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**1**

### 1 Sampling bags, PVF

**NEW!**

Saint Gobain

Reusable bags made of 2 ml (50 µm) PVDF fluoropolymer film, Chemware® Gas Bags offer an economical alternative for analysis of noncorrosive gases. Durable, heat-sealed seams ensure leak-proof operation. Available with either a nickel-plated, brass on/off valve that accepts 6.4mm I.D. flexible tubing or with a PTFE/silicone septum in a polypropylene housing for use with a hypodermic needle. Applications include sampling carbon monoxide, sulfur dioxide, hydrogen sulfide, radon and mercaptan. The bags are individually packaged. When used for liquid samples, bags should be supported with a tray. Custom sizes and configurations available on request.

- Flexible
- Will not contaminate sample
- Choice of fitting style: on/off or septum
- For use in gas sampling trains
- Use for gas or liquid sample containment

Capacity L	Connection	Size mm	PK	Cat. No.
0.3	on/off	150 x 150	1	6.267 492
1.6	on/off	230 x 230	1	6.267 493
3.8	on/off	300 x 300	1	6.267 494
8.1	on/off	380 x 380	1	6.267 495
20.3	on/off	460 x 460	1	6.267 496
37.7	on/off	600 x 600	1	6.267 497
0.3	septum	150 x 150	1	6.267 498
3.8	septum	230 x 230	1	6.267 499
1.6	septum	300 x 300	1	6.267 600
8.1	septum	380 x 380	1	6.267 601
20.3	septum	460 x 460	1	6.267 602
37.7	septum	600 x 600	1	6.267 603


**2**

### 2 Sampling bags, FEP

**NEW!**

Saint Gobain

Made from 5 mil (125 µm) FEP fluoropolymer film, these flexible, sturdy bags are heat sealed on all four sides for complete chemical resistance and leak-proof operation. They are inert to most chemicals and have low permeability which limits sample loss. Available with either a nickel-plated, brass on/off valve that accepts 6.4mm I.D. flexible tubing or with PTFE/silicone septum in polypropylene housing for use with a hypodermic needle. These FEP bags are easy to use. They can be stored for an unlimited period prior to use. Applications include gas sample analysis, extracting air samples from smokestack exhaust systems, monitoring air quality or calibrating instruments in the field. The bags are individually packaged.

- Chemically resistant
- Flexible
- Will not contaminate sample

Capacity L	Connection	Size mm	PK	Cat. No.
1.2	on/off	150 x 250	1	6.267 484
0.5	on/off	150 x 150	1	6.267 485
4.7	on/off	300 x 300	1	6.267 486
50.0	on/off	600 x 900	1	6.267 487
0.5	Septum	150 x 150	1	6.267 488
1.2	Septum	150 x 250	1	6.267 489
4.7	Septum	300 x 300	1	6.267 490
50.0	Septum	600 x 900	1	6.267 491


**3**

### 3 Air Flow Tester

Dräger

In many fields, such as mining or industry, it is very important to detect even the smallest air flows, in order to quickly and reliably evaluate the possible diffusion of dangerous substances. With the air flow test tubes, the source, direction and speed of the air flow are visible immediately.

Type	PK	Cat. No.
Air Flow Tester (Set with blower ball and 10 flow test tubes)	1	6.054 581
Blower Ball	1	6.200 206
Flow test tubes	10	6.076 362

## 12. Environmental-, soil-, water-, food analysis Sample preparation/Air sampling and analysis

### Gas sampling tubes, DURAN® tubing

Made of DURAN® tubing. Available with or without nozzle (with thread GL and septa), with two one-way stopcocks NS14 (with retaining device), connections: capillary tube (outer dia. 8mm, inner dia. 2.7mm), glass olive (outer dia. 8mm), with inscription label

Lenz

1



9.110 236

Capacity ml	Length* mm	External body diam. mm	Type	PK	Cat. No.
150	155	42	Without sampling connections	1	9.110 215
350	200	54	Without sampling connections	1	9.110 220
500	220	65	Without sampling connections	1	9.110 225
1000	260	85	Without sampling connections	1	9.110 230
150	155	42	With sampling connections, GL 14	1	6.243 069
350	200	54	With sampling connections, GL 14	1	9.110 236 1
500	220	65	With sampling connections, GL 14	1	9.110 237
1000	260	85	With sampling connections, GL 14	1	7.623 930

\* Body length (mm)

### 2 Digital Anemometer

**NEW!**

Digital Anemometer to measure wind speed and temperature. Useful for the functional check of fume hoods and safety cabinets.

- Wind speed range: 0 to 30 m/s
- Wind temperature range: -10 to 45°C (14 to 113°F)
- Current/MAX/Average wind speed reading
- Wind speed units: m/s, km/h, ft/min, knots, mph
- Temperature display in °C/°F
- LCD backlight display
- Auto/Manual power off
- Battery: 3V CR2032 (included)

2



Type	PK	Cat. No.
Digital Anemometer	1	6.264 198

### 3 Dräger Sampling Tubes

Using the Dräger activated charcoal tubes or silica gel tubes, hazardous substances in the air are collected using a suitable medium via adsorption or chemisorption. The sample is then analysed in the laboratory by means of various analytical methods such as gas chromatography (GC), high performance liquid chromatography (HPLC), UV-VIS photometry, or IR spectroscopy.

Dräger

3



Description	Type	PK	Cat. No.
Charcoal tubes	BiA	10	9.620 414
Charcoal tubes	G	10	9.620 415
Charcoal tubes	B/G	10	9.620 416
Silica gel tubes	BiA	10	9.620 417
Silica gel tubes	G	10	9.620 418
Silica gel tubes	B/G	10	9.620 419
Isocyanate sampling set incl. analysis		1	6.070 187
Diffusion sampler ORSA 5		5	6.050 155
Diffusion sampler ORSA 25		25	6.080 611



### 1 Dräger Tubes®

**NEW!**

Dräger

The Dräger Tubes® measuring system is the safe method for measuring pollutants in the soil, water and air. More than 500 substances can be measured in varying concentrations. The long-established principle of Dräger Tubes® is still the same. A defined volume of gas/air must be pumped through the sampling tube. This can be achieved by using the Accuro® gas pump. On contact with the substance under test the reagent system contained in the tube reacts and displays a colour. The strength of the concentration of the substance is shown by the length of the colour band displayed and can be read directly from the scale. The Dräger-Tubes® sampling system provides accuracy, efficiency, quick and easy handling. Over 250 tubes are available on request for all substances and measuring fields. Further sampling devices, diffusion tubes for long-term measurements as well as sampling systems with activated carbon tubes, ORSA collector and TDS thermodesorption tubes are also available.

Type	Measuring range	PK	Cat. No.
Accuro gas pump		1	9.620 410
Gas pump set accuro (incl. bag a. E-Set)		1	9.620 411
Acetone 100/b tubes	100 to 12000 ppm	10	9.620 421
Alcohol 25/a tubes	25 to 5000 ppm	10	9.620 423
Ammonia 2/a tubes	2 to 30 ppm	10	9.620 404
Ammonia 5/a tubes	5 to 700 ppm	10	9.620 405
Ammonia 5/b tubes	5 to 100 ppm	10	9.620 424
Petroleum hydrocarbons 10/a tubes	10 to 300 ppm	10	9.620 426
Benzene 0.5/a tubes	0.5 to 10 ppm	10	9.620 406
Benzene 0.5/c tubes	0.5 to 10 ppm	5	9.620 427
Chlorine 0.2/a tubes	0.2 to 3 ppm	10	9.620 407
Formaldehyde 0.2/a tubes	0.2 to 5 ppm	10	9.620 429
Carbon dioxide 100/a tubes	100 to 3000 ppm	10	9.620 408
Carbon dioxide 5/a	5 to 60 Vol.%	10	6.050 554
Carbon monoxide 2/a tubes	2 to 60 ppm	10	9.620 432
Carbon monoxide 5/c tubes	8 to 700 ppm	10	9.620 409
Nitrous fumes 0.2/a	0.2 to 30 ppm	10	6.266 890
Ozone 0.05/b tubes	0.05 to 0.7 ppm	10	9.620 434
Perchloroethylene 2/a tubes	2 to 300 ppm	10	9.620 436
Phenol 1/b tubes	1 to 20 ppm	10	9.620 437
Hydrogen phosphide 0.01/a tubes	0.01 to 1 ppm	10	9.620 438
Mercury vapour 0.1/b tubes	0.05 to 2 mg/m <sup>3</sup>	10	9.620 439
Hydrochloric acid 1/a tubes	1 to 10 ppm	10	9.620 413
Hydrochloric acid/nitric acid 1/a tubes	1 to 10/15 ppm	10	9.620 441
Oxygen 5%/c	5 to 23 Vol.% 10	10	9.620 448
Sulphur dioxide 0.5/a tubes	0.5 to 25 ppm	10	9.620 420
Hydrogen sulfide 0.2%/a	0.2 to 7 Vol.%	10	6.088 166
Hydrogen sulfide 1/d tubes	1 to 200ppm	10	9.620 443
Hydrogen sulfide 100/a	100 to 2000 ppm	10	6.050 553
Hydrogen sulfide 5/b tubes	5 to 60 ppm	10	9.620 425
Toluene 5/b tubes	5 to 300 ppm	10	9.620 446
Trichloroethylene 2/a tubes	20 to 250 ppm	10	9.620 447
Hydrogen sulfide 1/c	1 to 20ppm	10	6.052 630
Hydrogen sulfide 0,5/a	0.5 to 15ppm	10	6.304 822
Acetic Acid 5/a	5 to 20ppm	10	6.900 409
Carbon disulfide tubes 5/a	5 to 60 ppm	10	6.259 530
Cyanide 0.5/a	0.5-100 ppm	10	9.620 449

We can supply this

manufacturer's whole

product range !

# Dräger

partner of the

**LLG**  
Lab Logistics Group

## 12. Environmental-, soil-, water-, food analysis Sample preparation/Air sampling and analysis

### Dräger Aerotest Alpha

The Dräger Aerotest Alpha allows the quality of breathing air supplied by a compressor or compressed gas cylinder to be determined. Use of the test system performs a reliable check in accordance with the breathing air standard EN 12 021.

Dräger

1

Dräger Aerotest Alpha comprising of 1 pressure reducer, measuring device for 4 tubes, impactor adapter, coupling, barbed nipple, stopwatch, tube opener Dräger TO 7000, bubble test hose, pack of 5 sintered filters, instruction for use, transport case (black)

Dräger Aerotest Alpha, with Dräger Tubes:

- Dräger Aerotest Alpha
- + box of 10 Dräger Oil Impactors,
- + box of 10 Dräger-Tubes carbon dioxide (CO<sub>2</sub>) 100/a-P,
- + box of 10 Dräger-Tubes carbon monoxide (CO) 5/a-P,
- + box of 10 Dräger-Tubes water vapor (H<sub>2</sub>O) 20/a-P



7.629 381

#### Specifications

Dimensions of carrying case (L x W x H)	350 x 300 x 85 mm
Weight, including contents	approx. 3.0 kg
Max. supply pressure	15 bar
Supply pressure (set on delivery)	3.0 bar
Pressure gauge	0.3 to 15 bar
Connection for compressed air supply	barbed nipple 9 mm
Flow rate	0.2 and 4.0 l/min

Description	PK	Cat. No.
Dräger Aerotest Alpha	1	6.241 227
Dräger Aerotest Alpha, with Dräger Tubes	1	7.629 381 1
Oil-impactor	10	6.241 225
Carbon monoxide 5/a-P	10	6.801 977
Carbon dioxide 100/a-P	10	6.801 978
Water Vapor 5/a-P	10	6.087 703
Water vapour 20/a-p	10	6.801 979

### Automatic tube pump Dräger X-act® 5000

The automatic tube pump Dräger X-act® 5000 is the first all-in-one solution designed for measurements with Dräger short-term tubes and for sampling tubes and systems. Ease of operation and a high degree of reliability compliment the measurement and sampling of gases, vapors and aerosols.

Dräger

2

- New Pump Concept
- Simplicity of Operation, even with protection gloves
- Automatic Transfer of Measurement Parameters with barcode reader
- Measurement in Technical Gases
- Direct Settings for Sampling
- Simple and intuitive menu structure

#### Specifications:

Number of strokes	adjustable, 1 to 199 strokes
Stroke volume	100ml
Sample taking	
Flow rate range:	0.1 to 2.0 L/min Resolution 0.1 to 1.0 L/min: 0.1 L/min ± 5 % Resolution 1.0 to 2.0 L/min: 0.2 L/min ± 5 %
Sampling time:	adjustable, up to 12 hours, depending on flow rate Resolution in steps of 15 minutes (default) or 1 minute
Display:	two parts: segment and matrix
Menu languages	Danish, Dutch, English, Finnish, French, German, Italian, Norwegian, Polish, Spanish, Swedish
Dimensions (H x W x D)	approx.. 175mm x 230mm x 108mm
Weight (without battery pack)	approx. 1.6kg
Temperature during storage:	-20°C to 55°C
Temperature during operation:	5°C to 40°C
Humidity:	0 to 95% r. h., non-condensing
Pressure	700 to 1300 hPa



9.620 470

Description	PK	Cat. No.
Dräger X-act 5000, shoulder strap without power supply	1	9.620 470 2
Rechargeable Battery NiMH, T4	1	9.620 471
Alkaline Battery Pack, T4 without Batteries (6 batteries required)	1	9.620 472
Alkaline Battery Dräger X-act 5000	1	9.620 473
Wall-Wart Charger 100 – 240 VAC (worldwide)	1	9.620 474
Car Charger 12 / 24 V	1	9.620 475



### 1 Air sampler, Airport MD8 airborne bacteria sampler

Sartorius

AirPort MD8 is a new portable air bacteria sampler for the pharmaceutical and food and beverage industries, hospitals, environmental protection and for industrial safety. AirPort MD8 has the following benefits:

- Battery-powered and portable for lab or field use
- Battery status display guarantees constant performance during sampling
- Ergonomic, smooth design, surfaces can be disinfected
- Choice of sampling selection, either by total volume or measurement duration

The device can be calibrated on-site. AirPort MD8 uses the gelatin membrane filter method which guarantees reliable and accurate measurement results.

#### Specifications:

Volume flow control:	Volume flow can be set to three levels using integral hydrometric manometer: 30 L/min., 40 L/min. and 50 L/min.
Fixed sample volumes:	25, 50, 100, 250, 500, 750 and 1000 litres Sample volume can also be adjusted in 5 litre increments
Battery:	NiMH 16.8 Volt/3800 mAh
Running time with a full battery charge:	approx. 4 hours
Charging time:	approx. 4.5 hours if battery flat
Noise level:	Using gelatin membrane filters, 48 dB(A)
Weight:	2.5 kg
Dimensions (L x W x H):	300 x 135 x 165 mm
Filter size:	80 mm dia., area 38.5 cm <sup>2</sup>

Type	PK	Cat. No.
AirPort MD8	1	9.841 605

### 2 Air sampler, MD8 airscan airborne bacteria sampler

Sartorius

The MD8 airscan airborne bacteria sampler, together with gelatin membrane filters, has been developed for detecting airborne bacteria in conventionally ventilated areas, sterile rooms with, or without, laminar flow systems, air-conditioning systems and isolators. It provides safe, reproducible and quantitative results.

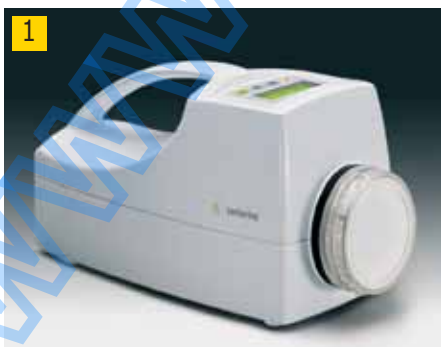
With error display if the filter is blocked or damaged. CE tested.

#### Applications:

- Collecting viri and phages from the air
- Detecting airborne influenza A virus
- Quantitative detection of atmospheric bacteriophage loads within dairy premises.

Air throughput:	2.0 to 8 mü/hr., can be set in increments of 0.1 mü/hr.
Timer:	1 to 99 mins., can be set in increments of 1 minute
Noise level:	For gelatin membrane filters, max. 62 dB (A)
Filter size:	80 mm Ø, area 38.5 cm <sup>2</sup>
Weight:	approx. 6.5 kg
Dimensions (L x W x H):	375 x 242 x 228 mm (total length: 407 mm with filter holder fitted)

Type	PK	Cat. No.
Airscan MD8	1	9.841 601



### 1 Laboratory purification plants to determine the biodegradability

e.g. for the Coupled Units Test in acc. with OECD 303 A, complete.

Behr

optional:

- Dentrification step with pump and stirrers
- Oxygen control, consisting of:

Oxygen measuring unit for preliminary sedimentation with a voltage output for switching the air supply on and off behrotest® GWS 200 limit switch. Operating capacity 0 to 200%, corresponds to 0 to 19.9 mg/l

Vessels made of borosilicate glass 3.3

Type	Description	PK	Cat. No.
KA 1	Laboratory purification plant, complete	1	9.920 600
KA 1/SR	Laboratory purification plant, complete, with oxygen entry control	1	9.920 605
KLD 4	Laboratory purification plant, complete, with dentrification step	1	9.920 602
KLD 4/SR	Laboratory purification plant, complete, with dentrification step and oxygen entry control	1	9.920 606
KLD 4/N	Like KLD 4, with continual sludge recirculation	1	9.920 598
KLD 4N/SR	Like KLD 4/SR, with continual sludge recirculation	1	9.920 599



### 2 Equipment to determine anaerobic digestion

The complete equipment consists of:

Behr

- Tempering bath with thermostat for 6 eudiometer units incl. clamping device for eudiometer tubes
- 6 eudiometer units with laboratory bottles, 500ml, eudiometer tubes with graduation, stopcock and connecting tube and levelling bulb
- Series magnetic stirrer, for use in water bath to stir 6 bottles, each with 500 ml, including separate control unit

#### Specification

Dims (WxDxH): 850 x 330 x 360 mm  
Weight: 16 kg

Type	Description	PK	Cat. No.
FH 6	Tempering bath made of PVC incl. thermostat for 6 eudiometer units	1	9.843 850
FH 10	Eudiometer unit. Eudiometer tube, laboratory and levelling bottle	1	9.843 851
RM 6	Series magnetic stirrer	1	9.843 852



### behrotest® column elution unit for the elution of soil samples

#### Column elution unit:

Column elution unit in acc. with the LUA recommendation with 4-channel hose pump with controllable speed. The unit consists of:

Behr

- Assembly stand for the system
- Controllable 4-channel hose pump with fixed speed
- Storage vessel, 20 l
- 4 elution columns, internal diameter 6 cm, 32 cm long, with 2 screwed joints (GL 45, with PTFE inserts) for simple filling of the columns
- 4 collection bottles for the column eluate, 2 l, with screwed joint (GL 45) and deaeration
- Supply tube made of TYGON and PVC, with non-return valve in the supply to the column
- PTFE tubes between columns and collection vessels
- Flow rate 0.003 to 35 ml/min
- Range of speed 2 to 100 min<sup>-1</sup>
- Simultaneous control of all 4 channels

#### behrotest® silica sand:

for column elution unit, grain size 1 to 2 mm in acc. with DIN V 19736, 1000 g bottle

#### behrotest® silica wool:

for column elution unit, 100 g bag

Type	Description	PK	Cat. No.
SEB 32 R	Column elution unit B	1	9.843 741 3
QS-SEB	Silica sand for column elution unit	1	9.843 744
QW-SEB	Fibreglass for column elution unit	1	9.843 745
GS 950	Glass column 60mm x 320mm	1	9.843 925



9.843 741

## Sample preparation/for standard analysis



### 1 behrotest® waste water mixers

behrotest® homogenisers

Behr

With transportable sample vessels

Homogenisers for pre-treatment, splitting and homogenization of heterogeneous water samples in accordance with the quality assurance and quality control standards for wastewater examinations.

The vessels of the homogenizers are protected against damage in the yolk type frame and can be carried easily by the two handles. They can be filled at the sampling location by a flattened inlet connection. Capacities from 2 to 25 l permit extraction and collection of multiple samples. Exact measurement of the sample quantities due to graduation.

Subsequently, the transport rack is just placed on the magnetic stirrer in the laboratory or in the sampling vehicle and the homogeniser is immediately ready for use. The speed of the magnetic stirrer can be adjusted by a controller.

The user can thus comply with the specified cone height in all cases. Oxygen is thus prevented from entering the samples. Dosed extraction of the homogenised sample via PTFE spindle stopcock.

12V, with adapter for mains connection.

Type	Description	PK	Cat. No.
QMR 2	Capacity 2 l	1	9.920 639
QMR 5	Capacity 5 l	1	9.920 640
QMR 10	Capacity 10 l	1	9.920 641
QMR 15	Capacity 15 l	1	9.920 642
QMR 20	Capacity 20 l	1	9.920 643
QMR 25	Capacity 25 l	1	9.920 644



### 2 Distillation unit FBA

**Determination of the inorganic total fluoride**

Behr

FBA distillation unit

behrotest® distillation unit to determine inorganically bound total fluoride

In highly contaminated inorganic wastewater with a fluoride ionic concentration greater than 0.2 mg/l determination of the inorganic bound total fluoride takes place after digestion and distillation. The behrotest® distillation unit combines all components required for distillation on a stable laboratory stand. The unit is also suitable for larger analysis series due to the heating control system.

The single components are:

Distillation equipment made of borosilicate glass for acid steam distillation, contact thermometer, heating mantles for distillation flasks and volumetric flasks.

Type	Description	PK	Cat. No.
FBA	Distillation unit for total fluoride	1	9.843 806



### 3 Extraction unit EX 1000

**Determination of hydrocarbon EX 1000 extraction unit**

The PFL sampling bottle is ideal for direct extraction in terms of ISO 9377-2. With its solid glass stopper, in addition it offers a decisive advantage in handling and safety.

The funnel separator facilitates the separation of the organic phase. The individual functional parts of the separator can be easily separated. The user can thus transfer the organic phase quickly and simply in one step to the clean-up column. In addition the individual functional parts are particularly easy to clean.

Type	Description	PK	Cat. No.
EX 1000	Extraction unit	1	9.843 800



### 1 behrotest® compact equipment for elution of solid matters

Percolation equipment to jointly examine the elution behaviour of inorganic and organic substances in solid matters. Including hose pump with 2 channels and 2 different pump tubes for a flow rate of 0.25-12 ml/min. and 0.66-33 ml/min. (Other pump tubes upon request).

Behr

- Complete equipment, consisting of
- Percolation columns with pre-filters on sturdy stands
  - Storage bottle with cap and tube
  - Tube
  - Eluate lead made of PTFE
  - Storage vessel made of glass, cap with ventilation tube



Type	Description	PK	Cat. No.
KEB 101	Complete equipment, elution of solid matters for one sample w/ GS 101 glass column. Incl. two-channel hose pump and 2 tubes for different flow rates	1	9.843 931
KEBE 101	Supplementary equipment, elution of solid matters for one sample w/ GS 101 glass column. Incl. two-channel hose pump and 2 tubes for different flow rates	1	9.843 932
GS 101	Glass column, 90 x 500 x 5 mm, thread GL 100	1	9.843 928
SRR	Tube set, 4 pump tubes made of Tygon, flow rate of 0.25 - 12 ml/min	1	9.843 929
SVV	Tube set, 4 pump tubes made of Tygon, flow rate 0.66 - 33 ml/min	1	9.843 930

### 2 CUS 2 clean-up-station

The behrotest® clean-up column with glass frit corresponds exactly to the provisions of ISO 9377-2.

Behr

The practical twin stand provides safe support for two complete clean-up units with dropping funnel, clean-up columns and Kuderna-Danish flasks. Thus, the complete clean-up procedure can be carried out for two samples simultaneously - without delays due to time-consuming equipment or sample manipulation.

Clean-up-Station, supplied as: stand, 2 graduated round, bottom flasks, 100ml, 2 columns with grade 2 frits



Type	Description	PK	Cat. No.
CUS 2	Clean-up-Station	1	9.843 801

### 3 KOSTA 2 nitrogen station

The two-stage concentration of the organic phase is concluded by reducing the extract down to less than 1 ml under a mild nitrogen flow.

Behr

In the behrotest® nitrogen station, a distributor leads the nitrogen flow via two individually adjustable tubes into the Kuderna-Danish flasks. Thus, two samples can be reduced simultaneously in accordance with ISO 9377-2.



Type	Description	PK	Cat. No.
Kosta 2	Nitrogen station	1	9.843 802

## Trace analysis/Tubes



### 1 2 Test Tubes, PFA

**NEW!**

Saint Gobain

These unbreakable test tubes are excellent for trace metal analysis. They are inert, non-contaminating, and transparent for easy viewing of contents. They withstand temperature extremes. Can be sterilized repeatedly.

- Made from fluoropolymer PFA resin
- Low metal ion content
- Inert

Capacity ml	Int. diam. mm	Ext. diam. mm	Length mm	Description	PK	Cat. No.
5	8	10	120	without cap	1	6.267 607
15	14	16	150	without cap	1	6.267 608
25	16	19	170	without cap	1	6.267 609
50	19	22	220	without cap	1	6.267 610
60	19	22	230	without cap	1	6.267 611
5	8	10	132	with cap	1	6.267 612
10	10	12	152	with cap	1	6.267 613
15	14	16	162	with cap	1	6.267 614
20	14	16	175	with cap	1	6.267 615
25	16	19	185	with cap	1	6.267 616
50	19	22	235	with cap	1	6.267 617
60	19	22	245	with cap	1	6.267 618



### 3 Sample tubes, PFA

VITLAB

Tube for sample preparation, centrifugation and for use in autosampler racks. With or without individually calibrated ring mark at 10 ml with GL 25 screw cap made from PFA or PE stoppers. Autoclavable.

Capacity ml	Height mm	Diam. mm	Description	PK	Cat. No.
12	110	16	with ring mark and stopper	1	9.315 344
12	110	16	without ring mark and stopper	1	9.315 343
15	110	22	with ring mark and screw cap	1	9.315 345
15	110	22	without ring mark and screw cap	1	9.315 346



### 4 Centrifuge tubes Oak Ridge Typ 3114, FEP

Thermo Scientific

Teflon® FEP with Tefzel® ETFE screw cap. Resistant to all acids, bases and solvents. Autoclavable. Operating temperature range -100 to +150°C. Can be used brim-full in refrigerated centrifuges at up to 50000xg rcf. Leak-proof. Accessory sealing cap assemblies are available for all sizes.

Type	Volume ml	Diam. mm	Height mm	PK	Cat. No.
3114	10	16.0	81.5	1	9.315 701
3114	30	25.5	93.7	1	9.315 702
3114	50*	28.8	107.7	1	9.315 703

\* Capacity: 46ml to the brim.

Teflon® and Tefzel® are a registered trademark of DuPont.



### 5 Watch Glasses, PTFE

**NEW!**

Saint Gobain

This ultra-shallow, concave dish is ideal for holding, weighing, crystallizing, evaporating and drying small samples of liquids, powders and solids. It can also be used as a convex cover for beakers and Erlenmeyer flasks to limit airborne contaminants, while still allowing gas exchange. All sizes are molded to the same contour for easy stacking. Shatter-proof PTFE material is chemical resistant and easy to clean.

- Inert-chemically resistant
- Smooth and unbreakable
- Use as beaker covers

Diam. mm	PK	Cat. No.
50	1	6.267 619
75	1	6.267 620
100	1	6.267 621
125	1	6.267 622
150	1	6.267 623

### 1 Evaporating Dish, PFA



Saint Gobain

The PFA Evaporating Dish design promotes evaporation of excess fluids to produce a concentrated solution or solid precipitate. The flat bottom provides good surface contact with a heat source, while the non-stick angled walls direct fluids to the base, which limits condensation on the dish wall. This PFA dish can be used in a wide range of temperatures, from cryogenics to 260°C. The dish is also ideal for holding solid samples or small volumes of liquid. Features a broad spout for easy pouring.

- Chemically inert
- Ideal for trace metal analysis
- Transparent for easy viewing
- Perfect for microwave use
- Smooth, non-stick surface



Capacity ml	Height mm	PK	Cat. No.
100	29.5	1	6.267 447

### 2 Evaporating Dish, PTFE



Saint Gobain

This PTFE Evaporating Dish can be used to concentrate a solution or to create solid precipitates. The evaporating dish can also be used as a shallow bath, as a drying dish or as a beaker cover to protect contents from dust and other contaminants. PTFE material is unbreakable, chemically inert, and withstands temperatures up to 288°C. The non-stick surface is stain resistant and easy to clean. Features a broad spout for easy pouring.

- Chemically inert
- Ideal for ultra-pure samples
- Withstands temperatures up to 288°C



Capacity ml	Height mm	PK	Cat. No.
100	37.3	1	6.267 448
400	45.2	1	6.267 449

### 3 Petri Dish, PFA



Saint Gobain

The non-stick, chemically inert surface of PFA petri dishes is non-contaminating and ideal for high-purity biological applications that range in temperature from -200°C to 260°C. Each petri dish is shallow, cylindrical and translucent with a flat bottom that allows for easy observation and uniform specimen growth. Ideal for cell culture or drying applications. Stackable one-piece design does not require a separate lid. Can be autoclaved for repeat use.

- Inert surface
- Non-stick
- Non-protein binding
- Transparent
- Uniform flat bottom



Capacity ml	Ext. diam. mm	Height mm	PK	Cat. No.
20	50	10	1	6.267 436
100	100	15	1	6.267 437

### 4 LLG- Beakers, low form, PTFE



Manufactured from high quality PTFE with excellent resistance to all chemicals. Manufactured from molded, pure PTFE with a smooth internal finish. Flat base enables a flat contact to the surface for effective heat transfer. PTFE beakers have excellent resistance to chemicals and temperature stability from -200°C to +260°C.



Capacity ml	Diam. mm	Height mm	PK	Cat. No.
50	43	55	1	6.267 346
100	54	68	1	6.267 347
250	66	97	1	6.267 348

## Trace analysis/Tubes



1

### 1 Beakers, low form, PTFE

With reinforced rim and spout. Ungraduated.  
Excellent chemical and temperature resistance.

BRAND

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
5	20	26	1	9.013 722
10	24	33	1	9.013 723
25	32	47	1	9.013 724
50	43	55	1	9.013 725
100	54	68	1	9.013 726
150	59	75	1	9.013 727
250	66	97	1	9.013 728
400	80	125	1	9.013 729
500	100	125	1	9.013 731
1000	105	155	1	9.013 734
2000	125	205	1	9.013 735



2

### 2 Griffin Beakers, PTFE

**NEW!**

Saint Gobain

Griffin Beakers, PTFE are non-contaminating and completely inert to highly corrosive reagents. They are non-wettable, unbreakable, lightweight, and heat resistant. Easy to clean, these beakers have a broad spout for easy pouring. They can be heated on a hot plate up to 288°C when proper care is exercised. The specially molded bottom allows rapid heat transfer.

- Can be heated to 550°F (288°C) and used in a microwave
- Chemically resistant to acids and bases
- Ultra-pure

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
10	21.8	32.1	1	6.267 424
30	32.9	45.0	1	6.267 425
50	38.9	52.3	1	6.267 426
100	48.3	65.5	1	6.267 427
250	65.7	92.3	1	6.267 428
400	76.0	107.0	1	6.267 429
600	85.0	124.5	1	6.267 430
1000	104.7	146.2	1	6.267 431



3

### 3 Beakers, Griffin, PFA

**NEW!**

Saint Gobain

Griffin Beakers, PFA have a specially machined bottom designed for rapid, efficient heat transfer. They are transparent for easy viewing and graduated for easy measuring. They feature a non-stick, easy-to-clean surface.

- Can be heated up to 260°C and used in a microwave
- Ideal for ultra-pure applications
- Low metal ion content for trace metal analysis

Capacity ml	Diam. mm	Height mm	PK	Cat. No.
50	42.7	43.3	1	6.267 432
125	59.7	60.8	1	6.267 433
250	71.6	76.2	1	6.267 434
500	88.8	89.7	1	6.267 435



4

### 4 Griffin beakers, ETFE

VITLAB

Transparent. With easily readable, printed black scale.  
Very good chemical resistance and very high thermal stability from -100°C to +150°C.  
To preserve markings, cleaning at greater than 60°C is not recommended.

Capacity ml	Grad. ml	Diam. mm	Height mm	PK	Cat. No.
25	5	32	50	1	9.013 702
50	10	39	59	1	9.013 703
100	20	50	72	1	9.013 704
250	50	67	96	1	9.013 706
400	50	77	109	1	9.013 707
500	100	88	122	1	9.013 192
600	100	91	125	1	9.013 708
1000	100	105	143	1	9.013 710

### 1 Griffin beakers, PFA

Transparent. With a raised scale. Excellent chemical resistance and very high thermal stability from -200°C to +260°C

VITLAB

Autoclavable at 120°C (2 bar) according to DIN EN 285.

The advantages of PFA

- Specially suitable for use in trace analysis
- Ideal for sensitive and valuable samples
- Long-term maintenance of low-concentration reference materials in PFA containers
- No memory effects
- Practically no carryover, no contamination due to the extremely hydrophobic, anti-adhesive and smooth surfaces
- High thermal stability, from -200°C to +260°C
- Chemical inertness against nearly all chemicals
- Good transparency and dimensional stability
- Easy to clean
- Use of high purity raw materials



Material	Capacity	Grad.	Diam.	Height	PK	Cat. No.
	ml	ml	mm	mm		
PFA	25	5	32	50	1	9.013 210
PFA	50	10	39	59	1	9.013 211
PFA	100	20	50	72	1	9.013 212
PFA	250	50	67	96	1	9.013 213
PFA	500	100	88	122	1	9.013 214
PFA	1000	100	109	141	1	9.013 215

### 2 Round-bottom flasks, PFA

Transparent, neck with NS 29/32. Can be used as a safety flask with a rotary evaporator.

VITLAB

High thermal stability and chemical resistance.

The advantages of PFA:

- Especially suitable for use in trace analysis
- Long-term maintenance of low-concentration reference materials in PFA containers
- No memory effects
- Practically no carryover, no cross-contamination due to the extremely hydrophobic, anti-adhesive and smooth surfaces
- High thermal stability, from -200°C to +260°C, autoclavable.
- Chemical inertness against nearly all chemicals
- Good transparency and dimensional stability
- Easy to clean
- Use of high purity raw materials



Capacity	Diam.	Height	PK	Cat. No.
ml	mm	mm		
100	65	117	1	9.011 896
250	88	147	1	9.011 897
500	107	177	1	9.011 898

### 3 Erlenmeyer flasks, graduated, PFA

Saint Gobain

Erlenmeyer flasks, PFA are chemically inert for ultra-pure applications. The neck of each flask is slightly rounded for pouring and can be plugged with a stopper. The conical shape and neck design allow contents to be mixed or stirred with reduced risk of splashing. The narrow neck also helps limit evaporation and contamination. PFA material has the lowest metal ion content of any fluoropolymer. Ideal for use in titration and for the preparation of microbial cultures.

- Chemically inert for ultra-pure applications
- Graduated
- Transparent for easy viewing
- Non-stick PFA surface-easy to clean
- Can be used in a microwave



Capacity	Height	Neck diam.	PK	Cat. No.
ml	mm	mm		
100	97	18	1	6.267 465
200	123	23	1	6.267 466
300	130	23	1	6.267 467



## Trace analysis/Tubes



### 1 Dropper bottle Type 2414, FEP/ETFE

Teflon® FEP bottle with Tefzel® ETFE dropper and cap. Excellent chemical resistance. Autoclavable.

Thermo Scientific

Capacity ml	PK	Cat. No.
30	1	9.073 300

Teflon® and Tefzel® are registered trademarks of DuPont.



### 2 Narrow-mouth bottles with screw thread

PFA. Transparent, with tightly sealing screw closure (saw-tooth thread). High temperature resistance from -200 to +250°C. With PFA screw cap equipped with built-in sealing lip specially developed to enable use as mailing bottles for high-purity chemicals and samples. Autoclavable.

VITLAB

Capacity ml	Thread S	Diam. mm	Height mm	PK	Cat. No.
50	28	37	86	1	9.073 740
100	28	45	120	1	9.102 420
250	28	61	160	1	9.102 422
500	28	76	190	1	9.102 424
1000	28	96	240	1	9.102 426



### 3 Narrow-mouth bottles with cap, PFA

**NEW!**

Saint Gobain

These unbreakable PFA bottles can be used for storage of virtually all corrosive chemicals, including hydrofluoric, nitric, and perchloric acids. PFA bottles are chemically inert, heat resistant with a non-stick, easy-to clean surface and are ideal for environmental sampling. The inert fluoropolymer cap liner ensures leak-proof sealing. Supplied with PFA caps.

- Ultra-pure, the lowest metal ion content of all fluoropolymers
- Unbreakable
- Chemically inert
- Non-stick, easy to clean
- Use for storage in pharmaceutical and semiconductor processing (intermediate stages)

Capacity ml	Height with cap mm	Neck diam. mm	PK	Cat. No.
100	100,8	16.7	1	6.267 438
250	133,7	16.5	1	6.267 439
500	165,1	17.0	1	6.267 440
1000	202,4	25.3	1	6.267 441



### 4 Narrow-mouth bottles Type 1600, FEP with screw cap ETFE

Thermo Scientific

Transparent. Teflon® FEP bottle with leakproof Teflon® ETFE screw cap. Highly resistant to chemicals, corrosion and temperature. Autoclavable - cap should be unscrewed and sat loosely on neck before autoclaving.

Type	Capacity ml	Screw cap diam. mm	PK	Cat. No.
1600	30	20	1	9.103 011
1600	60	20	1	9.103 012
1600	125	24	1	9.103 013
1600	250	24	1	9.103 014
1600	500	28	1	9.103 015
1600	1000	38	1	9.103 016
1600	2000	38-430*	1	9.103 017

\* with high form thread.

Teflon® and Tefzel® are registered trademarks of DuPont.

### 1 Wide-mouth bottles with screw thread, PFA

Transparent, with tightly sealing screw closure (saw-tooth thread S and built-in sealing lip). Excellent resistance to temperature (from -200 to +250°C). An extremely smooth wall surface and the outstanding material properties mean that high-purity chemicals can be stored without loss of quality. Autoclavable. VITLAB

Capacity	Thread	Ext. diam.	Height	PK	Cat. No.
ml	S	mm	mm		
250	40	61	150	1	9.073 742
500	40	76	179	1	9.073 741
1000	40	96	217	1	9.073 743
2000	40	130	245	1	9.102 430



### 2 Wide-mouth bottles with cap, graduated, PFA

These PFA graduated bottles have a convenient wide-mouth opening for easy filling and pouring. These unbreakable, chemically inert bottles can be used for storage of virtually all corrosive chemicals. PFA material is heat resistant, non-stick and easy-to-clean. Each includes a PFA cap with an inert fluoropolymer cap liner to ensure leak-proof sealing. Ideal for environmental sampling, or for storage in pharmaceutical and intermediate-stage semiconductor processing applications. Saint Gobain

- Wide-mouth for easy filling
- Ultra pure and chemically inert
- Non-stick and easy-to-clean

Capacity	Height with cap	Neck diam.	PK	Cat. No.
ml	mm	mm		
20	60,3	16.4	1	6.267 442
100	106,5	25.7	1	6.267 443
250	136,8	25.7	1	6.267 444
500	173,8	33.9	1	6.267 445
1000	207,2	36.8	1	6.267 446



### 3 Wash bottles, PFA

These wash bottles feature a wide-mouth opening for convenience in filling and pouring of all types of liquids. Non-stick and easy to clean, fluoropolymer construction provides superior flex life and mechanical strength. As PFA contains the lowest concentration of trace metal ions of all fluoropolymers, these bottles are ideal for ultra-pure applications and environmental work. Saint Gobain

- Wide-mouth for easy filling
- Chemically inert and leak-proof
- Flexible nozzle with 360° swivel; small orifice allows accurate content dispensing
- Transparent and break resistant
- Molded-in graduation marks

Capacity	Height with cap	Neck diam.	PK	Cat. No.
ml	mm	mm		
100	159,5	25.5	1	6.267 480
250	195,3	25.6	1	6.267 481
500	293,7	33.9	1	6.267 482
10000	317,5	36.9	1	6.267 483



### 4 Wash bottles Type 2403, FEP, with screw cap, ETFE

Screw cap, jet and feed tube are one-piece moulded from ETFE. Ideal for contamination-free work and suitable for trace element analysis. Thermo Scientific

Capacity	Screw cap diam.	PK	Cat. No.
ml	mm		
125	24	1	9.223 231
250	24	1	9.223 232
500	28	1	9.223 233
1000	38-430	1	9.223 234



## Trace analysis/Tubes



### 1 Measuring cylinders, graduated, PFA

**NEW!**

Saint Gobain

These graduated cylinders offer all the advantages of non-stick inert fluoropolymers. PFA is temperature resistant from -196°C to 260°C and has the lowest metal ion content. As a result, Chemware® cylinders are excellent for trace metal analysis.

- Easy-to-read graduations
- Smooth pouring, drip-free spout
- Broad base for stability

Capacity ml	Height mm	PK	Cat. No.
10	118.5	1	6.267 450
30	165.9	1	6.267 451
50	216.7	1	6.267 452
100	231.8	1	6.267 453
200	281.8	1	6.267 454
300	295.3	1	6.267 455
500	352.4	1	6.267 456
1000	316.7	1	6.267 457



### 2 Volumetric flasks, PFA, class A, with screw cap

VITLAB

Highly transparent.

Ring mark individually calibrated to `In`.

Class A tolerances according to DIN EN ISO 1042.

The PFA screw cap guards against contamination.

Outstanding chemical resistance, can be used with strong oxidants, highly concentrated acids and alkalis, hydrocarbons, and ketones.

With laser-engraved lot number and batch certificate. Thermal stress up to 121°C (autoclaving) does not permanently exceed the tolerance limit.

To preserve the ring mark, do not clean at temperatures exceeding 60°C.

The advantages of PFA

- Long-term maintenance of low-concentration reference materials in PFA containers
- No memory effects
- Practically no carryover, no cross-contamination due to the extremely hydrophobic, anti-adhesive and smooth surfaces
- High thermal stability, from -200°C to +260°C
- Chemical inertness against nearly all chemicals
- Good transparency and dimensional stability, suitable for volumetric instruments
- Easy to clean
- Use of high purity raw materials

Capacity ml	Height mm	Neck thread GL	Tolerance ± ml	PK	Cat. No.
10	90	18	0.04	1	9.276 919
25	115	18	0.04	1	9.276 920
50	150	18	0.06	1	9.276 921
100	180	18	0.10	1	9.276 922
250	235	25	0.15	1	9.276 923
500	270	25	0.25	1	9.276 924



### 3 Gas washing bottles, PFA

VITLAB

With cap with S40 screw thread and frit made of PTFE. Approx. pore size 50 µm for optimal formation of gas bubbles into the liquid. Because all parts are made of high-quality fluorocarbon resins, a broad range of applications are possible. The threaded inlet and outlet connections accept 4 x 6mm i.d. x o.d. tubing, (1000 ml version: 5 x 8mm i.d. x o.d. tubing).

Capacity ml	Height mm	Diam. mm	PK	Cat. No.
250	160	61	1	9.110 320
500	190	76	1	9.110 322
1000	240	96	1	9.110 324

### 1 Gas washing columns, FEP/PTFE

**(NEW)**

BOLA

PTFE top with two threaded connections. The standard PTFE frit has a pore size of approx. 3 µm and is screwed on the riser tube with an M8x1 thread. It can be exchanged with the PTFE gas distributor with fine bores which needs a lower primary pressure.

Temperature resistance: from -200°C to +250°C

- transparent
- unbreakable
- frit easily exchangeable

Type	Capacity	Height	For external tube/pipe	PK	Cat. No.
	ml	mm	mm		
Column	500	400	8	1	9.110 306
Column	1000	700	8	1	9.110 308



### 2 Sample jars with screw cap, PFA

VITLAB

With screw cap made of PFA. Cylindrical, tall shape.

Ideal for sample collection, transport and storage of samples.

The advantages of PFA

- Specially suitable for use in trace analysis
- Ideal for sensitive and valuable samples
- Long-term maintenance of low-concentration reference materials in PFA containers
- No memory effects
- Practically no carryover, no cross-contamination due to the extremely hydrophobic, anti-adhesive, smooth surfaces
- High thermal stability from -200°C to +260°C, autoclavable at 121°C (2 bar) according to DIN EN 285
- Chemical inertness against nearly all chemicals
- Good transparency and dimensional stability
- Easy to clean
- Use of high purity raw material

Capacity	Neck thread	Diam. with cap	Height with cap	PK	Cat. No.
ml	GL	mm	mm		
30	40	38	54	1	9.401 810
60	40	38	90	1	9.401 812
90	56	54	62	1	9.401 814
180	56	54	112	1	9.401 816



### 3 Jars, PFA

**(NEW)**

Saint Gobain

PFA jars store solutions, paste and bulk materials with no concern about leaching, corrosion, contamination or evaporation. They are resistant to corrosive liquids, acids, solvents, sensitive reagents, and staining solutions. PFA jars feature a large mouth for easy access and non-stick surface for easy cleaning. There is an area for identification marking on the side of the jars. Stackable, these jars have a knurled top for secure grip to facilitate easy opening and closing.

- Chemically resistant
- Ultra-pure
- Heat resistant and usable to cryogenic temperatures
- Secondary inner seal design for safety and integrity
- Ideal for storing digestion samples

Capacity	Diam. with cap	Height with cap	PK	Cat. No.
ml	mm	mm		
60	50,8	46,8	1	6.267 468
120	66,0	53,2	1	6.267 469
240	66,8	96,8	1	6.267 470
360	84,4	90,6	1	6.267 471
480	65,2	94,3	1	6.267 472
1000	106,7	150,0	1	6.267 473
2000	104,1	269,1	1	6.267 474



### 4 Premium screw cap, TpCh260

DURAN Group

TpCh260 (similar to PFA), with PTFE coated silicone seal. Colourless (to avoid risk of leaching) and temperature resistant from -196°C to +260°C. Ideal for dry sterilization. USP/FDA standard conformity. DFM available on request. Autoclavable.

With Retrace code (Batch Identification). Certificate available via the internet.

Neck thread	Diam.	Height	PK	Cat. No.
GL	mm	mm		
25	32	32	1	9.072 159
45	51	26	1	6.205 218





### 1 Premium pouring ring for Premium screw cap, TpCh260

Colourless pouring ring TpCh260, height 4mm. Temperature resistant from -196°C to +260°C.

DURAN Group

Neck thread	PK	Cat. No.
GL 45	1	6.803 677



### 2 Sealing tape, PTFE

For covering areas which require protection against chemicals of all types at temperatures of -150 to +260°C. Non-swelling. Easy loosening of seams even after continuous operation. Supplied in rolls as outlined below.

Width	Length	Wall thickness	PK	Cat. No.
mm	cm	mm		
12.8	670	0.1	1	9.404 952
24.0	670	0.1	1	9.404 955



### 3 Raschig Rings for distillation, PTFE

**(NEW)**

Saint Gobain

- Packing for distillation columns
- Chemically inert
- High surface area per unit of volume
- Minimum resistance to gas and liquid flow

Length	Diam.	PK	Cat. No.
mm	mm		
3	3	1	9.012 473
6	6	1	9.012 476



### 4 Boiling Stones, PTFE

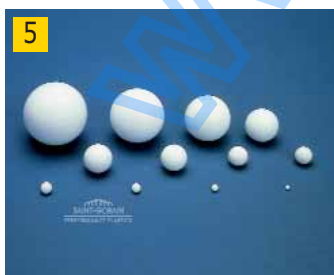
**(NEW)**

Saint Gobain

Ultra-pure, virgin PTFE chips promote gentle, efficient boiling and help prevent overheating, even of highly volatile liquids. Ideal for continuous extraction methods. Stones minimize "bumping" during reflux and distillation. The boiling stones are not affected by acids, hydrocarbons, ketones, esters, alcohols or alkalis. They are easily cleaned and non-contaminating. Shows no trace of face acidity or alkalinity. They will not scratch or abrade glassware and leave no residue. Usable up to 288°C.

- Chemical resistant
- Ideal for boiling organic liquids
- Minimizes superheating

Weight	PK	Cat. No.
g		
450	1	9.012 310



### 5 Balls, PTFE

**(NEW)**

Saint Gobain

PTFE balls minimize "bumping" during boiling. They are inert and can be used up to 288°C. 100 balls per package.

- For column packing and mixing beds
- Resistant to most chemicals
- Non-contaminating

Diam.	PK	Cat. No.
mm		
3.2	100	9.012 453
6.4	100	9.012 456
9.5	100	9.012 459



### 1 Spatulas, PTFE fluoropolymer, coated

**NEW!**

Saint Gobain

These spatulas are designed for use in the most severe laboratory conditions. They are made of nickel-plated stainless steel and fluoropolymer coating. The coating eliminates surface buildup or loss of valuable sample due to sticking. Will not scratch or damage delicate surfaces.

- Extra heavy-duty PTFE coatings
- Resistant to low and high temperatures
- Use for handling chemically active materials

Description	Length mm	Figure	PK	Cat. No.
Double-ended spatula	200	a	1	9.220 940
Spoon spatula	225	b	1	9.220 945
Tapered pallet	102	c	1	9.220 950



### 2 Stirrers, PTFE

**NEW!**

Saint Gobain

These stirrers are ideal for scraping precipitates and residues. Chisel tip on one end and diagonal cut on other end permits applications in confined vessels. Chemically inert PTFE offers resistance to adhesion of any material. Unbreakable and heat resistant to 288°C, they will not crack or break under severe conditions, such as thermal and mechanical shock, and will not scratch glassware.

- Highly inert PTFE coating
- Non-stick, easy to clean
- Low and high temperature resistant

Length mm	PK	Cat. No.
100	1	6.267 604
150	1	6.267 605
200	1	6.267 606



### 3 Stirring Rods, PTFE® Fluoropolymer

**NEW!**

Saint Gobain

Contains fully enclosed steel insert for stiffness, yet can be bent to various shapes for use as a powered stirrer. Heat resistant to 288°C and completely inert to highly corrosive reagents. Antistick properties facilitate cleaning.

- Inert to corrosives
- Easy to clean
- Bendable into shapes

Length mm	PK	Cat. No.
204.8	1	6.267 420
255.6	1	6.267 421
306.4	1	6.267 422
410.6	1	6.267 423



### 4 Forceps, PTFE Fluoropolymer, coated

**NEW!**

Saint Gobain

Forceps are made of nickel-plated steel and have an extra heavy-duty coating of PTFE. The forceps have the same great features as the spatulas and tongs.

- Ridged grips prevent slips
- Inner pin retains closed position
- Rounded precision tip for accuracy and safety

Length mm	PK	Cat. No.
116	1	9.171 555



### 5 Forceps, PTFE

**NEW!**

Saint Gobain

Made from PTFE resin with an encapsulated metal insert for strength. Chemically inert and non-contaminating, these forceps are ideal for laboratory work involving hot, cold, delicate or highly reactive materials.

- Chemically inert
- Non-contaminating
- Will not scratch delicate surfaces

Length mm	PK	Cat. No.
150	1	6.267 478





### 1 Tong, PTFE fluoropolymer, coated

**NEW!**

The stainless steel tongs are covered with extra-heavy, non-stick PTFE coating and have the same great feature as the PTFE coated spatulas.

- Opposing grip handle for easy operation
- Coated tension screw will not corrode
- Contoured jaw enables handling of crucibles and other objects
- Tapered tips for enhanced grip; rounded for safety
- Use for handling chemically active materials

Saint Gobain

Length mm	PK	Cat. No.
240	1	6.267 479



### 2 Dipper, PFA

**NEW!**

Resistant to most chemicals, the Chemware® dipper is ideal for ultra-pure applications and use with aggressive media. Handle design allows dipper to hook over edge of vessel, eliminating dripping of corrosive fluids onto surrounding surface. Use with containers that have at least an 80mm opening.

- Non-contaminating
- Superior chemical resistance
- Lowest concentration of metal ions of any fluoropolymer

Saint Gobain

Diam. mm	Length mm	PK	Cat. No.
76	180	1	6.267 475



### 3 Chemware® Sieves, PFA

**NEW!**

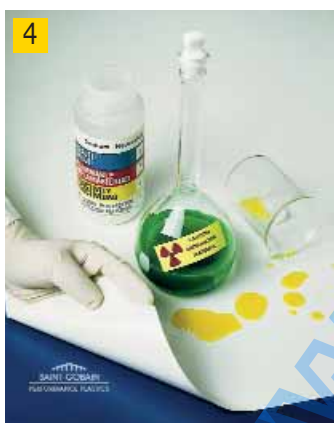
Resistant to most chemicals, Chemware® sieves are ideal for ultra-pure applications.

Two mesh sizes are available-0.5mm and 1.0mm. Use with containers that have openings of 80mm or greater and a capacity ranging from 300ml to 1000ml.

- Non-contaminating and resistant to most chemicals
- Ideal for coarse sorting or draining of aggressive media
- Handle can be hung over the edge of the vessel for draining

Saint Gobain

Aperture size mm	Diam. mm	Length mm	PK	Cat. No.
0.5	76	180	1	6.267 476
1.0	76	180	1	6.267 477



### 4 Bytac® Bench protectors

**NEW!**

Bytac® Bench protectors, FEP Film with Vinyl or Aluminum Backing. Inert to most chemicals - Non-stick; easy to clean - Use to resurface bench tops and line fume hoods. Contrasting work surface for viewing color changes during titrations. Protects surfaces against absorption of radioactive chemicals.

Vinyl backing is recommended for all applications up to 93°C

Aluminium foil-backing is resistant to high temperatures up to 182°C for up to one hour

Saint Gobain

Width mm	Length m	Description	PK	Cat. No.
635	4.6	FEP/Vinyl	1	9.106 300
320	4.6	FEP/Vinyl	1	6.267 458
100	33.0	FEP/Vinyl	1	6.267 459
50	33.0	FEP/Vinyl	1	6.267 460
25	33.0	FEP/Vinyl	1	6.267 461
635	4.6	FEP/Alu	1	9.106 310
320	4.6	FEP/Alu	1	6.225 629
100	33.0	FEP/Alu	1	6.267 462
50	33.0	FEP/Alu	1	6.267 463
25	33.0	FEP/Alu	1	6.267 464



### 5 Mini-Sampler, PTFE

Bürkle

For ultrapure sampling.

Also suitable for viscous oils.

Complete with one PFA Sample Jar 180 ml, 5 m PTFE suction tubing (6 x 8 mm), one tubing cutter, one stainless steel tubing weight and 20 seal-it safety seal labels in case.

Type	PK	Cat. No.
Mini sampler	1	9.303 975

### 1 Sampler LiquiSampler, PTFE/FEP

DIN 53242. For liquids. Made of ultra pure and chemically inert PTFE/FEPPP for contamination-free sampling. Practical push button, single-handed operation. Suitable for point, cross-sectional, and bottom sampling. Ideal for sampling from open and closed drums, kegs, tanks, silos, water sources (ponds, lakes, streams, rivers). Suitable for all commercial kegs and drums with openings of at least 25mm diameter. All surfaces are non-porous and crevice-free preventing accumulation of dirt. Only round-profile screwthreads, suitable for food hygiene applications, are used. Simple to dismantle and clean. Bürkle

Material	Length mm	Diam. mm	PK	Cat. No.
PTFE/FEP	600	25	1	6.255 307
PTFE/FEP	1000	25	1	9.303 950
PTFE/FEP	2000	25	1	9.303 951



### Sampler ViscoSampler, PTFE/FEP

Ultra-pure sampler with powerful suction for tough substances. Choice of construction. PTFE/FEP. Bürkle  
Specially designed for tough substances, such as slime, slurries, wet clay and soil samples, sediments, oils, emulsions and creams.  
The filter flask sucks up and discharges the material. All surfaces are non-porous and crevice-free, preventing dirt accumulation. Only round-profile threads, suitable for food hygiene applications, are used. Allow easy dismantling and cleaning.

Material	Length mm	Diam. mm	PK	Cat. No.
PTFE/FEP	600	25	1	6.803 102
PTFE/FEP	1000	25	1	9.303 960 2
PTFE/FEP	2000	25	1	9.303 961



9.303 960

### 3 Bottletop Dispenser Dispensette® TA, Analog

The product range of Dispensette® bottle-top dispensers is well-known for its wide variety of applications. The wide range of Dispensette® dispensers provides premium dispensing options for the complete spectrum of liquid reagents. The Dispensette® TA provides outstanding performance for precise volume dispensing of high-purity media for trace analysis. Also suitable for HF with platinum-iridium valve spring. BRAND

**General features of the Dispensette® TA bottle-top dispenser:**

- Plastics in contact with media consist of high-purity materials such as PTFE, ETFE, FEP, and PFA. The purest sapphire is used for replaceable valves. Depending on the application, platinum-iridium or tantalum are available as spring materials.
- A field-tested cleaning process before use in trace analysis is described in the operating manual.
- If contamination of the bottle contents must be avoided, we recommend using the device without the SafetyPrime™ recirculation valve.
- The 45 mm standard thread plus the included adapters fit most common lab bottles.
- The valve block can be rotated 360° so that the bottle label always faces the user for safety.
- Telescoping filling tube adjusts to different bottle sizes.
- Easy disassembly for replacement of the dispensing cartridge.

**Items supplied:** Dispensette® TA, DE-M marking, with performance certificate, discharge tube, telescoping filling tube, SafetyPrime™ recirculation valve and recirculation tube (optional), mounting tool and bottle adapters GL 28/S 28 (ETFE), GL 32 (ETFE) and S40 (PTFE), operating manual.

Volume ml	Grad. ml	Accuracy max. vol. (≤ ± R%)	Precision max. vol. (≤ CV%)	Valve spring	Recycle valve	PK	Cat. No.
1 - 10	0.2	0.5	0.1	Pt / Ir	without	1	4.007 914
1 - 10	0.2	0.5	0.1	Pt / Ir	with	1	4.007 915
1 - 10	0.2	0.5	0.1	Tantalum	without	1	4.007 916
1 - 10	0.2	0.5	0.1	Tantalum	with	1	4.007 917



➔ For PTFE/PFA tubings, please see page 143.

### Colorimeters, Lovibond® PFXi series

*Tintometer*

The PFXi series of spectrophotometric colorimeters introduces a unique concept in liquid colour control: RCMSi technology (Remote Calibration & Maintenance Service via internet). Users can benefit from the capability for remote calibration and servicing via the internet - eliminating any costs and time delays associated with servicing and guaranteeing compliance with standards. The PFXi range is supplied with a full range of colour scales for specific markets including, but not limited to, Petroleum, Edible Oils, Pharmaceuticals, Brewing and Honey. Users can upgrade scales remotely at any time. Every PFXi is supplied with colour control software for data analysis (LAN & USB cable provided). Optical glass cells, a certified glass calibration filter, a spare lamp and user instructions included. The PFXi-880 and -995 series are available with an optional integrated heater unit. (This is not available for the PFXi-195). This is a critical feature when dealing with materials such as fats and waxes where temperature needs to be maintained at a constant temperature +10°C above the "Cloud Point" of the material.

Please Note: CIE values and spectral data readings are standard on all the instruments listed below.

Type	For	Colour scale	PK	Cat. No.
PFXi-195/1	Chemicals & Industrial Oils	Pt-Co/Hazen/APHA, Gardner, Iodine	1	<b>9.947 280</b> 1
PFXi-195/2	Petroleum Oils & Waxes	Saybolt, ASTM Color, Pt-Co/Hazen/APHA	1	<b>9.947 281</b>
PFXi-195/4	Beers, Malts & Caramels	EBC (CIE & 430nm), ASBC (CIE & 430nm), Series 52	1	<b>9.947 282</b>
PFXi-195/5	Pharmaceutical Solutions	European & US Pharmacopoeia, Pt-Co/Hazen/APHA	1	<b>9.947 283</b>
PFXi-880/L	Oils and Fats	RYBN colour	1	<b>9.947 284</b>
PFXi-880/P	Fuels and Waxes	Saybolt, ASTM Color, IP Units	1	<b>9.947 285</b>
PFXi-995	Transparent Samples	AOCs-Tintometer®, Gardner, Saybolt, Kreiss, Hess-Ives, Hunter Lab, Iodine colour, ASTM Color, Pt-Co/Hazen/APHA	1	<b>9.947 286</b>
PFXi-995/P	Petroleum Oils and Waxes	Saybolt Colour, ASTM Colour, Pt-Co/Hazen/APHA Colour, Gardner Colour, Lovibond® RYBN, IP Units, CIE Values, Spectral Data	1	<b>9.947 287</b>



### 2 Visual Colorimeter, Lovibond® Tintometer Model F

- Individually housed glass colour standards
- Prismatic optical system for accurate and repeatable colour matching
- Standardised and diffused tungsten-halogen light source
- Replacement inserts simplify cleaning and maintain interior whiteness

*Tintometer*

The Model F is a versatile visual colorimeter for measuring the colour of liquids, solids, powders and pastes in terms of Lovibond units. The user simultaneously compares the colour of light that is either transmitted through or reflected from the sample with that transmitted through a series of glass colour filters in 3 primary colours - red, blue and yellow. The slides are adjusted until a visual colour match is found for the light from the sample and the colour is then expressed in Lovibond RYBN units.

The Model F is supplied with a complete set of Lovibond coloured glass filters (Red 0.1 to 70; Yellow 0.1 to 70; Blue 0.1 to 40; Neutral 0.1 to 3.0), a sample chamber insert for easy cleaning, fused glass cells (one each of 1" and 5¼"), accessories and instructions. An optional solid sample accessory pack is available for measuring light-reflecting products. Includes a 12 Volt a.c. power pack switchable to suit 110/220/Volt supply.

Description	PK	Cat. No.
Tintometer Model F	1	<b>9.947 340</b>

Each instrument is supplied with optical cuvettes of the appropriate path length for the individual colour scales, calibration filter, spare lamp and operating instructions.

### Accessories for visual Colorimeter, Lovibond® Tintometer Model F

*Tintometer*

Description	PK	Cat. No.
1/2" optical glass cell	1	<b>9.947 341</b>
1" optical glass cell	1	<b>9.947 342</b>
5 1/4" optical glass cell	1	<b>9.947 343</b>
Replacement sample chamber insert for Model F	3	<b>9.947 346</b>
Accessory pack for solid sample measurement	1	<b>9.947 347</b>



### 1 Lovibond® Nessleriser Systems, Pt-Co/Hazen/APHA Scale

For colour grading of clear, light yellow liquids such as clear oils, chemicals, petrochemicals and water. Each system covers a set measuring range and includes:

*Tintometer*

- A visual comparator instrument with a long path length, ensuring good sensitivity and accuracy when grading pale samples.
- A selection of Pt-Co/APHA colour standards; stable-coloured glass filters in test discs, which have been precalibrated to give direct Pt-Co Colour readings over set measuring ranges.
- A standardised bench-top light source to ensure constant and uniform lighting conditions for colour matching and therefore consistent and accurate readings.
- Nessler cylinders of the appropriate path length.

**Model**

**Apparatus included**

- AF 329: Nessleriser 2150 with Daylight 2000 Lighting Unit and 113mm (50ml) Nessler cylinders, Nessleriser 2250 upgrade with 250mm Nessler cylinders, Pt-Co discs CAA (0 to 30mg Pt/l) CAB (30 to 70mg Pt/l), NSB (70 to 250mg Pt/l), stand for using Nessleriser with natural light.
- AF 325: Nessleriser 2150 with Daylight 2000 Lighting Unit and 113 mm (50ml) Nessler cylinders, Pt-Co discs NSH (10 to 90mg Pt/l), NSB (70 to 250mg Pt/l), stand for using Nessleriser with natural light.
- AF 328: Nessleriser 2250 with Daylight 2000 Lighting Unit and 250mm Nessler cylinders, Pt-Co discs CAA (0 to 30mg Pt/l), CAB (30 to 70mg Pt/l), stand for using Nessleriser with natural light.

Type	Pt-Co range	PK	Cat. No.
AF 329	0 - 250 mg Pt/l	1	9.947 334
AF 325	10 - 250 mg Pt/l	1	9.947 335
AF 328	0 - 70 mg Pt/l	1	9.947 336



### Nessler Tube, without spout, borosilicate 3.3

For use, for example, with the Nessleriser systems from Lovibond®.

*NORMAX - Fabrica*

Description	Capacity	Dimensions (dia. x H) mm	PK	Cat. No.
	ml			
tall form, graduated at 50 ml	50	20 x 300	1	9.170 621 <b>2</b>
tall form, graduated at 100 ml	100	24 x 375	1	9.170 622
short form, graduated at 50 ml	50	25 x 175	1	9.170 623 <b>3</b>
short form, graduated at 100 ml	100	32 x 200	1	9.170 624



9.170 621



9.170 623

### Reagent tablets for Nessler Tubes



For use for example with the Nessleriser systems from Lovibond®.

*AQUALYTIC*

Type	For	PK	Cat. No.
DPD (Ness) No. 1	Chlorine	100	9.947 079
DPD (Ness) No. 2	Chlorine	100	9.947 080
DPD (Ness) No. 3	Chlorine	100	9.947 081



### 1 QUANTOFIX® test strips

For semi-quantitative determinations. Strips 6mm wide x 95mm long.  
Supplied in packs of 100 strips.

MACHEREY-NAGEL



For	Measuring range	PK	Cat. No.
Aluminium*	0 to 500mg/l Al <sup>3+</sup>	100	9.130 401
Ammonia*	0 to 400mg/l NH <sub>4</sub> <sup>+</sup>	100	9.130 414
Arsenic 10*	0 to 0.5mg/l As <sup>2+/5+</sup>	100	9.130 416
Arsenic 50*	0 to 3.0mg/l As <sup>2+/5+</sup>	100	9.130 415
Arsenic Sensitive*	0 to 0.5mg/l As <sup>2+/5+</sup>	100	9.130 440
Ascorbic acid	0 to 2000mg/l Vitamin C	100	9.130 402
Calcium**	0 to 100mg/l Ca <sup>2+</sup>	60	9.130 417
Carbonate hardness	0 to 20 °d	100	9.130 418
Chlorine*	0 to 100mg/l Cl <sub>2</sub>	100	9.130 419
Chlorine Sensitive CE***	0 to 10mg/l Cl <sub>2</sub>	100	4.005 102
Chloride	0 to 3000mg/l Cl <sup>-</sup>	100	9.130 420
Chromate*	0 to 100mg/l CrO <sub>4</sub> <sup>2-</sup>	100	9.130 403
Cyanide*	0 to 30mg/l CN <sup>-</sup>	100	9.130 421
EDTA	0 to 400mg/l EDTA	100	9.130 432
Formaldehyde*	0 to 200mg/l HCHO	100	9.130 422
Total Iron 1000	0 to 1000mg/l Fe <sup>2+/3+</sup>	100	6.243 754
Total Iron 100	0 to 100mg/l Fe <sup>2+/3+</sup>	100	9.130 439
Glutaraldehyde CE***	0 to 2.5 %	100	9.130 438
Potassium*	0 to 1500mg/l K <sup>+</sup>	100	9.130 423
Cobalt	0 to 1000mg/l Co <sup>2+</sup>	100	9.130 406
Copper	0 to 300mg/l Cu <sup>2+</sup>	100	9.130 407
Concentration of cooling lubricants	0 to 200mmol/l KOH	100	9.130 433
Molybdate*	0 to 250mg/l Mo <sup>6+</sup>	100	9.130 424
Nickel	0 to 1000mg/l Ni <sup>2+</sup>	100	9.130 408
Nitrate/Nitrite	0 to 500mg/l NO <sub>3</sub> <sup>-</sup> , 1 to 80mg/l NO <sub>2</sub> <sup>-</sup>	100	9.130 409
Nitrite	0 to 80mg/l NO <sub>2</sub> <sup>-</sup>	100	9.130 410
Nitrite 3000	0 to 3000mg/l NO <sub>2</sub> <sup>-</sup>	100	9.130 425
Nitrite/pH	0 to 80mg/l NO <sub>2</sub> <sup>-</sup> , pH 6.0 to 9.6	100	6.227 796
Peracetic acid 50 CE***	0 to 50 mg/l PAA	100	6.238 574
Peracetic acid 500 CE***	0 to 500 mg/l PAA	100	9.130 436
Peracetic acid 2000 CE***	0 to 2000 mg/l PAA	100	9.130 437
Peroxide 25	0 to 25mg/l H <sub>2</sub> O <sub>2</sub>	100	9.130 427
Peroxide 100 CE***	0 to 100mg/l H <sub>2</sub> O <sub>2</sub>	100	9.130 411
Peroxide 1000	0 to 1000 mg/l H <sub>2</sub> O <sub>2</sub>	100	9.130 426
Phosphate*	0 to 100mg/l PO <sub>4</sub> <sup>3-</sup>	100	9.130 428
Quaternary ammonium compounds	0 to 1000mg/l Benzalkonium chloride	100	9.130 434
Sulphate	<200 to >1600 mg/l SO <sub>4</sub> <sup>2-</sup>	100	9.130 429
Sulphite	0 to 1000mg/l SO <sub>3</sub> <sup>2-</sup>	100	9.130 412
Zinc*	0 to 100mg/l Zn <sup>2+</sup>	100	9.130 430
Tin	0 to 500mg/l Sn <sup>2+</sup>	100	9.130 413
Multistick for aquarists, total hardness	0 to 25°d	100	9.130 431

\* Test strips with reagent

\*\*Box with 60 test strips and reagent

\*\*\*CE-marked according to the directive for medical products 93/42/EWG.

### 2



### 2 Water hardness test strips, AQUADUR®

For determining water hardness. Supplied in boxes of 100 strips.  
Colour change from green to red.

MACHEREY-NAGEL

Scale gradation °d*	PK	Cat. No.
<3 / >5 / >10 / >15 / >20 / >25	100	9.130 393
<3 / >4 / >7 / >14 / >21	100	9.130 394
<3 / >4 / >8.4 / >14	100	9.130 400

\* German units. Multiply by 1.25 to convert to UK units (°e), and by 10 for US units (mg/l CaCO<sub>3</sub>)

Test strips are also available as individually sealed test strips or as test cards.

### 1 2 MERCKOQUANT® test strips

Other tests on request. Merck

For	Measuring range	PK	Cat. No.
Ammonia	10 to 400 mg/l NH <sub>4</sub> <sup>+</sup>	100	9.129 902
Ascorbic acid	50 to 2000 mg/l	100	9.129 904
Chromate	3 to 100 mg/l CrO <sub>4</sub> <sup>2-</sup>	100	9.129 909
Cyanide	1 to 30 mg/l CN <sup>-</sup>	100	9.129 912
Iron	3 to 500 mg/l Fe <sup>2+/3+</sup>	100	9.129 913
Formaldehyde	10 to 100 mg/l HCHO	100	9.129 914
Total hardness	5 to 25 °dH	100	9.129 916
Total hardness	3 to 21 °dH	100	9.129 918
Total hardness	3 to 21 °dH	1000	9.129 919
Copper	10 to 300 mg/l Cu <sup>2+</sup>	100	9.129 923
Nickel	10 to 500 mg/l Ni <sup>2+</sup>	100	9.129 928
Nitrate	10 to 500 mg/l NO <sub>3</sub> <sup>-</sup>	100	9.129 931
Nitrite	2 to 80 mg/l NO <sub>2</sub> <sup>-</sup>	100	9.129 932
Nitrite	0.1 to 3 mg/l NO <sub>2</sub> <sup>-</sup>	100	9.129 933
Peracetic acid	5 to 50 mg/l	100	9.129 943
Peroxide	0.5 to 25 mg/l H <sub>2</sub> O <sub>2</sub>	100	9.129 934
Sulphite	10 to 400 mg/l SO <sub>3</sub> <sup>2-</sup>	100	9.129 938



### Test kits, VISOCOLOR®

**VISOCOLOR® HE Ammonium.** Highly sensitive test kit for testing of ammonium. MACHEREY-NAGEL

Measuring range (scale gradation): 0.0/0.02/0.04/0.07/0.10/0.15/0.20/0.30/0.40/0.50mg/l NH<sub>4</sub><sup>+</sup>

**VISOCOLOR® ECO Nitrate.** Test kit for Nitrate testing.  
Measuring range (scale gradation): 0/1/3/5/10/20/30/50/70/90/120mg/l NO<sub>3</sub><sup>-</sup>  
This test kit is qualified for the analysis of seawater.

**VISOCOLOR® ECO Nitrite.** Test kit for Nitrite testing.  
Measuring range (scale gradation): 0.0/0.02/0.03/0.05/0.07/0.1/0.2/0.3/0.5mg/l NO<sub>2</sub><sup>-</sup>  
This method is qualified for the analysis of seawater.

**VISOCOLOR® alpha pH 5 to 9.** Test kit for the pH analysis.  
Measuring range (scale gradation): pH 5.0/5.5/6.0/6.5/7.0/7.5/8.0/8.5/9.0  
This test kit is qualified for the analysis of seawater.

**VISOCOLOR® HE Phosphate.** Highly sensitive test kit for Phosphate analysis.  
Measuring range (scale gradation): 0.0/0.05/0.10/0.15/0.20/0.3/0.4/0.6/0.8/1.0mg/l P  
This test kit is qualified for the analysis of seawater.

**VISOCOLOR® HE Oxygen SA 10.** Test kit for the titrimetric analysis of dissolved oxygen in water according to DIN EN 25 813.  
Measuring range: 1 syringe filling is enough for testing 0.2 to 10.0mg/l O<sub>2</sub>. 1 scale line = 0.2mg/l O<sub>2</sub>  
Contents: sufficient for 100 tests with an average oxygen content of 9.0 mg/l  
This test kit is qualified for the analysis of seawater.

**VISOCOLOR® HE Carbonate hardness C 20.** Test kit for carbonate hardness in water as well as for the partial alkalinity. Dual range test kit for carbonate hardness (=m-value) as well as the partial alkalinity (=p-value).  
Measuring range: 1 syringe filling is enough for testing 0.5 to 20.0°d and /or 0.2 to 7.0mmol/l H<sup>+</sup>.  
This test kit is qualified for the analysis of seawater.

**VISOCOLOR® alpha Total Hardness.** Test kit for total hardness.  
Reaction basis: Titration  
Measuring range: 1 drop = 1°d  
Contents: sufficient reagents for 100 tests with an average hardness of 10°d.  
This test kit is qualified for the analysis of seawater after dilution (1+29).



9.304 581



9.304 583



9.304 585

Type	For	PK	Cat. No.
VISOCOLOR® HE Ammonium	110 tests	1	9.304 581 3
VISOCOLOR® ECO Nitrate	110 tests	1	9.304 565
VISOCOLOR® ECO Nitrite	120 tests	1	9.304 582
VISOCOLOR® alpha pH 5.0-9.0	200 tests	1	9.304 570
VISOCOLOR® HE Phosphate	300 tests	1	9.304 583 4
VISOCOLOR® HE Oxygen SA 10	100 tests	1	9.304 569
VISOCOLOR® HE Carbonate hardness C 20	200 tests	1	9.304 585 5
VISOCOLOR® alpha Total hardness	100 tests	1	9.304 586

## Sample analysis/Elemental analysis



9.304 587



9.304 588



6.267 820



6.252 729



9.304 591

### VISOCOLOR® reagent case and photometer



MACHEREY-NAGEL

#### VISOCOLOR® ECO reagent case

For mobile use with test instructions for visual determination, analytical accessories and the following tests:

Ammonium 0.2 - 3mg/L  $\text{NH}_4^+$ /Carbonate Hardness 1 drop = 1.25°e/total hardness 1 drop = 1.25°e/  
Nitrate 1 - 120mg/L  $\text{NO}_3^-$ /Nitrite 0.02 - 0.5mg/L  $\text{NO}_2^-$ /pH 4.0 - 9.0/Phosphate 0.2 - 5mg/L P

#### VISOCOLOR® reagent case for soil analysis

The VISOCOLOR® reagent case for soil analysis is the perfect companion for economical, fast and convenient soil analysis, both in the field or in your laboratory, including the following tests:

**QUANTOFIX® test strips:** Ammonium 10 - 400mg/L  $\text{NH}_4^+$ /Nitrate/Nitrite 10 - 500mg/L  $\text{NO}_3^-$ /1 - 80mg/L  $\text{NO}_2^-$ /  
**VISOCOLOR® ECO test kits:** Potassium 2 - 15mg/L  $\text{K}^+$ /**VISOCOLOR® HE test kits:** pH 4.0 - 10.0/  
Phosphate 1.0 - 20.0mg/L P/**pH-Fix test strip:** pH 2.0 - 9.0

#### VISOCOLOR® reagent case for soil analysis with PF-3 Soil

The newest version of the VISOCOLOR® reagent case for soil analysis includes, beside reagents and accessories, also the compact photometer PF-3 Soil.

The reagent case contains the following test kits:

**Quantofix® test strips:** Nitrate/Nitrite: 10-50mg/L  $\text{NO}_3^-$ /1-8mg/L  $\text{NO}_2^-$ /  
**VISOCOLOR® ECO test kits:** Ammonium 3: 0.1-2.5mg/L  $\text{NH}_4^+$ /Potassium: 2-15mg/L  $\text{K}^+$ /Nitrate: 4-60mg/  
L  $\text{NO}_3^-$ /Phosphate: 0.6-15.0mg/L  $\text{PO}_4^{3-}$ /**pH-Fix test strips:** pH 2.0-9.0

#### VISOCOLOR® SCHOOL reagent case

The VISOCOLOR® SCHOOL reagent case is especially designed for schools and caters to the needs of both students and teachers. All reagents are approved to be used in schools in Germany (GUV - SR 2004 directive) and can be disposed of easily just down the drain without any harm to the environment.

Ammonium 0.2 - 3mg/L  $\text{NH}_4^+$ , Nitrate 1 - 90mg/L  $\text{NO}_3^-$ , Nitrite 0.02 - 0.5mg/L  $\text{NO}_2^-$ , Phosphate 0.5 - 15mg/L P,  
pH 4.0 - 9.0, Total hardness 1 drop = 17.8mg/L  $\text{CaCO}_3$

#### VISOCOLOR® FISH reagent case

The VISOCOLOR® FISH reagent case is developed for the requirements in analysis of fisheries waters. The flexible and tough reagent case is especially suited for mobile analysis directly at the point of interest. Beside the needed accessories, the VISOCOLOR® FISH reagent is equipped with 6 tests for colorimetric and titrimetric determination of the following classic parameters: Ammonium: 0.2-3mg/L  $\text{NH}_4^+$ , Nitrate: 1-90mg/L  $\text{NO}_3^-$ , Nitrite: 0.02-0.5mg/L  $\text{NO}_2^-$ , Phosphate: 0.5-15mg/L  $\text{PO}_4^{3-}$ , pH: 4.0-9.0, Total Hardness: 1 drop = 1°d

#### Compact photometer PF-12<sup>Plus</sup>:

Photometer for laboratories, in a practical case with manual, rechargeable batteries and battery charger

**Light source:** Xenon lamp

**Detector:** Silicon photo-element

**Display:** Backlit graphic display, 64 x 128 pixels

All important data at a glance: Result in respective unit, date, time, sample number, sample location and dilution

**Operation:** Display user guidance, plastic foil keyboard

Test selection via test number or parameter lists

12 languages (de, en, fr, es, it, nl, hu, pl, pt, cz, id, si)

**Accuracy:** ±1%

**Long-term stability:** < 0.002A/h

**Interface:** USB 2.0

**Power supply:** Via USB power supply, standard or rechargeable batteries

**Dimensions:** 215 x 100 x 65mm

**Weight:** 0.7kg

Type	PK	Cat. No.
VISOCOLOR® ECO Analysis kit	1	9.304 587 1
VISOCOLOR® soil kit, incl. manual	1	9.304 588 2
VISOCOLOR® reagent case for soil analysis with PF-3 Soil, incl. manual	1	6.267 820 3
VISOCOLOR® SCHOOL Analysis kit	1	6.252 729 4
VISOCOLOR® FISH reagent case	1	6.267 821
Compact photometer PF-12 <sup>Plus</sup>	1	9.304 591 5

List price for one package, volume discount at 10 packages.



### 1 Photometers PrimeLab 1.0

**NEW!**

Pool-i.d. GmbH

1

The new PrimeLab 1.0 photometer is the first and only photometer using just one LED and one (JENCOLOR) sensor, simultaneously covering 400 wavelengths in one go. The

JENCOLOR sensor allows self-calibration of the unit in seconds.

More than 120 test methods are available on the PrimeLab 1.0 to be individually selected when device is purchased. Even after purchase, not chosen parameters can be activated afterwards by entering a code. Step-by-step guidance through each test method in 4 different languages (7 languages when using the App) are displayed on the screen. User can choose to either use tablet, liquid or powder reagents.

Wireless Bluetooth technology combined with powerful PC-software (PrimeLab Desktop Assistant) and App for Android, iOS and Windows with free Cloud-Service, make the PrimeLab a powerful tool for on-spot-testing (battery) also for each lab (DC-connected).

Each measurement can be connected to an individual "account", identifying the water source, to always keep track of test results. Users can create and export test reports per "account" via software and/or App, where he also can store individual water treatment chemicals to create dosage recommendations, based on test results, account settings (such as water source volume) and individual water treatment chemicals.

Using the PrimeLab adapter for Turbidity (NTU), PTSA and Fluorescein, even those parameters can be tested by the PrimeLab whereas user normally needs to purchase a second device. Further info under [www.primelab.org](http://www.primelab.org)



#### PrimeLab 1.0 Multitest Photometer BASIC-KIT 3-in-1 (Chlorine/pH/Chlorine dioxide):

PrimeLab 1.0 Multitest Photometer in a black plastic case with foam insert.

4 x 24mm/10ml Glass-vials, light shield, stirring rod, 10ml syringe, cleaning brush, Bluetooth-USB-dongle for non-bluetooth PC, 4 x AAA-batteries, DC-adapter with international plugs, CD-ROM "PrimeLab Desktop Assistant", full printed manual.

Pre-activated parameters:

ID11 - Chlorine (free/combined/total) using DPD tablets

ID16 - Chlorine dioxide using DPD tablets

ID38 - pH using Phenol Red tablets

Reagent tablets to do 50 tests of the above mentioned parameters

#### PrimeLab 1.0 Multitest Photometer ALL-IN-KIT (all current and future parameters activated):

PrimeLab 1.0 Multitest Photometer in a black plastic case with foam insert.

4 x 24mm/10ml Glass-vials, light shield, stirring rod, 10ml syringe, cleaning brush, filter-kit containing 20ml luer-lock-syringe, filter-adapter as well as 50 filter papers each of GF/C and 0.45µ, 100ml dilution tube, Bluetooth-USB-dongle for non-bluetooth PC, 4 x AAA-batteries, DC-adapter with international plugs, CD-ROM "PrimeLab Desktop Assistant", full printed manual,

All available parameters are activated on the device. Parameters released in the future will be automatically added and activated while performing an update through PC-software or App.

#### Specifications:

Optic:	JENCOLOR Multispectral sensor, covering 380-780 nm
Power:	4 x AAA batteries/5.0 V DC-adapter with international plugs
Size:	180 x 90 x 60 mm
Weight:	160g
Communication:	Wireless via Bluetooth
Connection:	Free PC software (windows) "PrimeLab Desktop Assistant" and free Android/iOS/Windows App
Time/date:	RTC (real time clock) with date
Auto-off:	Set by user (0 - 99 min)
Display:	LCD (monochrome)
Calibration:	Auto-calibration function due to JENCOLOR sensor
One-Time-Zero:	Intelligent OTZ, based on chosen method
Memory:	On device: 20 accounts/100 test results. Unlimited via software and App
Languages:	English, Spanish, French, German. Software/App: English, Spanish, French, German, Italian, Russian, Chinese
Environment:	30-90% RH (not condensating), ca. 5°C-45°C
Certification:	CE

Description	Measuring range	PK	Cat. No.
BASIC-KIT 3-in-1	View a full range of available test methods and ranges on <a href="http://www.primelab.org">www.primelab.org</a>	1	6.268 024
ALL-IN-KIT		1	6.268 025

### Accessories to Photometers PrimeLab 1.0



Pool-i.d. GmbH

Description	PK	Cat. No.
Set of 10 x 10ml glass-vials	10	6.268 026
Set of 10 x plastic stirring rods	10	6.268 027
Set of 5 cleaning brushes	5	6.268 028
20ml luer-lock syringe for filter-adapter	1	6.268 029
Filter-adapter for 20ml luer-lock-syringe to be used with 25mm filter papers	1	6.268 030
50 filter papers GF/C (25mm)	50	6.268 031
50 filter papers 0.45µ (25mm)	50	6.268 032
adapter to use 16mm vials on PrimeLab (e.g.: for COD vials)	1	6.268 033
Professional lab-pipette (0-10ml) with 2 tips	1	6.268 034
Set of 10 tips (10ml) for professional lab-pipette	10	6.268 035
100ml plastic dilution tube	1	6.268 036
microfiber cloth to clean glass vials	1	6.268 037
Adapter-kit "Turbidity"	1	6.268 038
Adapter-kit "PTSA"	1	6.268 039
Adapter-kit "Fluorescein"	1	6.268 040
Reference solution "ZERO, Chlorine, pH, Cyanuric Acid (tablet reagents)"	1	6.268 041
Reference solution "ZERO, Chlorine, pH, Cyanuric Acid (liquid reagents)"	1	6.268 042
Reference solution (10ml each) 0,5 / 10 / 1000 NTU	1	6.268 043
Reference solution (100ml each) "100 µg/l PTSA" and aqua dest	1	6.268 044
Reference solution (100ml each) "100 µg/l Fluorescein" and aqua dest	1	6.268 045



### 1 2 Photometers AL100



AQUALYTIC

The AQUALYTIC® AL100 Photometers are designed for analysis of different parameters in drinking water, industrial process water and waste water. With a total of more than 30 different types, instruments are available for routine testing as well as for special applications.

The AL100 uses high quality interference filters with long-life LEDs as a light source without any moving parts in a transparent sample chamber. The units supply accurate, reproducible results very quickly. Other major advantages include ease of operation, ergonomic design, compact dimensions and safe handling. Provided with calibration and software-based adjustment options the AL100 is suitable for use as a testing instrument. The tests are conducted using either AQUALYTIC® tablet reagents with long-term stability and a shelf life of 5 or 10 years, VARIO powder reagents or using liquid reagents.

- Optics: High-quality Interference Filters
- Wavelength accuracy: ±1 nm.
- Power supply: 4 micro batteries (AAA), capacity approx. 17 hours or 5000 tests.
- Automatic switch-off.
- LCD Display (backlit on keypress).
- Internal ring memory for 16 data sets.
- Dimensions (L x W x H): 155 x 75 x 35 mm.

Supplied with: Photometer in a plastic carrying case, with reagents for 100 tests, cells and batteries

Optional: IRiM - infrared interface module for data transfer to computer or printer.

Description	Measuring range	PK	Cat. No.
Ammonium tablet reagents	0.02 - 1.0mg/l	1	9.699 280
Chlorine tablet reagents	0.01 - 6.0mg/l	1	7.627 340
Chlorine powder reagents	0.02 - 2.0mg/l** / 0.1 - 8.0mg/l***	1	6.251 486
Chlorine liquid reagents	0.02 - 4.0mg/l	1	6.252 939
Chlorine dioxide tablet reagents	0.02 - 11mg/l	1	9.699 281
Iron tablet reagents	0.02 - 1.0mg/l	1	9.699 282
Copper tablet reagents	0.05 - 5.0mg/l	1	9.699 283
Manganese LR tablet reagents	0.2 - 4.0mg/l	1	9.699 284
Phosphate tablet reagents	0.05 - 4.0mg/l	1	9.699 285
Silicon dioxide tablet reagents	0.05 - 4.0mg/l	1	9.699 286
2 in 1 Chlorine / pH tablet reagents	0.01 - 6.0mg/l* / 6.5 - 8.4pH	1	9.699 287
3 in 1 Chlorine LR / Chlorine HR / Chlorine dioxide tablet reagents	0.01 - 6.0mg/l / 5 - 200mg/l / 0.05 - 11mg/l	1	9.699 288
5 in 1 Chlorine / pH / Cyanuric acid / Alkalinity-M / Calcium hardness tablet reagents	0.01 - 6.0mg/l* / 6.5 - 8.4pH / 0 - 160mg/l Cys / 5 - 200 mg/l CaCO <sub>3</sub> (TA); 0 - 500 mg/l CaCO <sub>3</sub> (CaH)	1	9.699 289
Reference standard kit Chlorine	0.2 / 1.0mg/l	1	7.627 352
Reference standard kit Chlorine	1.0 / 4.0mg/l	1	9.699 290
Reference standard kit pH	7,45pH	1	9.699 291
Infrared data transfer module IRiM		1	9.699 247

\*Delivery without reagents for measuring range 0.1 - 10 mg/l Cl<sub>2</sub>.

\*\*24mm diam. glass cell

\*\*\*10mm diam. multi cell-2



### 1 Photometers AL100 Boiler Water, Cooling Water



Photometer instruments, specially designed for cooling and boiler water analysis. Thanks to the handy format and the user-friendly indicator chemistry, most of the important parameters can be determined on site. The photometers are supplied pre-calibrated with test methods, simply add the appropriate AQUALYTIC® reagent sets (tablets, powder packs and liquids).

AQUALYTIC

Manufactured under tightly controlled conditions, sealed reagents have a shelf-life of up to 10 years since, until used, they are not exposed to the elements. A step by step instruction manual enables even photometer novices to quickly understand the procedures to ensure rapid and accurate results every time. Easy-to-use with push-button technology, photometry is widely regarded as the simplest yet most accurate method to analyze water, removing any possible subjectivity when reading results that can occur with visual testing equipment. Both photometers are further equipped with functionality expected of the AQUALYTIC® brand such as scroll memory, backlit display, recall of stored data and the ability to transfer results to a PC. Supplied in a case with accessories (**without reagents**), these photometers provide an efficient, portable and self-contained option for Boiler Water and Cooling Water testing. CE-Conformity

**Please order reagents separately!** Please pay attention that some reagents could be used for **Boiler Water** or **Cooling Water** only.

Optics	LEDs, interference filters (IF) and photo sensor in transparent sample chamber
Wavelength Accuracy	±1 nm
Photometric Accuracy	3% FS (T = 20°C - 25°C)
Photometric Resolution	0.01 A
Power Supply	4 micro batteries (AAA), capacity approx. 17 hours or 5000 tests
Auto-Off	automatic switch-off
Display	backlit LCD (on keypress)
Storage	internal ring memory for 16 data sets
Interfaces	infrared interface for test data transfer
Additional Feature	real time clock and date
Calibration	factory calibration and user calibration. Reset to factory calibration possible
Dimensions	155 x 75 x 35 mm (L x W x H)
Weight	basic unit approx. 260 g
Environmental conditions	temperature: 5 - 40°C, rel. humidity: 30 -90% (non condensing)

Description	For	Package contents	PK	Cat. No.
AL 100 Boiler			1	9.699 278
AL 100 Cooling			1	9.699 279
Set Aluminium (0,01 - 0,25) mg/l Al		20ml for 100 tests	1	6.225 880
Set DEHA (20 - 500 µg/l DEHA)	only for Boiler water	set for 100 tests	1	6.257 410
Set Copper (0,3 - 5,0 mg/l Cu)		combi pack no.1/2, each 100 tabl.	200	6.232 946
Set Oxygen (10 - 800 µg/l O <sub>2</sub> )	only for Boiler water	liquid reagent of 30 vials	1	6.229 104
Set Chlorine (0,01 - 6,0 mg/l Cl <sub>2</sub> ) and (5 - 200 mg/l Cl <sub>2</sub> )	only for Cooling water	combi pack, each 100 tabl.	100	6.230 324
Set Sulfate (5 - 100 mg/l SO <sub>4</sub> )	only for Cooling water	powder pack for 100 tests	100	6.204 319
Set Chloride (0,5 - 20 mg/l Cl <sup>-</sup> )	only for Boiler water	liquid reagent of 65ml	1	9.699 330
Set Iron (0,03 - 2,00 mg/l Fe <sup>2+</sup> /3 <sup>+</sup> )		liquid reagent of 65ml	1	9.699 331
Set Phosphate (5 - 80 mg/l PO <sub>4</sub> )	only for Boiler water	liquid reagent of 65ml	1	9.699 332
Set Polyacrylate (1 - 30 mg/l)		liquid reagent of 65ml	1	9.699 333
Set Zinc (0,1 - 2,5 mg/l Zn)	only for Cooling water	liquid reagent of 65ml	1	9.699 334



## Sample analysis/Photometers



### 1 Photometer system AL400



AQUALYTIC

With the modern design of the AL400 we have succeeded in combining the mobility of a portable photometer with the characteristics of a modern laboratory photometer. This new unit covers all the important parameters of water analysis, from aluminium to zinc. The high level of accuracy of Aqualytic® reagents and the user-friendly nature of the instrument guarantee rapid and reliable analysis of your water samples. Depending on the application, the unit will operate with tablet reagents, powder reagents, liquid reagents or tube tests (16/13mm).

The AL400 operates with 6 interference filters and uses long-life LED's as a light-source. No moving parts are involved. The AL400 has a memory, in which up to 1000 data sets can be stored. The optional infra-red interface (IRIM = infra-red interface module) enables data to be transmitted to a computer or printer (RS232/USB). Now also available on request with Bluetooth®.

Highlights:

- easy to use
- backlit display
- more than 120 pre-programmed methods
- automatic wavelength selection
- user Interface in English, German, French, Spanish, Italian, Portuguese (BR), Polish and Indonesian.
- Storage of 1000 data sets
- More than 35 user-defined methods possible
- Infrared Interface
- Waterproof Housing
- Mobile
- CE marked

Supplied with:

The instrument is supplied complete and ready-to-use incl. 4 batteries, 3 vials diam. 24 mm, 3 vials diam. 16 mm, 1 adapter each for 16 mm and 13 mm vials, carrying case with water resistance foam, **but without reagents.**

Specifications

Optics:	High-quality Interference Filters
Power Supply:	4 batteries (1.5V Mignon AA/LR6)
Operation time:	approx. 26 hours; continuous operation or 3500 tests
Dimensions ( WxDxH):	approx. 210 x 95 x 45mm (unit) approx. 395 x 295 x 106mm (case)
Wavelengths:	530/ 560/ 610/ 430/ 580/ 660 nm

Type	Description	PK	Cat. No.
Photometer AL400		1	9.699 235
Verification standard kit		1	9.699 246
Set of 10 round cuvettes with cap	16 mm dia.	1	9.699 240
Set of 12 round cuvettes with cap	24 mm dia.	1	9.699 231
Adapter, grey	for 16mm dia. cuvettes	1	9.699 226
Adapter, black	for 16mm dia. cuvettes	1	9.699 227
Adapter, grey	for 13mm dia. cuvettes	1	9.699 228
Adapter, black	for 13mm dia. cuvettes	1	9.699 229
Sealing ring for cuvette	24mm dia.	12	9.699 243
Plastic funnel with handle		1	9.699 244
Stirring rod, plastic	13 cm long	1	9.699 266
Cleaning brush	10 cm long	1	9.699 267
Infrared data transfer module IRiM		1	9.699 247



### 2 Waste Water Set-Up AL400

AQUALYTIC

Waste Water Set-Up including Photometer AL400 with standard accessory, thermoreactor AL125, Infra-red data transmission module IRiM, tube stand, membrane filter set, instruction manual, guarantee sheet and reagents for the following parameters: COD 0 - 150 mg/l and 0 - 1500 mg/l, Ammonia 1 - 50 mg/l N, Nitrate 1 - 30 mg/l N Nitrite LR 0.01 - 0.3 mg/l N, Nitrogen 5 - 150 mg/l N, Phosphate 0.02 - 1 mg/l P/0.06 - 3.5 mg/l PO<sub>4</sub>

Type	PK	Cat. No.
Waste Water Set-Up AL400	1	9.699 236

### Photometer system AL450

AQUALYTIC

With Dual Beam Technology. The AL450 is a modern, microprocessor-controlled photometer with ergonomically designed keypad and large-format graphic display. It is equipped with a wide range of pre-programmed methods (e.g. ammonia, COD, phosphate) based on the proven range of Aqualytic® tablet reagents, liquid reagents, vial tests and powder reagents. The calibration and software-supported control options mean that the unit is also suitable for use as a testing instrument. The seven standard rechargeable batteries (supplied) ensure easy mobile use.

#### Advantages

- wide range of pre-programmed methods
- large, graphics display
- RS232 interface
- suitable for use with standard rechargeable batteries
- updates for new methods and languages via the Internet
- 1000 data set memory
- custom method recall is also possible

**Comprises:** AL450, ready-to-use incl. 7 x rechargeable batteries and battery charger for 100 - 240V, 3 each 24mm and 16mm cuvettes, 16mm cuvette adapter, 3 x syringes, 1 x 100ml plastic beaker and case with waterproof insert.

**Without reagents and without battery** (please order separately).

**Verification Standard Kit:** The verification standard kit for the AL450 is designed to reassure the user about the accuracy and the reliability of the results. The shelf life of the standard kit is two years from the date of production, provided that storage and use are in accordance with the instructions provided. Measurements are taken in mAbs.

#### Specifications

Optics:	Dual-Beam Technology, High-quality Interference Filters
Measuring time:	approx. 10 seconds
Power supply:	7 Ni-MH-battery pack (1.5V AA), charged in the unit using external power pack
Dimensions (HxWxD):	70mm x 265mm x 195mm
Ambient operating conditions:	up to max 90% humidity (non condensing), approx. 5 to 40°C
Approval:	CE
Wavelengths:	430/ 530/ 560/ 580/ 610/ 660nm

Type	Description	PK	Cat. No.
Photometer AL450		1	9.699 230 <b>1</b>
Set of 10 round cuvettes with cap	16mm dia.	10	9.699 240
Set of 12 round cuvettes with cap	24mm dia.	12	9.699 231
Adapter	for round vials, 16mm dia.	1	9.699 264
CSB reactor AL125	with 24 apertures	1	9.920 204
Verification standard kit		1	6.226 018 <b>2</b>
Lithium button cell CR2032		1	9.012 971
Mains adapter TR15RA150 Level V	for Multi/Pool/Turbi, incl.4 adapter	1	9.699 273



9.699 230



6.226 018

### 3 Reagent tablets for photometers Aqualytic

AQUALYTIC

For	Type	PK	Cat. No.
Ammonia	Ammonia No. 1	100	9.947 060
Ammonia	Ammonia No. 2	100	9.947 062
Bromine, Chlorine, Chlorine dioxide	DPD No. 1	100	9.947 065
Bromine, Chlorine, Chlorine dioxide	DPD No. 1	250	9.947 066
Iron	Iron LR	100	9.947 100
Nitrite, Nitrate	Nitrite LR	100	9.947 108



### 4 Cuvettes for photometers

**NEW!**  
AQUALYTIC

Type	Diam. mm	PK	Cat. No.
Set of 10 round cuvettes with cap	16	1	9.699 240
Set of 5 round cuvettes with cap	24	5	6.230 635
Set of 12 round cuvettes with cap	24	1	9.699 231



## Sample analysis/Photometers

### Handheld photometers pFotoFlex® series, with/without pH and turbidity measurement

Handheld photometers for use in a wide range of areas such as process control, mobile water testing or wine industry. Easy operation with menu driven, user guidance.

WTW

- Smart cuvette adapter: holds 28mm or 16mm round cuvettes with height 91 to 104mm; to be used with a variety of different test types
- Optics: LED's with filters, accuracy < 2nm, 436nm, 517nm, 557nm, 594nm, 610nm, 690nm
- Concentration, Absorption, Transmission
- Methods can be downloaded from the Internet
- 35 (pFotoFlex®) 100 user defined routines
- 100 (pFotoFlex® STD)/1000 data sets, RS 232 interface
- pH range: pH 0 to 16.00 (±0.01) for DIN standard combination electrodes
- incl. calibration interval and calibration protocol
- Batteries: 4 button cells

Optional: LabStation with rechargeable battery and power plug, GLP-compliant software LSdata for simplified laboratory evaluation and operation, charging function; accu and power supply separately. LSdata is also available as stand-alone package.

#### pFotoFlex® (R) STD

Water Analysis purely w/o pH- and turbidity measurement for standard parameters

#### pFotoFlex® pH

Just like the standard version of pFotoFlex STD plus full electrochemical pH-and ORP measurement via electrodes. This allows also the measurement of the parameters NH<sub>3</sub> and CO<sub>2</sub>.

- pH 0 ... 16.00 (±0.01) for Standard-DIN pH-electrodes with automatic temperature compensation ATC and automatic buffer recognition
- Calibration intervall setting and calibration record

#### pFotoFlex® Turb:

Generally as pFotoFlex® (R) STD, with additional turbidity measurement:

- IR light source acc. DIN 27027 /ISO 7027
- Measuring range: 0 to 1100 NTU/FNU
- Resolution: 0 to 9.99 NTU: 0.01; 10 to 99 NTU: 0.1; 100 to 1100 NTU: 1NTU
- Accuracy: 0.01 NTU or 2% of measured value
- 3 point calibration
- Standard set with traceable AMCO® Standards (0.02 - 10 - 1000 NTU)

#### Complete pFotoFlex® Sets:

The mobile laboratory: smart with integrated lab table to hold instrument, cuvettes, beaker and stand for pH electrode. Complete sets with:

- pH electrode SenTix 41 with technical buffers
- 1 adjustable pipette with 5ml volume for pFotoFlex® models
- Calibration standard kit for pFotoFlex® Turb and Turb® 40 IR/T

#### pFotoFlex® pH Set:

Field case with pFotoFlex®, table insert, pH electrode Sentix® 41 and stand, TEC buffer, 5ml variable pipette, and accessories, PC cable and LSdata software.

#### pFotoFlex® Turb Set:

Field case with pFotoFlex® Turb, table insert, pH electrode Sentix® 41 and stand, TEC buffer, 5ml variable pipette, and accessories, PC cable and LSdata software.



9.923 625



9.923 601

Type	PK	Cat. No.
pFotoFlex® STD	1	9.923 624
pFotoFlex® pH	1	9.923 625 <b>1</b>
pFotoFlex® Turb	1	9.923 626
pFotoFlex® pH Set	1	9.923 601 <b>2</b>
pFotoFlex® Turb/Set	1	9.923 602



### 1 Photometer pHotoLab® S6 and S12 - Filter photometer

High-precision, laboratory photometers with multilevel AQA/IQC functions. Features easy operation, GLP-conforming documentation, simultaneous turbidity compensation: open cover, place cell, measure! Automatic selftest and zeroing of the optical systems during start up. Graphics display with instructions. AutoSelect for cuvettes recognition via barcode; all necessary settings automatically of more than 150 programmed methods with automatic cuvette detection. Unique barcode-support for 10, 20 und 50 mm cuvette for high quality and economic reagent test kits. The RS232 interface transfers data to the user's PC. With real time clock and memory (incl. date/time) for 500 (S6) or 1000 (S12) data records. To be used with 16mm round cells and rectangular cells (only S12) 10, 20 and 50mm path length. Autozeroing. CE, UL, CUL tested.

WTW

#### photoLab® S6

With 6 interference filters for 340/445/525/550/605/690nm  $\pm 2$ nm. For routine applications with round cuvettes in waste water analysis.

#### photoLab® S12

With 12 interference filters  $\pm 2$ nm. Wavelength according to S6 with additional filters for 410/500/565/620/665/820nm. All test kits can be used (round cuvettes and reagent test kits), 50 user defined methods, Kinetic functions.



Type	Description	PK	Cat. No.
photoLab® S6	Mains version, 220V European plug	1	9.923 631
photoLab® S6-A	Rechargeable battery version, 220V European plug	1	9.923 632
photoLab® S12	Mains version, 220V European plug	1	9.923 635
photoLab® S12-A	Rechargeable battery version, 220V European plug	1	9.923 636
LP 6/12	Spare lamp for S6, S12	1	9.923 638

### 2 photoLab® 6000 series for VIS and UV-VIS

Whether for water analysis, food and beverage or education and research applications, the pHotoLab® 6000 series is universally applicable and offers complete photometric functionality at an outstanding price: performance ratio and precision. Fast, routine measurement, as well as complex spectral analytics can be performed easily, supported by function keys F1-F4. The on-screen user guide almost replaces the operating manual. The pHotoLab® meters and the WTW Online-system IQ Sensornet are interactively connected with the easy IQ-LabLink procedure for easy data referencing.

WTW

#### Routine Measurement:

- more than 200 methods for routine parameters
- barcode recognition for more than 150 cell and reagent test kits
- direct methods such as SAC at 436 and 254nm, Chlorophyll, Ammonia e.g.

#### Spectral Analysis:

- absorbance spectra
- kinetics
- multi wavelength measurement (e.g. for the wine industry)
- User defined methods and profiles
- Comprehensive programming options for multiwavelength- and lab analytics
- PC software pHotoLab® Data spectral and application packages for brewing optional
- enhanced AQA with user administration for environmental analytics and industrial needs
- IQ-LabLink for easy data referencing with WTW-Online System IQ Sensornet
- update and data exchange via USB stick
- interfaces: USB-A, USB-B, RS232
- optional direct printing to PDF file
- extensive testing routines and optical testing equipment (optional)
- 4nm band pass
- wavelength accuracy/reproducibility: 1nm/0.5nm
- photometric reproducibility  $\pm 0.002 E @ 1 E$  (or better)
- photometric accuracy 0.003 for  $< 0.600E$ , 0.5% of result for 0.600 to 2.000E
- approx. 4 MB storage for 1000 measurement values and spectral data sets
- weight: 4 kg (allows onsite usage with car battery and optional WTW adapter cable)



Type	Description	PK	Cat. No.
photoLab® 6100 VIS	340-1100nm for VIS range with Tungsten halogen lamp	1	6.232 685
photoLab® 6600 UV-VIS	190-1100nm for UV-VIS range with Xenon flash lamp	1	6.234 159
photoLab® Brew	Application package brewery analysis for the photoLab® 6000 Series	1	9.920 080
photoLab® Data spectral	PC software for data management of photoLab® 6000 Series	1	9.920 081



## Sample analysis/Photometers

### 1 Photometer photoLab® and pFotoFlex®, stored test programs



- A: Stored in photoLab® S6, S12, photoLab® 6000 Serie and photoLab® Spektral  
 B: Stored in photoLab® S12, photoLab® 6000 Serie and photoLab® Spektral  
 C: Stored in pFotoFlex® STD, pFotoFlex® pH and pFotoFlex® Turb  
 D: Stored in photoLab® 6000 series

WTW

#### Reagent-free tests:

- Cu - copper plating bath, 690nm, 820nm - copper plating bath - B  
 CrO<sub>3</sub> - chromium plating bath - chromium plating bath - B  
 Ni - nickel plating bath - nickel plating bath - B  
 HZ - Hazen colour - Hazen colour - B  
 IFZ - iodine number, 340nm, 455nm - iodine number - B  
 m-1 (DFZ) - colouring - FB445 - B, C  
 m-1 (DFZ) - colouring - FB525 - A, C  
 m-1 (DFZ) - colouring - FB620 - B, C  
 FAU - turbidity 620 - T620 - B  
 E - extinction - extinction - A, B, C  
 SAK - Spectral absorption coefficient at 254 and 436nm photoLab® 6100 VIS (436nm) and photoLab® 6600 UV-VIS (254/436nm)

Further tests on demand, range information is based on max. range and can also be smaller for pFotoFlex®.

Type	Description	For	Measuring range mg / l	No. of determinations	PK	Cat. No.
14831	Ag, Silver	B, C	0,25 - 3,00	100	1	9.920 905
14825	Al, Aluminium	B, C	0,02 - 1,20	300	1	9.920 906
14821	Au, Gold	B, C	0,50 - 12,00	80	1	9.920 907
14839	B, Boron	B	0,05 - 0,80	60	1	9.920 908
14555	COD-O <sub>2</sub> , COD	A, C	500 - 10000 mg/l	25	1	9.920 879
14560	COD-O <sub>2</sub> , COD	A	4,0 - 40,0 mg/l	25	1	9.920 880
14690	COD-O <sub>2</sub> , COD	A, C	50 - 500 mg/l	25	1	9.920 934
14691	COD-O <sub>2</sub> , COD	A, C	300 - 3500 mg/l	25	1	9.920 935
14895	COD-O <sub>2</sub> , COD	A, C	15 - 300 mg/l	25	1	9.920 936
C3/25	COD-O <sub>2</sub> , COD	A, C	10 - 150 mg/l	25	1	9.920 956
C4/25	COD-O <sub>2</sub> , COD	A, C	25 - 1500 mg/l	25	1	9.920 957
14551	C <sub>6</sub> H <sub>5</sub> OH, Phenol	B, C	0,10 - 2,50	25	1	9.920 893
14815	Ca, Calcium	B, C	5,00 - 160,00	100	1	9.920 909
14834	Cd, Cadmium	A, C	0,025 - 1,00	25	1	9.920 873
01745	Cd, Cadmium	A, C	0,002 - 0,50	55	1	9.920 946
00595	Cl <sub>2</sub> , Free chlorine	A, C	0,03 - 6,00	200	1	9.920 949
00597	Cl <sub>2</sub> , Free + total chlorine	A, C	0,03 - 6,00	200	1	9.920 950
00599	Cl <sub>2</sub> , Free + total chlorine	B	0,01 - 6,00	200	1	9.920 951
Cl-3 TP	Cl <sub>2</sub> , Total chloride	C, D	0,00 - 2,00	100	1	9.920 864
14730	Cl, Chloride	A, C	5,00 - 125,00	25	1	9.920 910
14897	Cl, Chloride	B, C	2,50 - 250,00	100	1	9.920 911
14561	CN, Cyanide	A, C	0,01 - 0,50	25	1	9.920 881
09701	CN, Cyanide	B, C	0,002 - 0,5	100	1	9.920 914
14552	Cr, Chromate (Chromium)	A, C	0,05 - 2,00	25	1	9.920 875
14758	Cr, Chromate (Chromium)	B	0,01 - 3,00	250	1	9.920 915
Cu-1 TP	Cu, Copper	C, D	0,00 - 5,00	100	1	9.920 862
14553	Cu, Copper	A, C	0,05 - 8,00	25	1	9.920 887
14767	Cu, Copper	B, C	0,02 - 6,00	250	1	9.920 916
14549	Fe, Iron	A, C	0,05 - 4,00	25	1	9.920 883
14761	Fe, Iron	B, C	0,005 - 5,00	1000	1	9.920 917
14896	Fe, Iron	C	1,00 - 50,00	25	1	9.920 918
00809	F, Fluoride	A, C	0,10 - 1,80	25	1	9.920 966
00961	GH, total hardness / Ca	A, C	5,00 - 215,00	25	1	9.920 919
14500	HCHO, Formaldehyde	C	0,10 - 8,00	25	1	9.920 885
14678	HCHO, Formaldehyde	A, B	0,02 - 8,00	100	1	9.920 921
14779	HS, Hydrogen sulphide	B	0,02 - 1,50	220	1	9.920 922
14562	K, Potassium	A, C	5,0 - 50,0	25	1	9.920 886
00815	Mg, Magnesium	A, C	5,0 - 75,0	25	1	9.920 953
14770	Mn, Manganese	B, C	0,01 - 10,0	500	1	9.920 924
19252	Mo, Molybdenum	B	0,5 - 45,0	100	1	9.920 964
Mo-1 TP	Mo, Molybdenum	C, D	0,0 - 35,0	100	1	9.920 965
00816	Mn, Manganese	A, C	0,10 - 5,00	25	1	9.920 963
09711	N <sub>2</sub> H <sub>4</sub> , Hydrazine	B	0,005 - 2,00	100	1	9.920 983
00860	Molybdate	B, C	0,02 - 1,00	25	1	6.225 979
14537	N <sub>total</sub> , Totale Nitrogen	A, C	0,5 - 15,0	25	1	9.920 897
14763	N <sub>total</sub> , Totale Nitrogen	A	10,0 - 150,0	25	1	9.920 926

### Photometer photoLab® and photoFlex®, stored test protocols

WTW

Type	Description	For	Unit	No. of determinations	PK	Cat. No.
14544	NH <sub>4</sub> -N, Ammonium	A, C	0,5 - 16,0	25	1	9.920 927
14559	NH <sub>4</sub> -N, Ammonium	A	4,0 - 80,0	25	1	9.920 928
14752	NH <sub>4</sub> -N, Ammonium	B, C	0,01 - 3,00	500	1	9.920 929
A6/25	NH <sub>4</sub> -N, Ammonium	A, C	0,20 - 8,00	25	1	9.920 958
14554	Ni, Nickel	A, C	0,10 - 6,00	25	1	9.920 888
14785	Ni, Nickel	B, C	0,02 - 5,00	250	1	9.920 930
14776/1	NO <sub>2</sub> -N, Nitrite	B, C	0,005 - 1,00 mg/l	1000	1	9.920 931
N5/25	NO <sub>2</sub> -N, Nitrite	A, C	0,010 - 0,700 mg/l	25	1	9.920 960
14542	NO <sub>3</sub> -N, Nitrate	A, C	0,5 - 18,0 mg/l	25	1	9.920 890
14556	NO <sub>3</sub> -N, Nitrate	B, C	0,10 - 3,00 mg/l	25	1	9.920 891
14773	NO <sub>3</sub> -N, Nitrate	B	0,2 - 20,0 mg/l	100	1	9.920 932
14764	NO <sub>3</sub> -N, Nitrate	A	1,0 - 50,0 mg/l	25	1	9.920 933
14942	NO <sub>3</sub> -N, Nitrate	B, C	0,2 - 17,0 mg/l	50	1	9.920 870
N2/25	NO <sub>3</sub> -N, Nitrate	A	0,5 - 25,0 mg/l	25	1	9.920 959
14694	O <sub>2</sub> , Oxygen	A	0,5 - 12,0 mg/l	25	1	9.920 925
00607/1	O <sub>3</sub> , Ozone	B, C	0,010 - 4,0 mg/l	200	1	9.920 952
01744	pH	A	6,4 - 8,6 pH	280	1	9.920 945
14833	Pb, Lead	A	0,10 - 5,00 mg/l	25	1	9.920 872
14546	PO <sub>4</sub> -P, Phosphate	A, C	0,5 - 25,0 mg/l	25	1	9.920 896
14842	PO <sub>4</sub> -P, Phosphate	B	0,5 - 30,0 mg/l	400	1	9.920 939
14848	PO <sub>4</sub> -P, Phosphate	B, C	0,01 - 5,00 mg/l	420	1	9.920 940
00616	PO <sub>4</sub> -P, Phosphate	A, C	3,0 - 100,0 mg/l	25	1	9.920 954
00798	PO <sub>4</sub> -P, Phosphate	B, C	1,0 - 100,0 mg/l	100	1	9.920 955
P6/25	PO <sub>4</sub> -P, Phosphate	A, C	0,05 - 5,00 mg/l	25	1	9.920 961
P7/25	PO <sub>4</sub> -P, Phosphate	A, C	0,5 - 25 mg/l	25	1	9.920 962
14683	RH, Residual hardness	A	0,50 - 5,00 mg/l Ca	25	1	9.920 941
14794	Si, Silicate	B, C	0,005 - 5,00 mg/l	300	1	9.920 942
00857	Si, Silicate	B, C	0,5 - 500,0 mg/l	100	1	9.920 868
14622	Sn, Tin	B	0,10 - 2,50 mg/l	25	1	9.920 943
14394	SO <sub>3</sub> , Sulfite	B	1,0 - 20,0 mg/l	25	1	9.920 900
01746	SO <sub>3</sub> , Sulfite	B	1,0 - 60,0 mg/l	150	1	9.920 948
14564	SO <sub>4</sub> , Sulfate	A	100 - 1000 mg/l	25	1	9.920 899
14791	SO <sub>4</sub> , Sulfate	B	25 - 300 mg/l	200	1	9.920 944
14548	SO <sub>4</sub> , Sulfate	A, C	5 - 250 mg/l	25	1	9.920 898
14697	Ten-A, Surfactants anionic	B, C	0,05 - 2,00	25	1	9.920 904
14566	Zn, Zinc	A, C	0,20 - 5,00 mg/l	25	1	9.920 901
14832	Zn, Zinc	B	0,05 - 2,50 mg/l	90	1	9.920 902
00861	Zn, Zinc	A, C	0,025 - 1,000 mg/l	25	1	9.920 866

### 1 Thermoreactor AL125



Chemical digestion of samples is required for the photometric determination of COD, TOC, total chromium, total phosphate and total nitrogen. The required temperatures and reaction time can be selected by using the membrane keypad of the reactor AL125. The unit works at three different temperatures (100/120/150°C) and three pre-set reaction times (30/60/120 minutes). When digestion is complete, the reactor automatically switches off and gives a corresponding LED indication with short beep alarm.

AQUALYTIC

The AL125 reactor is fitted with 24 holes for 16 mm diameter vials.

#### Specifications

Power supply	230 V/50-60 Hz or 115 V/50-60 Hz (switchable)
Power	550 W
Dimensions	248 x 219 x 171 mm
Weight	3,9 kg
Holes in the aluminium block	24 holes, 16,2 mm ±0.2 mm
Selectable temp.	100/120/150°C
Probe type	Pt100 A class
Temperature stability	±1°C at the Pt100
Selected time	30/60/120/min. and continuous operation (∞)
Heating up	from 20°C to 150°C in 12 min.
Regulation	Microprocessor
Protection against overheating	on a heating block at 190°C
Beeper	max. 88 dB (Piezo Summer)
Environmental conditions	10 - 40°C max. 85 % rel. humidity



Type	Description	PK	Cat. No.
CSB reactor AL125	with 24 borings	1	9.920 204

## Sample analysis/COD

**1**


9.920 806

### Thermoreactor CR 2200/CR 4200

CR 2200:

- routine unit for waste water analysis
- Stored programs for all important digestions
- thermoblock with 12 holes for 16mm o.d. reaction tubes
- temperatures: 100°C, 120°C, 148°C and 150°C
- 8 fixed heating programmes: 148°C and 2 hours, 148°C and 20 minutes, 120°C and 30 minutes, 120°C and 60 minutes, 150°C and 120 minutes, 120°C and 120 minutes, 100°C and 60 minutes, 30 minutes
- Automatic temperature switch-off after end of set programs

WTW

CR 4200:

- Professional unit for waste water analysis
- 2 thermoblocks with 12 holes each for 16mm o.d. reaction tubes,
- 8 fixed heating programs (as CR2200) and 8 user-defined programs (from room temperature (25°C) to 170°C and 0 to 180 minutes)
- High Temperature Capability
- 2 different programs and temperatures can be used simultaneously (CR 4200 only)
- Automatic temperature switch-off after end of set programs
- Optional: External temperature probe TFK CR

**2**


9.920 808

Type	PK	Cat. No.
CR 2200	1	9.920 806 <b>1</b>
CR 4200	1	9.920 808 <b>2</b>

**3**


### 3 COD measuring station, AL200 COD Vario

According to ISO 15705. This measuring station from AQUALYTIC® allows the accurate, rapid, and economical determination of meaningful waste water COD levels (Chemical Oxygen Demand). Easy operation, even by unskilled operators. Comprises of COD photometer, 25 tube tests covering lower measuring ranges, a reactor block for sample digestion and a tube stand. Waterproof acc. to IP 68, 1 hour at 0.1 meter.

AQUALYTIC

#### Specifications:

Range:	0 to 15.000 mg/L
Measurement cycle:	approx. 3 seconds (method dependent)
Display:	LCD readout
Optics:	High-quality Interference Filters
Power:	4 batteries (AA) capacity approx. 53 hours or 15000 tests (continuous operation with backlit switched off)
Overall WxDxH:	190 x 110 x 55mm
Storage:	16 data sets
Interface:	internal interface for test data transfer

Type	Description	PK	Cat. No.
COD measuring station AL200 COD Vario		1	9.920 205
AL200 COD Vario(photometer only)		1	9.950 531
COD reactor AL125	with 24 borings	1	9.920 204

**4**


### 4 COD-Standard cuvette test, 16mm

Due to the chemical properties suitable for various photometers (e.g. Aqualytic, Hach disclaimer) with 16mm tube diameter.

AQUALYTIC

Description	PK	Cat. No.
0 to 150mg/l O <sub>2</sub>	25	9.950 533
0 to 1500mg/l O <sub>2</sub>	25	9.950 534
0 to 15000mg/l O <sub>2</sub>	25	9.950 535

### 1 COD sample digestion units PA-CSB

Unit configuration for simultaneous digestion of maximum 6 or 12 COD samples in acc. with ISO, DIN etc. Behr

A digestion unit consists of the following components:

- TRS 300 microprocessor-controlled time and temperature control unit with COD program
- CSB/E Precision heating block for RG 2 reaction vessels
- E/B Insert and yoke type frame for RG 2 reaction vessels
- KW/N Cooling trough with holder and stands for E/B
- RG 2 Reaction vessels
- LK 1 COD air coolers
- LS Air cooler stands for LK COD air coolers

Type	PK	Cat. No.
PA-CSB 6	1	9.920 540
PA-CSB 12	1	9.920 541 <sup>1</sup>

### 2 COD workstations, PB-CSB/M

For COD determination. Complete workstations for simultaneous determination of maximum 6 or 12 samples in acc. with ISO, DIN etc. Manual metering and titration. Behr

A workstation consists of the following components

- TRS 300 Microprocessor-controlled time and temperature control unit with COD program
- CSB/E Precision heating block for RG 2 reaction vessels
- E/B Insert and yoke type frame for RG 2 reaction vessels
- KW/N Cooling trough with holder and stands for E/B
- SM 12/N Series magnetic stirrer for E 12/B insert/yoke type frame (only for PB-CSB 12/M)
- RG 2 Reaction vessels
- MRST 2 Magnetic stirrer rod set , 12 rods
- SIST 100 Boiling stones , contents 100 g
- LK1 COD Air coolers
- LS Air cooler stand for LK COD air coolers
- PTFE 29 PTFE Collars for LK 1, set of 12 collars
- TS COD Transport stands for E/B insert/yoke type frame
- HTI 1 Manual titration station

Type	PK	Cat. No.
PB-CSB 6/M	1	9.920 542
PB-CSB 12/M	1	9.920 543 <sup>2</sup>



9.920 541



9.920 543



### 3 behr COD Heating Blocks

COD acc. to ISO Precision heating blocks with 6, 12 or 24 sample positions. Flat surface heater for even temperature distribution to each sample position. Stainless steel and powder coated steel casing. Extensive insulation provides for inoffensive temperatures of the casing surfaces.

End-to-end grooves in the precision aluminum plate at the bottom of the bores simplify sample handling and provide for exemplary safety of the analyst.

During sample insertion the grooves cause pressure compensation. Thus even the most accurately fitting reaction vessels slip easily into the bores, which is required to effortlessly handle the behr insert and yoke type frames for RG 2 reaction vessels.

When inserting the samples into the hot heating block adherent moisture on the vessel surface evaporates in sudden bursts. The grooves drain off the vapor which otherwise might cause the vessels to jump up and down which might eventually lead to the destruction of the vessels.

In case of one or more vessels overflowing the liquid COD samples discharge through the grooves minimizing the danger of damages inside the block caused by acids.

Type	Description	Power consumption W	Temp. range max. °C	PK	Cat. No.
CSB 6 / E	for 6 RG reaction vessels	800	299	1	9.920 721
CSB 12 / E	for 12 RG reaction vessels	1500	299	1	6.510 709
CSB 24 / E	for 24 RG reaction vessels	2000	299	1	6.054 780



## Sample analysis/COD



### 1 TRS 300 programmable temperature and time control unit

Programmable control unit for behrotest® digester blocks

Behr

Behr one-button operation for particularly easy and quick programming. Menu navigation in the language of the country. 10 optionally configurable programs for block temperature and digestion time. The TRS 300 has a special COD program which has already been set by the plant. Therefore in the operation mode „COD“ it heats up to a temperature which is 20°C above the set target temperature. After inserting the samples, the 20°C higher target value remains for another 6 minutes. This procedure ensures heating up to 148°C within 10 minutes which is specified by the ISO norm, and at the same time causes extremely high temperature constancy during the subsequent reaction process. The supplied Windows software permits the user to transfer time/temperatures profiles, which are specifically for the application, via the RS232 interface in both directions between one or more units (TRS 300) and a PC. Temperature data can also be transmitted from the unit to the PC via the RS232 interface while operating. The user can save them if necessary and print them out as graphics. Integrated safety function switches the connected units off if there is a short-circuit and an interruption of the temperature sensor.

Type	Description	PK	Cat. No.
TRS 300	Temperature and control unit	1	6.229 909



### 2 behrotest® HTI 1 manual titration station

The HTI 1 manual titration station consists of

Behr

- a burette with digital display and
- a magnetic stirrer with a precisely fitting holder for COD reaction vessels. A screen serves as a neutral background and allows the user to determine the colour change at the end of the titration precisely. He/she will therefore always carry out titration under similar visual conditions. This improves the precision and the reproducibility of the results. The precise positioning of the reaction vessels in the holder on the top of the magnetic stirrer also contributes to this. The angled wing of the screen protects against lateral dazzling light.

#### Specifications

Voltage	230 VAC/ 115 VAC
Frequency	50/60 Hz
Weight	approx. 3.5 kg
Dimensions in mm (WxDxH)	approx. 330 x 200 x 600

Type	Description	PK	Cat. No.
HTI	Manual titration station	1	9.920 730



### 3 COD cooling trough

The cooling trough prevents the overheating of the COD samples during the critical addition of sulphuric acid. In addition, it is used to cool the samples after the heating phase.

Behr

Type	Description	PK	Cat. No.
KW 6 /N	Cooling trough for E 6/B insert frame	1	9.920 706
KW 12/N	Cooling trough for 2 E 12/B insert frame	1	6.052 519
KW 24/N	Cooling trough for E 12/BV insert frame	1	6.089 903
LS 6	Stands for 6 COD air coolers	1	9.920 723
LS 12	Stands for 12 COD air coolers	1	6.051 958

### COD magnetic stirrer

The continuously adjustable COD series magnetic stirrer with 12 stirring points is used to mix the samples during the metering process. Due to its watertight casing and also its external power supply and control, it is suitable for use under water.

Behr

Type	Description	PK	Cat. No.
SM/12N	Series magnetic stirrer for E 12/B insert	1	6.055 561



# >> Halogens, Carbon, and Sulfur

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## Sample analysis/COD

**1**


### 1 COD metering funnel

COD metering funnels, placed on top of the COD reaction vessels, simplify the addition of sulphuric acid to several samples simultaneously.  
 COD metering funnel together with a cooling trough and a series magnetic stirrer increase the safety and offer considerable relief to the user when determining the COD.

*Behr*

Type	Description	PK	Cat. No.
DT 30	metering funnel, 30 ml, for sulphuric acid	1	9.920 713

**2**


### 2 HCl-absorber

To expel chloride, e.g. when determining the COD of sea water.

*Behr*

Type	Description	PK	Cat. No.
HCL 29	HCL absorber to expel chloride	1	6.060 789

**3**


### 3 Reagent metering unit

Metering unit to automate and accelerate the metering of potassium chromate solution and sulphuric acid when preparing COD samples. Metering in a maximum of 12 samples simultaneously.

*Behr*

Connection to direct activation of the 12-position magnetic stirrer SM 12/P.

Metering in optimal time intervals: The metering of sulphuric acid is carried out in several processes, the samples are thus constantly cooled and stirred. This method accelerates the preparation of samples and at the same time prevents non-standard overheating of the samples during addition.

Safety for the user: Due to the automatic addition of reagent there is no risk at any time of coming into contact with chemicals

Practice-oriented and user friendly software: The complete programming of the behr DS 20 is very easy to use and user-friendly with the Windows user interface

Type	Description	PK	Cat. No.
DS 20	for up to 12 samples, incl. burettes and cooling trough	1	9.920 747

**4**


### 4 Automatic metering and titration unit DT 20

Dosage:

Time optimized COD interval dosage. The addition of sulfuric acid is carried out in several steps, while the samples are constantly cooled and stirred. This method accelerates sample preparation and at the same time prevents non-standard overheating of the samples during acid addition.

Titration:

Instead of the commonly known over-titration, the behr-specific dynamic titration guarantees the exact end-point recognition, even in the case of the typical COD edge steepness, and thus particularly accurate test results

*Behr*

Type	Description	PK	Cat. No.
DT 20	Automatic metering and titration	1	9.920 748

### 1 | 2 B.O.D. auto-check measurement systems, OxiTop®

WTW

In accordance with DIN EN 1899 H55.

Modular and mercury-free B.O.D. systems for practical, daily operation. The system is TÜV/GS tested. With no mechanical moving parts the programme-controlled, Inductive Stirring System is durable and does not require any type of maintenance. The magnetically coupled stirring bars are periodically speeded up, or slowed down from the minimum to the maximum stirring speed respectively. A controlled "catching device" forces the stirrer bars into the magnetic field and synchronises them with the stirring speed. An optimal gas exchange for BOD determinations is therefore guaranteed in the sample bottle. The mercury-free, OxiTop measuring system works manometrically with a pressure sensor and 2-digit digital display.

- Large measuring range with overflow indicator
- Auto Temp function - intelligent temperature monitoring for automatic start under the best possible conditions
- Automatic zero setting at start
- Integral memory - daily readings no longer required
- Battery powered with typical running time of 2 years.

system comprises:

B.O.D. measuring units with inductive stirring system and OxiTop® measuring system, ready for use in thermostatic cabinets and incubators with amber sample bottles 600ml, stirring bars, stirring bar remover, sodium hydroxide pellets, rubber sleeves, 164ml and 432ml overflow measuring flasks, chart paper block and nitrification inhibitor. Any conventional manometric B.O.D. system can be converted to the OxiTop® system. Various conversion kits are available for this - details on request.

**IS 6 and IS 12:**

- Number of stirring positions: 6 or 12
- Speed: 180 to 450 rpm.
- Safety class: 3, IEC 1010
- Protection system: IP 30 DIN 40050
- Supply requirements: Far range mains adapter 100 to 240 V, 50/60 Hz

**OxiTop-System:**

- Instrument range: 0 to 50 digits (display units)
- Operating pressure range: 500 to 1100 hPa
- Display accuracy: ±1 digit (±3.55 hPa)
- Safety class: 3, IEC 1010
- Protection system: IP 54 DIN 40050

Type	Description	PK	Cat. No.
OxiTop® IS 6	for 6-place	1	9.920 000
OxiTop® IS 12	for 12-place	1	9.920 001
OxiTop® IS 12-6	generally as OxiTop® IS 12, but with 6 OxiTop® measuring systems, suitable for expansion to 12 measuring units	1	9.920 003



## Sample analysis/BOD

### 1 B.O.D. auto-check measurement systems, OxiTop® Control

In accordance with DIN EN 1899 H55.

WTW

OxiTop® Measuring System with infra-red communication between measuring head Oxitop C and the Controller Oxitop Control 100.

Sample administration for up to 100 parallel samples and automatic sample ID. The display presents a clear view of the whole sample management and process with indication of the process step. The display function means that manual identification or labelling is no longer necessary. The two operating modes included, "Routine B.O.D." and "Standard B.O.D." fulfil standard requirements and additional demands such as calculation and statistics. GLP-compliant documentation with testing agent monitoring is included. It is not possible to switch samples. The progress of individual sample procedures is stored in the measuring head with 180 to 360 data records. Each measuring system independently implements a temperature-controlled start using the integral AutoTemp function. The measuring positions can be called up at any time using the controller and their measurements loaded into the controller's memory (even through the closed insulating glass door or cover of the thermostatic cabinets and OxiTop® boxes). B.O.D. evaluation and curve construction is carried out in the controller. Data output to PC is possible via the RS 232 interfaces. OxiTop® Control can be expanded as required using extension sets. The inductive stirring system corresponds with OxiTop® (see previous page).

#### Complete system comprises:

OxiTop® B.O.D. controller, OxiTop®-C measuring heads (each battery operated) and inductive stirring system, ready for use in OxiTop® thermostatic cabinets and incubators. Controller includes graphics display, sample management for up to 100 measuring positions, amber sample bottles 600 ml, stirring bars, stirring bar remover, sodium hydroxide pellets, rubber sleeves, 164ml and 432ml overflow measuring flasks, chart paper block and nitrification inhibitor.

#### Controller OxiTop® OC 100:

Measuring ranges: 0 to 40/80/200/400/800/2000/4000mg/L B.O.D.  
 Safety class: 3, IEC 1010  
 Protection system: IP 42 DIN 40050.

#### OxiTop®-C measuring head:

Measurement principle: manometric, by means of a pressure sensor  
 Operating pressure range: 500 to 1350 hPa  
 Accuracy: ±1 % Meas. value ±1 hPa  
 Resolution: 1 hPa (corresponds with 0.7 % of the B.O.D. measuring range)  
 Display: LED pilot lamp  
 Safety class: 3, IEC 1010  
 Protection system: IP 54 DIN 40050

Type	Description	PK	Cat. No.
OxiTop® Control 6	for 6-place	1	9.920 010
OxiTop® Control 12	for 12-place	1	9.920 011

### 2 Controlled temperature cabinet, OxiTop® Box

With temperature regulated forced air circulation.

WTW

Benchtop model with transparent, hinged cover. can be used with various accessories, including OxiTop® IS, OxiTop® Control and IS 602. With interior power supply socket to allow operation of stirrers etc. within the chamber. Corrosion-resistant housing made of stainless steel or plastic. Temperature control is maintained using forced air circulation refrigeration unit. Cross flow ventilation provides uniform temperature distribution. Overtemperature protection, automatic defrosting and condensate evaporation are also provided, to maximise system efficiency. Stability at 20°C ±0.5°C. A special storage rack is provided for methylene blue samples. Also suitable for "BOD dilution" samples.

Dimensions (WxDxH): 425 x 600x 375 mm  
 Weight: approx. 30 kg  
 Supply requirements: 230 V 50 Hz (+10 %, -15 %) 200 W.

Type	PK	Cat. No.
OxiTop® Box	1	9.920 025





### 1 BOD-Measurement-System BD600



AQUALYTIC

BOD measurement is an important measurement of the effects of domestic and industrial waste water on sewage plants and outflow points.

The AQUALYTIC® sensor system BD 600 is a 6 sample system that allows precise measurements of BOD based on the manometric principle. Manometric respirometers relate oxygen uptake to the change in pressure caused by oxygen consumption while maintaining a constant volume. Due to the modern integral pressure sensors, it is not necessary to use mercury for the measurements.

The BOD values are stored automatically in the sensor memory at regular intervals and can be called up on the large-format display at any time without the need for time-consuming conversion using factors. This means that test series that end on a Sunday can be evaluated during the following week without any problem. Measurement series can be stored on USB stick/ SD card or transferred via USB cable to evaluate the data on a computer.

The measurement period is user-selectable between 1 and 28 days to suit the application. While short measurement periods are useful for scientific applications, standard BOD measurements typically extend over a period of 5 days - and manometric determination of OECD, for example, generally takes place over a period of 28 days.

System comprises:

- BD 600, complete unit with 6 sensor heads and control unit with batteries
- Power supply unit incl. Y-cable for common power supply of BD 600 and stirring unit
- Inductive stirring unit
- 6 sample bottles
- 6 rubber gaskets
- 6 magnetic stirring rods
- 1 overflow flask, 157 ml
- 1 overflow flask, 428 ml
- 1 bottle, 50 ml potassium hydroxide solution
- 1 bottle, 50 ml nitrification inhibitor solution
- 1 instruction manual

#### Specifications

Measuring principle:	manometric, electronic pressure sensor
Ranges:	0 - 40, 0 - 80, 0 - 200, 0 - 400, 0 - 800, 0 - 2000, 0 - 4000 mg/l O <sub>2</sub>
Measurement period:	User-selectable, between 1 and 28 days
Power supply:	3 x 1.5V alkaline batteries, size "C"
Protection class:	P 54 (Sensor)
Approval:	CE
Interface:	USB host port
Clock:	Real time
Application:	BOD5/ BODF/ OECD301F

Type	Description	PK	Cat. No.
BD600	BOD-Measurement-System	1	6.268 048



### 2 Controlled temperature cabinets BOD

WTW

To maintain samples at the same temperature during incubation, there is a need for an controlled temperature cabinet. WTW offers a choice of cabinet with temperature range adjustable from 10°C to 40°C (temperature stability ±0.5°C), power supply 230 V 50Hz. For stirring the samples there is a supply socket for a mixer inside the cabinet. Depending on the size of the samples there is max. space for 2 to 4 shelves. So up to 48 standard BOD samples, 4 x type IS 12 or 8 x IS 6-Var stirring platforms can be accommodated. For special applications the larger Model TS 1006-i is required, having enough space between the shelves for 1.5 litre bottles. Models TS 606/2-i and TS 606/4-i with separate glass door are designed for use with the larger OxiTop® Control system, allowing the digital readout to be viewed through the glass.

Temperature range:	+10°C to +40°C
Settable resolution:	1°C
Ambient temperature:	+10°C to +32°C (Climate class SN)
Storage:	-25°C to +65°C

Type	For	PK	Cat. No.
TS 606/2-i	2 BOD OxiTop® units	1	9.926 304
TS 606/4-i	4 BOD OxiTop® units	1	9.926 308
TS 1006-i	4 BOD OxiTop® units	1	9.926 311





## Sample analysis/BOD



### 1 Thermostatic cabinets

AQUALYTIC

The incubators from AQUALYTIC® are designed for continuous tempering for different applications, mainly for the determination of BOD, the storage of wastewater samples, and the determination of enzymatic activity.

The temperature range is +2°C up to +40°C and can be regulated in steps of 0.1°C. Temperature tolerance is defined with  $\pm 1^\circ\text{C}$  respectively  $\pm 0.5^\circ\text{C}$  (at 20°C). Low energy consumption due to reinforced isolation. The interior of the cabinets is equipped with sockets for connecting stirrers. There are 4 models available with standard doors from 135 to 445 litres net capacity, and 2 models with glass doors with 140 and 255 litres net capacity. Illuminated LED display with actual/setpoint display.

#### Specifications

Coolant:	R134a
Fan:	Axial, delivery rate 320m <sup>3</sup> /h
Power supply:	220-230V/50Hz

Description	Capacity l	PK	Cat. No.
With metal door, 3 metal racks + 1 bottom grid + 4 sockets	135	1	9.699 142
With metal door, 3 metal racks + 1 bottom grid + 5 sockets	175	1	9.699 143
With metal door, 4 metal racks + 1 bottom grid + 7 sockets	255	1	9.699 144
With metal door, 4 metal racks + 1 bottom grid + 9 sockets	445	1	9.699 145
With glass door, 3 metal racks + 1 bottom grid + 4 sockets	140	1	9.699 146
With glass door, 4 metal racks + 1 bottom grid + 7 sockets	256	1	9.699 147



### 2 Bottles (Karlsruhe bottles) with stoppers

The special bottle neck of the Karlsruhe bottles absorbs the water which is displaced by the stopper of the electrode. This construction guarantees clean working and ensures at the same time that the test results are not adulterated by unwanted entry of oxygen into the samples.

Behr

Capacity ml	Length*	PK	Cat. No.
100	20	1	9.920 514
100	60	1	9.920 515
250	20	1	9.920 513
250	60	1	9.920 509

\* Stopper handle length (mm)

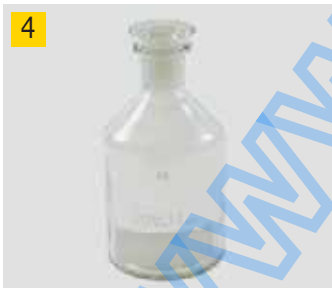


### 3 BOD meters Type KF 12, accessory funnel bottle

Karlsruher BOD bottle with NS19 conical ground joint.

WTW

Type	PK	Cat. No.
Karlsruher BOD bottle, 250ml	1	9.304 170



### 4 Dissolved oxygen bottles, Winkler pattern

Winkler pattern. Soda-lime glass.

For determination of dissolved oxygen in water. The measured capacity is specified to  $\pm 0.01\text{ml}$ . With white labelling area. Solid, bevelled glass stopper, secured with an accessory spring clip. Each bottle is adjusted to the relevant stopper. Stoppers and bottles are therefore not interchangeable. Each bottle and its stopper is marked with a unique, matching identification number.

Nominal capacity ml	NS	Snap-on clip	PK	Cat. No.
100 to 150	14/23	9.304 050	1	9.304 038
250 to 300	19/26	9.304 051	1	9.304 048



### 5 Spring clips for oxygen bottles according to Winkler

For bottles ml	PK	Cat. No.
100 - 150	1	9.304 050
250 - 300	1	9.304 051

## 12. Environmental-, soil-, water-, food analysis

### Sample analysis/Turbidity

#### 1 2 Sedimentation cones, borosilicate glass 3.3

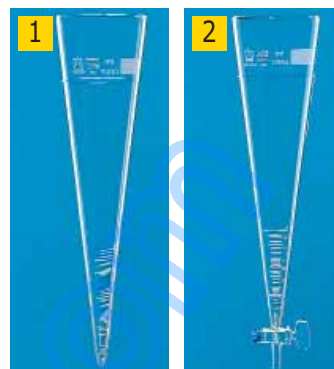
Imhoff pattern. DIN 12672. Borosilicate glass 3.3. Graduations and inscriptions in contrasting white enamel. Ring mark at 1000ml.

Starke

Graduations, ml:	Subdivisions ml/Tolerance ±ml:
0 to 2	0.1/0.1
2 to 10	0.5/0.5
10 to 40	1/1
40 to 100	2/2
100 to 1000	50/10

Type	Grad.	PK	Cat. No.
ml			
Without stopcock	up to 100*	1	9.304 262
With stopcock	up to 100*	1	9.304 272
Without stopcock	up to 1000	1	9.304 273

\* No subdivisions from 100 to 1000 ml.



#### 3 Sedimentation cone, plastic, SAN

Imhoff pattern. DIN 12672. Transparent SAN (Styrene acrylonitrile). With screw cap for draining the contents. Temperature-resistant up to max. 85°C.

Kartell

Graduations, ml:	Subdivisions, ml
0 to 2	0.1
2 to 10	0.5
10 to 40	1
40 to 100	2
100 to 1000	50

Type	Grad.	PK	Cat. No.
ml			
With screw cap	up to 1000	1	9.304 280



#### 4 Sedimentation cones, accessory stand

Acrylic/PP. To hold two Imhoff sedimentation cones. Compact and easy to transport even when fully loaded.

Kartell

Width mm	Length mm	Height mm	PK	Cat. No.
150	300	300	1	9.304 281



#### 5 Sedimentation cones, accessory holders

Imhoff pattern, solid grey PVC. Stable design.

Behr

For	PK	Cat. No.
2 Imhoff funnels without stopcock	1	9.882 101
4 Imhoff funnels without stopcock	1	9.882 102
2 Imhoff funnels with stopcock	1	9.882 103
4 Imhoff funnels with stopcock	1	9.882 104



#### 6 Flocculation tester AL30

- Portable
- Continuously variable stirring speed
- Timer feature
- Height adjustment of the stirring blades during operation
- Central lamp for easy observation

AQUALYTIC

**Specifications**

Stirring places:	4
Speed control:	20 - 40 - 50 - 100 - 120rpm
Timer:	0 to 30min (continuous)
Power Supply:	100V-240V/50-60Hz

Type	PK	Cat. No.
AL30	1	9.699 301
Bag for transport	1	9.699 302



## Sample analysis/Turbidity

1



9.951 491

2



### 2 Flocculation testers

For flocculation tests of water and waste water.

- choice of 2- or 6-bank models
- digital speed display
- two adjustable speed presets
- accurate and reproducible speeds
- diffused base illumination with black background
- accepts beakers up to 1000ml.

Stuart

Adjustable speed range 25 to 250rpm. Dimensions (H x W x D): 460 x 320 x 220mm (two-bank model)  
460 x 750 x 220mm (six-bank model). For 230 V 50 Hz, single phase supplies. Supplied with rotor blades but without beakers.  
With BioCote silver based antimicrobial protection.

Type	Description	PK	Cat. No.
SW5	Flocculation tester, 2-bank	1	9.951 491 1
SW6	Flocculation tester, 6-bank	1	9.951 492

3



### 3 Turbidity meter AL250T-IR

With infrared light source.

AQUALYTIC

Highlights:

- measuring ranges from 0.01 to 1100NTU (autorange)
- measurement with infrared light at an angle of 90°
- measurement of coloured liquids
- easy operation
- 600 tests between battery charges

The compact Aqualytic® infrared turbidity meter AL250T-IR is designed to allow fast, precise on-site testing. The unit measures the scattered light at an angle of 90°, as stipulated in EN ISO 7027.

The wide measuring range from 0.01 to 1100 TE/F = NTU = FNU permits use of the unit for various media, ranging from drinking water to waste water.

As infrared light is used for measurement, the unit can be used to test both coloured and colourless liquids.

The standards required for calibration of the unit are also supplied. A second adjustment mode allows alternative adjustment with user-defined turbidity standards.

Package contents:

AL250T-IR turbidity meter as described above, complete with 4 turbidity standards <0.1, 20, 200 and 800NTU, battery and test vial, in case.

#### Specifications:

Measurement cycle:	approx. 9 seconds
Display/Function:	LCD
Optics:	temperature-compensated LED and photosensor amplifier in water proof sample chamber
Keypad:	4 key polycarbonate membrane
Measuring range:	0.01 to 1100NTU (autorange)
Resolution:	0.01 to 9.99NTU = 0.01NTU 10.0 to 99.9NTU = 0.1NTU 100 to 1100NTU = 1NTU
Accuracy:	±2.5% of measuring value or ±0.01 NTU (0 to 500 NTU) ±5% (500 to 1100NTU)
Housing:	ABS
Dimensions (L x W x H):	190 x 110 x 55mm
Weight (Basis unit):	approx. 0.4kg
Temperature:	0 to 40°C
Humidity (rel.):	30 to 90% R.H.
CE-conformity:	DIN EN 50081-1, VDE 0839 part 81-1: 1993-03, DIN EN 50082-2, VDE 0839 part 82-2: 1996-02

Type	PK	Cat. No.
AL250T-IR	1	9.920 203

### Accessories for turbidity meter AL250T-IR/AL450T-IR

AQUALYTIC

Description	PK	Cat. No.
Set of 12 empty sample vials, diam. 24 mm	1	6.223 191
Set of turbidity standards T-CAL (<0.1, 20, 200, 800 NTU)	1	9.920 493

### 1 Turbidity Meter HI 98713-02

Optical system of the meter, the infrared LED, assures long term stability and minimizes stray light and colour interferences. Instrument meets the requirements of the ISO 7027 method and provides reliable and accurate measurements even on low turbidity values. Very wide range from the 0.00 to 1000 FNU. Meter can be used for various applications from drinking water to waste water. Automatic 2/3/4- point calibration with the supplied Calibration standards (<0.1, 15, 100, 750 FNU). Calibration data can be checked at any time by simply pressing a button (GLP features). Up to 200 measurements can be logged and transferred later to PC via USB interface. Supplied with: Meter HI 98713-02, carrying case, 5 sample cuvettes and caps, 4 calibration standards, cuvette cleaning cloth, batteries and 12 VDC adapter,

Hanna



**Specifications:**

Measuring range: 0.00 to 9.99; 10.0 to 99.9; 100 to 1000 FNU  
 Accuracy: ±2% of reading plus 0.1 FNU  
 Calibration: 2-, 3- or 4-point calibration  
 Logging Capacity: 200 records  
 PC Interface: USB or RS 232  
 Power supply: 4 x 1.5V alkaline batteries or 12VDC Adapter

Type	PK	Cat. No.
HI 98713-02	1	9.922 810

### 2 LLG-Extraction thimbles, cellulose



Made of cellulose.

Diam. mm	Length mm	PK	Cat. No.
19	90	25	9.045 705
20	80	25	9.045 701
22	80	25	9.045 700
25	100	25	9.045 709
26	60	25	9.045 707
28	80	25	9.045 711
30	80	25	9.045 708
33	80	25	9.045 702
33	94	25	9.045 703
33	100	25	9.045 704
33	118	25	9.045 706
37	130	25	6.256 301
43	123	25	9.045 710
58	170	25	6.263 174



### 3 Extraction and filter thimbles Grade 603

Manufactured in pure cellulose according to DIN 12449.

GE Healthcare

Int. diam. mm	Length mm	Standard extractor capacity ml	For	PK	Cat. No.
22	80	30	Büchi (1)	25	9.043 901
25	80			25	9.043 909
25	100	70	Büchi (1)	25	9.043 902
26	60			25	9.043 910
33	80		Gerhardt (2) / Foss Tecator (3)	25	9.043 907
33	90			25	9.043 911
33	94	100	Büchi (1)	25	9.043 903
33	100			25	9.043 916
33	118			25	9.043 904
33	130			25	9.043 917
33	205	250		25	9.043 905
35	150			25	9.043 915
40	85			25	9.043 918
43	123		Büchi (1)	25	9.043 950
44	230			25	9.043 906





## Sample analysis/Extraction



### 1 2 Extraction thimbles

Cellulose. Supplied in packs of 25. Dimensions given are nominal internal diameter x external length in mm.

GE Healthcare

Int. diam. mm	Length mm	Type	PK	Cat. No.
10	50	Single	25	9.951 335
18	55	Single	25	9.951 336
19	90	Single	25	9.951 337
22	80	Single	25	9.951 338
25	80	Single	25	9.951 339
25	100	Single	25	9.951 340
26	60	Single *	25	9.951 341
28	80	Single	25	9.951 342
28	100	Single	25	9.951 343
28	120	Single	25	9.951 344
30	80	Single	25	9.951 345
30	100	Single	25	9.951 346
33	80	Single	25	9.951 347
33	94	Single	25	9.951 348
33	100	Single	25	9.951 349
33	118	Single	25	9.951 350
37	130	Single	25	9.951 351
41	123	Single	25	9.951 352
43	123	Single	25	9.951 353
60	180	Single	25	9.951 354
22	80	Double	25	9.951 355
33	80	Double	25	9.951 356

\*Fits Soxtec™ extractor



### 3 Stands for Extraction Thimbles

**NEW!**

Behr

Type	Description	PK	Cat. No.
RIP 4	for 4 extraction thimbles	1	9.843 949
RIP 6	for 6 extraction thimbles	1	9.843 950



### 4 Complete compact extraction systems, with heating

Complete compact extraction systems with stand, heating module, mount, hoses and glassware (round-bottom reaction flask, extractor, Dimroth condenser for extraction). Infinitely variable heating regulation.

Behr

- practical stand for holding the condensers securely between extractions
- extractor sizes from 30 ml to 1000 ml
- the use of extractors with a stopcock eliminates the need for any additional distillation after extraction
- Condensers with screwed-on tubing nipples

Type	Description	PK	Cat. No.
KEX 30	for 30ml extraction with 100 ml distilling flasks	1	9.843 777
KEX 60	for 60ml extraction with 250 ml distilling flasks	1	9.843 835
KEX 100	for 100ml extraction with 250 ml distilling flasks	1	9.843 778
KEX 30 F	for 30ml extraction with stopcock and 100 ml distilling flasks	1	9.843 836
KEX 60 F	for 60ml extraction with stopcock and 250 ml distilling flasks	1	9.843 837
KEX 100 F	for 100ml extraction with stopcock and 250 ml distilling flasks	1	9.843 786
KEX 250 F	for 250ml extraction with stopcock and 500 ml distilling flasks	1	9.843 779
KEX 500 F	for 500ml extraction with stopcock and 1000 ml distilling flasks	1	9.843 838
KEX 1000 F	for 1000ml extraction with stopcock and 2000 ml distilling flasks	1	9.843 839

### Extraction apparatus, Soxhlet-pattern

Extraction apparatus, Soxhlet-pattern. With Dimroth condenser and round-bottom flask.  
Made of Duran® tubing.

Extractor	Condenser	Round bottom flasks	PK	Cat. No.
ml	NS	Capacity ml		
30	29/32	100	1	9.043 001
70	34/35	100	1	9.043 002
100	45/40	250	1	9.043 003 1
150	45/40	250	1	9.043 004
200	45/40	250	1	9.043 008
250	45/40	500	1	9.043 005
300	60/46	500	1	9.043 009
500	60/46	1000	1	9.043 006
1000	71/51	2000	1	9.043 007



9.043 003

### 2 Serial Extraction Apparatus behrotest® for Soxhlet-/Fat-Extraction

behrotest® serial heaters are the economical and user-friendly solution for the classic Soxhlet or fat extraction:

Behr

- complete with reaction vessels, extraction spacers and coolers
- energy for each sample position is individually adjustable
- cooling water distributor ensures even cooling at all sample positions
- practical stand for holding the condensers securely between extractions
- mounts for holding the extraction spacers after removing the sample vessels
- S models: The extractors with stopcock do away with the need for any additional distillation after extraction

Type	Description	Capacity ml	PK	Cat. No.
R 304	4-position	30	1	9.043 030
R 306	6-position	30	1	9.043 031
R 304 S	4-position, with stop-cock	30	1	9.043 035
R 306 S	6-position, with stop-cock	30	1	9.043 036
R 604	4-position	60	1	9.043 037
R 606	6-position	60	1	9.043 038
R 604 S	4-position, with stop-cock	60	1	9.043 039
R 606 S	6-position, with stop-cock	60	1	9.043 040
R 104 S	4-position, with stop-cock	100	1	9.043 029
R 106 S	6-position, with stop-cock	100	1	9.043 028
R 108 S	8-position, with stop-cock	100	1	9.043 041
R 254 S	4-position, with stop-cock	250	1	9.043 042
R 256 S	6-position, with stop-cock	250	1	9.043 043



### 3 Single-reflux distillation apparatus

**NEW!**

Behr

Complete equipment for reflux distillation, consisting of

- Compact frame with supporting brackets for cooler depositing and cooler holder
- Standing basin
- Reaction flask
- Behr high performance glass cooler
- Tubing

Type	Description	PK	Cat. No.
KRD 50	1 heating place for 50ml	1	9.843 970
KRD 100	1 heating place for 100ml	1	9.843 971
KRD 250	1 heating place for 250ml	1	9.843 972
KRD 500	1 heating place for 500ml	1	9.843 973
KRD 1000	1 heating place for 1000ml	1	9.843 974



## Sample analysis/Extraction



### 1 Serial heating unit for reflux distillation (NEW)

Complete equipment for reflux distillation, consisting of

- Hot bench, 4 or 6 heating positions
- Standing basin
- Stand rods
- Cooling water distribution with condenser rack and cooler stand
- Reaction flask
- Behr high performance glass coolers

Behr

Type	Description	PK	Cat. No.
RH 104	4 heating places for 100ml round flasks	1	9.843 963
RH 106	6 heating places for 100ml round flasks	1	9.843 964
RH 254	4 heating places for 250ml round flasks	1	9.843 965
RH 256	6 heating places for 250ml round flasks	1	9.843 966
RH 504	4 heating places for 500ml round flasks	1	9.843 967
RH 506	6 heating places for 500ml round flasks	1	9.843 968



### 2 Hydrolysis/crude fibre separation set , behrotest

behrotest® Hydrolysis apparatus, complete with:

- Serial heating unit with individually adjustable heating places
- Cooling water distribution with condenser rack and hoses
- Beakers (600ml), cold fingers

Behr

Type	Description	PK	Cat. No.
EXR 4	Hydrolysis/crude fibre separation unit, 4 sample positions	1	9.843 828
EXR 6	Hydrolysis/crude fibre separation unit, 6 sample positions	1	9.843 827

### Complete Compact Extraction System

Compact Extraction System in accordance with Twisselmann  
 Complete compact extraction system with stand, heating module, mount, hoses and glassware (round-bottom reaction flask, extractor, Dimroth condenser for extraction).

Behr

Type	Description	PK	Cat. No.
KEX 100 T	Compact system for Twisselmann extraction	1	9.843 824



### 3 behrotest® Multi-sample Extractors for Twisselmann Extraction

Economical and user-friendly units for extraction in accordance with Twisselmann:

- each sample position is individually adjustable
- cooling water distributor ensures an even cooling at all sample positions
- practical stand for holding the condensers securely between the extractions
- mounts for holding the spacers after the removal of the sample containers

Behr

Type	Description	PK	Cat. No.
R 104 T	Multi-sample extractor for an extraction in accordance with Twisselmann, complete for 4 samples	1	9.843 825
R 106 T	Multi-sample extractor for an extraction in accordance with Twisselmann, complete for 6 samples	1	9.843 826

### 1 Extraction Unit for the Randall Method

Manual apparatus for hot extraction according to Randall. Several times faster than a customary Soxhlet extraction. Incl. 1 set of extraction thimbles, 100 ml.

Behr

- Optimal safety thanks to screw-fastened extraction units

Multiple position extraction units:

- Every extraction thimble with sample can be independently adjusted

- The user can lower and raise all the extraction units into/out of the heating chamber with a single lever

- Every heating position has a separate temperature control

#### Specifications

Dimensions (H x W x D, cm): approx. 81 x 55 x 63

Weight, kg: approx. 32

Voltage: 230V 50Hz a.c.

Power consumption: Max. 1500W

Type	Description	PK	Cat. No.
E1	One sample position	1	9.843 923
E4	Four individually adjustable sample positions	1	9.843 922
E6	Six individually adjustable sample positions	1	9.843 924
EX 75 HS	Extraction thimbles for the EB 75 reaction flask	25	9.843 926
EB 75	Reaction flask	1	9.843 927



### Exhaust Device, borosilicate

- Filter mountings, 400 ml, with thread

- PP funnels with thread

- Slotted sieve plate with 2 gaskets

- Stainless steel rack

- Water jet pump

Behr

Type	Description	PK	Cat. No.
FU 4	Filtration unit, 4 places	1	9.843 844
FU 6	Filtration unit, 6 places	1	9.843 845



9.843.844

### Filtration Device for Crude Fibre separation

e.g. to determine the raw fibre content according to EN ISO6865

Behr

Type	Description	PK	Cat. No.
SC 4	Filtration unit, 4 places	1	9.843 833
SC 6	Filtration unit, 6 places	1	9.843 834



9.843 833

➡ For extraction apparatus, Soxhlet, please see page 1149.

We can supply this  
**manufacturer's whole**  
**product range !**





## Sample analysis/Kjeldahl

**1**


9.843 770

### InKjel M manually adjustable infrared digestion system

Rapid digestion system with manually adjustable energy control and direct heating of the samples through high-quality quartz radiators (1500W).

- Quartz infra-red radiators peak at 830°C within 1 min.
- Particularly uniform heating at all sample positions

All InKjel systems are fitted completely with multi-level consoles, fume extraction unit, sample rack and glass digestion vessels.

Configurations available:

- 6 sample vessels each 250ml
- 12 sample vessels each 100ml
- 12 sample vessels each 250ml
- 4 sample vessels each 500ml
- 4 sample vessels each 750ml

Type	For	PK	Cat. No.
InKjel 1210 M	12 sample vessels each 100ml	1	9.843 757
InKjel 625 M	6 sample vessels each 250ml	1	9.843 770 <b>1</b>
InKjel 1225 M	12 sample vessels each 250ml	1	9.843 771
InKjel 450 M	4 sample vessels each 500ml	1	9.843 768
InKjel 475 M	4 sample vessels each 750ml	1	9.843 769

Behr

**2**


9.843 706

### Infrared rapid digestion system with temperature control

The temperature-controlled InKjel TC-series devices combine the advantages of infrared and block digestion in one system: Fast Infrared digestion at defined temperatures ensures high sample throughput.

In the programmable version InKjel TCP, the user has a choice of 25 freely configurable programs for temperature and digestion time.

The high-quality quartz infrared heaters of InKjel TC reach 830°C in a minute and achieve uniform heating at all sample positions.

Type	For	PK	Cat. No.
InKjel 625 TCM	6 sample vessels each 250ml	1	9.843 701
InKjel 1210 TCM	10 sample vessels each 100ml	1	9.843 702
InKjel 1225 TCM	12 sample vessels each 250ml	1	9.843 703
InKjel 450 TCM	4 sample vessels each 500ml	1	9.843 704
InKjel 475 TCM	4 sample vessels each 750ml	1	9.843 705
InKjel 625 TCM	6 sample vessels each 250ml	1	9.843 706 <b>2</b>
InKjel 1210 TCM	12 sample vessels each 100ml	1	9.843 707
InKjel 1225 TCM	12 sample vessels each 250ml	1	9.843 708
InKjel450 TCM	4 sample vessels each 500ml	1	9.843 709
InKjel 475 TCM	4 sample vessels each 750ml	1	9.843 710

Behr

**3**


6.233 440

### InKjel P infrared digestion system with 10 freely configurable programmes

Rapid digestion system with 10 freely configurable programmes for power and digestion time and direct heating of the samples through high-quality quartz radiators (1500W).

- Quartz infra-red radiators peak at 830°C within 1 min.
- Particularly uniform heating at all sample positions
- The supplied Windows software permits the user to transfer time/temperatures profiles, which are specifically for the application, via the RS232 interface in both directions between one or more units and a PC.
- A library with common applications is already included on the CD.

All InKjel systems are fitted completely with multi-level consoles, fume extraction unit, sample rack and glass digestion vessels.

Configurations available:

- 6 sample vessels each 250ml
- 12 sample vessels each 100ml
- 12 sample vessels each 250ml
- 4 sample vessels each 500ml
- 4 sample vessels each 750ml

Type	For	PK	Cat. No.
InKjel 1210 P	12 sample vessels each 100ml	1	9.843 756
InKjel 625 P	6 sample vessels each 250ml	1	9.843 760
InKjel 1225 P	12 sample vessels each 250ml	1	6.233 440 <b>3</b>
InKjel 450 P	4 sample vessels each 500ml	1	9.843 758
InKjel 475 P	4 sample vessels each 750ml	1	9.843 759

Behr

### 1 Standard Kjeldahl block digestion systems K 8, K 12 and K 20

Behr

Block digestion systems with high-quality corrosion-resistant block housing made of stainless steel. With 8, 12 or 20 sample slots for standard Kjeldahl digestion vessels with a volume of 250 ml. High-efficiency heating and extraction hood with exhaust collector.

- behr single-knob control for particularly easy and fast programming.
  - Menu navigation in national language.
  - 10 freely configurable programs for block temperature and digestion time.
  - Applications can be saved.
  - USB interface.
  - The Windows software supplied enables the user to bidirectionally transfer application-specific time/temperature profiles between one or several units and a PC via the interface.
  - The removable inspection door on the insertion rack enables the progress of the digestion to be observed.
- Complete systems with digestion vessels, rack and extraction hood.



Type	Description	PK	Cat. No.
K 8	with 8 sample slots, for digestion vessels with a volume of 250 ml	1	9.843 900
K 12	with 12 sample slots, for digestion vessels with a volume of 250 ml	1	9.843 901
K 20	with 20 sample slots, for digestion vessels with a volume of 250 ml	1	9.843 902

### 2 Micro Kjeldahl block digestion systems K 6, K 24 and K 40

Behr

Block digestion systems with high-quality corrosion-resistant block housing made of stainless steel. With 16, 24 or 40 sample slots for micro Kjeldahl digestion vessels with a volume of 100 ml. High-efficiency heating and extraction hood with exhaust collector.

- behr single-knob control for particularly easy and fast programming.
  - Menu navigation in national language.
  - 10 freely configurable programs for block temperature and digestion time.
  - Applications can be saved.
  - USB interface.
  - The Windows software supplied enables the user to bidirectionally transfer application-specific time/temperature profiles between one or several units and a PC via the interface.
  - The removable inspection door on the insertion rack enables the progress of the digestion to be observed.
- Complete systems with digestion vessels, rack and extraction hood.



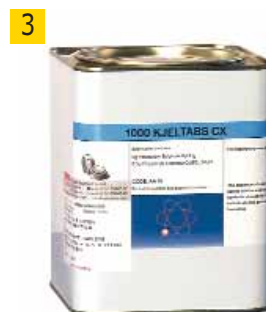
Type	Description	PK	Cat. No.
K 16	with 16 sample slots, for digestion vessels with a volume of 100 ml	1	9.843 903
K 24	with 24 sample slots, for digestion vessels with a volume of 100 ml	1	9.843 904
K 40	with 40 sample slots, for digestion vessels with a volume of 100 ml	1	9.843 905

### 3 Accessories for Kjeldahl rapid sample digestors

**NEW!**

Behr

Type	Description	PK	Cat. No.
KT 1	Catalyst tablets (5.0 g K <sub>2</sub> SO <sub>4</sub> ; 0.5 g CuSO <sub>4</sub> )	1000	9.843 767
KT 2	Catalyst tablets (5.0 g K <sub>2</sub> SO <sub>4</sub> ; 0.15 g CuSO <sub>4</sub> ; 0.15 g TiO <sub>2</sub> )	1000	9.843 773
KT 3	Catalyst tablets (3.5 g K <sub>2</sub> SO <sub>4</sub> ; 0.4 g CuSO <sub>4</sub> )	1000	9.843 752
KT 4	Catalyst tablets (3.5 g K <sub>2</sub> SO <sub>4</sub> ; 3.5 g Se)	1	9.843 969
AFS	Antifoam tablets	1000	9.843 753
SIST 100	Boiling stones, contents 100g	1	9.920 710
WP	Nitrogen-free weighing boats	100	9.843 754
SR 3i	Sample vessel, 250ml, for InKjel	1	9.843 766
SR 4	Sample vessel	1	9.843 750
SR 5	Sample vessel	1	9.843 751
KJ 500	Sample vessel, 500ml, for InKjel	1	9.843 775
KJ 750	Sample vessel, 750ml, for InKjel	1	9.843 776



## Sample analysis/Kjeldahl



### 1 behrosog 3 Scrubber

- Infinitely variable throughput
- Transparent protective shield for safe operation of the unit
- Exterior manual control elements with easy access prevent the analyst from touching hot glass parts
- Acid resistant diaphragm pump

Behr

Type	Description	PK	Cat. No.
behrosog 3	Scrubber with suction pump (40 l/min), cooling stage, neutralisation stage and drip catcher	1	9.920 584
ACS	Additional cooling for behrosog 3	1	9.920 585



9.843 815

### 2 Steam Distillation Unit S

- Exemplary safety and reliability
- Robust casing of polyurethane
- Distillation time approx. 3 mins. per sample
- Detection limit 0.1 mg N
- Recovery rate >99.5%
- Reproducibility ±1%
- Steam generating capacity adjustable from 40% - 100%
- Extremely simple, menu-controlled operation of the programmable units via one single operating element (Behr one-button operation)
- Programmable reaction time
- Serial interface (RS232)
- Filling level monitoring for can set
- Practical quick clamping device equally suited for the "left-handed" analyst

Behr

Type	Description	PK	Cat. No.
S 1	Steam distillation unit, partly automated with automatic addition of NaOH	1	9.843 814
S 2	Steam distillation unit, partly automated with automatic addition of NaOH and H <sub>2</sub> O	1	9.843 813
KAS 20	Can set for S 1 and S 2	1	6.236 005
S 3	Steam distillation unit, partly automated, like S2 with automatic extraction of the sample residues and with 10 programs	1	9.843 815 2
KAS 30	Set of 3 canisters (20 l each) for S 3, incl. float switch	1	9.843 816
S 4	Steam distillation unit, fully automatic, like S 3 with automatic extraction H <sub>3</sub> BO <sub>3</sub> of the sample residues and with 99 programs	1	9.843 817
S 5	Steam distillation with automatic addition of NaOH, H <sub>2</sub> O and H <sub>3</sub> BO <sub>3</sub> with automatic extraction of the sample residues, with 99 programs and a connection option for external titrator	1	9.843 803
KAS 40	Set of 4 x 20 l containers for S 4, incl. float switch	1	9.843 818
TB 1	Titration module for connection to steam distillation unit S 5	1	9.843 832



### 3 Steam distillation unit D1 and D2

- Alcohol
- Volatile acid contents
- Fermentation process (beer, etc.)
- Ammonium chloride in liquorice products

Behr

Distillation units for determining alcohol and volatile acid content in wine and other alcoholic drinks. Complete glassware, with volumetric flasks and pycnometer. Because of its rapidity, the Behr D 1 and D 2 are especially suitable for high sample throughputs.

The supplied Windows software permits the user to transfer distillation parameters, which are specifically for the application, via the RS232 interface in both directions between one or more units and a PC. A library with common applications is already included on the CD. Data can also be transmitted from the unit to the PC via the RS232 interface while operating. The user can save them if necessary and print them out as graphics.

Type	Description	PK	Cat. No.
D1	for determining alcohol content, distillation into a pycnometer	1	9.843 830
D2	for determining Volatile acid content, distillation into an erlenmeyer flask 500 ml	1	9.843 831

## 12. Environmental-, soil-, water-, food analysis

### Sample analysis/Special distillation

#### 1 Compact systems for sulphur dioxide determination, KSO/SO

For determination of sulphur dioxide (total SO<sub>2</sub>), 2 absorption units per sample. With base unit, heating mantle, mounting frame and glassware, including 500ml reaction flasks. Systems with adsorption units or other flask sizes on request.

Behr

Type	Description	PK	Cat. No.
KSO 2	Complete compact system	1	9.920 546
SO 2-6	System for 6 working units	1	9.920 547



#### 2 Compact system for determination of water content

Compact system for determination of water content by azeotropic distillation. Suitable for non-homogeneous and irregularly shaped food such as dried fruit and vegetables, Sauerkraut etc. With base stand, heating mantle, mounting frame and glassware.

Behr

Type	Description	PK	Cat. No.
KWA 500		1	9.920 548
KWA 500/4 for 4 samples		1	9.920 537
KWA 500/6 for 6 samples		1	9.920 538



#### Infrared decomposition and separation systems with temperature control for cyanide distillation

Infrared decomposition and separation systems with temperature control for cyanide distillation

Behr

State of the art and efficient system with four sample sites for the decomposition and separation of total cyanide.

Novel infrared digestion system with temperature control.

With integrated magnetic stirrer, according to national and international standards for cyanide determination in water samples.

With the appropriate accessories also suitable for the determination of readily liberated cyanide and cyanide content in soils according to DIN 11262

Available with manual control and electronic time/temperature programming.



9.843 711

Type	Description	PK	Cat. No.
CN 4 IR TCP	Rapid Infrared digestion unit CN 4 IR TCP incl. electronic time-/ temperature programming, for max. 4 samples	1	9.843 711 <b>3</b>



## Sample analysis/Milk analysis



1 Milk dipper		(NEW)
Nickel plated brass, with valve, sterilisable. Gerber		
Capacity ml	PK	Cat. No.
1	1	6.266 491
2	1	6.266 492
4	1	6.266 493
5	1	6.266 494
10	1	6.266 495
20	1	6.266 496
40	1	6.266 497
50	1	6.266 498
100	1	6.266 499



2 Milk sample bottles		(NEW)
Gerber		
Type	PK	Cat. No.
50 ml, AR-glass, flat bottom, 4 ringmarks at 10 / 20 / 30 / 40 mm	1	6.266 500
Rubber stopper for milk sample bottle 6.266 500	1	6.266 501
50 ml, plastic, with snap cap	1	6.266 502

Rack for Milk sample bottles, stainless steel		(NEW)
Meshes: 35 x 35 mm Gerber		
Type	PK	Cat. No.
Bottlerack for 3 x 7 milk sample bottles	1	6.266 503
Bottlerack for 4 x 7 milk sample bottles	1	6.266 504
Bottlerack for 11 x 11 milk sample bottles	1	6.266 505



3 Centrifuge Micro II		Gerber
Small centrifuge for the determination of fat and solubility of milk powder by Gerber. With timer, automatic brake, temperature controlled heating with variable temperature setting. Digital microprocessor control of time and temperature. Lid latch. Steel casing (WxDxH): 430 x 460 x 280 mm. Incl. rotor and brass sleeves.		
Type	PK	Cat. No.
for 8 butyrometers, 230 VAC, 50 Hz	1	9.112 580
for 12 butyrometers, 230 VAC, 50 Hz	1	9.112 579



4 Universal Gerber Centrifuge		(NEW)
Multi-purpose centrifuge for the dairy laboratory. 3 pre-programmed speeds for: <ul style="list-style-type: none"> <li>- Gerber butyrometers (350 x g)</li> <li>- Solubility index in milk powder (164 x g)</li> <li>- Extraction tubes Roese-Gottlieb/Mojonnier (80 x g)</li> </ul> 1 variable speed (200 to 1300rpm) available on request Microprocessor controller with LCD display for speed, duration, temperature and errors. Automatic brake, lid lock and imbalance switch-off. Temperature thermostatically controlled. Steel housing (WxDxH): 640 x 640 x 450mm. Power supply: 230VAC, 50/60Hz		
Description	PK	Cat. No.
Centrifuge without heating, with universal rotor for 12 positions, without inserts	1	6.254 782 4
Centrifuge without heating, with special-rotor incl. 36 sleeves	1	6.264 744
Centrifuge with heating (temperature control to 65°C) and special rotor incl. 36 sleeves	1	6.264 745

➔ For more centrifuges, please see page 631.

### Accessories for Gerber Centrifuges Universal

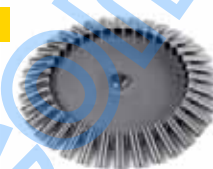
Type	PK	Cat. No.
Universal rotor with 12 places, without inserts	1	9.112 584 <b>1</b>
Butyrometer insert, sleeve with ring, int. diam. 26mm	1	9.112 585
Solubility insert, stainless steel sleeve, int. diam. 31mm, for intake of milk powder solubility tubes by ADPI	1	9.112 586
Insert acc. Röse-Gottlieb, with aluminium mounting for Mojonner tubes	1	9.112 587
Special rotor complete with 36 free-swinging sleeves of stainless steel, for Gerber butyrometers and solubility tubes by Gerber	1	9.112 583 <b>2</b>

1



9.112 584

2



9.112 583

### 3 Butyrometer water bath Butytherm Mini

For 12 butyrometers, stainless steel tank, holds approx. 8 liters, dimensions int. (L x W x H): 300 x 150 x 200mm. Thermostat up to 90°C, heating 550 W, 230 VAC

Type	PK	Cat. No.
Butyrometer water bath Butytherm Mini	1	9.112 591

3



### 4 Accessories for Butyrometer water bath Butytherm Mini

Type	PK	Cat. No.
Flat lid with 12 openings for Butyrometer	1	9.112 594
Rack (PP) for 12 butyrometers, 2 x 6 positions, L x W x H 220 x 80 x 150mm, 2 handles (H=45mm)	1	9.112 592
Shaking cover (PVC) for rack with 12 tests	1	9.112 593

4



### 5 Butyrometer water bath WB 22 Pump

The water provides optimal operating comfort by splash-proof keypad and bright strong multi-display (LED). Modern microprocessor technology with PID temperature control ensures optimum temperature stability in the water bath. The circulation pump is used to improve the temperature distribution. The adjustable overheating protection protects the samples. Bath tanks and all parts in contact with the bath liquid are made of high quality stainless steel. Temperature range: +5°C above ambient to 85°C (±0.2). Volume: 22 liters, interior dimensions (L x W x H): 490 x 290 x 150mm, heating: 1100W, 230 VAC.

Type	PK	Cat. No.
WB 22 Pump	1	6.266 506

5



### Accessories for Butyrometer water bath WB 22 Pump

Type	PK	Cat. No.
Rack for 8 butyrometers, stainless steel	1	6.266 507 <b>6</b>
Rack for 20 butyrometers, stainless steel	1	6.266 508
Bottom plate for butyrometer racks	1	6.266 509

6



6.266 507

## Sample analysis/Milk analysis



### 1 Butyrometer heating bath



Grant

Robust, high precision temperature-controlled stirred bath specifically designed for use in dairy laboratories, with sufficient depth to allow immersion of Gerber butyrometers. Also suitable for general laboratory applications where a deeper tank is required.

- Temperature range ambient +5°C to 100°C
- Stability ±0.05°C
- Precision digital thermostatic temperature control, with stirred circulation
- Capacity for up to 36 Gerber butyrometers
- Fixed over-temperature cutout
- 3 programmable temperature sets
- Removable control unit for easy cleaning and servicing. All immersed parts, the heater, float, stirrer and temperature sensor, are made of materials that will resist occasional contamination of the water by spilt Gerber acid
- Space for three purpose-designed racks (H1-25M), each with the capacity to hold 12 butyrometers
- Robust stainless steel inner tank and outer case with a hinged lid plus handle for convenient access
- User calibration facility for optimum accuracy at the required operating temperature
- The bright LED display constantly displays actual temperature for at-a-glance reassurance
- Sophisticated digital control unit provides adaptive intelligent PID temperature control
- Low liquid protection and fixed over-temperature protection
- Simple-to-use rotor plus two function keys for quick temperature setting and menu navigation

#### Specifications

Temperature range:	ambient +5 to 100°C
Stability:	±0.05°C
Display:	4-digit LED
Display resolution:	0.1°C
Heater power:	230V, 1.3kW 120V, 1.4kW
Working area/tank opening:	240 x 210mm
Tank capacity (nominal):	20L
Liquid depth min/max:	185/225mm
Electrical power:	230V 50/60Hz 1.4kW 120V 50/60Hz 1.5kW

Type	Description	PK	Cat. No.
T100-MST20	Tank and control unit	1	9.699 676
MST20	Spare tank	1	9.699 677
H1-25M	Test tube rack for 12 butyrometers	1	9.699 678



9.112 565

### Milk Butyrometer Original Gerber



Gerber

With frosted label on bulb, plain neck, without stopper, for milk quantities of 10.73-11 ml. All instruments manufactured according to ISO-standard 488IDF 105.

Fat %	Graduation	PK	Cat. No.
0 - 4	0.05	1	9.112 565 2
0 - 5	0.05	1	6.266 487
0 - 6	0.1	1	9.112 588
0 - 7	0.1	1	6.803 740
0 - 8	0.1	1	6.224 904
0 - 9	0.1	1	6.226 307
0 - 10	0.1	1	6.225 776
0 - 12	0.1	1	6.236 033
0 - 14	0.2	1	6.236 845
0 - 16	0.2	1	6.266 488



9.112 566

### Skim Milk Butyrometer



Gerber

With frosted label on bulb, without stopper.

Fat %	Graduation	Description	PK	Cat. No.
0 - 0.5	0.02	Milk: 43.5ml ±0.5ml, closed bulb, plain neck	1	9.112 566 3
0 - 1	0.01	Milk: 10.73 - 11ml, open bulb, ring neck*	1	9.112 563
0 - 1	0.02	Milk: 10.73 - 11ml, open bulb, plain neck*	1	9.112 564

\*Stopper Cat. No. 9.112 576 please order separately.

### Cream Butyrometer Koehler Gerber Standard



1

Volumetric method for 5 ml cream, with frosted label on bulb, ring neck, without stopper

Gerber

Fat	Graduation	PK	Cat. No.
%			
0 - 40	0.5 (± 0.25)	1	9.112 567
0 - 50	0.5 (± 0.25)	1	6.224 905 1
0 - 60	1.0 (± 0.5)	1	6.264 746
0 - 70	1.0 (± 0.5)	1	9.112 568



6.224 905

### Ice Cream Butyrometer Koehler



2

Volumetric method for 5 ml cream, closed bulb with frosted label, plain neck, without stopper

Gerber

Fat	Graduation	PK	Cat. No.
%			
0 - 15	0.2	1	6.266 489
0 - 20	0.2	1	6.234 868 2
0 - 25	0.2	1	6.264 747



6.234 868

### Cream Butyrometer Roeder with accessories



3

Gravimetric method for 5 g cream, with 2 openings, frosted label on bulb, complete with rubber stoppers and glass beaker with stem without hole

Gerber

Fat	Graduation	PK	Cat. No.
%			
0 - 50	0.5 (±0.25)	1	9.112 570 3
0 - 60	1.0 (±0.5)	1	6.264 748
0 - 70	1.0 (±0.5)	1	6.204 427
0 - 20 - 50	0.5 (±0.25)	1	7.659 958
0 - 35 - 65	0.5 (±0.25)	1	9.112 571
0 - 30 - 55	0.5 (±0.25), Norm: DIN	1	6.243 590
0 - 50 - 75	0.5 (±0.25), Norm: DIN	1	6.237 816



9.112570

### Cheese and Quark Butyrometer with Accessories



4

Weighing method for 3 g cheese, with two openings, frosted label on bulb, complete with rubber stoppers and glass beaker with 16 holes

Gerber

Fat	Graduation	PK	Cat. No.
%			
0 - 40	0.2	1	6.234 562
0 - 40	0.5	1	6.203 256 4
0 - 40	0.5; officially verified	1	6.264 749
0 - 40	0.5; Norm: ISO/DIN/NE	1	9.112 572
0 - 40	0.5; Norm: ISO/DIN, officially verified	1	6.266 490



6.203 256

### Dry Milk Butyrometer Teichert with Accessories



5

Weighing method for 2.5 g dry milk, closed bulb with frosted label, neck Ø 17/18 mm, with rubber stopper and glass nail

Gerber

Fat	Graduation	PK	Cat. No.
%			
0 - 35	0.5 (±0.25)	1	9.112 569 5
0 - 70	1.0 (±0.5)	1	6.203 600



9.112 569



### Accessories for Butyrometers

**NEW!**

Gerber



6.262 314



9.112 575



6.264 750

Description	PK	Cat. No.
GERBAL-M stopper with bush, length 23.5mm	1	9.112 573
Regulating pin for GERBAL-M stopper, nickel plated brass	1	9.112 574
Double conical rubber stopper, 36x12/14mm for milk-, skim milk- and Koehler-Cream-Butyrometer	1	6.224 906
Single conical rubber stopper 35x11/16mm, acid-proof for milk, skim milk and Koehler-Cream-Butyrometer	1	6.202 638
Single conical rubber stopper, small, 15x10.5/13 mm for butyrometers with two openings	1	9.112 576
Single conical rubber stopper, large, 30 x 17.5/20mm, with hole for beaker, for butyrometers with two openings	1	9.112 575 2
Single conical rubber stopper, large, 30 x 17.5/22mm, without hole, for butyrometers with two openings	1	6.202 636
Glass beaker without holes for Cream Butyrometers	1	9.112 577
Glass beaker with two holes for butter butyrometers	1	6.262 314 1
Glass Beaker with 16 holes for Cheese Butyrometers	1	9.112 578
Glassnail for powder milk butyrometer	1	6.234 037
Weighing funnel of glass, for weighing and filling the milkpowder into the butyrometer	1	6.264 750 3

### Pipettes for Butyrometers

**NEW!**

Gerber



4

9.112 589

Description	PK	Cat. No.
Milk pipette 11.00ml, verifiable	1	9.112 589 4
Milk pipette 10.75ml acc. to DIN 129837	1	9.112 603
Cream pipette 5ml, 20°C	1	9.112 609
Water pipette 5ml	1	9.112 610
Sulfuric Acid pipette 10ml with 2 bulbs	1	9.112 607
Amyl alcohol pipette 1ml with 1 bulb	1	9.112 604

### Accessories for glass butyrometers

Gerber



5

9.112 605

Type	PK	Cat. No.
Tilt measure for 10 ml sulphuric acid, with rubber stopper, without bottle	1	9.112 608
Tilt measure for 1 ml amyl alcohol, with rubber stopper, without bottle	1	9.112 590
Milk syringe, exchangeable barrel, 11 ml	1	9.112 605 5
Cream syringe, exchangeable barrel, 5 ml	1	9.112 611



### 1 Mono Water Stills without storage tank

Models 2001/2 and 2001/4 without storage tank, capacity 2L and 4L/hr., for bench mounting. Low-gas, bacteria and pyrogen free distillate, in conformity with DAB requirements and international pharmacopoeia regulations. Conductivity of distillate approx. 2.3µs/cm at 25°C. Evaporator, condenser (cooler) with baffle and heating element made of stainless steel. Evaporator is easily accessible by lifting out the condenser. Degassing of carbon dioxide through vent in the condenser. Main switch with pilot lamp on the front of the unit. Housing electrostatically powder-coated with epoxy resin. Cooling water inlet and outlet\*on the right-hand side of the unit. Water connection: cooling water inlet ½ inch (12.7mm i.d.), cooling water outlet ½ inch\* (12.7mm i.d.). Thermometer to display the temperature of the cooling water. Distillate withdrawal through drain tube on the front of the unit. Economical energy consumption by distilling the heated cooling water. Thermostatic low water cut-off, to protect the heating element in case of low water. Power connection through mains connection cable with German shock-proof type (Schuko) plug, for 230V 50/60Hz (other voltages are available - details on request).

GFL

\*Tubing for water inlet and outlet can be supplied as accessory items.

Type	Output		Water consumption	Dimensions (W x D x H) mm	Power W	Weight g	PK	Cat. No.
	L / hr.	approx. L / hr.						
2001/2	2	20	20	280 x 250 x 490	2000	7500	1	9.910 600
2001/4	4	40	40	280 x 250 x 490	3000	7500	1	9.910 601



### 2 Mono Water Stills with storage tank

Models with storage tank; 2002 (4 litres), 2004 (8 litres), 2008 (16 litres) and 2012 (24 litres) Models with storage tank, suitable for bench and wall mounting. Low-gas, bacteria- and pyrogen-free distillate, in conformity with DAB requirements and international pharmacopoeia regulations. Conductivity of distillate approx. 2.3µs/cm at 25°C. Evaporator with baffle is easily accessible by lifting the lid. Evaporator, condenser (cooling coil) positioned in the storage tank, storage tank for distillate and heating element are of stainless steel. Storage tank for distillate holds double the hourly capacity of the unit. Water supply through a built-in solenoid valve with connection for mains pressure water tubing, ½ inch\* (12.7 mm i.d.), cooling water pressure required: > 3 bar to max. 7 bar. After turning on the main switch the solenoid valve opens the water supply and closes it once the storage tank is full, thus avoiding unnecessary waste of water. Economical energy consumption by distilling the heated cooling water. Cooling water outlet with ¾ inch (19 mm i.d.) tubing connection. Water that has not been condensed flows off through the cooling water outlet\*. The evaporator is drained via a tap on the right-hand side of the unit. Automatic indication when cleaning required. Degassing of carbon dioxide through vent in the top. An electronic level switch switches the still off when the storage tank is full and restarts it automatically when distillate is withdrawn. Distillate withdrawal through a tap on the front of the unit. Thermostatic low water cut-off, to protect the heating element in case of low water. Main switch and pilot lamps on the front of the unit. Double-walled housing, outer housing made of electrolytically galvanized sheet steel, electrostatically powder-coated with epoxy resin. Power connection through connection cable; 2 and 4 litre units have German shock-proof type (Schuko) plug.

GFL

\*Tubing for water inlet and outlet can be supplied as accessory items.

Type	Output		Water consumption	Dimensions (W x D x H) mm	Power W	Voltage 50/60 Hz	Weight kg	PK	Cat. No.
	L / hr.	approx. L / hr.							
2002	2	30	30	540 x 290 x 420	1500	230V	15.40	1	9.910 602
2004	4	48	48	620 x 330 x 460	3000	230V	20.20	1	9.910 604
2008	8	72	72	780 x 410 x 540	6000	400V*	30.70	1	9.910 608
2012	12	198	198	780 x 410 x 670	9000	400V*	43.00	1	9.910 612

\* 400V/3/N/PE/three-phase current  
Other voltages available - details on request.





### 1 Double Water Stills

Double distillation stills, models 2102, 2104 and 2108, suitable for bench and wall mounting. Low-gas, bacteria- and pyrogen-free distillate, in conformity with DAB requirements and international pharmacopoeia regulations. Conductivity of mono-distillate approx. 2.2µs/cm at 25°C, conductivity of bi-distillate approx. 1.6µs/cm at 25°C. Evaporator and baffle of the mono stage are easily accessible by lifting the condensers. Evaporator, condensers (coolers) 1st stage and heating element made of stainless steel, 2nd stage including baffle made of DURAN®/Borosilicate glass 3.3. Water supply through built-in, solenoid valve with ½ inch\* (12.7 mm i.d.) tubing connection for mains water inlet required, cooling water pressure: > 3 bar to max. 7 bar. After switching on the power, the solenoid valve opens the water supply. Cooling water outlet with ¾ inch\* (19 mm i.d.) tubing connection. Water that has not been condensed flows off through the cooling water outlet\*.

Distillate withdrawal: stop valve made of Borosilicate glass 3.3 with PTFE plunger for mono distillate, outlet with dustproof shield made of Borosilicate glass 3.3 for bi-distillate. Low energy consumption achieved by distilling the heated cooling water. Low water cut-off: float switch and thermostatic overtemperature cut-out. Automatic indication for cleaning. Degassing of carbon dioxide through vent on the condensers. Two-part housing made of electrolytically galvanized sheet steel, electrostatically powder-coated with epoxy resin; upper part easily removable through quick-release catches. Mains switch and pilot lamps to monitor both distillation stages are on the front of the unit. Power connection through connection cable.

GFL

\*Tubing for water inlet and outlet can be supplied as accessory items.

Type	Output		Water consumption approx. L / hr.	Dimensions (W x D x H) mm	Power W	Voltage 50/60 Hz	Weight kg	PK	Cat. No.
	L / hr.								
2102	2		72	500 x 260 x 470	3500	230V	18.00	1	9.910 642
2104	4		120	550 x 280 x 570	6500	400V*	23.00	1	9.910 644
2108	8		198	700 x 390 x 700	11500	400V*	39.00	1	9.910 648

\* 400V/3/N/PE/three-phase current  
Other voltages available - details on request.



### 2 Mono/Double Glass Water Stills

Mono Water Stills: models 2202, 2204, 2208 for 2, 4 and 8 litres/hr, Bi Distillation Stills: models 2302, 2304 for 2 and 4 litres /hr, fully automatic. Suitable for bench and wall mounting. Low-gas, bacteria- and pyrogen-free distillate, in conformity with DAB requirements and international pharmacopoeia regulations. Conductivity of mono-distillate approx. 2.2µs/cm at 25°C, conductivity of bi-distillate approx. 1.6µs/cm at 25°C. Minimal metal ion content in the distillate. Evaporators, condensers and overflows made of DURAN®/Borosilicate glass 3.3. Condensers with dribble guard. Quartz sleeved heating element. Condensers are kept sterile by steam. Water supplied through built-in solenoid valve with connection for ½ inch\* (12.7mm i.d.) mains water pressure tubing, required water pressure >3 bar up to max. 7 bar. After the main switch is switched on, the solenoid valve opens to start the water supply. Cooling water outlet with ½ inch\* (12.7mm i.d.) tubing connection. Water that has not been condensed flows out through the cooling water outlet\*. Low energy consumption through distilling the heated cooling water. Distillate withdrawal at the right-hand side of the unit through tubing connection\*. Electronic level control during the whole distillation process. Water level control in the condenser has automatic power cut-off in the event of water shortage. Electronic impurity detector starts automatic water change to rinse and clean the condenser. Degassing of carbon dioxide through vents on the condenser. Main and function switches as well as pilot lamps for monitoring are on the front of the unit. Housing made of electrolytically galvanized sheet steel, electrostatically powder-coated with epoxy resin. Visible distillation process through easily removable, unbreakable front screen that does not steam up. Power connection through connection cable (models 2202, 2204 and 2302 with German shock-proof type (Schuko) plug).

GFL

\*Tubing for water inlet and outlet can be supplied as accessory items.

#### Technical Specification

Dimensions (WxDxH)

2202/2204: 650 x 200 x 390mm

2208/2302/2304: 650 x 365 x 390mm

Type	Output		Water consumption approx. L / hr.	Power W	Voltage 50/60 Hz	Weight kg	PK	Cat. No.
	L / hr.							
2202 (Mono)	2		48	1500	230V	16.00	1	9.910 672
2204 (Mono)	4		96	3000	230V	17.00	1	9.910 673
2208 (Mono)	8		144	6000	400V*	24.00	1	9.910 674
2302 (Bi)	2		96	2900	230V	24.00	1	9.910 675
2304 (Bi)	4		144	5800	400V*	24.00	1	9.910 676

\* 400V/3/N/PE/three-phase current  
Other voltages available - details on request.

### 1 | 2 Accessories for water stills

#### Dechlorite Filter 2904

GFL

For all GFL water stills. Eliminates chlorine particles in the mains water, added by the local water suppliers. Complete with connections for ½ inch (12.7mm i.d.) pressure tubing, including first filter charge. The charge should be changed every six months. Tubing for the water inlet and outlet are available as accessories

#### Spare Filling 2905

Spare filter charge for Dechlorite Filter 2904.

#### Phosphate Cartridge 2906

For all GFL water stills. Prevents limescale formation in the condenser by phosphatising the supply water. Can be used from 4-15°dH (German hardness). Complete with connections for ½ inch (12.7mm i.d.) pressure tubing, including first filling. The filling should be replaced according to consumption. Tubing for the water inlet and outlet are available as accessories.

#### Spare Filling 2907

Spare Filling for Phosphate Cartridge 2906.

#### Separate Water Supply 2901/2902/2903

To feed the evaporator with softened or desalinated water (pressure >1 bar) and the cooling coil (pressure >3 bar) with phosphate-treated, or standard mains water. Efficiency of the still is reduced by approx. 10 to 15%. **2901** for Water Stills 2002 to 2012, **2902** for Glass Water Stills, **2903** for Water Stills 2102 to 2108. Tubing for the water inlet and outlet are available as accessories. Installation must be performed at the factory.

#### Level Control Switch 2908/2910

To control the water level in external reservoirs for Water Stills. To switch off power and water when the external reservoir is full (not included). **2908** for Glass Water Stills 2202 to 2208, 2302 and 2304. **2910** for Water Stills 2004 to 2012 and 2102 to 2108. Installation must be performed at the factory. When using an external reservoir with level switch 2910, the internal reservoir is disabled.

Type	Description	PK	Cat. No.
2904	Dechlorite filter	1	9.910 664
2905	Spare filling for dechlorite filter	1	9.910 665
2906	Phosphate cartridge	1	9.910 666
2907	Spare filling for phosphate cartridge	1	9.910 667
2901*	Separate water supply for water stills 2002 to 2012	1	9.910 661
2902*	Separate water supply for glass water stills	1	9.910 662
2903*	Separate water supply for water stills 2102 to 2108	1	9.910 663
2908*	Level control switch for an external storage tank for glass water stills 2202-2208 and 2302 and 2304	1	9.910 668
2910*	Level control switch for an external storage tank for Water Stills 2004 to 2012 and 2102 to 2108	1	9.910 669

Other accessories such as pre-filter, wall brackets, hose sets, separate water supply with solenoid valve and heating with thermostat for the internal storage tank on request.

\*Installation must be performed at the factory





### Deioniser, behropur®

behropur® mixed-bed ion exchangers deliver de-ionized water according to Grade 3 of the ISO 3696 standard, -Water for analytical laboratory use; Specification and test methods.

Behr

The resins inside the behropur® ion exchangers are of certified quality.

The completely equal distribution of water inside the ion exchanger leads to the maximum utilization of the exchange capacity of the unit. Thus the user benefits from very low conductance water throughout the life cycle of each exchanger charge.



### 1 Deioniser, behropur®

Heavy-walled, robust and practical mixed bed deioniser in blue polyethylene with free flow output to the reservoir. Also ideal for the post desalination of reverse osmosis systems or for aquariums.

Behr

- Can be directly connected to the water supply and is immediately ready for operation.
- Automatic venting as water is supplied from below.
- Minimal risk of contamination due to slotted filter in the raw water inlet.
- Nozzles are durable and easy to clean. Highly resistant to abrasion or shocks.
- Extremely sturdy, heavy-duty nozzle welding by the manufacturer's own welding process.
- Resistivity meter fitted.
- B5 and B10 can also be used as wall mounted devices (wall mounting included).
- Also available with water quality cut-out and solenoid valve which engages if specified limits are exceeded and reservoir level control.
- Resistivity control available directly on the unit or remotely at any location.

#### Output data:

<b>Model</b>	<b>B5/B10</b>
Cation exchange capacity*at 10°dH:	500 L/1000 L
Flow max.:	50/100 L/hr.
Dia.:	16/21 cm
Height:	53/63 cm

Type	Description	PK	Cat. No.
B5	unpressurised, complete with resistivity meter	1	9.882 114
B10	unpressurised, complete with resistivity meter	1	9.882 115
B5Z	dual cartridge for unpressurised	1	9.882 116
B10Z	dual cartridge for unpressurised	1	9.882 117
B5A	unpressurised, resistivity meter with water quality cut-out and solenoid valve	1	9.882 118
B10A	unpressurised, resistivity meter with water quality cut-out and solenoid valve	1	9.882 119

\* Limiting value 20 µS



### 2 Deionisers, pressure-resistant, behropur®

Compact and secure mixed bed deionisers for small to medium-sized volumes of ultra pure water. Ideal for feeding laboratory washing machines, general requirements in the laboratory, low level consumption in industry and for post-treatment desalination of the output from reverse osmosis systems.

Behr

- Optimal utilisation of the deioniser due to totally uniform water distribution in the resin chamber.
- Can be connected directly to the raw water mains without a pressure reducer.
- Back pressure resistant.
- Also available with water quality cut-out and solenoid valve, which engages if specified limits are exceeded, and reservoir level control.
- Resistivity control available directly on the unit or remotely at any location.

#### Performance data:

<b>Model</b>	<b>B10dN/B22dN/B45dN</b>
Cation exchange capacity at 10°dH:	1200 L/2400 L/5500 L
Flow max.:	300/500/800 L/hr
Dia.:	21/21/26 cm
Height incl. LF:	68/112/125 cm
Height, cartridge only:	55/98/110 cm

Type	Description	PK	Cat. No.
B10dN	Pressure-resistant mixed bed unit, with resistivity meter	1	9.882 120
B10dNZ	Dual cartridge for pressure-resistant mixed bed unit B10dN	1	9.882 123
B10dNA	Pressure-resistant mixed bed unit, with resistivity meter	1	9.882 126
B22dN	Pressure-resistant mixed bed unit, with resistivity meter	1	9.882 121
B22dNZ	Dual cartridge for pressure-resistant mixed bed unit	1	9.882 124
B22dNA	Pressure-resistant mixed bed unit stivity, meter with water quality cut-out	1	9.882 127
B45dN	Pressure-resistant mixed bed unit, with resistivity meter	1	9.882 122
B45dNZ	Dual cartridge for pressure-resistant mixed bed unit B45dN	1	9.882 125
B45dNA	Pressure-resistant mixed bed unit, meter with water quality cut-out	1	9.882 128

\* Limit value 20 µS/cm

### 1 Mixed-bed ion exchanger made of stainless steel

Standard cartridge made of V4A stainless steel for general purpose application: To supply laboratory glassware washers, for general laboratory maintenance and for small industrial consumers.

Behr

For subsequent demineralization of reverse osmosis systems.

- pressure resistant to 10 bar
- optimum exploitation of the ion exchanger capacity due to absolute uniform water distribution in the unit
- flow rates up to 700 litres/hour
- the unique behropur® jet nozzle system distributes the raw water over the entire resin bed. This ensures an optimum exchange capacity and quality
- can be connected to the raw water network directly and without a pressure reducer
- resistant to alternating pressure
- hard rubber collars vulcanized to the base and top of the unit offer effective protection
- convenient transport thanks to the handles embedded into the top part of the unit
- conductivity is controlled directly on the unit (installed measuring equipment) or with remote location meter
- Also available with shut-off when the limit value is reached and limit control

**E28d** Pressure resistant mixed-bed unit made of V4A special alloy, permanent pressure resistant to 10 bar, complete with conductivity meter

**E40d** Pressure resistant mixed-bed unit made of V4A special alloy, permanent pressure resistant to 10 bar, complete with conductivity meter

**E28dZ** Pressure resistant mixed-bed unit made of V4A special alloy, permanent pressure resistant to 10 bar, spare cartridge

**E40dZ** Pressure resistant mixed-bed unit made of V4A special alloy, permanent pressure resistant to 10 bar, spare cartridge

**E28dA** Pressure resistant mixed-bed unit made of V4A special alloy, permanent pressure resistant to 10 bar, conductivity meter with limit switch and electrovalve

**E40dA** Pressure resistant mixed-bed unit made of nylon, permanent pressure resistant to 8 bar, conductivity meter with limit switch and electrovalve



#### Specifications

#### E 28/E 40 d

Exchange capacity*at 10°dH	2800 litres/4000 litres
Flow max. litres/hour	500/700
Diameter in cm	24/24
Height incl. LF in cm	74/84
Height of cartridge only in cm	60/70

Type	PK	Cat. No.
E28d	1	9.915 730
E40d	1	9.915 731
E28dZ	1	9.915 732
E40dZ	1	9.915 733
E28dA	1	9.915 734
E40dA	1	9.915 735

\* Limit value 20 µS/cm

### 2 Filter for behropur® mixed-bed ion exchanger

Filter for pressure-resistant behropur® mixed-bed ion exchangers. Transparent casing.

Behr

Once added to the ion exchanger, it completely retains even the finest particles and protects your high-quality equipment. Due to the transparent casing of the FG 130, you can see the state of the filter insert at any time and at a glance.

Depending on the requirements, you can use a universal filter (5µ) or a carbon filter (20µ). Downstream filters may only be used on pressure-resistant behropur® ion exchangers. Pressure-free exchangers are destroyed by the counter pressure. It could also subsequently result in expensive damage.

**FG 130** behropur® filter housing for filter inserts with a length of 5". Transparent casing made of PP. Connections 3/4", maximum operating pressure 8bar, max. temp. 50°C

**FE 130** behropur® filter insert, PP, 5µ, length 5", max. pressure 6bar, max. temp. 80°C

**AF 130** behropur® filter insert, carbon, 20, length 5", max. pressure 6bar, max. temp. 50°C



Type	PK	Cat. No.
FG 130	1	9.915 736
FE 130	1	9.915 737
AF 130	1	9.915 738

## Water purification/Pure and ultra-pure water



### 1 Deionisers, SG stainless steel (V4A)

The high quality 1.4404 stainless steel deionizers can be operated at pressures of up to 10 bar and are more resistant to mechanical stress than conventional glass fiber reinforced plastic cartridges. Evoqua has optimized the water flow to ensure that the resin bed can be used to its full capacity. All deionizers are available with the proven stainless steel quick-fit couplers (SK) or with 3/4" threaded connectors. All deionizers are supplied without conductivity meter and hose set (or probe). Please order these devices separately.

Type	Output	Diam.	Height	Weight	PK	Cat. No.
	L / hr.	mm	mm	kg		
Spare cartridge for SG 2000 SK	450	230	410	16	1	9.914 442
Spare cartridge for SG 2800 SK	800	230	570	22	1	9.914 452
Spare cartridge for SG 4500 SK	1000	230	785	33	1	9.914 437
Spare cartridge for SG 6200 SK	1000	230	1025	46	1	9.914 432
Spare cartridge for SG 2000 3/4"	450	230	410	16	1	9.914 512
Spare cartridge for SG 2800 3/4"	800	230	570	22	1	9.914 509
Spare cartridge for SG 4500 3/4"	1000	230	785	33	1	9.914 506
Spare cartridge for SG 6200 3/4"	1000	230	1125	46	1	9.914 587



### 2 Conductivity monitoring, 3D

The conductivity meter 3D is battery driven to control the conductivity of pure and demineralized water. The scaled value can be controlled with three light-emitting diodes (LED) green, yellow, red. The limited values are available in two performances. <1, <20, >20 µS/cm and <5, <20, >20 µS/cm, and two applications: straight (illustration 2) and angular (illustration 3) The unit consists of a plastic housing with a R 3/4" connection.

- **profitability:** battery-driven - longlasting duration
- **individuality:** no electrical connection necessary
- **safety device:** conductivity meter 3D - 3 light emitting diodes (LED)
- **connectors:** R 3/4" union nut



9.700 804

Measuring range	External dimensions (W x D x H)	Weight	Type	Measuring range limit value	PK	Cat. No.
0,1 - 20 µS/cm	55 x 40 x 110	0.3	straight	<1/<20/>20	1	9.700 802
0,1 - 20 µS/cm	55 x 40 x 110	0.3	straight	<5/<20/>20	1	9.700 803
0,1 - 20 µS/cm	55 x 40 x 110	0.3	angular	<1/<20/>20	1	9.700 804 3
0,1 - 20 µS/cm	55 x 40 x 110	0.3	angular	<5/<20/>20	1	9.700 805



9.914 516

### Conductivity meters

#### Model P 2/30 Sk.

With analogue display 0 to 30µS/cm and connector coupling. With quick couplings and integrated cell (c=0.2).

#### Model P2/30.

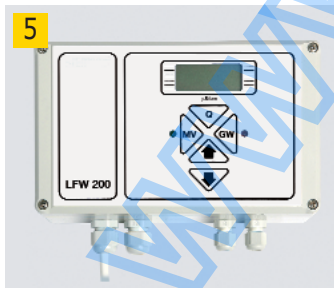
With analogue display 0 to 30µS/cm and threaded connections. With screw connections 3/4" and integrated cell (c=0.2).

#### Model LFW 200.

With digital display 0.1 to 199.9µS/cm. With potential free switching contact (adjustable value), malfunction alarm indicator, connections for solenoid valve, K = 0.2 cell with or without temperature compensation (Pt 500) and reservoir float switch with external indication. Designed for wall mounting. Dimensions (W x D x H): 200 x 60 x 120mm. Cell not included. Please order separately.

#### Model P1/50 WA

With analogue display, measuring range 0 to 50µS/cm, potential free switching contact (value free selectable), for wall mounting. Cell not included. Please order separately.



9.914 517

Type	PK	Cat. No.
P 2/30 SK	1	9.914 460
P 2/30 3/4"	1	9.914 516 4
LFW 200	1	9.914 517 5
P1/50 WA	1	9.914 518
Scew-in cell, 1/2", c=0.2, 3m cable for P1/50 WA/LFW 200	1	6.057 070

### 1 Conductivity monitoring, 3HD, flow controlled



Aqua Lab GmbH & Co.



The conductivity meter 3HD is battery driven, flow controlled equipment to control the conductivity of pure and demineralized water. The scaled value can be controlled with three light-emitting diodes (LED) green, yellow and red. Re-ionizing and wrong conductivity devices by long duration of no use are excluded. The preset values are <5, <20, >20 µS/cm. The unit consists of a plastic housing with a R 3/4" connection. No electrical connection necessary.

- **profitability:** battery-driven - longlasting duration
- **individuality:** no electrical connection necessary
- **safety device:** conductivity meter 3HD - 3 light emitting diodes (LED)
- **connectors:** R 3/4" union nut

Measuring range	External dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
0,1 - 20 µS/cm	110 x 40 x 145	0.5	1	9.700 806

### 2 Ultrapure water system, arium® pro

Sartorius

ASTM Typ1 water purification system for the high-end user. Whether for routine analysis or critical applications where reagent-grade water is required, the system consistently supplies high quality that is perfect for your applications. arium® pro features a convincing innovative design, quality and ease of use. From the intuitive menu navigation to the operator friendly setup, all units in the arium® pro series feature ultra easy operation and ultra high flexibility for producing laboratory-grade purified water. arium® pro UV and pro VF water purification systems are also optionally available with an integrated TOC monitor for regularly checking the organic water constituents in product water. The TOC can be measured manually or automatically as required.

#### Areas of Application

- Atomic absorption (AA)
- Ion exchange chromatography (IC)
- High performance liquid chromatography (HPLC)
- Polymerase chain reaction (PCR)
- Inductively coupled plasma mass spectrometry (ICP-MS)
- Preparing cell culture media
- Protein purification
- Manufacturing reagents
- Preparing buffers and media
- Rinsing glass vessels

#### Features

- Innovative glass operator interface with touch function
- Integrated TOC measurement (optional)
- Volume- and time-controlled dispensing
- Freely adjustable flow rates up to 2 L/min
- Conductivity measurement for feed and product water
- Integrated monitoring of water consumption
- Data logging on SD card and printer or PC
- Activatable PIN code for basic configurations
- Service and alarm functions supported by graphic displays
- Intelligent alarm system
- Compact design

#### Product Water Quality

Resistivity:	18.2 MΩ x cm
TOC (at 50ppb feed water):	
arium® pro DI/UF:	≤ 5ppb*
arium® pro UV/VF:	< 2ppb*
Endotoxin at arium® pro UF/VF:	< 0.001 EU/ml
Particles (at 0.2µm):	< 1/ml
Bacteria (CFU/1000ml):	< 1
Flow rate (at 2 bar without final filter)	
arium® pro DI/UV:	up to 2 L/min
arium® pro UF/VF:	up to 1.7 L/min



Type	Description	PK	Cat. No.
arium® pro DI-T	standard	1	9.914 548
arium® pro UV-T	with UV-lamp, for chromatographic applications	1	9.914 549
arium® pro UF-T	with ultra filter, for cell culture applications	1	9.914 550
arium® pro VF-T	with ultra filter and UV-lamp, for standard, cell culture and chromatographic applications	1	9.914 553

\*Values may vary depending on the quality of the feed water, the amount of contamination contained in the feed water, and/or the type of cartridge in use.



### 1 Pure water purification systems Barnstead™ Pacific™ TII

The Thermo Scientific Barnstead Pacific TII water purification systems support daily requirements from 20Litres to 200Litres Type 2 water using tap water as feed source. A 30L, 60L, or 100L polyethylene reservoir is required to store and dispense the pure water. Applications include routine laboratory work: lab glassware rinsing, supplying autoclaves, water baths, incubators and ultrapure water purification systems, preparing and diluting media, buffers and reagents.

Thermo Scientific

#### Product features:

##### Multiple options for Type 2 water

Five system options with permeate flows of 3L/hr, 7L/hr, 12L/hr, 20L/hr, or 40L/hr. Future system upgrades accommodate greater capacities to meet growing water demands. Space-saving design permits benchtop installation or wall mounting with integrated mounting bracket.

##### Operational reliability

Microprocessor controlled for automatic operation with continuous monitoring of all critical parameters. Automatic return to "operating" mode ensures recirculation during standstill periods. Optional UV lamp prevents biological contamination.

##### Easy-to-operate

Resistivity/conductivity clearly displayed on large back-lit control panel that tilts for optimum viewing. Status of current operating mode clearly indicating "production", "stand-by", "cleaning" modes. Reservoir fill-level shown as %. System parameters are code-protected to prevent accidental changes to set points.

##### GLP-Compliant documentation

Optional printer connects to RS-232 port for data recording and traceability. Cell constant of 0.01cm<sup>-1</sup> ensures precise conductivity measurements. Temperature compensation for the conductivity measurement has an accuracy of ±0.1°C (in conformity with USP 645).

Optional hand dispenser with flexible circulating line for dispensing water in a distance of up to 3 m. The kit contains a 0.2 µm end filter.



#### Pure water Specifications

Operating pressure:	2 to 6bar
Temperature:	+2°C to +35°C
Permeate conductivity:	0.067 to 0.1µS/cm (at <30ppm CO <sub>2</sub> in feeding water)
Permeate resistance at 25°C:	15 to 10MΩ.cm
Removal bacteria, Pyrogens:	>99%
TOC value:	<30ppb
Interface:	RS 232

#### Specifications

Power supply:	90-240V/50-60Hz
Dimensions (WxDxH):	372 x 330 x 613mm
Feedwater connector:	Tubing 1.5m with 8mm o.d. and R¾" inner thread
Wastewater connector:	¼" or 8mm o.d., tubing 2m, pressureless drain
Power Consumption:	0.08kW

Type	Permeate L/hr	PK	Cat. No.
Pacific TII 3	3	1	9.535 536
Pacific TII 3 (UV)	3	1	9.535 541
Pacific TII 7	7	1	9.535 537
Pacific TII 7 (UV)	7	1	9.535 542
Pacific TII 12	12	1	9.535 538
Pacific TII 12 (UV)	12	1	9.535 543
Pacific TII 20	20	1	9.535 539
Pacific TII 20 (UV)	20	1	9.535 544
Pacific TII 40	40	1	9.535 540
Pacific TII 40 (UV)	40	1	9.535 545

### Accessories for pure water purification system Barnstead™ Pacific TII and RO

Thermo Scientific

Type	PK	Cat. No.
Pretreatment complete with prefilter and hardness stabilization	1	9.535 978
5µm prefilter and activated carbon 10 inch cartridge	1	9.535 951
Hardness stabilization for treatment	1	9.535 957
Filter set	1	9.535 980
UV Lamp for UV models	1	9.535 979

### 1 Pure water purification system Barnstead™ Pacific™ RO

The Thermo Scientific Barnstead Pacific RO water purification systems are modularly designed laboratory reverse osmosis system for the production of 20L to 200L pure water from tap water. Applications include routine laboratory work: lab glassware rinsing, supplying autoclaves, water baths and incubators, preparing a diluting buffers and reagents. A 30L, 60L, or 100L polyethylene reservoir is required to store and dispense the permeate water.

Thermo Scientific

**Product features:** Space-saving design allows system to sit on the laboratory bench or be mounted on the wall. Simple system upgrade accommodates future pure water capacity requirements.

**Reliable operation:** Microprocessor control offers automatic operation with continual monitoring of all important parameters. Required filling level of the reservoir can be customized. Automatic return to operating mode ensures recirculation during periods of standstill.

**Easy-to-operate clear display:** Resistivity/conductivity clearly displayed on large back-lit control panel that tilts for optimum viewing. Status of current operating mode clearly indicates "production", "stand-by", "cleaning" modes. Reservoir fill-level shown as %.

**Integrated feed water monitoring:** Good quality feed water is a prerequisite for high purity water and extends cartridge service life.

**GLP-compliant documentation:** Real-time clock records system errors and faults. Ongoing data storage collects four weeks information displayed in clear text. Operating system is code-protected to prevent unauthorized changes to system settings. RS-232 interface with adjustable sender interval allows for customized timing of data transmission of measured values and faults to a PC or data printer. Cell constant of 0.16cm<sup>-1</sup> ensures precise conductivity measurements.

**Pacific RO pretreatment:** Two 10in. (25.4cm) cartridge filter housings with a 5µm prefilter and activated carbon to prevent entry of particles >5µm and high concentrations of free chlorine includes hardness stabilizer cartridge which binds calcium and prevents its precipitation.

**Worry-free pure water storage:** Reservoir are constructed of pigment-free polyethylene. Conical bottom allows for easy cleaning, disinfecting and complete emptying.

Optional hand dispenser with flexible circulating line for dispensing water in a distance of up to 3 m. The kit contains a 0.2 µm end filter.

1



#### Pure water specifications

Operating pressure: 2 to 6bar  
 Removal bacteria and particles: 99%  
 Removal anorganic components: 98%

#### Specifications

Power supply: 90-240 V/50 Hz, rubber connector 1.8m  
 Dimensions (WxDxH): 372 x 330 x 603mm  
 Feedwater connector: Tubing 1.5m with 8mm o.d. and R¾" inner thread  
 Wastewater connector: ¼" or 8mm o.d., tubing 2m, pressureless drain  
 Power consumption: 0.1kW

Type	Permeate L/hr	PK	Cat. No.
Pacific RO 3	3	1	9.535 531
Pacific RO 7	7	1	9.535 532
Pacific RO 12	12	1	9.535 533
Pacific RO 20	20	1	9.535 534
Pacific RO 40	40	1	9.535 535

### 2 Reservoirs for pure water purification system Barnstead™ Pacific™ TII and RO

For safely and convenient storage of high purity water

Thermo Scientific

- Large opening for easy and effective cleaning
- Vent filter with CO<sub>2</sub> absorber to prevent conductivity increases from drawn-in CO<sub>2</sub>
- Sterile overflow to prevent microorganisms from entering and contaminating reservoir water
- Constructed with inert materials opaque to light
- Recirculation pump protects high purity water from bacterial growth during standstill while maintaining a low conductivity value
- Simple and space-efficient wall mounting
- Conical bottom outlet for complete emptying
- Allows complete draining and efficient cleaning and disinfection

2



Capacity litres	Diam. mm	Height mm	PK	Cat. No.
30	380	602	1	9.535 929
30*	380	602	1	9.535 928
60	380	916	1	9.535 933
60*	380	916	1	9.535 932
100	380	1255	1	9.535 937
100*	380	1255	1	9.535 936

\*with pressure pump

### Accessories for reservoirs pure water purification system Barnstead™ Pacific™ TII und RO

Thermo Scientific

Type	PK	Cat. No.
Sterile tank overflow	1	9.535 922
CO <sub>2</sub> absorber and sterile vent filter	1	9.535 923
Sterile vent filter	1	9.535 924
Replacement UV Lamp for tank	1	9.535 994
UV lamp assembly for tank	1	9.535 925
Wall mounting bracket for 30L reservoir	1	9.535 926
Wall mounting bracket for 60L reservoir	1	9.535 927

### Accessories for Ultrapure water purification systems Barnstead™ GenPure/GenPure Pro/GenPure xCAD Plus

Thermo Scientific

Description	PK	Cat. No.
Ultrapure water filter set	1	9.535 971
Sterile filter 0.2µm	1	9.535 961
UV replacement lamp	1	9.535 969
Disinfection cartridge	1	6.243 959
Disinfection granules	12	6.243 960
Data printer	1	9.535 974
xCAD client, wall, radius: 0.8m, 1.2l/min, inlet: 3m	1	9.535 874
xCAD client, bench, radius: 0.8m, 1.2l/min, inlet: 3m	1	9.535 897
Hand dispenser with 3m flexible circulation tubing , end filter: 0.2µm	1	9.535 898

### 1 Ultrapure water purification systems Barnstead™ GenPure xCAD Plus with stand-alone remote dispensers



Thermo Scientific

1



Type	Description	PK	Cat. No.
GenPure xCAD Plus (bench)	AAS, IC, ICP, Standard buffer	1	9.535 810
GenPure xCAD Plus UV (bench)	Trace analysis, HPLC, ICP-MS, IC	1	9.535 811
GenPure xCAD Plus UF (bench)	Micro- and molecular biology, PCR, IVF	1	9.535 812
GenPure xCAD Plus UV/UF (bench)	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 813
GenPure xCAD Plus UV-TOC (bench)	Trace analysis, HPLC, ICP-MS, IC, TOC analysis	1	9.535 814
GenPure xCAD Plus UV/UF TOC (bench)	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 815
GenPure xCAD Plus (wall)	AAS, IC, ICP, Standard buffer	1	9.535 816
GenPure xCAD Plus UV (wall)	Trace analysis, HPLC, ICP-MS, IC	1	9.535 817
GenPure xCAD Plus UF (wall)	Micro- and molecular biology, PCR, IVF	1	9.535 818
GenPure xCAD Plus UV/UF(wall)	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 819
GenPure xCAD Plus UV-TOC (wall)	Trace analysis, HPLC, ICP-MS, IC, TOC analysis	1	9.535 872
GenPure xCAD Plus UV/UF TOC (wall)	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 873

UF=with ultra filtration, UV=with UV photo oxidation 185/254nm, UV-TOC=with UV photo oxidation 185/254nm and TOC display, UV-TOC/UF=with UV photo oxidation 185/254nm, TOC display and ultra filtration

## 12. Environmental-, soil-, water-, food analysis

### Water purification/Pure and ultra-pure water

#### Ultrapure water purification systems Barnstead™ GenPure™, ASTM I

The Thermo Scientific Barnstead GenPure systems deliver ultrapure 18.2 MΩ.cm water from pretreated feed water for the most demanding and sensitive applications. *Thermo Scientific*

Applications include molecular biology and microbiology, cell and tissue culture, PCR, DNA sequencing, electrophoresis and analytical chemistry: HPLC, GC, GC-MS, ICP-MS, AA, IC, TOC measurements. GenPure systems product water quality exceeds international standards ASTM Type I, ISO 3696 Grade1, ASTM D1193 and CLSI-CLRW.

**Product features:**

Flexibility of water dispensing is guaranteed through three different GenPure versions: the standard version with a fixed outlet, the GenPure Pro with an attached flexible dispenser and the GenPure xCAD models with a remote dispenser, which can be either bench or wall mounted. The ergonomically designed controller tilts for the ease-of-use and better visibility. It has a four line alpha-numeric display.

**Online TOC measurement with UV intensity monitoring:** real-time TOC monitoring allows for measurement of organic substances present in the water. Continuous monitoring of UV intensity removes the risk of false TOC values due to diminished UV intensity. Fault message alerts user when the UV lamp intensity is no longer sufficient for accurate TOC measurements

**UV Photo-oxidation 185/254 nm:** high performance UV assembly reliably reduces the content of microorganisms and their metabolites

**Measurement of conductivity/resistivity:** conductivity cells are carefully calibrated prior to each measurement via built-in reference resistance with cell constants at 0.01cm-1cm. Temperature measurements are made by platinum chip sensor with ±0.1°C accuracy. An additional cell monitors feed water conductivity and prevents the user when it drops below the set value.

**Quick-connect cartridge replacement:** aquastop quick-connect capability enables cartridge replacement within seconds even mid-operation

Exact dosing: electronic dosing for fully automatic volume control of 0.01L-65L with <0.5% accuracy

**GLP-compliant documentation:** real-time clock and code-protected operating system prevents unauthorized changes to system settings. RS-232 interface with adjustable send - interval for safe data transfer of all measured data, faults, date and time to a PC or log printer. Digital microprocessor control automatically monitors and stores faults from the last four weeks. USP-compliant conductivity measurement with temperature compensation can be switched on or off.



9.535 875



9.535 887

**Ultrapure water Specifications ASTM Typ I**

Flow rate, max.:	Up to 2L/min
Operating pressure:	2 to 6bar
Temperature:	2°C to 35°C
Conductivity:	0.055µS/cm
Resistance at 25°C:	18.2MΩxcm
TOC value in ppb (Models with UV):	1 - 5
TOC value in ppb (Models without UV):	< 10
Endotoxins*in EU/ml (Models with UF):	< 0.001
RNase*in ng/ml (Models with UF):	0.01
DNase*in pg/µl (Models with UF):	4
Bacterial content:	<1cfu/ml
Particles >0.2µm/mL:	< 1
Dimensions (WxDxH):	372 x 330 x 615mm
Dimensions xCAD (WxDxH):	260 x 530 x 725mm
Feedwater connector:	¾" o.d.
Drainwater connector:	¼"
Power Consumption:	0.1 kW
Power supply:	90-240V/50-60Hz

Type	Description	PK	Cat. No.
GenPure	AAS, IC, ICP, Standard buffer	1	9.535 875 <b>1</b>
GenPure UF	Micro- and molecular biology, PCR, IVF	1	9.535 876
GenPure UV	Trace analysis, HPLC, ICP-MS, IC	1	9.535 878
GenPure UF/UV	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 877
GenPure UV-TOC	Trace analysis, HPLC, ICP-MS, IC, TOC analysis	1	9.535 879
GenPure UV-TOC/UF	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 880
GenPure Pro	AAS, IC, ICP, Standard buffer	1	9.535 887 <b>2</b>
GenPure Pro UF	Micro- and molecular biology, PCR, IVF	1	9.535 888
GenPure Pro UV	Trace analysis, HPLC, ICP-MS, IC	1	9.535 890
GenPure Pro UV/UF	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 889
GenPure Pro UV-TOC	Trace analysis, HPLC, ICP-MS, IC, TOC analysis	1	9.535 891
GenPure Pro UV-TOC/UF	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 892

UF=with ultra filtration, UV=with UV photo oxidation 185/254nm, UV-TOC=with UV photo oxidation 185/254nm and TOC display, UV-TOC/UF=with UV photo oxidation 185/254nm, TOC display and ultra filtration  
\*depending on feed water quality



## Water purification/Pure and ultra-pure water

1



9.535 827

### Ultrapure water purification system Barnstead™ MicroPure™, ASTM I

Thermo Scientific Barnstead MicroPure ultrapure water purification systems. The Thermo Scientific Barnstead MicroPure systems deliver ultrapure 18.2 MΩ.cm water from pretreated feed. The "micro-sized" compact and reliable systems were designed for laboratories that require up to 15L/day of ultrapure water for applications such as HPLC or other instrumental analyses, sample preparation, glassware rinsing, or molecular biology work in which endotoxins and/or nucleases would interfere.

Thermo Scientific

#### Product features:

##### Smart features

- Backlit display tilts for easy viewing
- Variable speed dispensing
- Optional integrated 6L feed water reservoir so you can place the system without direct access to a water line
- Feed water quality monitoring
- Good feed water quality leads to consistently ultrapure water and a longer cartridge life time

##### Smart design

- Recirculation pump prevents bacterial growth during standstill and allows for constant monitoring of all system functions leading to the immediate display of fault messages if a problem is detected
- Systems ship fully equipped with pressure reducer, ultrapure cartridge and 0.2µm sterile filter

##### Superior filters

- Ultrafilter is flushed automatically to assure the highest retention of endotoxins and nucleases, which produces a long two year lifetime
- Validated 0.2µm final filter with folded membrane can be sterilized up to 5 times

#### Specifications

Flow rate, max.:	1L/min
Operating pressure:	2 to 6bar
Temperature:	+2°C to +35°C
Resistance at 25°C:	0.055µS/cm
TOC value (models with UV):	18.2 MΩxcm
TOC value (models without UV):	1 to 5ppb
Bacterial content:	< 10ppb
Particles >0.2µm/mL:	<1cfu/ml
Endotoxins (Models with UF):	<1
Power consumption:	<0.001EU/ml
Feedwater connector:	0.06kW
Power supply:	8mm o.d.
Dimensions (WxDxH):	90-240V, 50/60Hz, automatic voltage regulation to 24 V
Dimensions models with reservoir (WxDxH):	305 x 300 x 545 mm
	305 x 400 x 545 mm

Type	Description	PK	Cat. No.
MicroPure Standard	AAS, IC, ICP, Standard buffer	1	9.535 823
MicroPure UF	Micro- and molecular biology, PCR, IVF	1	9.535 824
MicroPure UV	Trace analysis, HPLC, ICP-MS, IC	1	9.535 826
MicroPure UF/UV	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 825
MicroPure Standard-ST	AAS, IC, ICP, Standard buffer	1	9.535 827 1
MicroPure UF-ST	Micro- and molecular biology, PCR, IVF	1	9.535 828
MicroPure UV-ST	Trace analysis, HPLC, ICP-MS, IC	1	9.535 830
MicroPure UF/UV-ST	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 829

With UF = ultrafiltration, UV = UV photo-oxidation 185/254nm, UF/UV = Ultra Filtration and UV photo-oxidation 185/254 nm

### Accessories for Ultra pure water system Barnstead™ MicroPure™



Thermo Scientific

Description	PK	Cat. No.
Ultra pure filter set	1	9.535 963
Sterile filter 0.2µm	1	9.535 961
UV replacement lamp	1	9.535 960
Disinfectant cartridge	1	9.535 968
Disinfectant granules	1	6.243 960
Wall mounting bracket	1	9.535 976

### 1 Pure- and Ultrapure water purification system Barnstead™ Smart2Pure™, ASTM I and II

1

The Thermo Scientific Barnstead Smart2Pure system is a compact system which converts tap water into both ASTM Type I and II water. The Smart2Pure 3 and 6 feature a built-in 6L reservoir to store the Type II water. The Smart2Pure 12 offers the choice of a 30L or 60L reservoir for customizable storage capacity.

Thermo Scientific



**Product features:**

**Powerful performance**

Based on your requirements, choose from capacities of 3L/hr, 6L/hr or 12L/hr

**Lasting economy**

Water purification progresses through independent cartridges with Aquastop quick connects for fast replacement

Module 1 - Combination of pretreatment and the reverse osmosis membrane

Module 2 - Polishing cartridge contains high-quality ultrapure resin for consistent purity and long cartridge life

**Easy-to-operate**

Dispensing is easy and features variable speed to control flow. The display can be tilted for optimal reading. Optional UV bulb and UF ultrafilter to customize ultrapure water

**Placement options**

Position on laboratory bench or mount it on the wall

**Smart integrated 6L reservoir for the Smart2Pure 3 and 6**

Constructed with pigment-free materials, conical bottom outlet allows for complete draining and efficient cleaning and disinfection.

**Smart2Pure 12 offers reservoir options, either 30L or 60L**

Large opening for easy and effective cleaning by hand. Sterile venting filter/reservoir overflow protects against contamination by microorganisms. Optional CO<sub>2</sub> absorber prevents TOC value increases from drawn-in CO<sub>2</sub>.

Polyethylene reservoir is opaque to light. Recirculation pump protects the high purity water from bacterial growth during standstills and maintains the low conductivity value. Wall-mount optional for simple space-savings. Conical bottom outlet allows for complete draining and efficient cleaning and disinfection.

- Optional hand dispenser with flexible circulating line for dispensing water in a distance of up to 3 m. The kit contains a 0.2 µm end filter.

**Ultrapure water Specifications ASTM Typ I**

Flow rate:	1.0l/min
Flow rate UF-models:	0.6l/min
Conductivity:	0.055µS/cm
Resistance at 25°C:	18.2MΩxcm
TOC value:	<10ppb
TOC values UV-models:	1 to 5ppb
Endotoxins UF-models:	0.005EU/ml
Bacterial content:	<1cfu/ml
Particles >0.2µM/ml:	<1

**Pure water Specifications ASTM Typ II**

Permeate flow rate at 15°C:	
Smart2Pure 3:	3 l/h
Smart2Pure 6:	6 l/h
Smart2Pure 12:	12 l/h
Permeate conductivity:	0.067 to 0.1µS/cm
Permeate resistance at 15°C:	15 to 10MΩxcm

**Specifications**

Power supply:	90-240V/Hz
Dimensions (WxDxH):	305 x 400 x 545mm
Feedwater connector:	¾ inch
Drain connection:	¼ inch

Type	Description	PK	Cat. No.
Smart2Pure 3	AAS, IC, ICP, Standard buffer	1	9.535 860
Smart2Pure 3 UF	Micro- and molecular biology, PCR, IVF	1	9.535 861
Smart2Pure 3 UV	Trace analysis, HPLC, ICP-MS, IC	1	9.535 862
Smart2Pure 3 UF/UV	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 863
Smart2Pure 6	AAS, IC, ICP, Standard buffer	1	9.535 864
Smart2Pure 6 UF	Micro- and molecular biology, PCR, IVF	1	9.535 865
Smart2Pure 6 UV	Trace analysis, HPLC, ICP-MS, IC	1	9.535 866
Smart2Pure 6 UF/UV	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 867
Smart2Pure 12	AAS, IC, ICP, Standard buffer	1	9.535 868
Smart2Pure 12 UF	Micro- and molecular biology, PCR, IVF	1	9.535 869
Smart2Pure 12 UV	Trace analysis, HPLC, ICP-MS, IC	1	9.535 870
Smart2Pure 12 UF/UV	Molecular biology, PCR, DNA, IVF, monoclonal antibodies, cell culture	1	9.535 871

With UF = ultrafiltration, UV = UV photo-oxidation 185/254nm, UF/UV = Ultra Filtration and UV photo-oxidation 185/254 nm

### Accessories for pure and ultrapure purification systems Barnstead™ Smart2Pure™

**NEW!**

Thermo Scientific

Description	PK	Cat. No.
Wall mounting bracket	1	9.535 976
Ultrapure water cartridge	1	9.535 966
UV replacement lamp	1	9.535 960
Sterile filter, 0.2µm for direct removal/device	1	9.535 961
Reservoir vent filter	1	9.535 986
Disinfection granules	1	6.243 960
Pretreatment Pack for Smart2Pure 3	1	9.535 970
Pretreatment Pack for Smart2Pure 6	1	9.535 972
Pretreatment Pack for Smart2Pure 12	1	9.535 973
CO <sub>2</sub> adsorber and sterile venting filter for Smart2Pure 12	1	9.535 923
UV immersion lamp for tank for Smart2Pure 12	1	9.535 925
Smart2Pure 12 Tank 30 l	1	9.535 931
Smart2Pure 12 Tank 60 l	1	9.535 935
Wall mounting bracket for Smart2Pure 12 30L reservoir	1	9.535 926
Wall mounting bracket for Smart2Pure 12 60L reservoir	1	9.535 927

### 1 Reverse osmosis systems, Ultra Clear™ RO EDI

**NEW!**

evoqua

The well-proven Ultra Clear™ RO range has been enhanced to peak water quality level in the plus series by adding electronic deionisation cells: accessory deionisers for removing inorganic materials from the output are therefore no longer required.

Technical parameters:

- Resistance up to 17 megohm (0.07µS/cm)
- TOC < 5 to 20ppb at RO cell output ( if feed water < 100ppb)
- Micro-organism reduction > 99%
- Typical pure water quality < 0.07µS/cm

In all Ultra Clear™ RO systems the quality of the feed and output water will be shown on the display.

#### Features:

- pure water treatment for simple analysis, laboratory rinsing machines, autoclaves, up to ultrapure water systems
- germ/pyrogen retention rate >99%
- modern, maintenance-friendly design
- modular flushing for long service life
- complete, connection-ready system; fittings allow supply tanks to be expanded if required (e.g. Ultra Clear™ RO supply tanks with 30, 60 and 80 litre capacities)
- conductivity monitor e.g. for downstream ion exchanger possible
- menu-driven controller, RS232 interface
- Ultra Clear™ RO DI: includes post-treatment module for residual desalination of permeate Entrance- and Product water quality will be shown on the display.

#### Specifications

Connections:	Permeate, concentrate, raw water: 8/6 mm/R 3/4"
Rating:	200/300W
Dimensions (WxDxH):	340 x 420 x 520mm
Colloidal index (SDI):	< 3
Supply water pressure:	2 to 6 bar (0 to 5 bar Ultra Clear™ RO EDI 10)
Input conductivity:	< 1400 µS/cm



Type	Pure water output at 15°C L / hr.	Weight kg	PK	Cat. No.
Ultra Clear™ RO EDI 10	10	20	1	6.267 641
Ultra Clear™ RO EDI 30	30	33	1	6.267 642
Ultra Clear™ RO EDI 55	55	35	1	9.914 623

## 12. Environmental-, soil-, water-, food analysis

### Water purification/Pure and ultra-pure water

#### 1 Reverse osmosis system, Ultra Clear™ RO

**NEW!**

evoqua

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Eight models with outputs from 10 to 100 l/hr that provide pure water supplies from 50 to 2400 litres per day. The application of low- energy- membranes ensures an efficient and economical operation.

**Features:**

- pure water treatment for simple analysis, laboratory rinsing machines, autoclaves, up to ultrapure water systems
- germ/pyrogen retention rate >99%
- modern, maintenance-friendly design
- modular flushing for long service life
- complete, connection-ready system; fittings allow supply tanks to be expanded if required (e.g. Ultra Clear™ RO supply tanks with 30, 60 and 80 litre capacities)
- conductivity monitor e.g. for downstream ion exchanger possible
- menu-driven controller, RS232 interface
- Ultra Clear™ RO DI: includes post-treatment module for residual desalination of permeate Entrance- and Product water quality will be shown on the display.

**Specifications**

Connections:	permeate, concentrate, raw water: R 3/4"
Salt retention rate, normal:	99%
Residual conductivity, Ultra Clear™ RO DI:	< 0.1µS/cm
Germ:	> 99%
Power requirement:	200/300W
Input conductivity:	< 2000µS/cm
Blocking index SDI:	< 3
Dimensions (WxDxH):	340 x 420 x 520mm (Ultra Clear™ RO 200: H= 1350mm)
Supply water pressure:	2 to 6bar (0 to 5bar Ultra Clear™ RO 10/Ultra Clear™ RO DI 10)

Type	Pure water output at 15°C L / hr.	Weight kg	PK	Cat. No.
Ultra Clear™ RO 10	10	22	1	6.267 635
Ultra Clear™ RO DI 10	10	23	1	6.267 636
Ultra Clear™ RO 20	20	30	1	6.267 637
Ultra Clear™ RO DI 20	20	26	1	6.267 639
Ultra Clear™ RO 30	30	35	1	6.267 638
Ultra Clear™ RO DI 30	30	28	1	6.267 640
Ultra Clear™ RO 60	60	40	1	9.914 612
Ultra Clear™ RO 100	100	33	1	9.914 661

#### 2 Accessories for ultra pure water systems Ultra Clear™ RO

**NEW!**

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2



Type	For	Change interval	PK	Cat. No.
Pre-treatment module AMB	all sytems Ultra Clear™ RO	every 6 months***	1	9.914 524
Pre-treatment module VMD	Ultra Clear™ RO DI 10-40	every 3 months***	1	9.914 520
RO module**	Ultra Clear™ RO DI 20	every 2 to 3 years	1	9.914 519
	Ultra Clear™ RO 20			

\*\* number depending on the size of the system

\*\*\*Interval of exchanges depends on raw water quality and throughput





### 1 Ultra pure water systems, Ultra Clear™

The Ultra Clear™ series is a user-friendly ultra-pure water system which is available in 12 different versions - for each application there is the right system. The units are modular and can be upgraded with UV-Oxidation or Ultra-filtration accessories. The Ultra Clear™ system can be mounted on the wall without any accessories - a wall bracket is included. Requirements for AAS, HPLC, IC, ICP/MS, cell cultures, micro biology and TOC- Analytic etc. have not only been fulfilled but significantly exceeded, depending on the unit. The Ultra Clear is a bench top system, the Integra a space saving, under-bench installation. Ultra Clear™ (Integra) UV and Ultra Clear™ (Integra) UV UF are available with TOC- Monitoring (TM-version) and UV- intensity measurement

evoqua

- programmable microprocessor control system with keypad, plain text display, resistance or conductance display with temperature compensation
- additional pressure reducing valve is not required
- input and output conductivity levels given, together with entry of limits
- internal sterile filtration filter 0.1µm, 1000cm<sup>2</sup>, and additional disinfection
- circulation mode programmable (intermittent/non-stop)
- very quiet (under 40dB)
- easy module change by quick-connector coupling system

#### Specifications:

Ultra-pure water output up to L/min:	2
Resistance at 25°C Megohm:	18.2
Conductivity at 25°C µS/cm:	0.055
Bacteria KbE/ml:	< 1
Particle >0.1µm amount/ml:	< 1
Dimensions (WxDxH):	340 x 320 x 540mm
Supply requirements:	100-240V 50/60Hz

Type	TOC value	Endotoxin content EU/ml	PK	Cat. No.
Ultra Clear™	5 - 10 ppb	-	1	9.914 497
Ultra Clear™ UV	<1 ppb	-	1	9.914 496
Ultra Clear™ UV UF	<1 ppb	<0,001	1	9.914 495
Ultra Clear™ UV TM*	<1 ppb	-	1	9.914 476
Ultra Clear™ Integra UV TM*	<1 ppb	-	1	9.914 477
Ultra Clear™ UV UF TM*	<1 ppb	<0,001	1	9.914 478
Ultra Clear™ Integra UV UF TM*	<1 ppb	<0,001	1	9.914 479

\* pure water system with TOC-Monitoring



### 2 Ultra Clear water systems, accessories

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Type	Change interval	PK	Cat. No.
Pre-treatment module VMD	1 to 2 x per year	1	9.914 520
Pre-treatment module DTO (UV version)	1 to 2 x per year	1	9.914 513
Post-treatment module MF III D	1 to 2 x per year	1	9.914 521
Post-treatment module ILT (optional)	1 to 2 x per year	1	9.914 514
Sterile filter 0.1 µm, 1000 cm <sup>2</sup>	every 6 months	1	9.914 522
UV replacement bulb UC (circulation)	1 to 2 x a year	1	6.265 906
Ultrafiltration module Preventor 5000	every 2 years	1	6.234 665
Desinfection kit (3-pack)		1	6.234 666

## 12. Environmental-, soil-, water-, food analysis

### Water purification/Pure and ultra-pure water

#### 1 Ultra pure water system, Ultra Clear™ TWF

The Ultra Clear™ TWF is an ultra-pure water system which accommodates almost any option that can be directly connected to the drinking water mains system - with an output of up to 2 l/min. UV oxidation, ultra-filtration and TOC monitoring can be integrated into all UV models. Permeate can be easily tapped directly from the tank for simple flushing purposes and a separate flushing machine can also be operated. Typical system applications: AAS, IC, GC, HPLC, TOC analysis, cell and tissue cultures, DNA sequencing, in-vitro fertilisation, PCR, and much more. evoqua

- microprocessor control with clear text display, resistance and conductivity display temperature compensated
- conductivity control with limit value entries for permeate and purest water
- sterile filter 0.1µm
- circulation mode with day and night programme to condition individual components during night-time periods
- simple module changing with pluggable connector system featuring "Aqua-Stop"



**Specifications:**

Ultra-pure water rating:	up to 2L/min
Resistance at 25°C:	18.2Megohm
Conductivity at 25°C:	0.055µS/cm
Bacteria:	< 1KbE/ml
Particle >0.1 to 1µm:	< 1 count/ml
Permeate rating:	< 10 l/h
Input conductivity:	< 2000µS/cm
Power requirement:	50W
Silt density index SDI:	< 3
Dimensions (WxDxH):	560 x 320 x 530mm
Supply requirements:	100-220V/50-60Hz

Type	TOC value	Endotoxin content EU/ml	PK	Cat. No.
Ultra Clear™ TWF	5 to 10 ppb	-	1	9.914 643
Ultra Clear™ TWF UV	<1 ppb	-	1	9.914 644
Ultra Clear™ TWF UV TM	<1 ppb	-	1	9.914 645
+ TOC-Monitor				
Ultra Clear™ TWF UV UF	<1 ppb	0.001	1	9.914 647
Ultra Clear™ TWF UV UF TM	<1 ppb	0.001	1	9.914 648
+ TOC-Monitor				

#### Ultra Clear TWF pure water systems, accessories



Type	Change interval	PK	Cat. No.
Pre-treatment module AMB	every 6 months	1	9.914 524
Post-treatment module MF III D	1 to 2 x a year	1	9.914 521
Sterile filter 0.1 µm	every 6 months	1	9.914 522
UV replacement bulb UC (circulation)	1 to 2 x a year	1	6.265 906
RO-Module	every 2 to 3 years	1	9.914 519
UV replacement bulb UC (tank)	1 to 2 x a year	1	6.265 907
CO2 trap CT1 incl. Vent filter (spare cartridge)	1 x a year	1	9.914 527
Ultrafiltration module Preventor 5000	every 2 years	1	6.234 665
Desinfection kit (3-pack)		1	6.234 666