated micro-insert "Base Bonded"	0.3	32 x 11.6	100	7.647 479
(13)	Clear glass, flat bottom, with inner cone	1.1	32 x 11.6	100	7.616 019
(14)	Clear glass, flat bottom, with inner cone "silanized"	1.1	32 x 11.6	100	7.677 376
(15)	Clear glass, conical	0.9	32 x 10	100	7.621 337
(16)	Clear glass, conical	1.1	32 x 11.6	100	7.632 401



Suitable LABSOLUTE® micro inserts are listed on page 179–180

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#### **CRIMP SEALS ND11**

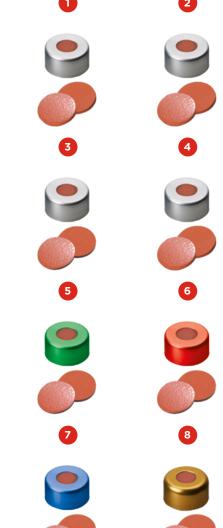
Crimp seals ND11 are made of aluminium. They are clear or lacquered in different colours and have a 5.5 mm hole. They are supplied with fitted septa made of a variety of materials.

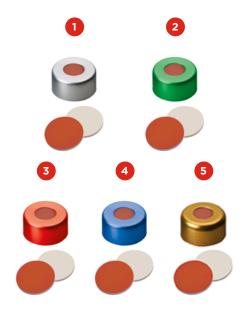
#### WITH NATURAL RUBBER / TEF SEPTA

These septa are temperature-resistant from -40  $^{\circ}$ C to 120  $^{\circ}$ C and ideal for multiple injections thanks to their excellent resealability properties.

Septa made of natural rubber / butyl / TEF combine the good physical properties of natural rubber (resealability) and the good chemical properties of butyl (analytical cleanliness).

Туре	Description	Hardness	<b>Thickness</b> mm	PK	Art. no.
(1)	Natural rubber red-orange / TEF transparent, IM quality, clear cap	60° shore A	1.0	100	7.608 142
(2)	Natural rubber red-orange / TEF transparent, clear cap	60° shore A	1.0	100	7.647 473
(3)	Natural rubber red-orange / TEF transparent, clear cap	45° shore A	1.0	100	7.608 161
(4)	Natural rubber red-orange / butyl red / TEF transparent, clear cap	60° shore A	1.3	100	7.618 902
(5)	Natural rubber red-orange / butyl red / TEF transparent, green cap	45° shore A	1.0	100	7.631 300
(6)	Natural rubber red-orange / butyl red / TEF transparent, red cap	45° shore A	1.0	100	7.631 301
(7)	Natural rubber red-orange / butyl red / TEF transparent, blue cap	45° shore A	1.0	100	7.615 164
(8)	Natural rubber red-orange / butyl red / TEF transparent, gold cap	45° shore A	1.0	100	7.617 087





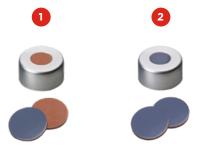
#### WITH REDRUBBER / PTFE SEPTA

These septa with instrument manufacturer's quality are temperature-resistant from  $-40\,^{\circ}\text{C}$  to  $110\,^{\circ}\text{C}$ . They are easier to penetrate and have lower particle formation than septa made of natural rubber.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	RedRubber / PTFE transparent, clear cap	45° shore A	1.0	100	7.663 236
(2)	RedRubber / PTFE beige, green cap	45° shore A	1.0	1000	7.671 640
(3)	RedRubber / PTFE beige, red cap	45° shore A	1.0	1000	7.671 641
(4)	RedRubber / PTFE beige, blue cap	45° shore A	1.0	1000	7.671 642
(5)	RedRubber / PTFE beige, gold cap	45° shore A	1.0	100	7.677 380

## WITH BUTYL / PTFE SEPTA

These septa are temperature-resistant from -40  $^{\circ}\text{C}$  to 120  $^{\circ}\text{C}$  and have excellent chemical properties.



Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Type	Description	Hardness	Thickness	PK	Art. no.
			mm		
(1)	Butyl red / PTFE grey, clear cap	55° shore A	1.3	100	7.616 840
(2)	PTFE grey / butyl red / PTFE grey, clear cap	55° shore A	1.3	100	7.615 681

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## WITH SILICONE / PTFE SEPTA

These septa are temperature-resistant from -60 °C to 200 °C and have a better purity than septa made of natural rubber or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications.

Septa with a double-sided PTFE coating show a very low particle formation during penetration.

#### The magnetic seals are suitable for CTC PAL and Thermo Scientific TriPlus autosampler.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	PTFE virginal	53° shore D	0.25	100	7.630 452
(2)	Silicone white / PTFE red, UltraClean, clear cap	45° shore A	1,3	100	7.663 237
(3)	Silicone white / PTFE red, UltraClean, red cap	45° shore A	1.3	100	7.646 367
(4)	Silicone white / PTFE red, UltraClean, blue cap	45° shore A	1.3	100	7.622 819
(5)	Silicone white / PTFE red, UltraClean, green cap	45° shore A	1.3	100	7.635 033
(6)	Silicone white / PTFE red, UltraClean, gold cap	45° shore A	1.3	100	7.646 368
(7)	Silicone white / PTFE red, UltraClean, magnetic cap	45° shore A	1.3	100	7.616 841
(8)	Silicone blue-transparent / PTFE white, clear cap	45° shore A	1.3	100	7.631 188
(9)	Silicone dark-blue / PTFE white, clear cap	45° shore A	1.3	1000	4.653 905
(10)	Silicone cream / PTFE red, clear cap	55° shore A	1.5	100	7.621 138
(11)	PTFE red / silicone white / PTFE red, clear cap	45° shore A	1.0	100	6.902 301
(12)	PTFE red / silicone white / PTFE red, magnetic cap	45° shore A	1.0	100	7.616 842
(13)	Silicone white / PTFE red, slitted, clear cap	45° shore A	1.3	100	7.663 238
(14)	Silicone cream / PTFE red, slitted, clear cap	55° shore A	1.5	100	7.647 474









## TPF SEAL Guaranteed phthalate free









#### WITH VITON SEPTA

Septa made from Viton have a very high resistance against a wide range of solvents. These septa are highly recommended for use with chlorinated solvents. Viton septa are not suitable for multiple injections or high injection speeds.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Viton 1A black, clear cap	70° shore A	1.0	100	7.630 453

#### WITH ALUMINIUM SEPTA

Septa made of aluminium are free of halogens and elastomers and suitable for storing standards or reactive substances that can attack normal septum materials. There is also no risk of contamination of the samples with plasticizers, silicone or butyl rubbers or PTFE, FEP or TEF components. A ring placed above the aluminium septum achieves an excellent seal on the stopper system.

#### **Application areas**

- Elastomer and plastomer analysis
- Phthalate analysis
- Analysis of fluorinated/halogenated organic compounds
- VOC analysis (volatile organic compounds)
- Analysis of polymerisation catalysts

Туре	Description	Thickness	PK	Art. no.
		mm		
(1)	Aluminium septum with O-ring seal	0.06	100	7.660 047

#### SPECIAL SEALS FOR CRIMP NECK ND11





The blue Push-On caps made of PE have a thinned penetration point, but no additional septum. They are an inexpensive alternative to crimp caps for non-critical applications.

Туре	Description	PK	Art. no.
(1)	PE Push-On cap, blue, thinned penetration point	100	7.616 553

#### KITS ND11, CRIMP NECK

The LABSOLUTE® kits ND11 contain shrink-wrapped crimp neck vials ND11 made of clear or amber first hydrolytic class glass and corresponding crimp caps made of clear lacquered aluminum with 5.5 mm centre hole.

Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
Clear glass, natural rubber red-orange / TEF transparent, 60° shore A, 1.0 mm	1.5	32 x 11.6	100	7.622 985
Clear glass, <b>pre-crimped</b> , natural rubber redorange / TEF transparent, 60° shore A, 1.0 mm	1.5	32 x <b>11.6</b>	1000	7.614 026
Clear glass, <b>pre-crimped</b> , natural rubber redorange / TEF transparent, 60° shore A, 1.0 mm	1.5	32 x 11.6	1000	7.643 985
Clear glass, label, <b>pre-crimped</b> , natural rubber red-orange / TEF transparent, 60° shore A, 1.0 mm	1.5	32 x 11.6	1000	7.643 966
Clear glass, natural rubber red-orange / butyl red / TEF transparent, 45° shore A, 1.0 mm	1.5	32 x 11.6	100	9.003 564
Clear glass, <b>pre-crimped</b> , natural rubber red-orange / butyl red / TEF transparent, 45° shore A, 1.0 mm	1.5	32 x 11.6	1000	7.643 979
Clear glass, label, natural rubber red-orange / butyl red / TEF transparent, 45° shore A, 1.0 mm	1.5	32 x 11.6	100	9.003 565
Amber glass, label, natural rubber red-orange / butyl red / TEF transparent, 60° shore A, 1.0 mm	1.5	32 x 11.6	100	9.003 566
Clear glass, silicone white / PTFE red, 45° shore A, 1.3 mm, UltraClean	1.5	32 x 11.6	100	6.238 979
Clear glass, silicone cream / PTFE red, 55° shore A, 1.5 mm	1.5	32 x 11.6	100	7.644 010



Suitable LABSOLUTE® crimping tools are listed from page 221





















#### **SNAP RING VIALS AND MICRO-VIALS ND11, WIDE OPENING**

Snap ring vials and micro-vials ND11 made of clear and amber first hydrolytic class glass can be used on almost all autosamplers and can also be used on equipment with robotic handling.

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 together have the same height as a crimp neck.

#### Vials with snap ring seal are only recommended for HPLC.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	РК	Art. no.
(1)	Clear glass, flat bottom	1.5	32 x 11.6	100	7.645 592
(2)	Clear glass, flat bottom, with label	1.5	32 x 11.6	100	7.663 234
(3)	Amber glass, flat bottom, with label	1.5	32 x 11.6	100	7.645 633
(4)	Clear glass, flat bottom, with integrated micro- insert "Base Bonded"	0.3	32 x 11.6	100	7.660 048
(5)	Amber glass, flat bottom, with integrated micro-insert "Base Bonded"	0.3	32 x 11.6	100	7.677 375
(6)	Microlitre vial, clear glass	0.9	32 x 11.6	100	7.655 281

















#### **SNAP RING VIALS AND MICRO-VIALS ND11, PMP OR PP**

Snap ring vials and micro-vials ND11 with wide opening made of natural or amber PMP or PP are a shatterproof alternative to glass vials.

Туре	Description	<b>Capacity</b> ml	Material	<b>Size</b> mm	PK	Art. no.
(1)	Clear, flat bottom, with integrated glass micro-insert, TopSert	0.2	PMP	32 x 11.6	100	7.631 402
(2)	Clear, flat bottom, with integrated glass micro-insert, TopSert "silanized"	0.2	PMP	32 x 11.6	100	7.616 109
(3)	Amber, flat bottom, with integrated glass micro-insert, TopSert	0.2	PMP	32 x 11.6	100	7.616 839
(4)	Clear, flat bottom, with integrated TPX micro-insert	0.3	PMP	32 x 11.6	100	7.616 860
(5)	Clear, flat bottom, with integrated PP micro-insert	0.3	PP	32 x 11.6	100	6.901 405
(6)	Amber, flat bottom, with integrated PP micro-insert	0.3	PP	32 x 11.6	100	7.616 861
(7)	Clear, flat bottom	0.7	PP	32 x 11.6	100	6.901 955

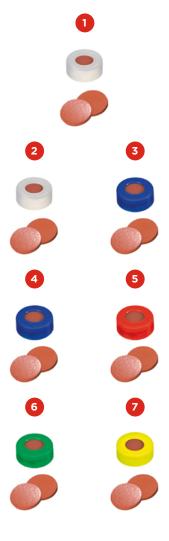
#### **SNAP RING SEALS ND11**

Snap ring seals ND11 are made of PE and are supplied with fitted septa made of a variety of materials. They are available in a soft and hard version as well as in different colours. Snap ring seals are very easy to use, time-saving and inexpensive.

#### WITH NATURAL RUBBER / TEF SEPTA

These septa are temperature-resistant from -40  $^{\circ}$ C to 120  $^{\circ}$ C and ideal for multiple injections thanks to their excellent resealability properties.

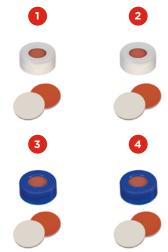
Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Natural rubber red-orange / TEF transparent, transparent hard cap	60° shore A	1.0	100	7.608 133
(2)	Natural rubber red-orange / TEF transparent, transparent soft cap	60° shore A	1.0	100	7.663 997
(3)	Natural rubber red-orange/TEF transparent, blue hard cap	60° shore A	1.0	100	7.616 862
(4)	Natural rubber red-orange / TEF transparent, blue soft cap	60° shore A	1.0	100	7.618 920
(5)	Natural rubber red-orange / TEF transparent, red hard cap	60° shore A	1.0	100	7.616 866
(6)	Natural rubber red-orange/TEF transparent, green hard cap	60° shore A	1.0	100	7.647 481
(7)	Natural rubber red-orange/TEF transparent, yellow hard cap	60° shore A	1.0	100	7.647 482



## WITH REDRUBBER / PTFE SEPTA

These septa with instrument manufacturer's quality are temperature-resistant from -40  $^{\circ}$ C to 110  $^{\circ}$ C. They are easier to penetrate and have lower particle formation than septa made of natural rubber.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	RedRubber / PTFE beige, transparent hard cap	45° shore A	1.0	100	7.651 441
(2)	RedRubber / PTFE beige, transparent soft cap	45° shore A	1.0	100	7.663 998
(3)	RedRubber / PTFE beige, blue hard cap	45° shore A	1.0	100	7.651 442
(4)	RedRubber / PTFE beige, blue soft cap	45° shore A	1.0	100	7.618 916







































































































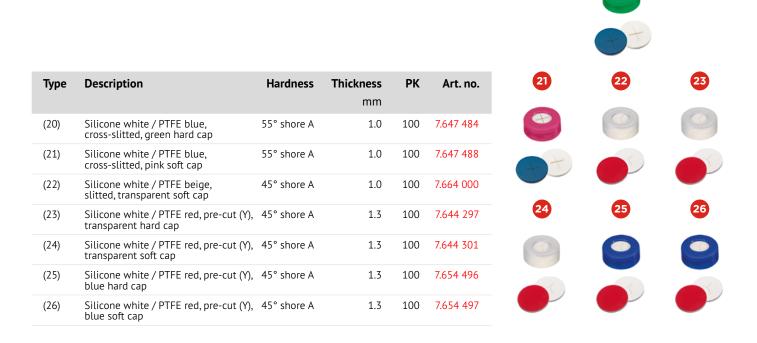
## WITH SILICONE / PTFE SEPTA

These septa are temperature-resistant from -60  $^{\circ}\text{C}$  to 200  $^{\circ}\text{C}$  and have better purity than septa made of natural rubber, butyl or red rubber. However, they have less effective resealability properties and are therefore more suitable for singleinjection applications.

Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Silicone white / PTFE red, UltraClean, transparent hard cap	45° shore A	1.3	100	7.614 940
(2)	Silicone white / PTFE red, UltraClean, transparent soft cap	45° shore A	1.3	100	7.663 999
(3)	Silicone white / PTFE red, UltraClean, blue hard cap	45° shore A	1.3	100	7.616 863
(4)	Silicone white / PTFE red, UltraClean, blue soft cap	45° shore A	1.3	100	7.618 917
(5)	Silicone white / PTFE red, UltraClean, red hard cap	45° shore A	1.3	100	7.616 867
(6)	Silicone white / PTFE red, UltraClean, green hard cap	45° shore A	1.3	1000	4.652 669
(7)	Silicone white / PTFE red, UltraClean, yellow hard cap	45° shore A	1.3	100	7.647 485
(8)	PTFE red / silicone white / PTFE red, transparent hard cap	45° shore A	1.0	100	7.630 864
(9)	PTFE red / silicone white / PTFE red, transparent soft cap	45° shore A	1.0	100	7.618 923
(10)	PTFE red / silicone white / PTFE red, blue hard cap	45° shore A	1.0	100	7.616 864
(11)	PTFE red / silicone white / PTFE red, blue soft cap	45° shore A	1.0	100	7.618 918
(12)	PTFE red / silicone white / PTFE red, red hard cap	45° shore A	1.0	100	7.616 868
(13)	PTFE red / silicone white / PTFE red, yellow hard cap	45° shore A	1.0	100	7.647 483
(14)	PTFE red / silicone white / PTFE red, pink soft cap	45° shore A	1.0	100	7.647 487
(15)	Silicone white / PTFE blue, cross-slitted, transparent hard cap	55° shore A	1.0	100	7.613 331
(16)	Silicone white / PTFE blue, cross-slitted, transparent soft cap	55° shore A	1.0	100	7.618 924
(17)	Silicone white / PTFE blue, cross-slitted, blue hard cap	55° shore A	1.0	100	7.615 797
(18)	Silicone white / PTFE blue, cross-slitted, blue soft cap	55° shore A	1.0	100	7.618 919
(19)	Silicone white / PTFE blue, cross-slitted, red hard cap	55° shore A	1.0	100	7.616 869

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#### KITS ND11, SNAP RING

The LABSOLUTE® kits ND11 contain shrink-wrapped snap ring vials ND11 made of clear or amber first hydrolytic class glass and corresponding snap caps made of PE with 6 mm centre hole.

Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
Clear glass, transparent hard cap, natural rubber red-orange / TEF transparent, 60° shore A, 1.0 mm	1.5	32 x 11.6	100	6.255 820
Clear glass, transparent hard cap, silicone white / PTFE red, 45° shore A, 1.3 mm, UltraClean	1.5	32 x 11.6	100	7.644 366
Clear glass, transparent hard cap, silicone white / PTFE blue, 55° shore A, 1.0 mm, cross-slitted	1.5	32 x 11.6	100	7.644 379





Further LABSOLUTE® ND11 vials, caps, septa and kits available on request

LABSOLUTE® Laboratory consumables 199

#### **SCREW NECK VIALS ND13**

Screw neck vials ND13 with 13-425 thread made of clear and amber first hydrolytic class glass facilitate easy filling with viscous substances thanks to their wide opening.

The LABSOLUTE® vials for optimised micro-sampling are the best solution for very small sample volumes.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, flat bottom	4.0	45 x 14.7	100	7.613 421
(2)	Amber glass, flat bottom	4.0	45 x 14.7	100	7.603 252
(3)	Clear glass, flat bottom, with label	4.0	45 x 14.7	100	7.616 808
(4)	Amber glass, flat bottom, with label	4.0	45 x 14.7	100	7.616 870
(5)	Clear glass, flat bottom, optimised micro-sampling	3.5	45 x 14.7	100	7.648 254
(6)	Amber glass, flat bottom, optimised micro-sampling	3.5	45 x 14.7	100	7.648 518

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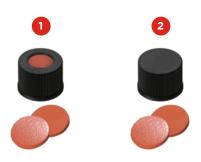
#### **SCREW SEALS ND13**

Screw seals ND13 are made of PP and have a 13-425 thread. They have a 8.5 mm centre hole or are closed. Screw seals are supplied with fitted septa made of a variety of materials or without any septa.

#### WITH NATURAL RUBBER / TEF SEPTA

These septa are temperature-resistant from -40  $^{\circ}$ C to 120  $^{\circ}$ C and ideal for multiple injections thanks to their excellent resealability properties.

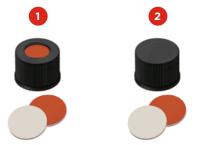
Туре	Description	Hardness	Thickness	PK	Art. no.
			mm		
(1)	Natural rubber red- orange / TEF transparent	60° shore A	1.3	100	7.621 159
(2)	Natural rubber red- orange / TEF transparent, closed	60° shore A	1.3	100	7.613 422



#### WITH REDRUBBER / PTFE SEPTA

These septa are temperature-resistant from -40  $^{\circ}$ C to 110  $^{\circ}$ C and easier to penetrate and have lower particle formation than septa made of natural rubber.





#### WITH BUTYL / PTFE SEPTA

These septa are temperature-resistant from -40  $^{\circ}\text{C}$  to 120  $^{\circ}\text{C}$  and have excellent chemical properties.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Butyl red / PTFE grey	55° shore A	1.3	100	7.616 871
(2)	Butyl red / PTFE grey, closed	55° shore A	1.3	100	7.616 209

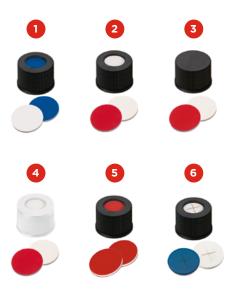


#### WITH SILICONE / PTFE SEPTA

These septa are temperature-resistant from -60 °C to 200 °C and have better purity than septa made of natural rubber, butyl or RedRubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications.

Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Silicone dark-blue / PTFE white	45° shore A	1.3	100	7.647 513
(2)	Silicone cream / PTFE red	55° shore A	1.5	100	7.621 158
(3)	Silicone cream / PTFE red, closed	55° shore A	1.5	100	7.632 198
(4)	Silicone cream / PTFE red, white cap	55° shore A	1.5	100	7.617 058
(5)	PTFE red / silicone white / PTFE red	45° shore A	1.0	100	7.616 872
(6)	Silicone white / PTFE blue, cross-slitted	55° shore A	1.5	100	7.616 873



#### WITHOUT SEPTA

Suitable septa with a diameter of  $12\ \text{mm}$  made of different materials are available on request.

Туре	Description	PK	Art. no.
(1)	Screw cap, black	100	7.615 951
(2)	Screw cap, black, closed	100	6.204 817
(3)	Screw cap, white	100	7.647 512
(4)	Screw cap, white, closed	100	7.615 656





#### KITS ND13

The LABSOLUTE® kits ND13 contain shrink-wrapped screw vials ND13 made of clear or amber first hydrolytic class glass and corresponding screw caps made of PP.

Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
Clear glass, black caps, 8.5 mm centre hole, natural rubber red-orange / TEF transparent, 60° shore A, 1.3 mm	4.0	45 x 14.7	100	7.621 760
Amber glass, black caps, 8.5 mm centre hole, natural rubber red-orange / TEF transparent, 60° shore A, 1.3 mm	4.0	45 x 14.7	100	7.621 761
Amber glass, black caps, 8.5 mm centre hole, PTFE red / silicone white / PTFE red, 1.0 mm, 45° shore A	4.0	45 x 14.7	100	7.648 604



Further LABSOLUTE® ND13 vials, caps, septa and kits available on request

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#### **CRIMP NECK VIALS ND13, WIDE OPENING**

Crimp neck vials ND13 made of clear first hydrolytic class glass are special products which require a minimum order quantity.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, flat bottom	2.0	32 x 16	100	7.677 374
(2)	Clear glass, flat bottom	4.0	45 x 14.7	100	7.648 602



#### **CRIMP SEALS ND13**

Crimp seals ND13 are made of aluminium. They are clear lacquered and have a 6 mm centre hole, a centre tear-off or complete tear-off. They are supplied with fitted septa made of a variety of materials.

The septa made of silicone white/PTFE red are temperature-resistant from -60  $^{\circ}$ C to 200  $^{\circ}$ C and have better purity than septa made of natural rubber, butyl or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications.

The septa made of butyl red/PTFE grey are temperature-resistant from -40  $^{\circ}$ C to 120  $^{\circ}$ C and have excellent chemical properties with regard to cleanliness.

On Pharma-Fix seals, it is only the butyl areas that can come into contact with the sample, are PTFE coated. The areas that abut the edges of the glass are not coated. This ensures a particularly good seal.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Natural rubber red-orange / TEF transparent	60° shore A	1.3	100	7.647 502
(2)	Butyl red / PTFE grey	55° shore A	2.0	100	7.632 356
(3)	Butyl red / PTFE grey, centre tear-off	55° shore A	2.0	100	7.647 505
(4)	Butyl / PTFE, Pharma-Fix	50° shore A	2.0	1000	7.670 913
(5)	Butyl / PTFE, Pharma-Fix, centre tear-off	50° shore A	2.0	100	7.615 288
(6)	Silicone white / PTFE red	45° shore A	1.3	100	7.657 319



#### **SHELL VIALS WITH STOPPER**

The shell vials made of clear or amber first hydrolytic class glass come in a set with transparent PE plugs. The star-shaped diaphragm in the plug facilitates easy penetration.

Shell vials made of plastic are a shatter-proof alternative to glass vials. They also come with a PE plug.

This easy-to-use, inexpensive vial/plug combination is suitable for non-critical analyses, especially in the field of HPLC.



























Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass	1	35 x 7.8	100	7.612 017
(2)	Clear glass, plugs without insertion barrier	1	40 x 8.2	100	7.677 195
(3)	Clear glass, plugs with insertion barrier*	1	40 x 8.2	100	7.620 436
(4)	Amber glass, plugs without insertion barrier	1	40 x 8.2	100	7.618 925
(5)	Amber glass, plugs with insertion barrier*	1	40 x 8.2	100	7.616 878
(6)	Clear glass	2	31.5 x 11.6	100	7.621 467
(7)	Amber glass	2	31.5 x 11.6	100	7.616 879
(8)	Clear glass	4	44.6 x 14.65	100	7.632 226
(9)	Amber glass	4	44.6 x 14.65	100	7.616 880

<sup>\*</sup> Please select this vial/seal set if micro-inserts are used. Please note, however, that penetration of the seal is slightly more difficult due to the insertion barrier.















Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Transparent	1	40 x 8	100	7.654 498
(2)	Transparent, with inner cone	3	44.6 x 14.65	100	7.654 505
(3)	Transparent	4	44.6 x 14.65	100	7.654 504

#### MICRO-INSERTS FOR SHELL VIALS





These micro-inserts made of first hydrolytic class glass are suitable for shell vials only.

Туре	Description	Usable volume	Nominal volume	Size	PK	Art. no.
		μΙ	μΙ	mm		
(1)	Clear glass, 13 mm conical tip*	150	200	34 x 5	1000	7.616 881

<sup>\*</sup> Only in combination with 7.620 436 and 7.616 878

#### **SCREW NECK VIALS ND15 / ND18**

Screw neck vials ND15 and ND18 made of clear and amber first hydrolytic class glass in combination with the corresponding screw caps are highly suitable as sample storage vials.

Screw neck vials ND15 have a 15-425 thread. ND18 vials have a 18-400 thread.

Item 7.616 139 is also suitable for headspace analysis (Perkin Elmer).

Туре	Description	<b>Capacity</b> ml	For	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass	8	ND15	61 x 16.6	100	7.616 898
(2)	Amber glass	8	ND15	61 x 16.6	100	7.618 935
(3)	Clear glass	12	ND15	66 x 18.5	100	7.616 655
(4)	Amber glass	12	ND15	66 x 18.5	100	7.618 936
(5)	Clear glass, flat bottom	16	ND18	71 x 20.6	100	7.616 899
(6)	Clear glass, rounded bottom	20	ND18	75.5 x 23.5	100	7.616 139



#### **SCREW SEALS ND15 / ND18**

Screw seals ND15 are made of PP and are supplied without or with fitted septa made of a variety of materials. They have a 15-425 thread, a 9 mm centre hole or are closed.

Screw seals ND18 are made of PP and are supplied with or without fitted septa made of a variety of materials. They have a 18-400 thread, a 12 mm centre hole or are closed.

ND15 seals are suitable for items 7.616 898, 7.618 935, 7.616 655 and 7.618 936. ND18 seals are suitable for items 7.616 899 and 7.616 139.

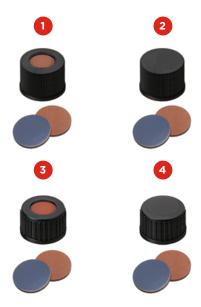
These ND18 screw caps with 18-400 thread are not compatible with ND18 precision thread vials!

#### WITH NATURAL RUBBER / TEF SEPTA

These septa are temperature-resistant from -40 °C to 120 °C and ideal for multiple injections thanks to their excellent resealability properties.

Туре	Description	Hardness	Thickness mm	For	PK	Art. no.
(1)	Natural rubber red-orange / TEF transparent	60° shore A	1.3	ND15	100	7.658 824
(2)	Natural rubber red-orange / TEF transparent, closed	60° shore A	1.3	ND15	100	7.660 050





#### WITH BUTYL / PTFE SEPTA

These septa are temperature-resistant from -40  $^{\circ}\text{C}$  to 120  $^{\circ}\text{C}$  and have excellent chemical properties.

Туре	Description	Hardness	Thickness mm	For	PK	Art. no.
(1)	Butyl red / PTFE grey	55° shore A	1.6	ND15	100	7.659 991
(2)	Butyl red / PTFE grey, closed	55° shore A	1.6	ND15	100	7.616 653
(3)	Butyl red / PTFE grey	55° shore A	1.6	ND18	100	7.616 885
(4)	Butyl red / PTFE grey, closed	55° shore A	1.6	ND18	100	7.616 140



#### WITH SILICONE / PTFE SEPTA

These septa are temperature-resistant from -60 °C to 200 °C and have better purity than septa made of natural rubber or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications.

Туре	Description	Hardness	Thickness mm	For	PK	Art. no.
(1)	Silicone white / PTFE red	45° shore A	1.3	ND15	100	7.671 516
(2)	Silicone white / PTFE red, closed	45° shore A	1.3	ND15	100	7.616 654
(3)	Silicone white / PTFE red	55° shore A	1.5	ND18	1000	7.639 588
(4)	Silicone white / PTFE red, closed	55° shore A	1.5	ND18	1000	7.672 038
(5)	Silicone blue transparent / PTFE white	45° shore A	1.7	ND18	100	7.616 886
(6)	Silicone blue transparent / PTFE white, closed	45° shore A	1.7	ND18	100	7.616 887



#### WITHOUT SEPTA

Suitable septa with a diameter of 16 mm (only for ND18 screw caps) made of different materials are available on request.

For	PK	Art. no.
ND15	1000	7.644 004
d ND15	1000	7.647 537
ND18	1000	7.629 085
d ND18	100	7.677 373
	ND15 sed ND15 ND18	ND15 1000 sed ND15 1000 ND18 1000

#### PRECISION THREAD HEADSPACE VIALS ND18

Precision thread headspace vials ND18 made of clear and amber first hydrolytic class glass are a practical alternative to the corresponding crimp neck vials ND20. Thanks to its many thread turns, the precision thread ensures that the septum is pressed firmly against the glass neck, keeping the vial gas-tight.

The vials are suitable both for solid phase microextraction (SPME) and for headspace applications. They are especially used with autosamplers made by CTC Pal, Varian, Gerstel, Atas, Shimadzu and Agilent.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, rounded bottom	10	46 x 22.5	100	7.620 815
(2)	Amber glass, rounded bottom	10	46 x 22.5	100	7.616 895
(3)	Clear glass, rounded bottom	20	75.5 x 22.5	100	7.630 303
(4)	Amber glass, rounded bottom	20	75.5 x 22.5	100	7.621 127



#### PRECISION THREAD SCREW SEALS ND18, MAGNETIC

Precision thread screw seals ND18 are made of metal and supplied with fitted septa made of a variety of materials. The hole size is selected so that the cap is suitable both for SPME and headspace applications. However, enough surface is left for the magnet to be able to transport a completely filled vial. The screw-on mechanism ensures that the cap always has a flat surface so that the bottle cannot fall from the magnet. Separation of the vial and cap for disposal after analysis is much easier than with crimp caps.

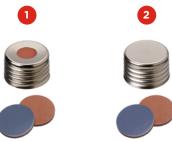
Closed caps in combination with precision thread screw vials ND18 are ideal for sample storage.

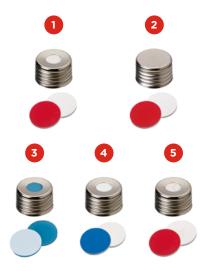
Precision thread screw seals are not suitable for item 7.616 139!

#### WITH BUTYL / PTFE SEPTA

Septa are temperature-resistant from -40  $^{\circ}\text{C}$  to 120  $^{\circ}\text{C}$  and have excellent chemical properties.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Butyl red / PTFE grey	55° shore A	1.6	100	7.615 717
(2)	Butyl red / PTFE grey, closed	55° shore A	1.6	100	7.622 171





#### WITH SILICONE / PTFE SEPTA

Septa are temperature-resistant from -60  $^{\circ}$ C to 200  $^{\circ}$ C and have better purity than septa made of natural rubber or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications.

Туре	Description	Hardness	<b>Thickness</b> mm	PK	Art. no.
(1)	Silicone white / PTFE red, UltraClean	45° shore A	1.3	100	7.621 126
(2)	Silicone white / PTFE red, UltraClean, closed	45° shore A	1.3	100	7.616 897
(3)	Silicone transparent blue / PTFE white, UltraClean*	45° shore A	1.3	100	7.630 304
(4)	Silicone white / PTFE blue, UltraClean*	55° shore A	1.5	100	7.621 125
(5)	Silicone white / PTFE red, pre-cut (star)**	55° shore A	1.5	100	7.676 995

<sup>\*</sup> Tested and approved by CTC

#### WITH SILICONE / ALUMINIUM SEPTA

These septa are temperature-resistant from -60 °C to 220 °C and have better purity than septa made of natural rubber or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications. The silicone is fully coated with a silver aluminium foil. These kind of septa are often used for applications on Pekrin Elmer instruments.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Silicone white / aluminium foil silver	50° shore A	1.3	100	7.644 779







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<sup>\*\*</sup> Especially suitable for SPME application due to the pre-cut septum

#### **SNAP CAP VIALS ND18 / ND22**

Snap cap vials ND18 / ND22 are made of clear third hydrolytic class glass. They are easy to handle and can be opened and sealed very quickly. Transparent PE caps have to be ordered separately.

Туре	Description	<b>Size</b> mm	<b>Capacity</b> ml	PK	Art. no.
(1)	Snap cap vial ND18	40 x 20	5	100	7.621 182
(2)	Snap cap vial ND18	50 x 22	10	100	7.620 831
(3)	Snap cap vial ND22	48 x 26	15	100	7.634 393
(4)	Snap cap vial ND22	65 x 26	25	100	7.630 475



#### **SNAP CAP VIAL KITS ND18 / ND22 / ND28**

Snap cap vials are made of clear third hydrolytic class glass. They are easy to handle and can be opened and sealed very quickly. Transparent PE caps come together with the vials packed in one handy box.

Description	<b>Capacity</b> ml	<b>Size</b> mm	Lid colour	PK	Art. no.
Snap cap vial + snap cap	3	30 x 18	ND 18	200	7.674 251
Snap cap vial + snap cap	5	40 x 19	ND 18	100	7.674 250
Snap cap vial + snap cap	10	45 x 22	ND 22	200	7.674 249
Snap cap vial + snap cap	15	52 x 24	ND 22	200	7.674 248
Snap cap vial + snap cap	20	70 x 26	ND 22	200	7.677 399
Snap cap vial + snap cap	20	55 x 26	ND 22	200	7.677 400
Snap cap vial + snap cap	25	50 x 30	ND 28	250	7.677 401
Snap cap vial + snap cap	30	75 x 28	ND 22	200	7.674 246
Snap cap vial + snap cap	40	80 x 30	ND 28	200	7.674 245
Snap cap vial + snap cap	50	100 x 30	ND 28	200	7.669 680
Snap cap vial + snap cap	100	145 x 34	ND 28	200	7.677 402



#### CAPS FOR SNAP CAP VIALS ND18 / ND22 / ND28

The transparent PE caps fit perfectly to the snap cap vials ND18 / ND22 / ND28.

Туре	Description	<b>Size</b> mm	РК	Art. no.
(1)	Snap cap ND18	19.8 x 5.2	100	7.620 830
(2)	Snap cap ND22	23.5 x 5.5	100	7.630 476
(3)	Snap cap ND28	29.7 x 5.6	100	7.677 370



#### **CRIMP NECK AND HEADSPACE VIALS ND20**

Crimp neck and headspace vials ND20 with rounded or flat bottom made of clear and amber first hydrolytic class glass need to be able to withstand very high internal pressures and, as a result, their walls are generally 1.2 mm thick. The vials are available with a flat DIN crimp neck or with a bevelled neck (HS neck).

On the flat DIN crimp neck, liners have a greater contact surface, which ensures a better seal. A bevelled HS neck is required if the overpressure safety seal system patented by Perkin Elmer is used, since excess pressure can only be reliably dissipated in vials with an HS neck.

Туре	Description	Compatible with	Capacity	Size	PK	Art. no.
			ml	mm		
(1)	Clear glass, crimp neck, flat bottom	Varian	5	38 x 20	100	7.620 148
(2)	Amber glass, crimp neck, flat bottom**	Varian	5	38 x 20	100	7.648 634
(3)	Clear glass, HS neck, rounded bottom	Perkin Elmer	5	38.2 x 22	100	7.615 908
(4)	Clear glass, DIN crimp neck, rounded bottom	Carlo Erba, CTC, Fisons, Varian (CP)	10	46 x 22.5	100	7.615 808
(5)	Amber glass, DIN crimp neck, rounded bottom	Carlo Erba, CTC, Fisons, Varian (CP)	10	46 x 22.5	100	7.616 883
(6)	Clear glass, DIN crimp neck, flat bottom, long neck	Carlo Erba, Dani, Fisons, Agilent	10	46 x 22.5	100	7.621 813
(7)	Clear glass, crimp neck, flat bottom	Varian	10	54.5 x 20	100	7.620 147
(8)	Amber glass, crimp neck, flat bottom**	Varian	10	54.5 x 20	100	7.648 635
(9)	Clear glass, DIN crimp neck, flat bottom, long neck	Carlo Erba, Dani, Fisons, Agilent	20	75.5 x 22.5	100	6.204 710
(10)	Clear glass, DIN crimp neck, rounded bottom, long neck	CTC PAL, Varian, Gerstel, Atas, Shimadzu and TriPlusHS	20	75.5 x 22.5	100	7.612 926
(11)	Amber glass, DIN crimp neck, rounded bottom, long neck	CTC PAL, Varian, Gerstel, Atas, Shimadzu and TriPlusHS	20	75.5 x 22.5	100	7.616 552
(12)	Clear glass, special crimp neck, rounded bottom*	CTC PAL	20	75.5 x 22.5	100	7.632 402
(13)	Clear glass, HS neck, rounded bottom	Perkin Elmer, Tekmar	20	75.5 x 23	100	7.620 798
(14)	Amber glass, HS neck, rounded bottom	Perkin Elmer, Tekmar	20	75.5 x 23	100	7.613 394
(15)	Clear glass, HS neck, rounded bottom, with label	Perkin Elmer, Tekmar	20	75.5 x 23	100	7.613 328
(16)	Clear glass, HS neck, flat bottom, long neck	Agilent	20	75.5 x 22.5	100	7.648 101

<sup>\*</sup> Especially for SPME applications

<sup>\*\*</sup> Special item with higher minimum order quantity

2	3	4
5	6	7
8	9	10
•	12	13
		9
14	15	16

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#### **CRIMP AND HEADSPACE SEALS ND20**

Crimp and headspace seals ND20 are made of aluminium and are supplied with fitted septa made of a variety of materials. There are the following different types of caps available:

**Plain caps with a 10 mm center hole**. These caps are suitable for standard applications. They are available in several colours on request.

Clear lacquered caps, so called **headspace caps**, with a special score line that breaks when the internal pressure reaches  $3.0 \pm 0.5$  bar. The excess pressure is then released, and the risk of the vial exploding can be avoided.

Clear lacquered centre tear-off caps and complete tear-off caps.

These caps are available in several colours on request.

Gold lacquered, **magnetic crimp caps with 5 mm centre hole** to be used with CE HS500/HS800, CTC 500, as well as Fisons HS500 / HS800 instruments.

Gold lacquered, **magnetic crimp caps with 8 mm centre hole** to be used with CTC Combi PAL instruments.

Red lacquered, **magnetic bimetal crimp caps with 8 mm centre hole** to be used with CTC Combi PAL instruments.

#### WITH CHLORO-BUTYL SEPTA

These dark grey septa are temperature-resistant from -40 °C to 120 °C and have excellent chemical properties. They are 3.0 mm thick and have a hardness of 55° shore A. Because of the missing PTFE coating, the pure butyl septa are an economic alternative for non-critical analysis.

Туре	Caps	PK	Art. no.
(1)	Standard, 10 mm	100	7.630 898
(2)	Headspace	100	7.608 140
(3)	Centre tear-off	100	7.633 655
(4)	Complete tear-off	100	7.631 029
(5)	Magnetic, 5 mm	100	7.630 472
(6)	Magnetic, 8 mm	1000	6.240 960



#### WITH BROMO-BUTYL / PTFE SEPTA

These grey septa are temperature-resistant from -40 °C to 120 °C and have excellent chemical properties. They are 3.0 mm thick and have a hardness of 50° shore A.

Type	Caps	PK	Art. no.
(1)	Standard, 10 mm	100	7.615 320
(2)	Headspace	100	7.613 446
(3)	Centre tear-off	100	7.612 177
(4)	Complete tear-off	100	7.612 176
(5)	Magnetic, 5 mm	100	7.631 586
(6)	Magnetic, 8 mm	100	7.612 927
(7)	Magnetic, bimetal, 8 mm	100	7.637 329



#### WITH BROMO-BUTYL / PTFE SEPTA, PHARMA-FIX

These grey septa are temperature-resistant from -40  $^{\circ}$ C to 120  $^{\circ}$ C and have excellent chemical properties. They are 3.0 mm thick and have a hardness of 50 $^{\circ}$  shore A.

Also on Pharma-Fix seals, it is only the butyl areas that can come into contact with the sample, and these are PTFE coated. The areas that abut the edges of the glass are not coated. This ensures a particularly good seal.

Туре	Caps	PK	Art. no.
(1)	Standard, 10 mm	100	7.614 955
(2)	Headspace	100	7.621 340
(3)	Centre tear-off	100	7.636 094
(4)	Complete tear-off	100	7.622 285
(5)	Magnetic, 5 mm	100	7.621 341
(6)	Magnetic, 8 mm	100	7.613 329



#### WITH BUTYL / PTFE SEPTA

These septa made of red butyl and grey PTFE are temperature-resistant from -40  $^{\circ}$ C to 120  $^{\circ}$ C and have excellent chemical properties. They are 3.0 mm thick and have a hardness of 50 $^{\circ}$  shore A.

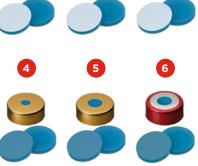
Туре	Caps	PK	Art. no.
(1)	Standard, 10 mm	100	7.648 632



#### WITH SILICONE / PTFE SEPTA, ULTRACLEAN

These septa, made of silicone blue transparent / PTFE white, are temperature-resistant from -60 °C to 200 °C. They are 3.0 mm thick and have a hardness of 45° shore A. They have better purity than septa made of natural rubber or red rubber. However they have less effective resealability properties and are therefore more suitable for single-injection applications.

Due to their high cleanliness, they are especially used for critical and sensitive analysis.



Туре	Caps	PK	Art. no.
(1)	Standard, 10 mm	100	6.204 709
(2)	Headspace	100	7.615 893
(3)	Complete tear-off	1000	6.239 164
(4)	Magnetic, 5 mm*	100	7.615 224
(5)	Magnetic, 8 mm*	100	7.615 866
(6)	Magnetic, bimetal, 8 mm*	100	7.616 884

 $<sup>^{\</sup>ast}$  Septa silicone blue-transparent / PTFE transparent, 45  $^{\circ}$  shore A, 3.0 mm

#### WITH SILICONE / PTFE SEPTA, HT QUALITY

These septa, made of silicone white / PTFE beige, are temperature-resistant from -60  $^{\circ}$ C to 200  $^{\circ}$ C. They are 3.2 mm thick and have a hardness of 45 $^{\circ}$  shore A. They have better purity than septa made of natural rubber or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications.

Due to their high cleanliness, they are especially used for critical and sensitive analysis.

#### These seals correspond to competitor HT liner!

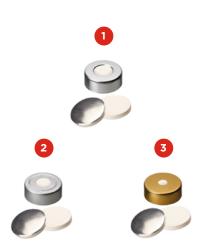
Type	Caps	PK	Art. no.
(1)	Standard, 10 mm	100	7.621 046
(2)	Headspace	100	7.621 047
(3)	Magnetic, 8 mm	1000	7.659 620
(4)	Magnetic, bimetal, 8 mm	100	7.648 631



#### WITH SILICONE / ALUMINIUM SEPTA

These septa are temperature-resistant from -60 °C to 220 °C. They are 3.0 mm thick and have a hardness of 50° shore A. They have better purity than septa made of natural rubber or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications. The silicone is fully coated with a silver aluminium foil and is often used on Perkin Elmer instruments.

Туре	Caps	PK	Art. no.
(1)	Standard, 10 mm	100	6.086 772
(2)	Headspace	100	7.615 848
(3)	Magnetic, 5 mm	1000	6.229 530



#### WITH VITON SEPTA

Septa made from Viton with a hardness of 70° shore A and a thickness of 1.0 mm have a very high resistance against a wide range of solvents. These septa are highly recommended for use with chlorinated solvents.

Viton septa are not suitable for multiple injections or high injection speeds.

Туре	Caps	PK	Art. no.
(1)	Magnetic, 8 mm	100	7.674 302



#### **CRIMP NECK AND HEADSPACE ND20**



#### WITHOUT SEPTA

Suitable septa with a diameter of 20 mm made of different materials are available on request.

Туре	Caps	PK	Art. no.
(1)	Standard, 10 mm	1000	7.615 550
(2)	Headspace	1000	7.670 648
(3)	Centre tear-off	1000	7.626 356
(4)	Complete tear-off	1000	7.638 103

#### PE CAPS FOR HEADSPACE / CRIMP NECK VIALS ND20

These caps made of transparent PE are generally used to seal washing bottles of autosamplers, but also for intermediate closure when collecting samples out in the field. They are available in three different dimensions with several septa.

#### 22 X 8.4 MM, 4.3 MM CENTRE HOLE

Suitable for the following vials: 7.620 798, 7.615 908, 7.613 328 and 7.613 394.



Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Natural rubber red- orange / TEF transparent	60° shore A	1.3	100	7.661 597
(2)	Butyl red / PTFE grey	55° shore A	1.3	100	7.634 142
(3)	Silicone blue-transparent / PTFE white	45° shore A	1.3	100	7.647 542

#### 22 X 9.1 MM, 4.3 MM CENTRE HOLE

Suitable for the following vials:

7.612 175, 7.620 146, 7.621 813, 6.204 710, 7.620 148, 7.620 147, 7.612 926, 7.615 808, 7.616 552 and 7.616 883.



Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Natural rubber red- orange / TEF transparent	60° shore A	1.3	100	7.616 888
(2)	Butyl red / PTFE grey	55° shore A	1.3	100	7.616 889
(3)	Silicone blue transparent / PTFE white	45° shore A	1.3	100	7.616 890
(4)	Silicone blue transparent / PTFE white, Y-slitted	45° shore A	1.3	100	7.657 337
(5)	Without septum*			100	7.647 541

<sup>\*</sup> Suitable septa with a diameter of 19.5 mm made of different materials are available on request

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#### 22 X 9.1 MM, 6.0 MM CENTRE HOLE

Suitable for the following vials:

7.612 175, 7.620 146, 7.621 813, 6.204 710, 7.620 148, 7.620 147, 7.612 926, 7.615 808, 7.616 552 and 7.616 883.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
			111111		
(1)	Silicone blue transparent / PTFE white, Y-slitted	45° shore A	1.3	100	7.671 337



## CRIMP NECK AND HEADSPACE VIALS ND20 / ND40, SPECIAL DIMENSIONS

The screw cap 7.622 166 for bottle 7.622 167 has to be ordered separately.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, crimp neck ND20	50	101 x 31	100	7.612 175
(2)	Clear glass, crimp neck ND20	100	94.5 x 51.6	88	7.620 146
(3)	Clear glass, screw neck ND40	50	69.5 x 44	1000	7.622 167
(4)	Clear glass, screw neck 20-400	20	86 x 22.5	100	7.663 432



#### **SCREW SEALS ND20**

Screw seals ND20 are made of white PP and supplied with fitted septa made of a variety of materials. They have a 20-400 thread and are closed.

#### Suitable for screw neck vial 7.663 432.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Natural rubber red-orange / TEF transparent	60° shore A	1.3	100	7.677 372
(2)	Butyl red / PTFE grey	55° shore A	1.3	100	7.639 759
(3)	Silicone white / PTFE red	45° shore A	1.3	100	7.657 799





#### **SCREW NECK VIALS ND24 (EPA)**

Screw neck vials ND24 made of clear and amber first hydrolytic class glass are suitable for EPA (Environmental Protection Association) analysis and can, upon request, be supplied with a sterility certificate that is specifically required for TOC analyses.

These vials are especially used with autosamplers made by Agilent, Dionex, Shimadzu, Tekmar, Thermo Scientific and Varian.

Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass	20	57 x 27.5	100	7.663 211
(2)	Amber glass	20	57 x 27.5	100	7.631 988
(3)	Clear glass	30	72.5 x 27.5	100	7.615 411
(4)	Amber glass	30	72.5 x 27.5	100	7.632 370
(5)	Clear glass	40	95 x 27.5	100	7.663 215
(6)	Amber glass	40	95 x 27.5	100	7.663 216
(7)	Clear glass	60	140 x 27.5	100	7.663 217
(8)	Amber glass	60	140 x 27.5	100	7.616 902

#### **SCREW SEALS ND24 (EPA)**

Screw seals ND24 (EPA) are made of PP and are supplied with or without fitted septa made of a variety of materials. They have a 24-400 thread, a 15 mm centre hole or are closed.

#### WITH BUTYL / PTFE SEPTA

These septa are temperature-resistant from -40  $^{\circ}\text{C}$  to 120  $^{\circ}\text{C}$  and have excellent chemical properties.



Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Butyl red / PTFE grey	55° shore A	2.5	100	7.664 004
(2)	Butyl red / PTFE grey, closed	55° shore A	2.5	100	7.664 005

#### WITH SILICONE / PTFE SEPTA, EPA QUALITY



These septa are temperature-resistant from -60 °C to 200 °C and have better purity than septa made of natural rubber, butyl or red rubber. However they have less effective resealability properties and are therefore more suitable for single-injection applications.

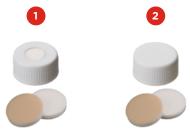
Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Silicone white / PTFE beige	45° shore A	3.2	100	7.664 006
(2)	Silicone white / PTFE beige, closed	45° shore A	3.2	100	7.664 007

### WITH SILICONE / PTFE SEPTA, ULTRABOND, EPA QUALITY

These septa are temperature-resistant from -60 °C to 200 °C and have better purity than septa made of natural rubber, butyl or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications.

With Ultrabond seals, the caps and septa form an inseparable unit, which means that even a blunt needle is unable to push the septa into the vial.

Туре	Description	Hardness	Thickness	PK	Art. no.
			mm		
(1)	Silicone natural / PTFE beige	45° shore A	3.2	100	7.612 151
(2)	Silicone natural / PTFE beige, closed	45° shore A	3.2	100	7.616 000



### WITH SILICONE / ALUMINIUM SEPTA

These septa are temperature-resistant from -60 °C to 220 °C and have better purity than septa made of natural rubber or red rubber. However, they have less effective resealability properties and are therefore more suitable for single-injection applications. The silicone is fully coated with a silver aluminium foil.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Silicone white / aluminium foil silver, closed	50° shore A	3.0	100	7.677 369



### WITHOUT SEPTA

Suitable septa with a diameter of 22 mm made of different materials are available on request.

Туре	Description	PK	Art. no.
(1)	Screw cap	100	7.677 371
(2)	Screw cap, closed	100	7.615 412



### KITS ND24

The LABSOLUTE $^\circ$  kits ND24 contain shrink-wrapped screw vials ND24 made of clear or amber first hydrolytic class glass and corresponding screw caps made of PP.

Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
Clear glass, white caps, 15 mm centre hole, <b>pre-screwed</b> , silicone white / PTFE beige, 45° shore A, 3.2 mm	40.0	95 x 27.5	100	7.657 480
Clear glass, white caps, 15 mm centre hole, <b>pre-screwed</b> , silicone white / PTFE beige, 45° shore A, 3.2 mm, Ultrabond	40.0	95 x 27.5	1000	7.660 179



### **VIALS WITH OPTIMIZED MICRO-SAMPLING**







### **VASE VIALS**







The LABSOLUTE® vials for optimised micro-sampling are the best solution for very small sample volumes. The universally usable, so called vase vials with a residual volume of max. 15  $\mu l$  can be tighly closed with the suitable LABSOLUTE® caps. All the vials are made of clear or amber first hydrolytic class glass. Because of their wide base, the vials stand independent and safe in almost every autosampler.

Further vials with ND8 or ND10 screw neck are available on request.







Туре	Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
(1)	Clear glass, crimp neck ND11	1.2	32 x 11.6	100	7.648 512
(2)	Amber glass, crimp neck ND11	1.2	32 x 11.6	100	7.648 513
(3)	Clear glass, snap ring ND11	1.2	32 x 11.6	100	7.648 514
(4)	Amber glass, snap ring ND11	1.2	32 x 11.6	100	7.648 515
(5)	Clear glass, short thread neck ND9	1.2	32 x 11.6	100	7.648 516
(6)	Amber glass, short thread neck ND9	1.2	32 x 11.6	100	7.648 517



















### **VIALS WITH DIRECTLY CLOSABLE MICRO-INSERT**

The special LABSOLUTE® vials made of clear or amber first hydrolytic class glass have a base bonded micro-insert with the vial head on it. The micro-insert can be directly closed by a suitable LABSOLUTE® cap. These vials are therefore ideal for volatile samples and micro reactions, because substances cannot escape into the space between insert and outer shell. In addition, the universally applicable vials with a nominal volume of 250  $\mu l$  also have a significantly smaller residual volume than the combinations of vials and micro-inserts.

Type	Description	Capacity	Size	PK	Art. no.
		μΙ	mm		
(1)	Clear glass, crimp neck ND11	250	32 x 11.6	100	7.648 521
(2)	Amber glass, crimp neck ND11	250	32 x 11.6	100	7.648 522
(3)	Clear glass, snap ring ND11	250	32 x 11.6	100	7.648 523
(4)	Amber glass, snap ring ND11	250	32 x 11.6	100	7.648 524
(5)	Clear glass, short thread neck ND9	250	32 x 11.6	100	7.648 525
(6)	Amber glass, short thread neck ND9	250	32 x 11.6	100	7.648 526

### KIT FOR TITRATION ACCORDING TO KARL-FISCHER

The LABSOLUTE® kit ND20 consists of crimp neck vials made of clear glass of the first hydrolytic class and corresponding aluminum crimp closures with an ultraclean septum made of silicone/PTFE. The special dimensions of the vials and the modification of the closures are perfectly adapted for the use with the Metrohm 774 & 874 Oven Sample Processor for the determination of the water content according to Karl-Fischer.

Description	<b>Capacity</b> ml	<b>Size</b> mm	PK	Art. no.
Crimp neck vial ND20, clear glass, flat bottom, crimp cap ND20, aluminium, septa silicone blue transparent / PTFE white, 3.0 mm, 45° shore A, UltraClean	6.0	38.2 x 21.7	100	7.648 231

COMPATIBLE
WITH METROHM
774 & 874
OVEN SAMPLE
PROCESSOR



### STANDARD BLOCK SYSTEMS

All well plates made of PP and sealmats are fully chromatography tested. There are several advantages compared to usual vials and caps. Furthermore, the SBS/ANSI footprint assures compatibility with all well plate capable prep stations and chromatography autosamplers.

Well plates and sealmats are suitable for polar and non-polar solvents, in case of very critical analysis and very low sample concentrations.

- Space saving on the lab bench and when stored
- Faster sample preparation when multichannel pipettes are used
- Time saving because many different samples are prepared on one single plate

### STANDARD WELL PLATES, 96 POSITIONS

The plates made of PP are non-coated, non-sterile and chromatography tested.

Art. no.

Glass coated well plates are available on request.





### **BLOCK COVERS, 96 POSITIONS**

The block covers (Sealmats) are non-sterile and suitable for standard well plates with 96 positions.

Suitable for items 7.644 703 and 7.644 707.

Description	Colour	PK	Art. no.
EVA, round, for 8 mm diameter	Clear	5	7.644 713
Silicone / PTFE, round, for 8 mm diameter	Blue	5	7.644 715
Silicone, square, slitted	Clear	5	7.644 720





Further LABSOLUTE® block systems available on request

### CRIMPING AND DECAPPING TOOLS, MANUAL, STANDARD

The crimping and decapping tools feature a chemically resistant surface lacquer that has been developed especially for use in the laboratory. Additionally, the crimping tools have hardened closing jaws with a special alloy that guarantee a long service life. The crimping pressure and crimping height of the crimping tools can also be adapted to the design of the crimp neck and septal thickness.

### **CRIMPING TOOLS**

Description	PK	Art. no.
Crimper for 8 mm crimp caps	1	9.003 470
Crimper for 11 mm crimp caps	1	9.003 471
Crimper for 13 mm crimp caps	1	9.003 473
Crimper for 13 mm Flip Top/Flip Off seals	1	7.652 437
Crimper for 20 mm crimp caps	1	9.003 475
Crimper for 20 mm Flip Top/Flip Off seals	1	7.610 160
Crimper for 28 mm crimp caps	1	6.281 869
Crimper for 32 mm crimp caps	1	6.301 675



### **DECAPPING TOOLS**

Description	PK	Art. no.
Decapper for 8 mm crimp caps	1	9.003 511
Decapper for 11 mm crimp caps	1	9.003 367
Decapper for 13 mm crimp caps	1	9.003 368
Decapper for 20 mm crimp caps	1	9.003 369
Decapper for 28 mm crimp caps	1	7.647 543
Decapper for 32 mm crimp caps	1	7.621 611



# CRIMPING AND DECAPPING TOOLS, MANUAL, STAINLESS STEEL

Crimping and decapping tools are completely made of stainless steel and feature lasting durability despite steam sterilization and autoclaving. Additionally, the crimping tools have hardened closing jaws with a special alloy that guarantee a long service life. The crimping pressure and crimping height of the crimping tools can also be adapted to the design of the crimp neck and septal thickness.

### **CRIMPING TOOLS**

Description	PK	Art. no.
Crimper for 11 mm crimp caps	1	7.654 510
Crimper for 13 mm crimp caps	1	7.654 511
Crimper for 13 mm Flip Top/Flip Off seals	1	7.644 158
Crimper for 20 mm crimp caps	1	7.654 512
Crimper for 20 mm Flip Top/Flip Off seals	1	7.644 157



### **DECAPPING TOOLS**

Description	PK	Art. no.
Decapper for 13 mm crimp caps	1	7.654 514
Decapper for 20 mm crimp caps	1	7.654 515



Tip: In light of the different crimp neck designs and septal thicknesses that are used, both the crimping pressure and the crimping height of crimping tools need to be adjustable.

The crimping pressure can be limited using an adjusting screw in the handle. The crimping height is adjusted using the Allen key supplied. To do this, hold the crimping edge of the forceps firmly and insert the Allen key into the opening provided on the crimping head. Turning the key to the right moves the crimping head upwards, and the crimping is looser. Turning the Allen key to the left moves the crimping head downwards, and the crimping is firmer.

### Correct crimping

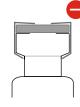
Close proximity cap edge

> Flat and undamaged cap sides

Flat cap surface

Flat septum surface

### Incorrect crimping



Space between the aluminium cap edges



Curving of the

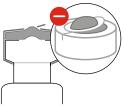


Deformity of the



Convex-looking liner



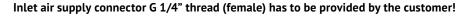


Rounded cap edges Curving of the cap liner upwards

### **CRIMPING TOOL, PNEUMATIC, MANUAL**

The pneumatic hand-held crimping tool makes crimping and decapping of vials very easy and ergonomic. The time spent to crimp or decap a series of many samples, especially, is shortend clearly. As the balancer compensates the weight of the pneumatic crimper, steady and precise crimping is no problem.

- Operated by compressed air (min. 6.2 bar = 90 psi)
- · Easy handling
- Interchangeable heads for crimping and decapping
- Adjustable, constant and reproducible crimping pressure
- Space-saving installation with a balancer on your working bench (Art. 7.618 928)
- · CE mark of conformity



Description	PK	Art. no.
Pneumatic basic crimping tool incl. pressure regulator, safety valve and PA twisted hose	1	7.618 927
Stand with foot switch	1	7.644 958

## CRIMPING AND DECAPPING HEADS FOR PNEUMATIC CRIMPING TOOL

Suitable for use with the pneumatic crimping tool 7.618 927.

Further crimping and decapping heads for standard crimp caps and Flip Top  $\!\!\!/$  Flip Off seals are available on request.

Description	PK	Art. no.
Crimping head for 20 mm crimp caps	1	7.621 742
Decapping head for 20 mm crimp caps	1	7.618 932

### **CRIMPING TOOL, PNEUMATIC, AIRGO**

The pneumatic crimping tool makes crimping quite easy and shortens the time to crimp all your vials in daily routine analysis. The completely new designed ergonomic tool with easy push button guarantees a fully joint-friendly work position.

- Unique ultra slim design of the crimping jaws is perfect for in-tray crimping of the vials
- Suitable for cleanroom applications
- Optional balancer helps to save space on the lab bench and keeps the crimper clean and ready to use in reach
- High-pressure and low-pressure version available

Other Types of the AIRGO crimping tool are available on request.

Description	PK	Art. no.
11 mm high pressure AIRGO crimping tool	1	7.648 346





### CRIMPING AND DECAPPING TOOL, ELECTRONIC

Electronic crimpers and decappers provide secure, reproducible crimps and quick and easy removal of aluminium seals. The tools can be used quite mobile because of the built-in rechargeable long life lithium ion battery. Ergonomic design and push button operation eliminates wrist strain especially at large sample series. Adjustable crimp settings make the crimping tool compatible with most vial/seal combinations. The adjusted crimping pressure can be seen easily at any time. A brush-less gear technology guarantees a longer lifetime and less particle emission.

- Vials can be crimped and decapped while they remain in the sample tray
- Tools can be used while recharging
- Universal 100–240 V charger included



### CRIMPING TOOL, ELECTRONIC

Other Types of the electronic crimper are available on request.

Description	PK	Art. no.
Crimping tool for 8 mm crimp caps	1	7.646 583
Crimping tool for 11 mm crimp caps	1	7.662 425
Crimping tool for 20 mm crimp caps	1	7.662 426

### DECAPPING TOOL, ELECTRONIC

Other Types of the electronic decapper are available on request.

Description	PK	Art. no.
Decapping tool for 11 mm crimp caps	1	7.646 804
Decapping tool for 20 mm crimp caps	1	7.646 958

## HIGH-POWER CRIMP STATION, ELECTRONIC, PROGRAMMABLE

The electronic high-power crimp station guarantees best crimp results for various closures, septa thickness and vials. It is especially used for magnetic steel caps. The tool is fully programmable. The different crimp and decapping heads can be removed and installed in seconds. Crimp-force sensing automatically determines when a proper seal has been formed and opens the jaws to release the vial. Overcrimping is almost completely avoided.

- 10 adjustment programms is available for each crimp and decapping head
- Including crimp and decapping head for 20 mm crimp seals
- Also suitable for aluminium and bimetal caps

Description	PK	Art. no.
High-power crimp station, electronic, programmable	1	7.665 477





### **VIAL RACKS**

The stackable vial racks made of transparent acrylic or blue PP allow the easy handling and secure transport of sample vials.

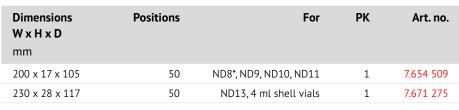
Transparent acrylic allows the fill level of the sample vials to be easily checked. PP is not transparent, but more robust than acrylic.

### VIAL RACKS, ACRYLIC

Dimensions W x H x D mm	Positions	For	PK	Art. no.
173 x 20 x 95	50	ND8*	1	7.621 486
173 x 20 x 95	50	ND8**, ND9, ND10, ND11	1	7.620 863
175.8 x 20 x 115.5	40	ND13, 4 ml shell vials	1	7.616 896
160 x 30 x 160	25	ND18, ND20	1	7.620 864

<sup>\*</sup> ND8 crimp neck vials and micro-vials

### VIAL RACKS, PP



<sup>\*</sup> ND8 screw neck vials





<sup>\*\*</sup> ND8 screw neck vials, small opening

# THE VIAL RACKS ARE SUITABLE FOR SAMPLE VIALS WITH THE FOLLOWING ARTICLE NUMBERS:

ND8*	NE	08**, ND9, ND10, ND	011	ND13, 4 ml shell vials	ND18, ND20
7.612 017	6.088 871	7.620 898	7.660 024	7.603 252	6.204 710
7.614 045	6.205 647	7.621 171	7.660 048	7.613 421	7.612 926
7.616 829	6.258 862	7.621 337	7.670 623	7.616 808	7.613 328
7.616 830	6.401 175	7.621 467	7.672 235	7.616 870	7.613 394
7.616 831	6.901 405	7.622 228	7.672 236	7.616 880	7.615 808
7.616 832	6.901 955	7.626 843	7.970 595	7.632 226	7.615 908
7.616 878	7.608 132	7.626 899	7.677 377	7.648 254	7.616 139
7.617 518	7.608 141	7.629 622	7.677 368	7.648 518	7.616 552
7.618 925	7.608 160	7.630 175	7.663 231	7.648 602	7.616 883
7.620 436	7.612 960	7.631 401	7.663 233	7.654 504	7.616 895
7.621 750	7.613 087	7.631 402	7.663 232	7.654 505	7.616 899
7.622 387	7.613 330	7.631 774	7.645 571		7.620 147
7.631 599	7.613 388	7.631 798	7.677 365		7.620 148
7.622 388	7.615 163	7.632 401	7.663 226		7.620 798
7.630 552	7.615 291	7.636 093	7.677 379		7.620 815
7.615 704	7.615 715	7.639 156	7.663 230		7.621 127
7.677 195	7.616 003	7.639 476	7.663 229		7.621 813
7.654 498	7.616 019	7.639 477	7.664 225		7.630 303
	7.616 109	7.639 478	7.677 376		7.632 402
	7.616 839	7.643 512	7.645 592		7.648 101
	7.616 848	7.644 559	7.663 234		7.648 634
	7.616 849	7.647 475	7.645 633		7.648 635
	7.616 850	7.647 476	7.677 375		7.663 432
	7.616 851	7.647 477	7.648 512		
	7.616 859	7.647 478	7.648 513		
	7.616 860	7.647 479	7.648 514		
	7.616 861	7.647 480	7.648 515		
	7.616 879	7.648 146	7.648 516		
	7.616 932	7.648 519	7.648 517		
	7.616 934	7.648 520	7.648 521		
	7.616 935	7.648 597	7.648 522		
	7.618 897	7.648 599	7.648 523		
	7.618 914	7.651 116	7.648 524		
	7.620 828	7.654 554	7.648 525		
	7.620 829	7.655 281	7.648 526		

<sup>\*</sup> ND8 crimp neck vials and micro vials

<sup>\*\*</sup> ND8 screw neck vials, small opening

### **STORAGE BOXES, PP**

The chemically resistant and autoclavable storage boxes made of PP are temperature-resistant from -80 °C to 100 °C and stackable. They offer space-saving storage and simple transport for several Types of vials. The alphanumerically coded positions ensure that each sample vial can be clearly identified in the box.

### ND8, ND9, ND10, ND11 - 81 POSITIONS

All storage boxes are suitable for ND8, ND9, ND10 and ND11 vials and shell vials with a nominal volume of  $1.5 \, \text{ml}$ ,  $1.8 \, \text{ml}$  or  $2.0 \, \text{ml}$ .

Dimensions W x H x D mm	Colour	РК	Art. no.
130 x 45 x 130	Blue	1	7.638 664
130 x 45 x 130	Orange	1	7.638 665
130 x 45 x 130	Pink	1	7.638 666
130 x 45 x 130	Yellow	1	7.638 667
130 x 45 x 130	Green	1	7.638 668
130 x 45 x 130	Transparent	1	7.638 669



### ND8, ND9, ND10, ND11 - 16 POSITIONS

All storage boxes are suitable for ND8, ND9, ND10 and ND11 vials and shell vials with a nominal volume of 1.5 ml, 1.8 ml or 2.0 ml.

Dimensions W x H x D mm	Colour	РК	Art. no.
67 x 45 x 67	Transparent	1	7.647 463



### ND13, ND18, ND20 HEADSPACE, ND24 (EPA)

Dimensions W x H x D	Colour	Positions	For	Vial size	PK	Art. no.
mm				ml		
130 x 52 x 130	Red	49	ND13	4	1	7.657 553
130 x 102 x 130	Blue	25	ND18, ND20*	5, 10, 20	1	7.657 554
130 x 102 x 130	Violet	16	ND24 (EPA)	20	1	7.659 996
130 x 105 x 130	Violet	10	ND24 (EPA)	30, 40	1	7.659 995



<sup>\*</sup> For headspace vials

### **SEPTA**

The choice of the right septa depends on the application. Many septa are PTFE coated on one side. PTFE is highly resistant against many chemicals and forms an inert border between the sample and the base material of the septa.

The septa's base material has various physical and chemical properties, like temperature resistance, resealability, cleanliness, hardness and thickness.

### Natural rubber/TEF

- Temperature-resistant from -40 °C to 120 °C
- Excellent resealability properties
- Inexpensive for standard applications in the fields of GC and HPLC

### RedRubber/PTFE

- Temperature-resistant from -30 °C to 110 °C
- Softer and therefore easier to penetrate than natural rubber
- Not as good resealability properties as natural rubber
- Higher chemical purity than natural rubber
- Inexpensive for standard applications in the fields of GC and HPLC

### **Butyl/PTFE**

- Temperature-resistant from -40 °C to 120 °C
- Higher chemical purity than natural rubber and RedRubber

### Silicone/PTFE

- Temperature-resistant from -60 °C to 200 °C
- More suitable for single-injection applications
- Much higher chemical purity than natural rubber and RedRubber
- $\bullet \ \ \text{Very low particle formation during penetration in case of double-sided PTFE coating}\\$
- Best for the thin and fragile needles of the autosampler
- Best for critical analysis (Ultraclean quality)

### WHICH SEPTUM FITS WHICH CAP?

Diameter of the septum	Сар
8 mm	8 mm screw caps (ND8) 8 mm crimp caps (ND8)
9 mm	9 mm short thread screw caps (ND9)
10 mm	10 mm screw caps (ND10)
11 mm	11 mm crimp caps (ND11)
12 mm	13 mm screw caps (ND13)
13 mm	13 mm crimp caps (ND13)
16 mm	18 mm screw caps (ND18)
17,5 mm	18 mm precision thread screw caps (ND18)
19,5 mm	22 mm PE caps
20 mm	20 mm crimp caps (ND20)
22 mm	24 mm screw caps (ND24 EPA)



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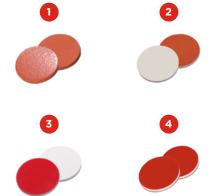


### SEPTA, 8 MM

Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	PTFE virginal*	53° shore D	0.25	1000	7.620 438
(2)	Natural rubber red- orange / TEF transparent	60° shore A	1.0	1000	7.630 195
(3)	Natural rubber red- orange / TEF transparent	60° shore A	1.3	1000	7.622 297
(4)	RedRubber / PTFE beige	45° shore A	1.0	1000	7.654 480
(5)	Butyl red / PTFE grey	55° shore A	1.3	1000	7.621 194
(6)	Silicone white / PTFE red	45° shore A	1.3	1000	7.615 160
(7)	Silicone blue transparent / PTFE white	45° shore A	1.3	1000	7.613 313
(8)	Silicone dark blue / PTFE white	45° shore A	1.3	1000	7.646 521
(9)	Silicone cream / PTFE red	55° shore A	1.5	1000	7.615 159
(10)	PTFE red / silicone white / PTFE red	45° shore A	1.0	1000	7.616 847
(11)	Silicone white / PTFE blue, slitted*	55° shore A	0.9	1000	7.615 125

<sup>\*</sup> Especially suitable for VWR (Merck®) / Hitachi instruments



### SEPTA, 9 MM

Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Natural rubber red- orange / TEF transparent	60° shore A	1.0	1000	7.669 529
(2)	RedRubber / PTFE beige	45° shore A	1.0	1000	7.639 093
(3)	Silicone white / PTFE red	55° shore A	1.0	1000	7.634 821
(4)	PTFE red / silicone white / PTFE red	45° shore A	1.0	1000	7.671 084

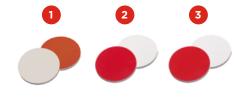
### SEPTA, 10 MM

Т	ype	Description	Hardness	Thickness mm	PK	Art. no.
(1	1)	PTFE virginal	53° shore D	0.25	1000	7.615 718

### SEPTA, 11 MM

Septa with a double-sided PTFE coating show a very low particle formation during penetration.

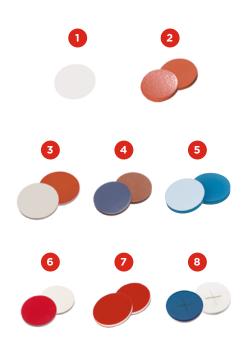
Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	RedRubber / PTFE beige	45° shore A	1.0	1000	7.639 959
(2)	Silicone white / PTFE red	45° shore A	1.3	1000	7.646 570
(3)	Silicone cream / PTFE red	55° shore A	1.5	1000	7.625 909



### SEPTA, 12 MM

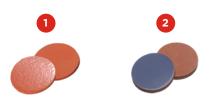
Septa with a double-sided PTFE coating show a very low particle formation during penetration.

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	PTFE virginal	53° shore A	0.25	1000	7.613 332
(2)	Natural rubber red- orange / TEF transparent	60° shore A	1.3	1000	7.616 874
(3)	RedRubber / PTFE beige	45° shore A	1.0	1000	7.669 530
(4)	Butyl red / PTFE grey	55° shore A	1.3	1000	7.616 875
(5)	Silicone blue- transparent / PTFE white	45° shore A	1.3	1000	6.254 775
(6)	Silicone cream / PTFE red	55° shore A	1.5	1000	6.204 825
(7)	PTFE red / silicone white / PTFE red	45° shore A	1.0	1000	7.616 876
(8)	Silicone white / PTFE blue, cross-slitted	55° shore A	1.5	1000	7.616 877



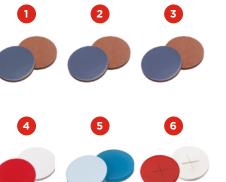
### SEPTA, 13 MM

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Natural rubber red- orange / TEF transparent	60° shore A	1.3	1000	7.647 496
(2)	Butyl red / PTFE grey	55° shore A	1.3	1000	7.616 210

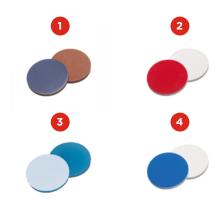


### SEPTA, 16 MM

Septa with a double-sided PTFE coating show a very low particle formation during penetration.



Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Butyl red / PTFE grey	55° shore A	1.3	1000	7.619 780
(2)	Butyl red / PTFE grey	55° shore A	1.6	1000	7.635 110
(3)	Butyl red / PTFE grey	55° shore A	2.0	1000	7.671 847
(4)	Silicone white / PTFE red	45° shore A	1.3	1000	6.205 339
(5)	Silicone blue transparent / PTFE white	45° shore A	1.7	1000	7.623 987
	Silicone natural / PTFE beige	55° shore A	1.9	1000	7.647 514
(6)	Silicone white / PTFE red, cross-slitted	55° shore A	1.5	1000	7.662 067



### SEPTA, 17.5 MM

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Butyl red / PTFE grey	55° shore A	1.6	1000	7.626 292
(2)	Silicone white / PTFE red	45° shore A	1.3	1000	6.280 903
(3)	Silicone blue transparent / PTFE white	45° shore A	1.3	1000	7.619 097
(4)	Silicone white / PTFE blue	55° shore A	1.5	1000	7.634 826



### SEPTA, 18 MM

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Cilianabita / DTEE d	4 F Q - L A	4.7	1000	7/57 0/0
(1)	Silicone white / PTFE red	45° snore A	1.3	1000	7.657 868

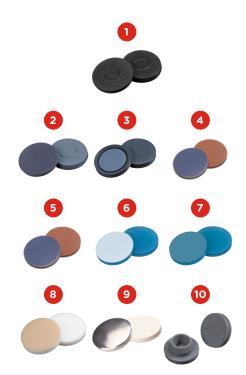




Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Natural rubber red- orange / TEF transparent	60° shore A	1.3	1000	7.647 517
(2)	Silicone blue transparent / PTFE white	45° shore A	1.3	1000	7.629 630

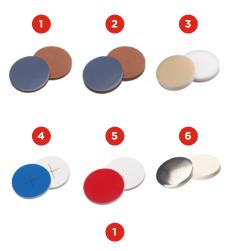
### SEPTA, 20 MM

Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Butyl dark grey	55° shore A	3.0	1000	7.616 891
(2)	Butyl / PTFE grey	50° shore A	3.0	1000	7.616 892
(3)	Butyl / PTFE grey, Pharma-Fix	50° shore A	3.0	1000	7.621 812
(4)	Butyl red / PTFE grey	55° shore A	1.3	1000	7.669 531
(5)	Butyl red / PTFE grey	50° shore A	3.0	1000	7.669 533
(6)	Silicone blue transparent / PTFE white	45° shore A	3.0	1000	7.616 893
(7)	Silicone blue transparent / PTFE transparent	45° shore A	3.0	1000	7.669 532
(8)	Silicone white / PTFE beige, IM quality	45° shore A	3.2	1000	7.616 894
(9)	Silicone white / aluminium foil silver	50° shore A	3.0	1000	6.204 824
(10)	Butyl injection stopper grey			1000	7.615 551



### SEPTA, 22 MM

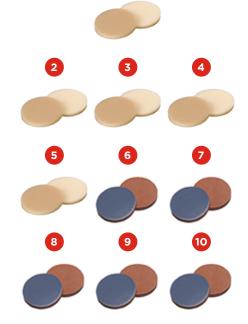
Туре	Description	Hardness	Thickness mm	PK	Art. no.
(1)	Butyl red / PTFE grey	55° shore A	1.6	1000	6.262 073
(2)	Butyl red / PTFE grey	55° shore A	2.5	1000	6.207 230
(3)	Silicone white / PTFE beige, EPA quality	45° shore A	3.2	1000	7.609 927
(4)	Silicone white / PTFE blue, cross-slitted	55° shore A	1.5	1000	7.636 710
(5)	Silicone white / PTFE red	45° shore A	1.3	1000	7.625 234
(6)	Silicone white / aluminium foil silver	50° shore A	3.0	1000	7.644 928



## **SEPTA FOR SCHOTT SCREW CAPS**

The septa are especially designed for the screw caps with GL thread.

(1)       Silicone cream / PTFE beige       45° shore A       3.2       GL14       100       7.677         (2)       Silicone cream / PTFE beige       45° shore A       3.2       GL18       100       7.677         (3)       Silicone cream / PTFE beige       45° shore A       3.2       GL25       100       7.677	no.
	382
(3) Silicone cream / PTFE beige 45° shore A 3.2 GL25 100 7.677	383
	385
(4) Silicone cream / PTFE beige 45° shore A 3.2 GL32 100 7.677	386
(5) Silicone cream / PTFE beige 65° shore A 3.2 GL45 100 7.677	388
(6) Butyl red / PTFE grey 55° shore A 1.6 GL14 100 7.677	395
(7) Butyl red / PTFE grey 55° shore A 1.6 GL18 100 7.677	394
(8) Butyl red / PTFE grey 55° shore A 2.4 GL25 100 7.677	393
(9) Butyl red / PTFE grey 55° shore A 2.5 GL32 100 7.677	390
(10) Butyl red / PTFE grey 55° shore A 2.4 GL45 100 7.677	700



### **GC INJECTION PORT SEPTA**

The GC septa are universal and longlife. They are delivered in resealable amber screw neck vials of  $1^{\rm st}$  hydrolytic class and ready-to-use. You have several advantages using our GC septa:

- Suitable for inlet temperatures up to 340 °C
- Low release of siloxanes
- Good penetration and sealing properties
- No sticking to hot surfaces



<sup>\*</sup> Septa cross-slitted

### MODEL OVERVIEW

Shimadzu stopper (7.621 124)	Shimadzu: All models
9,5 mm septum (7.629 437)	Agilent: Series 5700/5800 Varian: Injector type for packed columns Varian (CP): All models Tracor: 550, 560 Gow-Mac: All models Finnigan: 9001, QCQ, GCQ, Trace 2000 Antek Unicam: 4600
10 mm septum (7.648 606)	Agilent (HP): Series 5700/5880, 5890/6890 Varian: Injector type for packed columns and SSL
11 mm septum (7.635 081)	Agilent: Series 5890/6850/6890, 5700/5880, 5880A Varian: 3300, 3400, 3500, 3600, 3700, Vista SSL Gow-Mac: Series 6890 Perkin Elmer: Sigma series, 900, 990, Serie 8000, Autosystem X
12,5 mm septum (7.648 607)	Tracor: 220, 222
17 mm septum (7.639 885)	Thermo Scientific Quest: Trace Fisons/Carlo Erba: Series 8000 Finnigan: GCQ, Trace





### CHEMICAL RESISTANCE OF LABSOLUTE® DISPOSABLE GLOVES

Chemical substance	CAS number	LABSOLUTE® Sensitive	LABSOLUTE® Nitrile Green	LABSOLUTE® Protective	LABSOLUTE® Latex powder-free
Acetic acid (10 %)	64-19-7	Level 1	• Level 3	n. a.	n.a.
Acetone	67-64-1	N	N	N	N
Acetonitrile	75-05-8	N	N	N	N
Acrylamide (40 %)	79-06-1	Level 5	• Level 6	• Level 6	n.a.
Ammoniac (25 % ammonia solution)	1336-21-6	S	n. a.	Level 1	n.a.
Benzalconiumchloride, Liquid (Quats)	63449-41-2	• Level 6	n. a.	n. a.	• Level 6
Calcium chloride, granulated	10043-52-4	• Level 2	Level 2	• Level 3	Level 2
Chlorhexidindigluconat (0,5 %)	18472-51-0	n.a.	n. a.	n. a.	n.a.
Chlorhexidindigluconat (20 %)	18472-51-0	• Level 6	n. a.	n. a.	• Level 6
Chloroform (99 %)	67-66-3	N	N	N	N
Diethyl Ether	60-29-7	N	N	N	N
Diethylamine (DEA)	109-89-7	N	N	N	N
Dimethyl Sulfoxide (DMSO)	67-68-5	N	N	N	N
Ethanol (10 %)	64-17-5	n.a.	n.a.	n. a.	n.a.
Ethanol (20 %)	64-17-5	Level 1	Level 1	• Level 6	n. a.
Ethanol (70 %)	64-17-5	S	n. a.	• Level 3	N
Ethidium bromide (1 %)	1239-45-8	• Level 6	• Level 6	• Level 6	• Level 6
Ethyl acetate	141-78-6	N	n.a.	n.a.	N
Fentanyl citrate inj. (100 µg/2 Ml)		• Level 5	n. a.	• Level 5	n. a.
Formaldehyde (37 %) in methanol (10 %)*	50-00-0	• Level 6	• Level 6	• Level 6	• Level 6
Formamide	75-12-7	• Level 2	n. a.	Level 4	n. a.
Glutaraldehyde (5 %)	111-30-8	• Level 5	• Level 6	• Level 6	n. a.
Heavy Petrol (B.P. 150 - 190 °C)	8032-32-4	N	N	N	N
Hydrochloric acid (10 %)	7647-01-0	• Level 6	• Level 6	• Level 6	n. a.
Hydrochloric acid (36 %)	7647-01-0	S	n. a.	• Level 6	n. a.
Hydrofluoric acid (40 %)	7664-39-3	n.a.	n. a.	S	n. a.
Hydrogen peroxide (30 %)	7722-84-1	• Level 6	• Level 6	• Level 6	• Level 6
Isopropanol, 2-Propanol (40 %)	67-63-0	• Level 6	Level 1	n. a.	S
Isopropanol, 2-Propanol (70 %)	67-63-0	Level 1	Level 1	• Level 6	n. a.
Mercury(Ii) chloride	7487-94-7	n.a.	n. a.	S	n. a.

 $<sup>^{\</sup>star}$  Permeability refers to formal dehyde 37 % only



Please note, that the chemical resistance depends directly on the application and the purity of the chemicals. Every user has to check the disposable glove carefully for damage. Recommendation for chemical resistance is not part of glove's specifications. All data of the table are based on laboratory experiments of the manufacturer. Th. Geyer assumes no liability, if the disposable gloves are not used as recommended. Please contact pm@thgeyer.de for further information.

#### Chemical substance CAS number **LABSOLUTE® LABSOLUTE® LABSOLUTE® LABSOLUTE®** Sensitive Nitrile Green **Protective** Latex powder-free 67-56-1 Level 2 n. a. Level 4 Methanol (10 %) n. a. Ν Methanol p.a. 67-56-1 Ν Ν n. a. Ν 75-09-2 Methylene chloride Ν Ν Ν Methylmethacrylate (MMA) 80-62-6 n. a. n. a. n. a. n. a. n. a. n. a. 142-82-5 n-Heptane Ν Ν n.a. n.a. n-Hexane 110-54-3 Ν n. a. Ninhydrine (0.2 %) 485-47-2 n. a. n. a. n.a. Level 6 Nitric Acid (10 %) 7697-37-2 Level 5 Level 6 n. a. Nitric Acid (36 %) 7697-37-2 n. a. n. a. n. a. n. a. Octenidin (0.1 %) 71251-02-0 n. a. n.a. n. a. n. a. Petrol Ether (Benzine) 64742-49-0 S Level 1 S Ν Level 1 • Level 3 Phenol (10 % In Water) 108-95-2 n. a. n. a. Level 2 Level 4 n. a. n. a. Phenol (100 %, Solid) 108-95-2 S Level 1 n. a. Phenol (80 % In Water) 108-95-2 n. a. Level 5 Phoshoric acid (o-, 10 %) 7664-38-2 n. a. n. a. n.a. Level 3 Phoshoric acid (o-, 50 %) 7664-38-2 n. a. n. a. n. a. Level 2 Phoshoric acid (o-, Saturated) 7664-38-2 n.a. n. a. n. a. Level 6 n. a. n. a. Poly(vinylpyrrolidone)-iodine complex 25655-41-8 n. a. Potassium hydroxide (50 %, caustic n. a. n. a. 1310-58-3 n. a. n. a. pottash) Level 6 Level 6 Level 6 1310-73-2 Sodium hydroxide (40 %, Caustic Soda) Level 6 Level 1 n. a. Level 3 n. a. Sodium hypochlorite (10 %) 7681-52-9

n. a.

S

Ν

Ν

Ν

7664-93-9

7664-93-9

108-88-3

71-55-6

95-47-6

n. a.

S

Ν

Ν

Ν

n. a.

S

Ν

Ν

Ν

n. a.

n. a.

Ν

Ν

Ν

n. a.	not analysed
N	not recommended
S	only for splash protection
Level 1	recommended for contact up to 30 min
Level 2	recommended for application up to 60 min
Level 3	recommended for application up to 120 min
Level 4	recommended for application up to 240 min
Level 5	recommended for application up to 480 min
Level 6	recommended for application > 480 min

Sulfuric acid (30 %)

Sulfuric acid (96 %)

Trichloroethane

Toluene

Xylene

### **CHEMICAL RESISTANCE OF PLASTICS**

The mentioned resistance levels are only guide values, because the chemical resistance depends on many parameters, e. g. the concentration and temperature of the chemical, as well as simultaneous mechanical stress to the plastic. Anyhow, it is recommended to do some preliminary tests under the real conditions of the final application. Th. Geyer assumes no liability for the following recommendations.

Chemical substance	НС	PE	LDPE		PP	
	20 °C	50 ℃	50 °C 20 °C		20 °C	50 °C
Acetaldehyde	-	-	+		-	
Acetamide, saturated	++	++	++	++	++	++
Acetic acid, 100 % (Glacial acetic acid)	0	0	0	0	++	-
Acetic acid, 50 %	++	++	++	++	++	++
Acetone	++	++	-	-	++	-
Acetonitrile	++	++	++	++	-	
Acetophenone	0	0	++	0	++	-
Acetylene, 100 %	++	0	++	0	++	0
Acrylonitrile	++	++	++	-	-	
Adipic acid, saturated	++	++	++	+	++	++
Allyl alcohol, 96 %	++	-	-	-	+	+
Aluminium chloride, 10 %	++	++	++	+	++	++
Aluminium oxide, solid	++	++	++	++	++	++
Amino acids, generally	++	++	++	++	++	++
Ammonia, aquaous, 25 %	++	++	++	++	++	++
Ammonium chloride, aquaous	++	++	++	++	++	++
Ammonium hydroxide solution	+	+	+	0	+	+
Ammonium hydroxide, 5 %	++	++	++	++	++	++
Ammonium nitrate, aquaous, saturated	+	+	+	0	+	+
Ammonium oxalate	++	++	++	+	++	+
Ammonium sulfide	++	++	++	++	++	++
Ammonium sulphate, aquaous, saturated	+	+	+	0	+	+
Amyl acetate, n-	++	+	+	-	-	
Amyl alcohol (1-Pentanol)	++	++	++	+	++	++
Aniline	++	+	++	-	+	-
Anti-freeze agent (Diethylene glycol)	++	++	++	++	++	++
Aqua regia						
Barium chloride	++	++	++	++	++	++
Battery acid (sulphuric acid, 38 %)	+	+	+	+	+	+
Benzene	-		-		-	
Benzoic acid, saturated	++	++	++	++	++	-
Benzyl alcohol	-					
Benzyldehyde	++	-	-	_	++	

<sup>+</sup> good resistance (less damage of the material)

<sup>-</sup> poor resistance (not recommended)

o no value existing

<sup>++</sup> very good resistance (virtually no damage of the material) -- no resistance (heavy damage up to the complete destruction of the material)

Chemical substance	HDPE		LDPE		PP	
	20 °C	50 °C	20 °C	50 °C	20 °C	50 °C
Bleaching solution (NaOCl, 12.5 % chlorine)	-		0	0	-	-
Blood	+	+	+	+	+	+
Boric acid, 10 %	++	++	++	++	++	++
Boric acid, 100 %	+	+	0	0	+	+
Brake fluid	++	0	++	0	++	++
Bromine						
Bromine vapours		0		0		0
Bromobenzene	-					
Butadiene (1,3-Butadiene)	-					
Butane, gaseous (n-)	+	+	+	+	+	+
Butanol, technical pure (n-)	++	++	++	-	++	+
Butyl acetate	++	+	+	-	-	
Butyric acid	-					
Calcium carbonate, aquaous, saturated	++	++	++	++	++	++
Calcium chloride, aquaous	++	++	++	++	++	++
Calcium hydroxide, concentrated	++	++	++	++	++	++
Calcium hypochlorite, saturated	++	++	++	++	++	++
Calcium nitrate, aquaous, saturated	++	++	++	0	++	++
Calcium sulphate, saturated	++	++	++	++	++	++
Carbazole	++	++	++	++	++	++
Carbon dioxide	++	++	0	0	++	++
Carbon disulphide						
Carbon tetrachloride	-					
Cellosolve acetate	++	++	++	+	++	+
Chlorinated water	-	0	0		-	
chlorine, gaseous, anhydrous	-		-			0
Chlorobenzene	-		-		_	
Chloroform	-				+	_
Chromic acid, 10 %	++	++	++	++	++	++
Chromosulphuric acid			-			
Citric acid, 10 %	++	++	++	++	++	++
Cresol	-				+	
Crude oil	+	+	+	0	+	
Cyclohexane	-		-		-	
Cyclohexanol	+	+	+	+	+	
Decalin (Decahydronaphthalene)	++	+	+		+	
Diammonium hydrogen phosphate	++	++	++	++	++	++
Dibutyl phthalate	++		-	TT	TT	++

Chemical substance	HD	PE	LDPE		PP	
	20 °C	50 ℃	20 °C	50 °C	20 °C	50 ℃
Dichlorobenzene	-	-	-		-	
Diesel fuel	+	+	+	0	+	+
Diethyl ether	-					
Diethylbenzene	-					
Dimethylformamide	++	++	++	-	++	++
Dioxin, 1,4	+	+	+	-	-	-
Ethanol, 50 %	++	++	++	++	++	++
Ethanol, 96 %	++	++	-	++	++	++
Ether	-					
Ethyl acetate	++	-	-		++	-
Ethyl acrylate, 100 %						
Ethyl chloride	-	-	-		-	
Ethyl ether, technical pure	-	0	+	-		
Ethylbenzene	+	-	-		-	
Ethylene glycol (PEG)	++	++	++	++	++	++
Ethylene oxide	+	-	-	-	-	-
Film developer	++	-	++	++	++	+
Film fixing bath	++	0	++	++	++	++
Fluorides	++	++	++	++	++	++
Fluorine						
Formaldehyde, 40 %	++	+	+	-	++	+
Formic acid, 98-100 %	++	++	++	+	++	-
Fuel oil (domestic)	-	-	-		++	-
Glucose	++	++	++	++	++	++
Glycerin	++	++	++	++	++	++
Glycol	+	+	+	+	+	+
Heptane, n-	+	-	-		+	
Hexane, n-	+	-			+	-
Hydraulic oil	+	+	0	0	+	+
Hydrazine hydrate, aquaous	++	++	++	0	++	++
Hydrobromic acid	++	++	++	+	++	+
Hydrochloric acid, 20 %	++	++	++	++	++	++
Hydrocyanic acid, aquaous	++	++	++	++	++	++
Hydrofluoric acid, 50 %	++	++	++	++	++	++
Hydrogen peroxide, 10 %	+	+	+	+	+	+
Hydrogen peroxide, 30 %	-	+	+	+	+	+
lodine tincture	++	-	++	-	++	+
Isopropanol, technical pure	++	++	++	++	++	++

<sup>+</sup> good resistance (less damage of the material)

<sup>-</sup> poor resistance (not recommended)

o no value existing

<sup>++</sup> very good resistance (virtually no damage of the material) -- no resistance (heavy damage up to the complete destruction of the material)

Chemical substance	HDPE		LDPE		PP	
	20 °C	50 °C	20 °C	50 °C	20 °C	50 °C
Isopropyl acetate	++	+	+	-	+	-
Kerosine	+	+	-		-	-
Kerosine, technical pure	++	-	-		++	-
Lactic acid, 85 %	++	++	++	++	++	+
Lanolin (wool fat), technical pure	++	-	++	-	++	-
Lead acetate, aquaous	++	++	++	++	++	++
Lemon juice	+	+	+	0	+	+
Linseed oil	+	+	+	0	+	+
Lubricant oils	++	-	+	-	-	0
Machine oil, 100 %	0	0	++		++	-
Menthol, 100 %	++	-	-		++	-
Mercury chloride	++	++	++	++	++	++
Mercury, pure	++	++	++	++	++	++
Metal salts, generally, dissolved	++	++	++	++	++	++
Methane, gaseous	+	+	+	0	+	+
Methanol	++	++	++	++	++	++
Methyl acetate, 100 %	++	0	++	++	++	_
Methyl ethyl ketone (MEK)	++	-	-		++	-
Methylene chloride					-	
Milk	+	+	+	+	+	+
Mineral oil	++	++	+		++	_
Monochloracetic acid	++	++	++	++	++	+
Naphthalene, 100 %	+	-		0	0	0
Nitric acid, 50 %	+		-		-	
Nitrobenzene	-				+	
Octane, n-	++	++	++	++	++	++
Oils and fats, herbal	++	-	++	-	++	
Oleic acid	+	-	+	-	+	+
Olive oil	+	+	+	0	+	+
Oxalic acid	++	++	++	++	++	++
Paraffin oil, 100 %	+	+	+		+	+
Paraffin, 100 %	+	+	+	0		
Perchlorethylene (PER)				0	+	+
Perchloric acid	+		+			
Petrol		 -			+	
	+		-		-	
Phenol, 100 %	+	-	-	-	++	+
Phenylhydrazine, technical pure Phosphoric acid, 85 %	-	0	0	0	-	

Chemical substance	HDPE		LDPE		PP	
	20 °C	50 °C	20 °C	50 °C	20 °C	50 ℃
Pine needle oil, 100 %	+	+	+	0	+	+
Potassium carbonate, aquaous, saturated	+	+	+	+	+	+
Potassium chloride, aquaous, saturated	+	+	+	+	+	+
Potassium hydroxide solution, 50 %	++	++	++	++	++	++
Potassium nitrate, aquaous, saturated	+	+	+	+	+	+
Potassium perchlorate, saturated	++	++	++	++	++	++
Potassium permanganate	++	-	++	++	++	++
Potassium sulphate, aquaous, saturated	+	+	0	0	+	+
Propane, gaseous	-				+	
Propane, liquid	+	+	+	+	+	+
Propylene glycol (PG)	++	++	++	++	++	++
Propylene oxide	++	++	++	+	++	+
Pyridine	++	-	0	+	-	-
Resorcin, saturated	++	++	++	++	++	++
Salicylic acid, saturated	++	++	++	++	++	++
Salicylic aldehyde	++	++	++	+	++	+
Sea water	+	+	+	+	+	+
Silicone oil	+	+	+	+	+	+
Silver acetate	++	++	++	++	++	++
Silver nitrate	++	++	++	+	++	+
Sodium acetate	++	++	++	++	++	++
Sodium bisulfite, aquaous, saturated	+	+	0	0	+	+
Sodium carbonate	++	++	++	++	++	++
Sodium chlorate, aquaous, 25 %	+	+	0	0	+	+
Sodium chloride	++	++	++	++	++	++
Sodium dichromate	0	0	++	++	++	++
Sodium hydroxide, 100 % (caustic soda)	+	+	+	0	+	-
Sodium hydroxide, 50 % (soda lye)	++	++	++	++	++	++
Sodium hypochloride, 15 %	++	++	++	++	++	++
Sodium hypochloride, 50 %	-	-	-	-	-	-
Sodium thiosulphate (fixing salt), saturated	+	+	0	0	+	+
Softener, generally	++	-	++	-	++	-
Soya oil	+	+	+	0	+	+
Stearic acid, crystalline	++	-	++	-	++	-
Sulphur dioxide, humid	++	++	++	++	++	-
Sulphuric acid, 95 %	-		-		-	
Tar	+	0	0	0	+	0
Tetrahydrofuran	-				_	

<sup>+</sup> good resistance (less damage of the material)

<sup>-</sup> poor resistance (not recommended)

o no value existing

<sup>++</sup> very good resistance (virtually no damage of the material) -- no resistance (heavy damage up to the complete destruction of the material)

### **CHEMICAL RESISTANCE**

**PLASTIC** 

Chemical substance	HDPE		LDPE		PP	
	20 °C	50 °C	20 °C	50 ℃	20 °C	50 °C
Thionyl chloride, technical pure						
Toluene	-		-		+	
Trichlorethylene, 100 %	-					
Turpentine oil	+	+	-			
Urea	++	++	++	++	++	++
Vinyl chloride, technical pure	0	0	0	0	-	-
Water	++	++	++	++	++	++
White spirit	+	+	+	+	+	+
Xylene			-			0

### Source:

 $www.craemer.com/fileadmin/templates/downloads/diverse/Chemische\_Bestaendigkeit.pdf\\www.3d-plastic.eu/shop\_3d-plastic/images/Chemikalienbestaendigkeit\_PA+PE+PP+PVC.pdf$ 

### **PROPERTIES OF GLASS**

### **BOROSILICATE GLASS 3.3**

### Chemical resistance

Excellent resistance to acids, salt solutions, organic substances and halogens such as chlorine and bromine. Relatively resistant to alkalis and poorly resistant to hydrofluoric acid, concentrated phosphoric acid and strong alkaline solutions/lyes at high temperatures.

### Temperature resistance

Unaffected by sudden fluctuations in temperature. Also suitable for long-term use at temperatures above 100 °C.

#### Chemical composition

- ca. 80 % silicon dioxide (SiO<sub>2</sub>)
- ca. 13 % boron trioxide (B<sub>2</sub>O<sub>3</sub>)
- ca. 4.5 % sodium oxide (Na<sub>2</sub>O) + potassium oxide (K<sub>2</sub>O)
- ca. 2.5 % aluminium oxide (Al<sub>2</sub>O<sub>3</sub>)

### Physical data

- Density ca. 2.23 g · cm<sup>-3</sup>
- Thermal coefficient of linear expansion  $3.3 \cdot 10^{-6} \, \text{K}^{-1}$
- Heat conductivity (20 to 100 °C) 1.2 W  $\cdot$  m<sup>-1</sup>  $\cdot$  K<sup>-1</sup>
- Maximum short-term permissible working range 500 °C
- Hardness (acc. to Mohs) ca. 6°

### **SODA-LIME GLASS**

#### Chemical resistance

Chemical resistance is worse than that of borosilicate glass 3.3.

### Temperature resistance

Sensitive to temperature fluctuations, since irregular heating causes stress in the glass and can therefore lead to breakage. For this reason, it is not used in the laboratory sector for applications involving large changes in temperature.

#### Chemical composition (main components)

- 71–75 % silicon dioxide (SiO<sub>2</sub>)
- 12–16 % sodium oxide (Na,O)
- 10-15 % calcium oxide (CaO)

### Physical data

- Density ca. 2.5 q · cm<sup>-3</sup>
- Thermal coefficient of linear expansion  $9 \cdot 10^{-6} \ \text{K}^{-1}$
- Heat conductivity 0.8–1.05 W  $\cdot$  m<sup>-1</sup>  $\cdot$  K<sup>-1</sup>



### **PROPERTIES OF COMMON PLASTICS**

Material	Temperature resistance	Density	Flexibility	Autoclavable	Fumigation*	Disinfecting agents**
	°C	g/cm³				
LDPE	80	0.92	Very good	No	Yes	Yes
HDPE	120	0.95	Poor	No	Yes	Yes
PP	135	0.9	Poor	Yes	Yes	Yes

### **DIFFERENCES AND SIMILARITIES OF LABSOLUTE® SCREW CAPS**





	Red	Blue, Green, Yellow, Purple, Grey		
Lid	РВТ	PP		
Seal	Silicon seal with PTFE coating	Integrated lip seal		
Pouring ring	РВТ	PP		
Temperature-resistant	Up to 200 °C	Up to 135 °C		
Dry-sterilisable	Yes	No		
Autoclavable	Yes	Yes		

<sup>\*</sup> Ethylene oxide (EO) or formaldehyde \*\* Aquaous formaldehyde solution or ethanol etc.



### **CHEMSOLUTE® SORB**

CHEMSOLUTE® Sorb is an innovative polymer/mineral based chemical binding agent, which can be used for all liquids apart from mercury. The absorbed chemicals and oils are bound very quickly and effectively, which protects the employees and the environment and reduces the fire hazard, even for liquids with a high vapour pressure.

Due to its fine-granular structure CHEMSOLUTE® Sorb doesn't raise dust and can therefore be used indoors without any problems. As a registered oil binder according to guideline Type III R (MPA NRW 22 000 8388 10), it is also ideally suited for traffic areas.

- · Very high binding capacity
- Simple to dose
- Dust-free
- · Skin-compatible
- Dam formation possible
- · Colour change indicates acids and alkalis
- Saturation indicated by colour intensity

### SIMPLE AND ECONOMICAL APPLICATION

#### **Application**

Apply CHEMSOLUTE® Sorb equally and extensively on to the spilled chemicals. It sinks in immediately and initiates the absorption process. Once the absorption has finished, CHEMSOLUTE® Sorb remains dry which can be seen by the lighter colour. Now the dispersal can be stopped.

### Clean up

The chemicals and oils are incorporated into a gel structure and can therefore be easily swept up. The surface remains almost dry.

### Disposal

The disposal is very easy. Above all, only a small amount of contaminant-binding agent mixture accumulates, as CHEMSOLUTE® Sorb binds liquids in a ratio of up to 1:75. This means that only 100 g are required for 7.5 l of liquid. The absorption capacity depends on the water content of the chemical to be bound. If required, the original substance can even be recovered through thermal processes.





### VAPOUR BARRIER FOR SMOKING CHEMICALS

CHEMSOLUTE® Sorb acts as a barrier for emissions. If sufficiently dosed, it acts as a vapour barrier so that fewer pollutants can escape into the air. This protects the employees and reduces environmental pollution. CHEMSOLUTE® Sorb is non-combustible and the gel binding prevents an increase in surface area. Therefore, you can assume that CHEMSOLUTE® Sorb is not oxidizing.

### DAM FORMATION

To prevent outflow with larger volumes of liquid, CHEMSOLUTE® Sorb can also be dispensed to quickly create an effective barrier. Chemical-binding tubes and cushions are not necessary.

### **INDICATOR FUNCTION**

The pH indicator contained in CHEMSOLUTE® Sorb shows whether the liquids absorbed are acids or alkalis via a colour change:

Colour change from green to **yellow** = acid Colour change from green to **red** = alkali

**Note:** Chlorine compounds or hydrogen peroxide can bleach the pH indicator in a short time.







### **PACKAGING SIZES**

CHEMSOLUTE® Sorb is available in three different packaging sizes to suit the different areas of application:

### Dispenser container (1,800 ml)

Transparent plastic bottle with two different openings: fine dosage opening for very economical use and a slightly larger gap opening. Ideal for the lab bench, fume hood or small chemicals cupboard.

### Wide-necked container (4,000 ml)

White plastic bottle with wide-neck opening for quick application wherever larger quantities of liquid are used, e.g. in a chemical store.

### Reserve bucket (5 kg)

Plastic bucket as a reserve for filling up the smaller containers or for areas where very large quantities of liquid are used, e.g. when filling up drums or tanks.







## **GLOBALLY HARMONIZED SYSTEM (GHS)**

### SYMBOLS, HAZARD AND PRECAUTIONARY STATEMENTS

### **GHS Symbols**



### **Hazard statements (H-Phrases)**

	Hazard statements for physical hazards
H200	Unstable explosives.
H201	Explosive; mass explosion hazard.
H202	Explosive, severe projection hazard.
H203	Explosive; fire, blast or projection hazard.
H204	Fire or projection hazard.
H205	May mass explode in fire.
H206	Fire, blast or projection hazard; increased risk of explosion if desensitising agent is reduced.
H207	Fire or projection hazard; increased risk of explosion if desensitising agent is reduced.
H208	Fire hazard; increased risk of explosion if desensitising agent is reduced.
H220	Extremely flammable gas.
H221	Flammable gas.
H222	Extremely flammable aerosol.
H223	Flammable aerosol.
H224	Extremely flammable liquid and vapour.
H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H228	Flammable solid.
H229	Pressurised container: May burst if heated.
H230	May react explosively even in the absence of air.
H231	May react explosively even in the absence of air at elevated pressure and/or temperature.
H232	May ignite spontaneously if exposed to air.
H240	Heating may cause an explosion.
H241	Heating may cause a fire or explosion.
H242	Heating may cause a fire.
H250	Catches fire spontaneously if exposed to air.
H251	Self-heating: may catch fire.
H252	Self-heating in large quantities; may catch fire.
H260	In contact with water releases flammable gases which may ignite spontaneously.
H261	In contact with water releases flammable gases.
H270	May cause or intensify fire; oxidiser.

H271	May cause fire or explosion; strong oxidiser.		
H272	May intensify fire; oxidiser.		
H280	Contains gas under pressure; may explode if heated.		
H281	Contains refrigerated gas; may cause cryogenic burns or injury.		
H290	May be corrosive to metals.		

	Hazard statements for health hazards
H300	Fatal if swallowed.
H300+ H310	Fatal if swallowed or in contact with skin.
H300+H330	Fatal if swallowed or if inhaled.
H300+H310+ H330	Fatal if swallowed, in contact with skin or if inhaled.
H301	Toxic if swallowed.
H301+ H311	Toxic if swallowed or in contact with skin.
H301+ H331	Toxic if swallowed or if inhaled.
H301+H311+ H331	Toxic if swallowed, in contact witk skin or if inhaled.
H302	Harmful if swallowed.
H302+ H312	Harmful if swallowed or in contact with skin.
H302+ H332	Harmful if swallowed or if inhaled.
H302+ H312+ H332	Harmful if swallowed, in contact with skin or if inhaled.
H304	May be fatal if swallowed and enters airways.
H310	Fatal in contact with skin.
H310+H330	Fatal in contact with skin or if inhaled.
H311	Toxic in contact with skin.
H311+H331	Toxic in contact with skin or if inhaled.
H312	Harmful in contact with skin.
H312+H332	Harmful in contact witk skin or if inhaled.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects <state cause="" conclusively="" exposure="" hazard="" if="" is="" it="" no="" of="" other="" proven="" route="" routes="" that="" the="">.</state>
H341	Suspected of causing genetic defects <state of<br="" route="">exposure if it is conclusively proven that no other routes of exposure cause the hazard&gt;.</state>
H350	May cause cancer <state cause="" conclusively="" exposure="" hazard="" if="" is="" it="" no="" of="" other="" proven="" route="" routes="" that="" the="">.</state>

H350i	May cause cancer by inhalation	
пээи	May cause cancer by inhalation.	
H351	Suspected of causing cancer <state cause="" conclusively="" exposure="" hazard="" if="" is="" it="" no="" of="" other="" proven="" route="" routes="" that="" the="">.</state>	
H360	May damage fertility or the unborn child <state effect="" if="" known="" specific=""> <state cause="" conclusively="" exposure="" hazard="" if="" is="" it="" no="" of="" other="" proven="" route="" routes="" that="" the="">.</state></state>	
H360D	May damage the unborn child	
H360Df	May damage the unborn child. Suspected of damaging fertility.	
H360F	May damage fertility	
H360Fd	May damage fertility. Suspected of damaging the unborn child	
H360FD	May damage fertility. May damage the unborn child	
H361	Suspected of damaging fertility or the unborn child <state effect="" if="" known="" specific=""> <state exposure="" if="" it<br="" of="" route="">is conclusively proven that no other routes of exposure cause the hazard&gt;.</state></state>	
H361d	Suspected of damaging the unborn child.	
H361f	Suspected of damaging fertility.	
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child	
H362	May cause harm to breast-fed children.	
H370	Causes damage to organs <state effect="" if="" known="" specific=""> <state conclusively="" exposure="" if="" is="" it="" no<br="" of="" proven="" route="" that="">other routes of exposure cause the hazard&gt;.</state></state>	
H371	May cause damage to organs <or affected,="" all="" if="" known="" organs="" state=""> <state cause="" conclusively="" exposure="" hazard="" if="" is="" it="" no="" of="" other="" proven="" route="" routes="" that="" the="">.</state></or>	
Н372	Causes damage to organs <or affected,="" all="" if="" known="" organs="" state=""> through prolonged or repeated exposure <state cause="" conclusively="" exposure="" hazard="" if="" is="" it="" no="" of="" other="" proven="" route="" routes="" that="" the="">.</state></or>	
Н373	May cause damage to organs <i>or state all organs affected, if known&gt;</i> through prolonged or repeated exposure <i>state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard&gt;.</i>	

	Hazard statements for environmental hazards	
H400	Very toxic to aquatic life.	
H410	Very toxic to aquatic life with long lasting effects.	
H411	Toxic to aquatic life with long lasting effects.	
H412	Harmful to aquatic life with long lasting effects.	
H413	May cause long lasting harmful effects to aquatic life.	
H420	Harms public health and the environment by destroying ozone in the upper atmosphere.	

### **EUH Phrases**

EUH014	Reacts violently with water.
EUH018	In use may form flammable/explosive vapour-air mixture.
EUH019	May form explosive peroxides.
EUH029	Contact with water liberates toxic gas.
EUH031	Contact with acids liberates toxic gas.
EUH032	Contact with acids liberates very toxic gas.
EUH044	Risk of explosion if heated under confinement.
EUH066	Repeated exposure may cause skin dryness or cracking.
EUH070	Toxic by eye contact.
EUH071	Corrosive to the respiratory tract.
EUH201	Contains lead. Should not be used on surfaces liable to be chewed or sucked by children.
EUH201A	Warning! Contains lead.
EUH202	Cyanoacrylate. Danger. Bonds skin and eyes in seconds. Keep out of the reach of children.
EUH203	Contains chromium (VI). May produce an allergic reaction.
EUH204	Contains isocyanates. May produce an allergic reaction.
EUH205	Contains epoxy constituents. May produce an allergic reaction.
EUH206	Warning! Do not use together with other products. May release dangerous gases (chlorine).
EUH207	Warning! Contains cadmium. Dangerous fumes are formed during use. See information supplied by the manufacturer. Comply with the safety instructions.
EUH208	Contains <name of="" sensitising="" substance="">. May produce an allergic reaction.</name>
EUH209	Can become highly flammable in use.
EUH209A	Can become flammable in use.
EUH210	Safety data sheet available on request.
EUH211	Warning! Hazardous respirable droplets may be formed when sprayed. Do not breathe spray or mist.
EUH212	Warning! Hazardous respirable dust may be formed when used. Do not breathe dust.
EUH401	To avoid risks to human health and the environment, comply with the instructions for use.

**Source:** Regulation (EG) No. 1272/2008 and changes to commission regulation (EU) No. 605/2014 of the 5 June 2014 and the correction of regulation (EG) No. 1272/2008 official journal (94,58.lg.) of the 10 April 2015.

## **GLOBALLY HARMONIZED SYSTEM (GHS)**

### SYMBOLS, HAZARD AND PRECAUTIONARY STATEMENTS

### **GHS Symbols**

GHS06

P263



### Precautionary statements (P-Phrases)

GHS07

	General
P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P103	Read label before use.

GHS08

GHS09

Read label before use.
Precautionary statements — Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not spray on an open flame or other ignition source.
Avoid heating under confinement or reduction of the desensitising agent.
Keep away from clothing and other combustible materials.
Do not allow contact with air.
Do not allow contact with water.
Keep wetted with
Handle and store contents under inert gas/
Handle and store contents under inert gas/ Protect from moisture.
Protect from moisture.
Keep container tightly closed.
Keep only in original packaging.
Keep cool.
Ground and bond container and receiving equipment.
Use explosion-proof [electrical/ventilating/lighting/] equipment.
Use non-sparking tools.
Take action to prevent static discharges.
Keep valves and fittings free from oil and grease.
Do not subject to grinding/shock/friction/
Do not pierce or burn, even after use.
Do not breathe dust/fume/gas/mist/vapours/spray.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Do not get in eyes, on skin, or on clothing.

Avoid contact during pregnancy and while nursing.

P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face/ hearing protection.
P282	Wear cold insulating gloves and either face shield or eye protection.
P283	Wear fire resistant or flame retardant clothing.
P284	[In case of inadequate ventilation] wear respiratory protection.

Procautionary statements	_	Racnanca	

P301	IF SWALLOWED:
P301+ P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/
P301+ P312	IF SWALLOWED: Immediately call a POISON CENTER/doctor/ if you feel unwell.
P301+ P330+ P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302	IF ON SKIN:
P302 + P334	IF ON SKIN: Immerse in cool water or wrap in wet bandages.
P302+ P352	IF ON SKIN: Wash with plenty of water/
P302 + P335 + P334	IF ON SKIN: Immerse in cool water [or wrap in wet bandages].
P303	IF ON SKIN (or hair):
P303+ P361+ P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304	IF INHALED:
P304+ P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305	IF IN EYES:
P305+ P351+ P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P306	IF ON CLOTHING:
P306+ P360	IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
P308	IF exposed or concerned:
P308+ P311	IF exposed or concerned: Call a POISON CENTER/doctor/
P308+ P313	IF exposed or concerned: Get medical advice/attention.
P310	Immediately call a POISON CENTER/doctor/
P311	Call a POISON CENTER/doctor/
P312	Call a POISON CENTER/doctor/ if you feel unwell.
P313	Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.
P315	Get immediate medical advice/attention.
P320	Specific treatment is urgent (see on this label).
P321	Specific treatment (see on this label).
P330	Rinse mouth.
P331	Do NOT induce vomiting.

P332	If skin irritation occurs:
P332+ P313	If skin irritation occurs: Get medical advice/attention.
P333	If skin irritation or rash occurs:
P333+ P313	If skin irritation or rash occurs: Get medical advice/attention.
P334	Immerse in cool water [or wrap in wet bandages].
P335	Brush off loose particles from skin.
P336	Thaw frosted parts with lukewarm water. Do no rub affected area.
P336 + P315	Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.
P337	If eye irritation persists:
P337+ P313	If eye irritation persists: Get medical advice/attention.
P338	Remove contact lenses, if present and easy to do. Continue rinsing.
P340	Remove person to fresh air and keep comfortable for breathing.
P342	If experiencing respiratory symptoms:
P342+ P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor/
P351	Rinse cautiously with water for several minutes.
P352	Wash with plenty of water/
P353	Rinse skin with water [or shower].
P360	Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
P361	Take off immediately all contaminated clothing.
P361+ P364	Take off immediately all contaminated clothing and wash it before reuse.
P362	Take off contaminated clothing.
P362+ P364	Take off contaminated clothing and wash it before reuse.
P363	Wash contaminated clothing before reuse.
P364	And wash it before reuse.
P370	In case of fire:
P370+ P376	In case of fire: Stop leak if safe to do so.
P370+ P378	In case of fire: Use to extinguish.
P370 +	In case of fire: Evacuate area.
P380 + P375	Fight fire remotely due to the risk of explosion.
P370 +	
P372 + P380 + P373	In case of fire: Explosion risk. Evacuate area.  DO NOT fight fire when fire reaches explosives.
P370 + P380 + P375	In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. [Use to extinguish].
[+ P378]	
P371	In case of major fire and large quantities:
P371+ P380+ P375	In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
P372	Explosion risk.
P373	DO NOT fight fire when fire reaches explosives.
P375	Fight fire remotely due to the risk of explosion.
P376	Stop leak if safe to do so.
P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P378	Use to extinguish.
	<b>J</b>

P380	Evacuate area.
P381	In case of leakage, eliminate all ignition sources.
P390	Absorb spillage to prevent material damage.
P391	Collect spillage.

	Precautionary statements — Storage
P401	Store in accordance with
P402	Store in a dry place.
P402+ P404	Store in a dry place. Store in a closed container.
P403	Store in a well-ventilated place.
P403+ P233	Store in a well-ventilated place. Keep container tightly closed.
P403+ P235	Store in a well-ventilated place. Keep cool.
P404	Store in a closed container.
P405	Store locked up.
P406	Store in a corrosion resistant/ container with a resistant inner liner.
P407	Maintain air gap between stacks or pallets.
P410	Protect from sunlight.
P410+ P403	Protect from sunlight. Store in a well-ventilated place.
P410 + P412	Protect from sunlight. Do no expose to temperatures exceeding 50 °C/122 °F.
P411	Store at temperatures not exceeding °C/ °F.
P412	Do not expose to temperatures exceeding 50 °C/122 °F.
P413	Store bulk masses greater than kg/ lbs at temperatures not exceeding $^{\circ}$ C/ $^{\circ}$ F.
P420	Store separately.
P501	Dispose of contents/container to (in accordance with local/regional/ national/international regulations.)
P502	Refer to manufacturer or supplier for information on recovery or recycling.
P503	Refer to manufacturer/ supplier/ for information on disposal/ recovery/ recycling

**Source:** Regulation (EG) No. 1272/2008 and changes to commission regulation (EU) No. 605/2014 of the 5 June 2014 and the correction of regulation (EG) No. 1272/2008 official journal (94,58.lg.) of the 10 April 2015.

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12	7.690 023	217	7.677 369	216	7.664 006	228	7.657 554	218	7.648 522	200	7.646 877
12	7.690 024	209	7.677 370	216	7.664 007	215	7.657 799	218	7.648 523	225	7.646 958
14	7.690 025	217	7.677 371	190	7.664 225	232	7.657 868	218	7.648 524	228	7.647 463
14	7.690 026	215	7.677 372	23	7.664 455	205	7.658 824	218	7.648 525	191	7.647 473
14	7.690 027	206	7.677 373	23	7.664 456	187	7.658 886	218	7.648 526	193	7.647 474
14	7.690 028	203	7.677 374	23	7.664 457	187	7.658 887	180	7.648 594	190	.647 476
14	7.690 029	196	7.677 375	23	7.664 458	213	7.659 620	174	7.648 597	178	7.647 478
14	7.690 030	190	7.677 376	225	7.665 477	172	7.659 895	178	7.648 599	190	7.647 479
14	7.690 031	174	7.677 377	230	7.669 529	175	7.659 896	203	7.648 602	178	7.647 480
14	7.690 032	190	7.677 379	231	7.669 530	206	7.659 991	202	7.648 604	197	7.647 481
14	7.690 033	192	7.677 380	233	7.669 531	228	7.659 995	234	7.648 606	197	7.647 482
14	7.690 034	233	7.677 382	233	7.669 532	228	7.659 996	234	7.648 607	198	7.647 483
14	7.690 035	233	7.677 383	233	7.669 533	178	7.660 024	213	7.648 631	198	7.647 484
14	7.690 036	233	7.677 385	209	7.669 680	194	7.660 047	212	7.648 632	198	.647 485
14	7.690 037	233	7.677 386	102	7.670 320	196	7.660 048	210	7.648 634	198	.647 487
14	7.690 038	233	7.677 388	188	7.670 616	205	7.660 050	210	7.648 635	199	.647 488
14	7.690 039	233	7.677 389	214	7.670 648	217	7.660 179	190	7.651 116	231	.647 496
14	7.690 040	233	7.677 390	203	7.670 913	214	7.661 597	182	7.651 190	203	.647 502
14	7.690 041	233	7.677 393	230	7.671 084	186	7.661 859	197	7.651 441	203	647 505
14	7.690 042	233	7.677 394	226	7.671 275	232	7.662 067	197	7.651 442	201	.647 512
14	7.690 043	233	7.677 395	215	7.671 337	225	7.662 425	186	7.651 823	201	.647 513
14	7.690 044	209	7.677 399	206	7.671 516	225	7.662 426	221	7.652 437	232	.647 514
24	7.690 045	209	7.677 400	192	7.671 640	216	7.663 211	175	7.654 401	232	.647 517
24	7.690 046	209	7.677 401	192	7.671 641	216	7.663 215	230	7.654 480	177	.647 530
24	7.690 047	209	7.677 402	192	7.671 642	216	7.663 216	180	7.654 481	186	7.647 533
24	7.690 048	12	7.690 000	234	7.671 706	216	7.663 217	183	7.654 493	186	.647 534
24	7.690 049	12	7.690 001	232	7.671 847	190	7.663 226	183	7.654 494	206	.647 537
24	7.690 050	12	7.690 002	104	7.671 876	190	7.663 229	182	7.654 495	214	.647 541
24	7.690 051	12	7.690 003	206	7.672 038	190	7.663 230	199	7.654 496	214	.647 542
24	7.690 053	12	7.690 004	170	7.672 432	178	7.663 231	199	7.654 497	221	.647 543
24	7.690 054	12	7.690 005	170	7.672 433	178	7.663 232	204	7.654 498	104	647 581
24	7.690 055	12	7.690 006	184	7.673 794	178	7.663 233	204	7.654 504	210	.648 101
24	7.690 056	12	7.690 007	209	7.674 245	196	7.663 234	204	7.654 505	178	.648 146
24	7.690 057	12	7.690 008	209	7.674 246	192	7.663 236	226	7.654 509	219	.648 231
24	7.690 058	12	7.690 010	209	7.674 248	193	7.663 237	222	7.654 510	200	.648 254
24	7.690 059	12	7.690 011	209	7.674 249	193	7.663 238	222	7.654 511	224	.648 346
24	7.690 060	12	7.690 012	209	7.674 250	181	7.663 239	222	7.654 512	218	.648 512
2!	7.690 061	12	7.690 013	209	7.674 251	182	7.663 240	222	7.654 514	218	.648 513
2!	7.690 062	12	7.690 014	213	7.674 302	183	7.663 241	222	7.654 515	218	.648 514
2!	7.690 063	12	7.690 015	208	7.676 995	215	7.663 432	196	7.655 281	218	7.648 515
2!	7.690 064	12	7.690 016	204	7.677 195	197	7.663 997	102	7.656 547	218	7.648 516

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7.690 067 7.690 068 7.690 069 7.690 070 7.690 071 7.690 072 7.690 073 7.690 074 7.690 075 7.690 076 7.690 077 7.690 078	26 26 26 15 15 25 25 25	7.690 113 7.690 114 7.690 115 7.690 120 7.690 121 7.690 122 7.690 123 7.690 124 7.690 125	75 75 75 75 75 75 75 75	7.690 203 7.690 204 7.690 210 7.690 211 7.690 212 7.690 213 7.690 214	105 105 72 72 72 72	7.690 271 7.690 272 7.690 273 7.690 274 7.690 275	34 34 34 34 34	7.691 001 7.691 002 7.691 003 7.691 004	118 118 118 118	7.691 052 7.691 053 7.691 054	124 124 124
7.690 068 7.690 069 7.690 070 7.690 071 7.690 072 7.690 073 7.690 074 7.690 075 7.690 076 7.690 077 7.690 078	26 26 15 15 15 25 25 25 25	7.690 114 7.690 115 7.690 120 7.690 121 7.690 122 7.690 123 7.690 124 7.690 125	75 75 75 75 75 75 75	7.690 204 7.690 210 7.690 211 7.690 212 7.690 213 7.690 214	105 72 72 72 72	7.690 272 7.690 273 7.690 274 7.690 275	34 34 34 34	7.691 002 7.691 003 7.691 004	118 118 118	7.691 053 7.691 054	124 124
7.690 069 7.690 070 7.690 071 7.690 072 7.690 073 7.690 074 7.690 075 7.690 076 7.690 077 7.690 078	26 15 15 15 25 25 25 25	7.690 115 7.690 120 7.690 121 7.690 122 7.690 123 7.690 124 7.690 125	75 75 75 75 75 75	7.690 210 7.690 211 7.690 212 7.690 213 7.690 214	72 72 72 72	7.690 273 7.690 274 7.690 275	34 34 34	7.691 003 7.691 004	118 118	7.691 054	124
7.690 070 7.690 071 7.690 072 7.690 073 7.690 074 7.690 075 7.690 076 7.690 077 7.690 078	15 15 15 25 25 25 25	7.690 120 7.690 121 7.690 122 7.690 123 7.690 124 7.690 125	75 75 75 75 75	7.690 211 7.690 212 7.690 213 7.690 214	72 72 72	7.690 274 7.690 275	34 34	7.691 004	118		
7.690 071 7.690 072 7.690 073 7.690 074 7.690 075 7.690 076 7.690 077 7.690 078	15 15 25 25 25 25	7.690 121 7.690 122 7.690 123 7.690 124 7.690 125	75 75 75 75	7.690 212 7.690 213 7.690 214	72 72	7.690 275	34			7.691 055	124
7.690 072 7.690 073 7.690 074 7.690 075 7.690 076 7.690 077 7.690 078	15 25 25 25 25	7.690 122 7.690 123 7.690 124 7.690 125	75 75 75	7.690 213 7.690 214	72			7.691 005	110		
7.690 073 7.690 074 7.690 075 7.690 076 7.690 077 7.690 078	25 25 25 25	7.690 123 7.690 124 7.690 125	75 75	7.690 214		7.690 300			118	7.691 056	124
7.690 074 7.690 075 7.690 076 7.690 077 7.690 078	25 25 25	7.690 124 7.690 125	75		72		76	7.691 006	118	7.691 057	124
7.690 075 7.690 076 7.690 077 7.690 078	25 25	7.690 125		7.690 215		7.690 301	76	7.691 007	118	7.691 060	125
7.690 076 7.690 077 7.690 078	25		75		72	7.690 302	76	7.691 008	118	7.691 061	125
7.690 077 7.690 078		7.690 126		7.690 216	72	7.690 310	76	7.691 010	119	7.691 067	127
7.690 078	26		75	7.690 217	72	7.690 311	76	7.691 011	119	7.691 068	127
		7.690 130	73	7.690 218	72	7.690 312	76	7.691 012	119	7.691 069	127
	26	7.690 131	73	7.690 219	72	7.690 313	76	7.691 013	119	7.691 070	122
7.690 079	26	7.690 132	73	7.690 220	72	7.690 314	76	7.691 014	119	7.691 071	122
7.690 080	15	7.690 133	73	7.690 225	79	7.690 320	77	7.691 015	119	7.691 072	122
7.690 081	15	7.690 134	73	7.690 226	79	7.690 321	77	7.691 016	119	7.691 073	122
7.690 082	15	7.690 135	73	7.690 230	78	7.690 322	77	7.691 017	119	7.691 074	122
7.690 083	15	7.690 136	73	7.690 231	78	7.690 330	76	7.691 020	121	7.691 075	122
7.690 084	15	7.690 140	74	7.690 232	78	7.690 331	76	7.691 021	121	7.691 076	122
7.690 085	15	7.690 141	74	7.690 233	78	7.690 332	76	7.691 022	121	7.691 077	122
7.690 086	15	7.690 142	74	7.690 234	78	7.690 350	77	7.691 023	121	7.691 078	122
7.690 087	15	7.690 143	74	7.690 235	78	7.690 351	77	7.691 024	121	7.691 079	122
7.690 088	15	7.690 144	74	7.690 240	78	7.690 352	77	7.691 025	121	7.691 080	122
7.690 089	26	7.690 145	74	7.690 241	78	7.690 390	77	7.691 026	121	7.691 081	79
7.690 090	26	7.690 150	74	7.690 242	78	7.690 391	25	7.691 027	121	7.691 082	79
7.690 091	105	7.690 151	74	7.690 243	78	7.690 392	26	7.691 028	121	7.691 083	79
7.690 092	105	7.690 152	74	7.690 244	78	7.690 393	26	7.691 029	121	7.691 084	79
7.690 093	105	7.690 153	74	7.690 245	78	7.690 394	26	7.691 030	121	7.691 085	79
7.690 094	105	7.690 160	74	7.690 250	33	7.690 401	25	7.691 031	121	7.691 086	79
7.690 095	105	7.690 161	74	7.690 251	33	7.690 402	25	7.691 032	121	7.691 087	79
7.690 096	105	7.690 162	74	7.690 252	33	7.690 403	25	7.691 033	121	7.691 088	79
7.690 097	105	7.690 163	74	7.690 253	33	7.690 404	25	7.691 034	121	7.691 089	79
7.690 098	105	7.690 164	74	7.690 254	33	7.690 405	25	7.691 035	121	7.691 090	79
7.690 099	105	7.690 170	74	7.690 255	33	7.690 430	165	7.691 036	121	7.691 091	79
7.690 100	73	7.690 171	74	7.690 256	33	7.690 431	165	7.691 037	121	7.691 092	79
7.690 101	73	7.690 172	74	7.690 257	33	7.690 432	165	7.691 040	124	7.691 093	79
7.690 102	73	7.690 173	74	7.690 258	33	7.690 433	165	7.691 041	124	7.691 094	79
7.690 103	73	7.690 174	74	7.690 260	33	7.690 434	165	7.691 042	124	7.691 095	79 70
7.690 104 7.690 105	73 73	7.690 175 7.690 180	74	7.690 261 7.690 262	33	7.690 441 7.690 442	166 166	7.691 043 7.691 044	124	7.691 096 7.691 100	79 121
7.690 105 7.690 106	73	7.690 180	77 77	7.690 262	33	7.690 442	166	7.691 044	124	7.691 100	121
7.690 106	73	7.690 181	77	7.690 263	33	7.690 444	166	7.691 045	124	7.691 101	121
7.690 107	73	7.690 182	77	7.690 264	33	7.690 444	15	7.691 046	124	7.691 102	121
7.690 108	73	7.690 183	77	7.690 265	33	7.690 501	15	7.691 047	124	7.691 103	121
7.690 109	75	7.690 184	105	7.690 266	33	7.690 502	15	7.691 048	124	7.691 104	121

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7.691 107	121	7.691 172	142	7.693 031	13	7.694 925	36	7.694 985	168	7.695 121	43
7.691 108	121	7.691 173	142	7.693 032	13	7.694 926	34	7.694 986	168	7.695 122	43
7.691 109	121	7.691 180	122	7.693 033	13	7.694 927	34	7.695 001	146	7.695 125	43
7.691 110	121	7.691 200	125	7.693 034	13	7.694 928	34	7.695 002	146	7.695 178	38
7.691 120	120	7.691 201	125	7.693 035	13	7.694 929	34	7.695 003	146	7.695 179	38
7.691 121	120	7.691 202	125	7.693 036	13	7.694 930	34	7.695 004	146	7.695 180	38
7.691 122	120	7.691 203	125	7.693 100	120	7.694 931	34	7.695 005	146	7.695 181	38
7.691 123	120	7.691 204	125	7.693 101	120	7.694 932	34	7.695 006	146	7.695 182	38
7.691 124	120	7.691 205	125	7.693 102	120	7.694 933	34	7.695 008	146	7.695 183	38
7.691 125	120	7.691 206	125	7.693 103	120	7.694 934	34	7.695 009	146	7.695 184	38
7.691 126	120	7.691 207	125	7.693 104	120	7.694 935	34	7.695 012	146	7.695 192	38
7.691 127	120	7.691 300	36	7.693 105	120	7.694 936	34	7.695 015	146	7.695 193	38
7.691 130	122	7.691 310	125	7.693 106	120	7.694 937	34	7.695 016	146	7.695 201	52
7.691 131	122	7.692 000	164	7.693 107	120	7.694 938	34	7.695 019	146	7.695 251	153
7.691 132	122	7.692 001	164	7.693 110	119	7.694 939	34	7.695 021	146	7.695 253	154
7.691 133	122	7.692 002	164	7.693 111	119	7.694 940	34	7.695 022	147	7.695 261	154
7.691 134	122	7.692 003	164	7.693 112	119	7.694 941	70	7.695 023	147	7.695 262	154
7.691 135	122	7.692 004	164	7.693 113	119	7.694 942	70	7.695 024	147	7.695 270	155
7.691 136	122	7.692 005	164	7.693 114	119	7.694 943	70	7.695 025	147	7.695 271	155
7.691 140	143	7.692 006	164	7.693 115	119	7.694 944	70	7.695 026	147	7.695 272	155
.691 141	143	7.692 007	164	7.693 116	119	7.694 945	70	7.695 027	147	7.695 280	164
.691 142	143	7.692 008	164	7.694 900	35	7.694 946	70	7.695 028	147	7.695 281	164
.691 143	143	7.692 009	164	7.694 901	35	7.694 947	70	7.695 029	147	7.695 310	53
.691 144	142	7.692 010	164	7.694 902	35	7.694 948	70	7.695 030	147	7.695 315	53
.691 145	142	7.692 011	164	7.694 903	35	7.694 949	70	7.695 031	147	7.695 316	53
7.691 146	142	7.692 012	32	7.694 904	35	7.694 950	70	7.695 040	147	7.695 317	53
7.691 147	142	7.692 013	32	7.694 905	35	7.694 951	70	7.695 041	147	7.695 320	54
7.691 148	142	7.692 014	32	7.694 906	35	7.694 952	70	7.695 042	147	7.695 321	54
7.691 149	142	7.692 015	32	7.694 907	35	7.694 953	70	7.695 044	147	7.695 322	54
.691 150	142	7.692 016	32	7.694 908	35	7.694 954	106	7.695 045	147	7.695 325	54
7.691 151	142	7.692 017	32	7.694 909	35	7.694 955	106	7.695 047	147	7.695 326	54
7.691 152	142	7.692 018	32	7.694 910	35	7.694 956	106	7.695 060	148	7.695 327	54
.691 153	142	7.692 019	32	7.694 911	35	7.694 957	106	7.695 061	148	7.695 330	54
.691 154	142	7.692 020	32	7.694 912	35	7.694 958	106	7.695 100	42	7.695 331	54
.691 155	142	7.692 021	32	7.694 913	35	7.694 959	106	7.695 101	42	7.695 335	53
.691 160	118	7.692 022	32	7.694 914	35	7.694 960	106	7.695 102	42	7.695 336	53
.691 161	118	7.692 023	32	7.694 915	35	7.694 961	106	7.695 103	42	7.695 337	53
.691 162	118	7.692 024	32	7.694 916	35	7.694 962	106	7.695 104	42	7.695 338	53
.691 163	118	7.692 025	32	7.694 917	35	7.694 963	106	7.695 105	42	7.695 339	53
.691 164	118	7.693 020	13	7.694 918	35	7.694 964	106	7.695 106	42	7.695 340	53
7.691 165	118	7.693 021	13	7.694 919	36	7.694 970	36	7.695 107	42	7.695 341	53
7.691 166	118	7.693 022	13	7.694 920	36	7.694 971	36	7.695 108	42	7.695 342	53
7.691 167	118	7.693 023	13	7.694 921	36	7.694 972	36	7.695 109	42	7.695 343	53
7.691 168	118	7.693 024	13	7.694 922	36	7.694 973	36	7.695 110	42	7.695 344	53
		7.693 025	13	7.694 923	36	7.694 974	36	7.695 111	42	7.695 345	

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7.695 573         55         7.695 678         140         7.695 849         134         7.695 951         159         7.696 134         29         7.696 139         22           7.695 374         55         7.695 860         140         7.695 851         134         7.695 922         139         7.696 135         27         7.696 194         22           7.695 375         55         7.695 682         140         7.695 852         137         7.695 994         139         7.696 136         27         7.696 195         22           7.695 377         55         7.695 683         140         7.695 852         137         7.695 995         130         7.696 138         27         7.696 000         31           7.695 378         55         7.695 684         140         7.695 855         134         7.696 000         46         7.696 139         27         7.696 001         31           7.695 415         38         7.695 686         140         7.695 856         134         7.696 002         47         7.696 139         27         7.696 203         31           7.695 415         38         7.695 689         140         7.695 856         135         7.696 003         129         7.696 143<		55				134						22
7.695 374         55         7.695 680         140         7.695 850         134         7.695 952         139         7.696 135         27         7.696 194         22           7.695 375         55         7.695 681         140         7.695 852         137         7.695 937         139         7.696 137         27         7.696 185         22           7.695 376         55         7.695 683         140         7.695 832         137         7.695 957         139         7.696 137         27         7.696 138         27         7.696 618         22           7.695 377         55         7.695 683         140         7.695 835         134         7.696 000         46         7.696 138         27         7.696 200         31           7.695 378         55         7.695 685         140         7.695 855         134         7.696 001         47         7.696 139         27         7.696 203         31           7.695 445         38         7.695 687         140         7.695 857         134         7.696 003         147         7.696 143         27         7.696 203         31           7.695 445         38         7.695 689         140         7.695 857         134         7.696 003 </td <td></td> <td>22</td>												22
7.695 375         55         7.695 681         140         7.695 881         134         7.695 993         139         7.696 136         27         7.696 199         22           7.695 376         55         7.695 682         140         7.695 882         137         7.695 984         139         7.696 138         27         7.696 100         21           7.695 377         55         7.695 688         140         7.695 883         137         7.695 985         139         7.696 139         27         7.696 200         31           7.695 407         38         7.695 688         140         7.695 885         134         7.696 001         47         7.696 141         27         7.696 202         31           7.695 415         38         7.695 686         140         7.695 885         134         7.696 002         47         7.696 141         27         7.696 202         31           7.695 443         38         7.695 686         140         7.695 885         134         7.696 003         46         7.696 141         27         7.696 203         31           7.695 443         38         7.695 689         140         7.695 886         135         7.696 003         129         7.696 143 </td <td></td> <td>55</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>139</td> <td></td> <td></td> <td></td> <td>22</td>		55						139				22
7.695 377         55         7.695 683         140         7.695 853         137         7.695 955         139         7.696 138         27         7.696 200         31           7.695 378         55         7.695 684         140         7.695 885         134         7.696 000         46         7.696 109         27         7.696 201         31           7.695 415         38         7.695 685         140         7.695 885         134         7.696 001         47         7.696 101         27         7.696 201         31           7.695 415         38         7.695 687         140         7.695 885         134         7.696 001         47         7.696 101         27         7.696 203         51           7.695 415         38         7.695 688         140         7.695 880         135         7.696 030         46         7.696 141         27         7.696 203         31           7.695 445         38         7.695 688         140         7.695 881         135         7.696 030         30         7.696 143         27         7.696 210         113           7.695 451         68         7.695 690         140         7.695 861         135         7.696 100         29         7.696 144 <td>7.695 375</td> <td>55</td> <td>7.695 681</td> <td>140</td> <td>7.695 851</td> <td>134</td> <td>7.695 953</td> <td>139</td> <td>7.696 136</td> <td>27</td> <td>7.696 195</td> <td>22</td>	7.695 375	55	7.695 681	140	7.695 851	134	7.695 953	139	7.696 136	27	7.696 195	22
7.695 578         55         7.695 684         140         7.695 854         134         7.696 000         46         7.696 139         27         7.696 201         31           7.695 407         38         7.695 685         140         7.695 855         134         7.696 001         47         7.696 140         27         7.696 202         31           7.695 415         38         7.695 686         140         7.695 856         134         7.696 003         46         7.696 141         27         7.696 203         31           7.695 443         38         7.695 688         140         7.695 861         135         7.696 000         129         7.696 143         27         7.696 205         31           7.695 446         38         7.695 689         140         7.695 861         135         7.696 000         19         7.696 144         27         7.696 210         115           7.695 447         38         7.695 690         140         7.695 861         135         7.696 100         29         7.696 146         27         7.696 210         113           7.695 451         68         7.695 701         131         7.695 861         135         7.696 102         29         7.696 147 <td>7.695 376</td> <td>55</td> <td>7.695 682</td> <td>140</td> <td>7.695 852</td> <td>137</td> <td>7.695 954</td> <td>139</td> <td>7.696 137</td> <td>27</td> <td>7.696 196</td> <td>22</td>	7.695 376	55	7.695 682	140	7.695 852	137	7.695 954	139	7.696 137	27	7.696 196	22
7.695 578         55         7.695 684         140         7.695 854         134         7.696 000         46         7.696 139         27         7.696 201         31           7.695 407         38         7.695 685         140         7.695 855         134         7.696 001         47         7.696 140         27         7.696 202         31           7.695 415         38         7.695 686         140         7.695 856         134         7.696 003         46         7.696 141         27         7.696 203         31           7.695 443         38         7.695 688         140         7.695 861         135         7.696 000         129         7.696 143         27         7.696 205         31           7.695 446         38         7.695 689         140         7.695 861         135         7.696 000         19         7.696 144         27         7.696 210         115           7.695 447         38         7.695 690         140         7.695 861         135         7.696 100         29         7.696 146         27         7.696 210         113           7.695 451         68         7.695 701         131         7.695 861         135         7.696 102         29         7.696 147 <td>7.695 377</td> <td>55</td> <td>7.695 683</td> <td>140</td> <td>7.695 853</td> <td>137</td> <td>7.695 955</td> <td>139</td> <td>7.696 138</td> <td>27</td> <td>7.696 200</td> <td>31</td>	7.695 377	55	7.695 683	140	7.695 853	137	7.695 955	139	7.696 138	27	7.696 200	31
7.695 415         38         7.695 686         140         7.695 856         134         7.696 002         47         7.696 141         27         7.696 203         31           7.695 423         38         7.695 687         140         7.695 857         134         7.696 003         46         7.696 142         27         7.696 204         31           7.695 445         38         7.695 688         140         7.695 860         135         7.696 030         129         7.696 143         27         7.696 201         115           7.695 441         38         7.695 689         140         7.695 862         135         7.696 091         30         7.696 144         27         7.696 201         115           7.695 451         68         7.695 691         141         7.695 862         135         7.696 101         29         7.696 146         27         7.696 201         115           7.695 451         68         7.695 701         131         7.695 865         135         7.696 101         29         7.696 146         27         7.696 221         113           7.695 452         68         7.695 701         131         7.695 866         135         7.696 102         29         7.696 148<	7.695 378	55	7.695 684	140	7.695 854	134	7.696 000	46	7.696 139	27		31
7.695 425         38         7.695 687         140         7.695 857         134         7.696 003         46         7.695 142         27         7.696 204         31           7.695 445         38         7.695 688         140         7.695 860         135         7.696 030         129         7.696 143         27         7.696 205         31           7.695 446         38         7.695 689         140         7.695 861         135         7.696 090         30         7.696 144         27         7.696 210         115           7.695 447         38         7.695 691         141         7.695 862         135         7.696 091         30         7.696 146         27         7.696 210         113           7.695 451         68         7.695 691         141         7.695 864         135         7.696 101         29         7.696 146         22         7.696 212         113           7.695 452         68         7.695 701         131         7.695 864         135         7.696 102         29         7.696 147         28         7.696 221         113           7.695 453         67         7.695 701         131         7.695 866         135         7.696 102         29         7.696 149<	7.695 407	38	7.695 685	140	7.695 855	134	7.696 001	47	7.696 140	27	7.696 202	31
7.695 445         38         7.695 688         140         7.695 860         135         7.696 030         129         7.696 143         27         7.696 205         31           7.695 446         38         7.695 689         140         7.695 861         135         7.696 090         30         7.696 144         27         7.696 210         115           7.695 447         38         7.695 690         140         7.695 862         135         7.696 000         30         7.696 145         27         7.696 210         115           7.695 451         68         7.695 691         141         7.695 865         135         7.696 100         29         7.696 146         27         7.696 220         113           7.695 451         68         7.695 701         131         7.695 866         135         7.696 101         29         7.696 148         28         7.696 221         113           7.695 453         67         7.695 702         131         7.695 866         135         7.696 102         29         7.696 148         28         7.696 221         113           7.695 454         68         7.695 702         131         7.695 866         135         7.696 102         29         7.696 150	7.695 415	38	7.695 686	140	7.695 856	134	7.696 002	47	7.696 141	27	7.696 203	31
7.695 446         38         7.695 689         140         7.695 861         135         7.696 090         30         7.696 144         27         7.696 210         115           7.695 447         38         7.695 690         140         7.695 862         135         7.696 091         30         7.696 145         27         7.696 219         113           7.695 451         68         7.695 691         141         7.695 863         135         7.696 100         29         7.696 146         27         7.696 220         113           7.695 452         68         7.695 700         131         7.695 864         135         7.696 101         29         7.696 148         28         7.696 221         113           7.695 463         67         7.695 701         131         7.695 866         135         7.696 103         29         7.696 148         28         7.695 222         113           7.695 464         67         7.695 701         131         7.695 866         135         7.696 103         29         7.696 149         28         7.696 222         114           7.695 452         68         7.695 703         131         7.695 867         135         7.696 104         29         7.696 150	7.695 423	38	7.695 687	140	7.695 857	134	7.696 003	46	7.696 142	27	7.696 204	31
7.695 447         38         7.695 690         140         7.695 862         135         7.696 091         30         7.696 145         27         7.696 219         113           7.695 451         68         7.695 691         141         7.695 863         135         7.696 100         29         7.696 146         27         7.696 220         113           7.695 452         68         7.695 701         131         7.695 864         135         7.696 101         29         7.696 147         28         7.696 221         113           7.695 453         67         7.695 701         131         7.695 865         135         7.696 102         29         7.696 148         28         7.695 222         113           7.695 453         67         7.695 701         131         7.695 866         135         7.696 103         29         7.696 149         28         7.695 222         113           7.695 463         68         7.695 703         131         7.695 866         135         7.696 103         29         7.696 150         28         7.696 224         114           7.695 540         141         7.695 705         131         7.695 871         135         7.696 106         29         7.696 15	7.695 445	38	7.695 688	140	7.695 860	135	7.696 030	129	7.696 143	27	7.696 205	31
7.695 451         68         7.695 691         141         7.695 863         135         7.696 100         29         7.696 146         27         7.696 220         113           7.695 452         68         7.695 700         131         7.695 864         135         7.696 101         29         7.696 147         28         7.696 221         113           7.695 453         67         7.695 701         131         7.695 865         135         7.696 102         29         7.696 148         28         7.696 222         113           7.695 454         67         7.695 702         131         7.695 866         135         7.696 103         29         7.696 149         28         7.696 223         114           7.695 460         68         7.695 704         131         7.695 867         135         7.696 105         29         7.696 150         28         7.696 224         114           7.695 540         141         7.695 705         131         7.695 870         135         7.696 106         29         7.696 152         28         7.696 226         115           7.695 541         141         7.695 707         131         7.695 871         135         7.696 107         29         7.696 1	7.695 446	38	7.695 689	140	7.695 861	135	7.696 090	30	7.696 144	27	7.696 210	115
7.695 452         68         7.695 700         131         7.695 864         135         7.696 101         29         7.696 147         28         7.696 221         133           7.695 453         67         7.695 701         131         7.695 865         135         7.696 102         29         7.696 148         28         7.696 222         113           7.695 454         67         7.695 702         131         7.695 866         135         7.696 103         29         7.696 149         28         7.696 223         114           7.695 455         68         7.695 703         131         7.695 866         135         7.696 104         29         7.696 150         28         7.696 224         114           7.695 460         68         7.695 704         131         7.695 868         135         7.696 106         29         7.696 151         28         7.696 225         115           7.695 540         141         7.695 706         131         7.695 871         135         7.696 106         29         7.696 153         28         7.696 230         32           7.695 541         141         7.695 707         131         7.695 872         135         7.696 108         29         7.696 15	7.695 447	38	7.695 690	140	7.695 862	135	7.696 091	30	7.696 145	27	7.696 219	113
7.695 453         67         7.695 701         131         7.695 865         135         7.696 102         29         7.696 148         28         7.695 222         131           7.695 454         67         7.695 702         131         7.695 866         135         7.696 103         29         7.696 149         28         7.696 223         114           7.695 455         68         7.695 703         131         7.695 867         135         7.696 104         29         7.696 150         28         7.696 224         114           7.695 460         68         7.695 704         131         7.695 868         135         7.696 105         29         7.696 151         28         7.696 225         115           7.695 540         141         7.695 706         131         7.695 871         135         7.696 107         29         7.696 153         28         7.696 230         32           7.695 541         141         7.695 707         131         7.695 872         135         7.696 108         29         7.696 153         28         7.696 231         32           7.695 543         141         7.695 710         132         7.695 873         135         7.696 109         28         7.696 15	7.695 451	68	7.695 691	141	7.695 863	135	7.696 100	29	7.696 146	27	7.696 220	113
7.695 454         67         7.695 702         131         7.695 866         135         7.696 103         29         7.696 149         28         7.696 223         114           7.695 455         68         7.695 703         131         7.695 867         135         7.696 104         29         7.696 150         28         7.696 224         114           7.695 460         68         7.695 704         131         7.695 868         135         7.696 105         29         7.696 151         28         7.696 225         115           7.695 540         141         7.695 706         131         7.695 870         135         7.696 106         29         7.696 152         28         7.696 226         115           7.695 541         141         7.695 706         131         7.695 871         135         7.696 106         29         7.696 153         28         7.696 230         32           7.695 541         141         7.695 701         132         7.695 872         135         7.696 108         29         7.696 154         28         7.696 231         32           7.695 543         141         7.695 711         132         7.695 873         135         7.696 110         28         7.696 1	7.695 452	68	7.695 700	131	7.695 864	135	7.696 101	29	7.696 147	28	7.696 221	113
7.695 455         68         7.695 703         131         7.695 867         135         7.696 104         29         7.696 150         28         7.696 224         114           7.695 460         68         7.695 704         131         7.695 868         135         7.696 105         29         7.696 151         28         7.696 225         115           7.695 540         141         7.695 706         131         7.695 871         135         7.696 106         29         7.696 152         28         7.696 226         115           7.695 541         141         7.695 706         131         7.695 871         135         7.696 107         29         7.696 153         28         7.696 230         32           7.695 542         141         7.695 700         132         7.695 873         135         7.696 108         29         7.696 154         28         7.696 230         32           7.695 543         141         7.695 710         132         7.695 873         135         7.696 109         28         7.696 155         28         7.696 232         32           7.695 543         141         7.695 711         132         7.695 873         135         7.696 109         28         7.696 1	7.695 453	67	7.695 701	131	7.695 865	135	7.696 102	29	7.696 148	28	7.696 222	113
7.695 460         68         7.695 704         131         7.695 868         135         7.696 105         29         7.696 151         28         7.696 225         115           7.695 540         141         7.695 705         131         7.695 870         135         7.696 106         29         7.696 152         28         7.696 226         115           7.695 541         141         7.695 706         131         7.695 871         135         7.696 107         29         7.696 153         28         7.696 230         32           7.695 542         141         7.695 707         131         7.695 872         135         7.696 108         29         7.696 154         28         7.696 231         32           7.695 543         141         7.695 710         132         7.695 873         135         7.696 109         28         7.696 155         28         7.696 232         32           7.695 544         141         7.695 711         132         7.695 874         135         7.696 110         28         7.696 156         28         7.696 233         32           7.695 545         141         7.695 712         132         7.695 875         135         7.696 111         28         7.696 1	7.695 454	67	7.695 702	131	7.695 866	135	7.696 103	29	7.696 149	28	7.696 223	114
7.695 540         141         7.695 705         131         7.695 870         135         7.696 106         29         7.696 152         28         7.696 226         115           7.695 541         141         7.695 706         131         7.695 871         135         7.696 107         29         7.696 153         28         7.696 230         32           7.695 542         141         7.695 707         131         7.695 872         135         7.696 108         29         7.696 154         28         7.696 231         32           7.695 543         141         7.695 710         132         7.695 873         135         7.696 109         28         7.696 155         28         7.696 232         32           7.695 544         141         7.695 711         132         7.695 874         135         7.696 110         28         7.696 156         28         7.696 233         32           7.695 545         141         7.695 712         132         7.695 875         135         7.696 111         28         7.696 157         28         7.696 233         32           7.695 550         126         7.695 713         132         7.695 876         135         7.696 111         28         7.696 1	7.695 455	68	7.695 703	131	7.695 867	135	7.696 104	29	7.696 150	28	7.696 224	114
7.695 541         141         7.695 706         131         7.695 871         135         7.696 107         29         7.696 153         28         7.696 230         32           7.695 542         141         7.695 707         131         7.695 872         135         7.696 108         29         7.696 154         28         7.696 231         32           7.695 543         141         7.695 710         132         7.695 873         135         7.696 109         28         7.696 155         28         7.696 232         32           7.695 544         141         7.695 711         132         7.695 874         135         7.696 110         28         7.696 156         28         7.696 233         32           7.695 545         141         7.695 712         132         7.695 875         135         7.696 111         28         7.696 157         28         7.696 235         33           7.695 550         126         7.695 713         132         7.695 876         135         7.696 112         28         7.696 158         28         7.696 235         33           7.695 551         126         7.695 714         132         7.695 877         135         7.696 113         28         7.696 15	7.695 460	68	7.695 704	131	7.695 868	135	7.696 105	29	7.696 151	28	7.696 225	115
7.695 542         141         7.695 707         131         7.695 872         135         7.696 108         29         7.696 154         28         7.696 231         32           7.695 543         141         7.695 710         132         7.695 873         135         7.696 109         28         7.696 155         28         7.696 232         32           7.695 544         141         7.695 711         132         7.695 874         135         7.696 110         28         7.696 156         28         7.696 233         32           7.695 545         141         7.695 712         132         7.695 875         135         7.696 111         28         7.696 157         28         7.696 235         33           7.695 550         126         7.695 713         132         7.695 876         135         7.696 112         28         7.696 158         28         7.696 236         33           7.695 551         126         7.695 714         132         7.695 877         135         7.696 113         28         7.696 161         30         7.696 237         78           7.695 552         126         7.695 716         128         7.695 880         136         7.696 114         28         7.696 16	7.695 540	141	7.695 705	131	7.695 870	135	7.696 106	29	7.696 152	28	7.696 226	115
7.695 543         141         7.695 710         132         7.695 873         135         7.696 109         28         7.696 155         28         7.696 232         32           7.695 544         141         7.695 711         132         7.695 874         135         7.696 110         28         7.696 156         28         7.696 233         32           7.695 545         141         7.695 712         132         7.695 875         135         7.696 111         28         7.696 157         28         7.696 235         33           7.695 550         126         7.695 713         132         7.695 876         135         7.696 112         28         7.696 158         28         7.696 236         33           7.695 551         126         7.695 714         132         7.695 877         135         7.696 113         28         7.696 161         30         7.696 237         78           7.695 552         126         7.695 715         132         7.695 878         135         7.696 114         28         7.696 162         30         7.696 240         41           7.695 553         126         7.695 716         128         7.695 881         136         7.696 115         28         7.696 16	7.695 541	141	7.695 706	131	7.695 871	135	7.696 107	29	7.696 153	28	7.696 230	32
7.695 544       141       7.695 711       132       7.695 874       135       7.696 110       28       7.696 156       28       7.696 233       32         7.695 545       141       7.695 712       132       7.695 875       135       7.696 111       28       7.696 157       28       7.696 235       33         7.695 550       126       7.695 713       132       7.695 876       135       7.696 112       28       7.696 158       28       7.696 236       33         7.695 551       126       7.695 714       132       7.695 877       135       7.696 113       28       7.696 161       30       7.696 237       78         7.695 552       126       7.695 715       132       7.695 878       135       7.696 114       28       7.696 162       30       7.696 240       41         7.695 553       126       7.695 716       128       7.695 880       136       7.696 115       28       7.696 163       30       7.696 241       41         7.695 554       126       7.695 717       128       7.695 881       136       7.696 115       28       7.696 164       30       7.696 242       41         7.695 555       126       7.695 718 </td <td>7.695 542</td> <td>141</td> <td>7.695 707</td> <td>131</td> <td>7.695 872</td> <td>135</td> <td>7.696 108</td> <td>29</td> <td>7.696 154</td> <td>28</td> <td>7.696 231</td> <td>32</td>	7.695 542	141	7.695 707	131	7.695 872	135	7.696 108	29	7.696 154	28	7.696 231	32
7.695 545         141         7.695 712         132         7.695 875         135         7.696 111         28         7.696 157         28         7.696 235         33           7.695 550         126         7.695 713         132         7.695 876         135         7.696 112         28         7.696 158         28         7.696 236         33           7.695 551         126         7.695 714         132         7.695 877         135         7.696 113         28         7.696 161         30         7.696 237         78           7.695 552         126         7.695 715         132         7.695 878         135         7.696 114         28         7.696 162         30         7.696 240         41           7.695 553         126         7.695 716         128         7.695 880         136         7.696 115         28         7.696 163         30         7.696 241         41           7.695 554         126         7.695 717         128         7.695 881         136         7.696 116         28         7.696 164         30         7.696 242         41           7.695 555         126         7.695 718         127         7.695 882         136         7.696 117         29         7.696 16	7.695 543	141	7.695 710	132	7.695 873	135	7.696 109	28	7.696 155	28	7.696 232	32
7.695 550       126       7.695 713       132       7.695 876       135       7.696 112       28       7.696 158       28       7.696 236       33         7.695 551       126       7.695 714       132       7.695 877       135       7.696 113       28       7.696 161       30       7.696 237       78         7.695 552       126       7.695 715       132       7.695 878       135       7.696 114       28       7.696 162       30       7.696 240       41         7.695 553       126       7.695 716       128       7.695 880       136       7.696 115       28       7.696 163       30       7.696 241       41         7.695 554       126       7.695 717       128       7.695 881       136       7.696 116       28       7.696 164       30       7.696 242       41         7.695 555       126       7.695 718       127       7.695 882       136       7.696 117       29       7.696 165       30       7.696 243       41         7.695 556       126       7.695 719       131       7.695 883       136       7.696 118       29       7.696 170       30       7.696 244       41         7.695 557       126       7.695 720 </td <td>7.695 544</td> <td>141</td> <td>7.695 711</td> <td>132</td> <td>7.695 874</td> <td>135</td> <td>7.696 110</td> <td>28</td> <td>7.696 156</td> <td>28</td> <td>7.696 233</td> <td>32</td>	7.695 544	141	7.695 711	132	7.695 874	135	7.696 110	28	7.696 156	28	7.696 233	32
7.695 551       126       7.695 714       132       7.695 877       135       7.696 113       28       7.696 161       30       7.696 237       78         7.695 552       126       7.695 715       132       7.695 878       135       7.696 114       28       7.696 162       30       7.696 240       41         7.695 553       126       7.695 716       128       7.695 880       136       7.696 115       28       7.696 163       30       7.696 241       41         7.695 554       126       7.695 717       128       7.695 881       136       7.696 116       28       7.696 164       30       7.696 242       41         7.695 555       126       7.695 718       127       7.695 882       136       7.696 117       29       7.696 165       30       7.696 243       41         7.695 556       126       7.695 719       131       7.695 883       136       7.696 118       29       7.696 170       30       7.696 244       41         7.695 557       126       7.695 720       131       7.695 885       136       7.696 119       29       7.696 171       30       7.696 245       41         7.695 558       126       7.695 721 </td <td>7.695 545</td> <td>141</td> <td>7.695 712</td> <td>132</td> <td>7.695 875</td> <td>135</td> <td>7.696 111</td> <td>28</td> <td>7.696 157</td> <td>28</td> <td>7.696 235</td> <td>33</td>	7.695 545	141	7.695 712	132	7.695 875	135	7.696 111	28	7.696 157	28	7.696 235	33
7.695 552       126       7.695 715       132       7.695 878       135       7.696 114       28       7.696 162       30       7.696 240       41         7.695 553       126       7.695 716       128       7.695 880       136       7.696 115       28       7.696 163       30       7.696 241       41         7.695 554       126       7.695 717       128       7.695 881       136       7.696 116       28       7.696 164       30       7.696 242       41         7.695 555       126       7.695 718       127       7.695 882       136       7.696 117       29       7.696 165       30       7.696 243       41         7.695 556       126       7.695 719       131       7.695 883       136       7.696 118       29       7.696 170       30       7.696 244       41         7.695 557       126       7.695 720       131       7.695 884       136       7.696 119       29       7.696 171       30       7.696 245       41         7.695 558       126       7.695 721       131       7.695 885       136       7.696 120       29       7.696 172       30       7.696 250       66         7.695 565       126       7.695 725 </td <td>7.695 550</td> <td>126</td> <td>7.695 713</td> <td>132</td> <td>7.695 876</td> <td>135</td> <td>7.696 112</td> <td>28</td> <td>7.696 158</td> <td>28</td> <td>7.696 236</td> <td>33</td>	7.695 550	126	7.695 713	132	7.695 876	135	7.696 112	28	7.696 158	28	7.696 236	33
7.695 553       126       7.695 716       128       7.695 880       136       7.696 115       28       7.696 163       30       7.696 241       41         7.695 554       126       7.695 717       128       7.695 881       136       7.696 116       28       7.696 164       30       7.696 242       41         7.695 555       126       7.695 718       127       7.695 882       136       7.696 117       29       7.696 165       30       7.696 243       41         7.695 556       126       7.695 719       131       7.695 883       136       7.696 118       29       7.696 170       30       7.696 244       41         7.695 557       126       7.695 720       131       7.695 884       136       7.696 119       29       7.696 171       30       7.696 245       41         7.695 558       126       7.695 721       131       7.695 885       136       7.696 120       29       7.696 172       30       7.696 250       66         7.695 564       126       7.695 722       131       7.695 886       136       7.696 121       29       7.696 174       31       7.696 251       66         7.695 565       126       7.695 725 </td <td>7.695 551</td> <td>126</td> <td>7.695 714</td> <td>132</td> <td>7.695 877</td> <td>135</td> <td>7.696 113</td> <td>28</td> <td>7.696 161</td> <td>30</td> <td>7.696 237</td> <td>78</td>	7.695 551	126	7.695 714	132	7.695 877	135	7.696 113	28	7.696 161	30	7.696 237	78
7.695 554       126       7.695 717       128       7.695 881       136       7.696 116       28       7.696 164       30       7.696 242       41         7.695 555       126       7.695 718       127       7.695 882       136       7.696 117       29       7.696 165       30       7.696 243       41         7.695 556       126       7.695 719       131       7.695 883       136       7.696 118       29       7.696 170       30       7.696 244       41         7.695 557       126       7.695 720       131       7.695 884       136       7.696 119       29       7.696 171       30       7.696 245       41         7.695 558       126       7.695 721       131       7.695 885       136       7.696 120       29       7.696 172       30       7.696 250       66         7.695 564       126       7.695 722       131       7.695 886       136       7.696 121       29       7.696 174       31       7.696 251       66         7.695 565       126       7.695 725       128       7.695 887       136       7.696 122       29       7.696 175       31       7.696 252       66	7.695 552	126	7.695 715	132	7.695 878	135	7.696 114	28	7.696 162	30	7.696 240	41
7.695 555         126         7.695 718         127         7.695 882         136         7.696 117         29         7.696 165         30         7.696 243         41           7.695 556         126         7.695 719         131         7.695 883         136         7.696 118         29         7.696 170         30         7.696 244         41           7.695 557         126         7.695 720         131         7.695 884         136         7.696 119         29         7.696 171         30         7.696 245         41           7.695 558         126         7.695 721         131         7.695 885         136         7.696 120         29         7.696 172         30         7.696 250         66           7.695 564         126         7.695 722         131         7.695 886         136         7.696 121         29         7.696 174         31         7.696 251         66           7.695 565         126         7.695 725         128         7.695 887         136         7.696 122         29         7.696 175         31         7.696 252         66	7.695 553	126	7.695 716	128	7.695 880	136	7.696 115	28	7.696 163	30	7.696 241	41
7.695 556       126       7.695 719       131       7.695 883       136       7.696 118       29       7.696 170       30       7.696 244       41         7.695 557       126       7.695 720       131       7.695 884       136       7.696 119       29       7.696 171       30       7.696 245       41         7.695 558       126       7.695 721       131       7.695 885       136       7.696 120       29       7.696 172       30       7.696 250       66         7.695 564       126       7.695 722       131       7.695 886       136       7.696 121       29       7.696 174       31       7.696 251       66         7.695 565       126       7.695 725       128       7.695 887       136       7.696 122       29       7.696 175       31       7.696 252       66	7.695 554	126	7.695 717	128	7.695 881	136	7.696 116	28	7.696 164	30	7.696 242	41
7.695 557       126       7.695 720       131       7.695 884       136       7.696 119       29       7.696 171       30       7.696 245       41         7.695 558       126       7.695 721       131       7.695 885       136       7.696 120       29       7.696 172       30       7.696 250       66         7.695 564       126       7.695 722       131       7.695 886       136       7.696 121       29       7.696 174       31       7.696 251       66         7.695 565       126       7.695 725       128       7.695 887       136       7.696 122       29       7.696 175       31       7.696 252       66	7.695 555	126	7.695 718	127	7.695 882	136	7.696 117	29	7.696 165	30	7.696 243	41
7.695 558       126       7.695 721       131       7.695 885       136       7.696 120       29       7.696 172       30       7.696 250       66         7.695 564       126       7.695 722       131       7.695 886       136       7.696 121       29       7.696 174       31       7.696 251       66         7.695 565       126       7.695 725       128       7.695 887       136       7.696 122       29       7.696 175       31       7.696 252       66	7.695 556	126	7.695 719	131	7.695 883	136	7.696 118	29	7.696 170	30	7.696 244	41
7.695 564     126     7.695 722     131     7.695 886     136     7.696 121     29     7.696 174     31     7.696 251     66       7.695 565     126     7.695 725     128     7.695 887     136     7.696 122     29     7.696 175     31     7.696 252     66	7.695 557	126	7.695 720	131	7.695 884	136	7.696 119	29	7.696 171	30	7.696 245	41
7.695 565         126         7.695 725         128         7.695 887         136         7.696 122         29         7.696 175         31         7.696 252         66	7.695 558	126	7.695 721	131	7.695 885	136	7.696 120	29	7.696 172	30	7.696 250	66
	7.695 564	126	7.695 722	131	7.695 886	136	7.696 121	29	7.696 174	31	7.696 251	66
7.695 566     126     7.695 726     128     7.695 890     137     7.696 123     29     7.696 176     31     7.696 253     66		126				136				31		66
	7.695 566	126	7.695 726	128	7.695 890	137	7.696 123	29	7.696 176	31	7.696 253	66

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7.696 254	66	7.696 313	19	7.696 411	163	7.696 545	161	7.696 681	110	7.696 769	168
7.696 255	66	7.696 314	19	7.696 412	163	7.696 546	162	7.696 682	110	7.696 770	167
7.696 256	66	7.696 315	19	7.696 413	163	7.696 547	162	7.696 683	110	7.696 771	167
7.696 257	66	7.696 316	19	7.696 430	165	7.696 548	162	7.696 684	110	7.696 773	167
7.696 258	66	7.696 317	19	7.696 431	165	7.696 549	162	7.696 685	110	7.696 774	167
7.696 259	66	7.696 318	19	7.696 435	165	7.696 570	162	7.696 686	110	7.696 775	167
7.696 260	66	7.696 319	19	7.696 436	165	7.696 571	162	7.696 687	110	7.696 780	166
7.696 261	66	7.696 320	19	7.696 437	165	7.696 572	162	7.696 688	110	7.696 781	166
7.696 262	66	7.696 321	19	7.696 438	165	7.696 573	162	7.696 689	110	7.696 782	166
7.696 263	66	7.696 322	19	7.696 450	16	7.696 575	163	7.696 690	110	7.696 783	166
7.696 264	66	7.696 323	19	7.696 451	16	7.696 576	163	7.696 691	110	7.696 789	167
7.696 265	65	7.696 324	19	7.696 452	16	7.696 619	111	7.696 692	110	7.696 790	167
7.696 266	65	7.696 325	19	7.696 453	16	7.696 620	111	7.696 693	110	7.696 791	167
7.696 267	65	7.696 326	19	7.696 454	16	7.696 621	111	7.696 695	112	7.696 792	167
7.696 268	65	7.696 327	19	7.696 460	16	7.696 622	111	7.696 696	112	7.696 793	167
7.696 269	65	7.696 328	19	7.696 466	16	7.696 623	111	7.696 697	112	7.696 794	167
7.696 270	21	7.696 329	19	7.696 480	70	7.696 624	111	7.696 712	80	7.696 820	110
7.696 271	21	7.696 349	18	7.696 481	70	7.696 625	111	7.696 713	80	7.696 821	110
7.696 272	21	7.696 350	17	7.696 482	70	7.696 626	111	7.696 714	80	7.696 822	110
7.696 273	21	7.696 351	17	7.696 490	41	7.696 627	111	7.696 715	80	7.696 823	110
7.696 274	21	7.696 352	17	7.696 491	41	7.696 634	111	7.696 716	80	7.696 824	110
7.696 275	20	7.696 353	17	7.696 492	41	7.696 635	111	7.696 717	80	7.696 825	110
7.696 278	20	7.696 354	17	7.696 493	41	7.696 636	111	7.696 718	80	7.696 830	110
7.696 279	20	7.696 355	17	7.696 494	41	7.696 637	112	7.696 719	80	7.696 831	110
7.696 280	20	7.696 356	17	7.696 495	41	7.696 638	112	7.696 720	80	7.696 832	110
7.696 281	20	7.696 358	17	7.696 496	42	7.696 639	112	7.696 721	80	7.696 833	110
7.696 282	20	7.696 359	17	7.696 497	42	7.696 643	112	7.696 722	80	7.696 834	110
7.696 283	20	7.696 360	16	7.696 498	42	7.696 644	109	7.696 723	80	7.696 835	110
7.696 284	20	7.696 361	16	7.696 499	42	7.696 645	109	7.696 724	80	7.696 850	40
7.696 285	20	7.696 362	16	7.696 502	159	7.696 646	109	7.696 725	80	7.696 851	40
7.696 286	20	7.696 363	16	7.696 503	159	7.696 647	109	7.696 734	158	7.696 852	40
7.696 287	20	7.696 365	164	7.696 510	160	7.696 648	109	7.696 740	159	7.696 853	40
7.696 288	20	7.696 370	18	7.696 511	160	7.696 649	109	7.696 741	159	7.696 854	40
7.696 289	20	7.696 371	18	7.696 512	160	7.696 650	108	7.696 742	159	7.696 855	40
7.696 290	21	7.696 372	18	7.696 514	160	7.696 651	108	7.696 749	159	7.696 856	40
7.696 291	21	7.696 373	18	7.696 515	160	7.696 652	108	7.696 753	158	7.696 857	40
7.696 292	21	7.696 374	18	7.696 516	160	7.696 653	108	7.696 754	158	7.696 858	40
7.696 300	18	7.696 375	18	7.696 517	160	7.696 670	109	7.696 755	158	7.696 859	40
7.696 301	18	7.696 376	18	7.696 518	160	7.696 671	109	7.696 756	158	7.696 860	40
7.696 302	20	7.696 377	42	7.696 519	160	7.696 672	109	7.696 757	158	7.696 861	40
7.696 303	20	7.696 400	163	7.696 520	160	7.696 675	109	7.696 758	158	7.696 862	40
7.696 304	20	7.696 401	163	7.696 521	160	7.696 676	109	7.696 760	168	7.696 863	40
7.696 305	20	7.696 402	163	7.696 530	161	7.696 677	109	7.696 761	168	7.696 864	40
7.696 310	19	7.696 403	163	7.696 535	161	7.696 678	111	7.696 762	168	7.696 870	41
7.696 311	19	7.696 409	163	7.696 540	161	7.696 679	111	7.696 767	168	7.696 871	41
7.696 312	19	7.696 410	163	7.696 541	161	7.696 680	110	7.696 768	168	7.696 872	41

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7.696 873	41	7.697 100	149	7.697 824	92	7.697 877	84	7.697 927	96	7.697 985	84
7.696 874	41	7.697 101	149	7.697 825	92	7.697 878	84	7.697 928	96	7.697 986	84
7.696 875	41	7.697 102	149	7.697 826	92	7.697 879	84	7.697 929	96	7.697 987	84
7.696 890	37	7.697 103	149	7.697 827	92	7.697 881	85	7.697 940	95	7.697 988	84
7.696 891	37	7.697 104	149	7.697 828	92	7.697 882	85	7.697 941	95	7.697 989	84
7.696 900	49	7.697 105	149	7.697 830	94	7.697 883	85	7.697 942	95	7.697 990	82
7.696 901	49	7.697 106	150	7.697 831	94	7.697 884	85	7.697 943	95	7.697 991	82
7.696 902	49	7.697 200	169	7.697 832	94	7.697 885	85	7.697 944	95	7.697 992	82
7.696 903	49	7.697 201	169	7.697 833	94	7.697 886	85	7.697 945	95	7.697 993	82
7.696 904	49	7.697 202	169	7.697 834	94	7.697 887	85	7.697 946	95	7.697 994	82
7.696 906	51	7.697 203	169	7.697 835	94	7.697 888	85	7.697 947	95	7.697 995	82
7.696 907	51	7.697 206	169	7.697 836	94	7.697 889	85	7.697 950	87	7.697 996	82
7.696 908	51	7.697 207	169	7.697 837	94	7.697 890	89	7.697 951	87	7.697 997	82
7.696 909	51	7.697 220	169	7.697 838	94	7.697 891	89	7.697 952	87	7.697 998	82
7.696 911	48	7.697 221	169	7.697 839	94	7.697 892	89	7.697 953	87	7.697 999	82
7.696 912	48	7.697 222	169	7.697 840	93	7.697 893	89	7.697 954	87	7.698 020	91
7.696 913	48	7.697 223	169	7.697 841	93	7.697 894	89	7.697 955	87	7.698 021	91
7.696 914	48	7.697 226	169	7.697 842	93	7.697 895	89	7.697 956	87	7.698 022	91
7.696 915	50	7.697 227	169	7.697 843	93	7.697 896	89	7.697 957	87	7.698 023	91
7.696 916	50	7.697 240	170	7.697 844	93	7.697 897	89	7.697 958	87	7.698 024	91
7.696 917	50	7.697 241	170	7.697 845	93	7.697 898	89	7.697 959	87	7.698 025	91
7.696 918	50	7.697 242	170	7.697 846	93	7.697 899	84	7.697 960	86	7.698 026	91
7.696 920	51	7.697 243	170	7.697 847	93	7.697 900	82	7.697 961	86	7.698 027	91
7.696 920	153	7.697 800	94	7.697 848	93	7.697 901	82	7.697 962	86	7.698 028	91
7.696 921	51	7.697 801	94	7.697 849	93	7.697 902	82	7.697 963	86	7.698 029	91
7.696 925	52	7.697 802	94	7.697 852	87	7.697 903	82	7.697 964	86	7.698 030	148
7.696 930	81	7.697 803	94	7.697 853	86	7.697 904	82	7.697 965	86	7.698 031	148
7.696 994	56	7.697 804	94	7.697 854	86	7.697 905	82	7.697 966	86	7.698 040	86
7.696 995	56	7.697 805	94	7.697 855	87	7.697 906	82	7.697 967	86	7.698 041	86
7.696 996	56	7.697 806	94	7.697 860	83	7.697 907	82	7.697 968	86	7.698 042	86
7.696 997	56	7.697 807	94	7.697 861	83	7.697 910	90	7.697 969	86	7.698 043	86
7.696 998	56	7.697 808	94	7.697 862	83	7.697 911	90	7.697 970	85	7.698 044	86
7.696 999	56	7.697 809	94	7.697 863	83	7.697 912	90	7.697 971	85	7.698 045	86
7.697 000	55	7.697 810	93	7.697 864	83	7.697 913	90	7.697 972	85	7.698 050	87
7.697 001	55	7.697 811	93	7.697 865	83	7.697 914	90	7.697 973	85	7.698 051	87
7.697 002	55	7.697 812	93	7.697 866	83	7.697 915	90	7.697 974	85	7.698 052	87
7.697 003	55	7.697 813	93	7.697 867	83	7.697 916	90	7.697 975	85	7.698 053	87
7.697 004	55	7.697 814	93	7.697 868	83	7.697 917	90	7.697 976	85	7.698 054	87
7.697 005 7.697 010	55 56	7.697 815 7.697 816	93	7.697 869	83	7.697 918 7.697 920	90 155	7.697 977	85 85	7.698 055 7.698 090	87 83
7.697 010	166	7.697 816	93	7.697 870	84	7.697 920	96	7.697 978	85	7.698 090	83
7.697 011	56	7.697 818	93	7.697 872	84	7.697 921	96	7.697 979	84	7.698 091	83
7.697 022	56	7.697 820	93	7.697 873	84	7.697 922	96	7.697 980	84	7.698 092	83
7.697 030	56	7.697 821	92	7.697 873	84	7.697 924	96	7.697 982	84	7.698 093	83
7.697 033	56	7.697 822	92	7.697 875	84	7.697 925	67	7.697 983	84	7.698 095	83
7.697 034	56	7.697 823	92	7.697 876	84	7.697 926	96	7.697 984	84	7.698 096	83
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# **NOTES**

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#### **ABBREVIATIONS AND EXPLANATIONS**

ABS Acrylonitrile butadiene styrene
CPE Chlorinated polyethylene
EVA Ethylene-vinyl acetate
HDPE High-density polyethylene
LDPE Low-density polyethylene

NR Natural rubber

**PBT** Polybutylene terephthalate

**PC** Polycarbonate

PCR Polymerase chain reaction

PE Polyethylene
PK Packaging unit

**PMMA** Polymethyl methacrylate

PP PolypropylenePS Polystyrene

PTFE Polytetrafluoroethylene

**PU** Polyurethane

qPCR Real-time quantitative PCRTPE Thermoplastic elastomers

# **IMPRINT**

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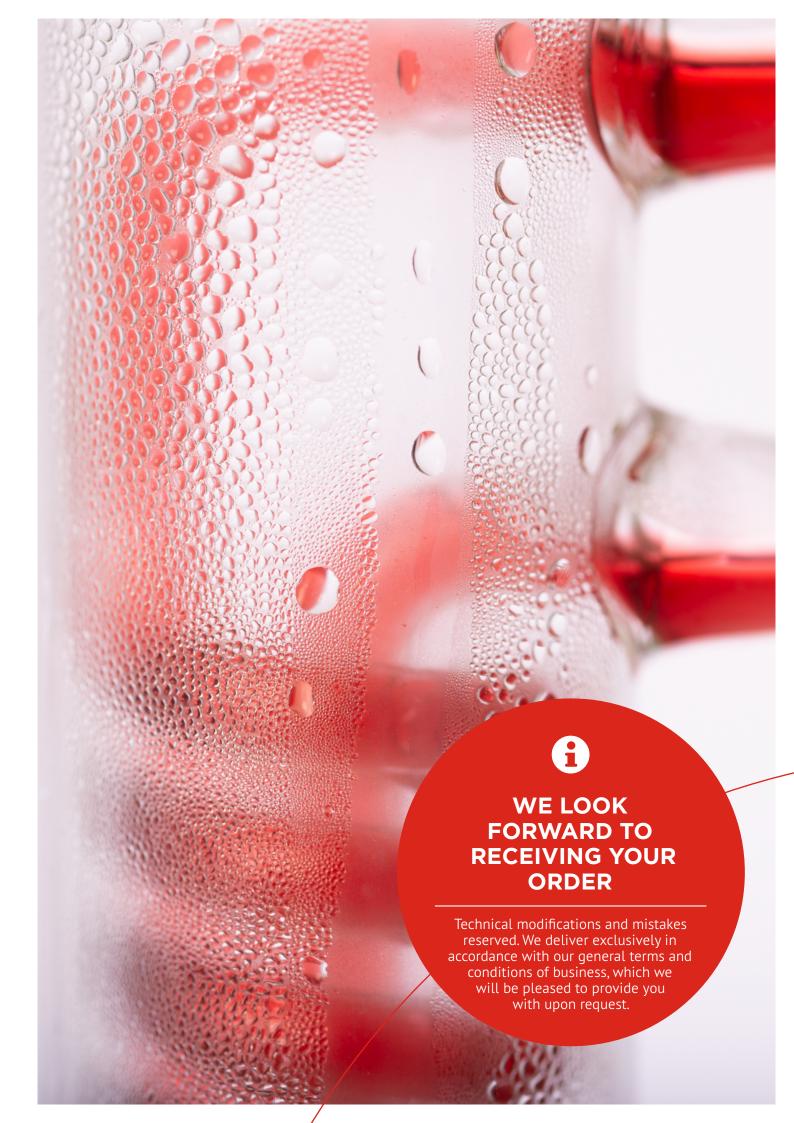
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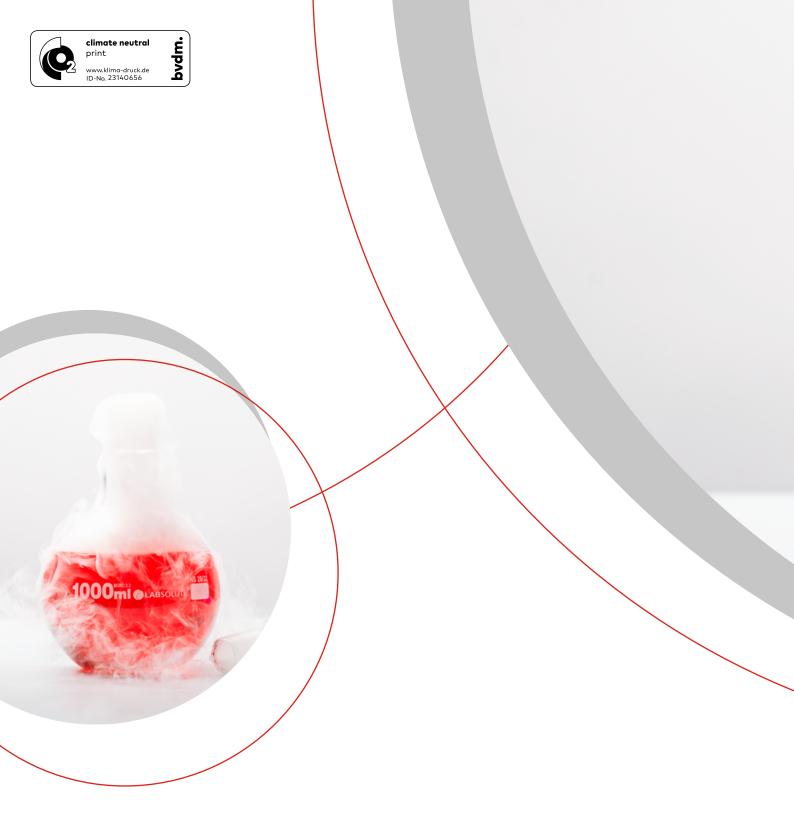
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