

Complete Product Range



General Catalog 800

LABORATORY EQUIPMENT





BRAND. Your partner in the lab.



In your hands, you hold the new General Catalog 800 from BRAND, which presents the entire BRAND product range in its 320 pages. It includes laboratory equipment for liquid handling together with the associated consumables, extensive offerings for life sciences applications, classical volumetric equipment in both glass and plastic, items for the clinical laboratory and general laboratory needs, as well as information about our OEM capabilities.

On the following pages of the catalog you will find information on many new products and extensions to existing product lines.

We are confident that these new products will provide the perfect tools and materials for your everyday laboratory use.

Our products are available through laboratory specialist dealers. If you have additional questions about our products, do not hesitate to contact your dealer, or get in touch with us directly.

Welcome to the new General Catalog 800!





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Contents

i	New Products at a Glance	4
i	About us	6
I	Liquid Handling Dispensing · Titrating · Pipetting	11
II	Life Science Consumables Pipette Tips · Micro Tubes · PCR · Microplates · Cuvettes, etc.	81
III	Volumetric Instruments Bulb Pipettes · Graduated Pipettes · Volumetric Flasks · Burettes, etc.	127
IV	Temperature and Density Measurement Density Bottles · Hydrometers · Thermometers, etc.	169
V	Clinical Laboratory Sample Cups · Centrifuge Tubes · Micropipettes · Counting Chambers, etc.	189
VI	General Laboratory Supplies Beakers · Funnels · Connectors · Bottles · Detergents, etc.	213
VII	OEM Products Production lines · Plastic Injection Molding	273
i	Technical Information	281
i	Index Alphabetical and numerical index · General Terms and Conditions	309

NEW!

Liquid Handling
pages 21-26

Liquid Handling
pages 27-32

Liquid Handling
pages 33-40

Life Science
pages 85-90

Life Science
pages 95, 97

Life Science
page 103

Life Science
page 107



BRANDnew!

seripettor® *pro* · seripettor®

seripettor® *pro*, the new bottle-top dispenser for a broader range of use, for example in the dispensing of concentrated HCl, essential oils or UV-sensitive reagents. Volume range for seripettor® and seripettor® *pro*: 0.2 - 25 ml.

Titrette®

The next generation Digital Burette. The new Titrette® bottle-top burette enables rapid and reliable titration within the error limits of Class A glass burettes. PC interface optional.

Transferpette® *S*-8/-12

The new multichannel pipettes make an ideal complement to the successful Transferpette® *S* single-channel pipettes, and complete the pipette family.

Filter tip 0.1 - 1 µl

The new 0.1-1 µl filter tip is available in various packaging options. Perfect with the 0.1-1 µl Transferpette® pipette for contamination-free pipetting of the smallest liquid quantities.

Micro tubes with tamper-evident screw cap

Closure indicates if tube has been opened. The new micro tubes have a silicone seal, and are autoclavable at 121 °C.

White PCR products for qPCR

The new line of white PCR products is uniformly colored with TiO₂ which, in combination with the smooth surfaces, provides optimum reflection of the fluorescence signal.

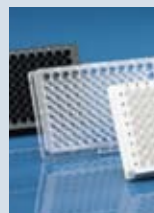
Rack with 96 coded tubes

The stackable racks are especially well-suited for use with robots and other automated dispensing systems. Coded tubes simplify sample organization.

NEW!

BRANDplates® microplates

Over 130 new microplates, 9 different surfaces divided into three categories: untreated plates, immunoanalysis plates and cell culture plates.



Life Science
page 111-122

96-well UV-microplate

96-well UV-microplates with a PS frame and F-bottom with a 25 µm strong UV-permeable film. The transmission at 240 nm is 80%.



Life Science
page 114

5-second-bulb pipettes, class AS

New bulb pipettes with reduced waiting time – from 15 to only 5 seconds! Significantly simpler handling and maximum precision through strict statistical quality testing.



Volumetric Instruments
pages 130-132

5-second-graduated pipettes, class AS

New graduated pipettes with reduced waiting time – only 5 seconds, while retaining the same volume precision. The type 2, with nominal volume at the top, is new. Now set the meniscus only once – faster, safer, simply better!



Volumetric Instruments
page 133-134

Volumetric flasks, PUR plastic coated

Synthetic coating for better protection. In the event of breakage, the safety coating helps contain the glass fragments.



Volumetric Instruments
page 141

Volumetric flasks with 3 marks

The volumetric flask with 3 marks is used to check the functioning of a dispenser. The mark in the middle shows the nominal volume, the upper and lower marks show the indicated error limits. DKD-calibrated.



Volumetric Instruments
page 142

Compact automatic burettes

Fast to dismantle and easy to clean. Easy to repair – all individual components replaceable. Now with glass supply bottle and pumphead.



Volumetric Instruments
pages 163-164



Working with BRAND

Worldwide representation

BRAND has developed a global support network for its customers all over the world. We maintain sales and representative offices in Europe, North America, Latin America and in South-East Asia. Our close relationships with more than 120 sales partners guarantees our customers ready and prompt access to our products, with on-site user support.

Sales support and product presentation

BRAND can provide on-site product training, demonstrations and support in many locations. Contact our sales department for more information.

Ordering options

Our products are available through major laboratory supply dealers throughout the world. If you have trouble locating a specialized supplier in your area, just call – or visit us at www.brand.de

DKD calibration laboratory

The DKD-accredited calibration laboratory at BRAND is authorized to issue DKD calibration certificates by the German Calibration Service (DKD) for the following products:
Liquid Handling instruments, such as piston operated pipettes and burettes, dispensers and dilutors, glass and plastic volumetric instruments and glass density bottles.

Products certified as "suitable for certification" satisfy the requirements of the German State Office of Weights and Measures ("Eichamt"). If an instrument is ever rejected by the Eichamt, we will replace it free of charge. Fees or other costs for official certification cannot be reimbursed.

Repair and calibration service

BRAND offers repair, service and calibration (including DKD calibration) for all BRAND liquid handling products. BRAND calibration service is also available for third-party products.

You can obtain an order form for repair and calibration service online at www.brand.de.

BRAND General Catalog

The catalog is intended for informational purposes only. Actual results may vary based upon a number of factors beyond our control, including user technique or lab environment. Suitability for a specific application is the responsibility of the end-user. Specifications, catalog numbers and appearance are subject to change without notice.

Pictures serve the purpose of visualization. They may not necessarily correspond to the described product in every detail.

Dimensions without indication of tolerances are approximate figures.

Pack quantities are according to the recommended order quantity. The minimum order quantities are indicated in the current pricelist.

We will not be held responsible for printing or typographical errors.

Product information and application support

For additional information about our products, application support or product modifications, please contact BRAND for assistance.



Our goals

Ultimately our customers determine whether we have realized our product performance and quality objectives.

We believe our success as the global leader for liquid handling equipment, consumables and BLAUBRAND® volumetric glassware to be evidence of our customers' trust.

BRAND has won that trust with products that have proven themselves worldwide.

It is our mission to provide our customers with the latest in liquid handling and life science products, glass volumetric instruments and plastic laboratory equipment while maintaining the highest level of quality and best service at a fair price.

In short, BRAND is your partner for high performance laboratory equipment.



Quality philosophy

Today's demanding scientific research and analyses require the highest quality lab products. BRAND works with its customers around the world to continuously improve the products and tailor them to the changing needs of a wide variety of applications. BRAND's goal is to develop and supply laboratory equipment that supports your specific needs and meets your requirements for performance and convenience.

Our in-house research and development staff serves as the foundation of the BRAND quality philosophy. The latest in production technology and computer integration in the areas of quality management and design make it possible to provide products with the highest possible performance to our customers.

Quality is our business goal

From the design and selection of optimum raw materials to quality assurance within our own company as well as external accredited laboratories, the entire process down to the final product is strictly controlled. All new products are tested by representative users in a comprehensive field testing environment. New designs are carefully evaluated, and any user suggestions for their practical improvement are adopted whenever possible.

With our committed staff and the latest in production technology, we have everything we need to offer our customers the highest degree of product performance at an attractive price.

Consistent performance in the production of laboratory equipment is only the first step towards high-quality work.

Just as important are

- ready availability wherever our customers are located;
- fast, error-free order processing;
- high-quality, understandable technical documentation;
- outstanding service;
- friendly, engaged staff who are pleased to be available for discussion and answers to your questions.

We offer our customers all this, and at a fair price.

BRAND doesn't just provide outstanding quality, but is also a strong and reliable partner for its customers and suppliers.



Certifications

DIN EN ISO 9001

BRAND's quality management system has been officially approved since 1993. The DIN EN ISO 9001 certifications earned by BRAND guarantee that the high performance standards designed into our products are consistently met in production and quality control. This certification ensures our customers and business partners that they are receiving products designed and manufactured to the highest international quality standards.

DIN EN ISO 14001

We believe that sustainable environmental protection and business needs are not incompatible. Our business procedures are oriented towards the principles of a sustainable future and forward-looking development of products, and we believe that they should guarantee future generations the possibility of free development and growth. We want to make products that are safe to manufacture, safe to use, and that can also be disposed of safely. Active environmental protection is thus a significant concern of ours, anchored in our philosophy and in our business practices.

BRAND has been certified according to DIN EN ISO 14001 since 1998.

DKD Calibration Laboratory to ISO/IEC 17025

This accreditation documents, for all DKD calibrated instruments, traceability to national and international standards. In 1998, a BRAND calibration lab was accredited by the DKD as a calibration laboratory for volumetric equipment according to DIN EN ISO/IEC 17025. As an accredited DKD laboratory we are licensed to issue calibration documents for Liquid Handling instruments (e.g., piston-operated pipettes, burettes, dispensers, dilutors), glass and plastic volumetric instruments and for glass density bottles.





Trademark Index

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Dispensette®

Bottle-top Dispenser

- Dispensette® III
- Dispensette® Organic
- Dispensette® HF

The Dispensette® bottle-top dispenser has proven itself the world over with its wide range of practical applications.

It has been continuously improved over decades to meet the increasing demands of the laboratory.

**For any application
the right Dispensette®.**



Models

The wide range of Dispensette® bottle-top dispensers provides premium dispensing options for the complete spectrum of liquid reagents:

Dispensette® III (red color-code):

- Digital · Easy Calibration type
- Analog-adjustable type
- Fixed-volume type

Dispensette® Organic (yellow color-code):

- Digital · Easy Calibration type
- Analog-adjustable type
- Fixed-volume type

Dispensette® HF (green color-code):

- Analog-adjustable type



For dispensing aggressive reagents, including concentrated acids such as H_3PO_4 , H_2SO_4 , bases like NaOH, KOH, saline solutions, as well as many organic solvents.



For dispensing organic solvents, including chlorinated and fluorinated hydrocarbons (e.g., trichlorotrifluoroethane and dichloromethane), concentrated acids (e.g., HCl and HNO_3), trifluoroacetic acid (TFA), tetrahydrofuran (THF) and peroxides.



For dispensing hydrofluoric acid (HF). Maximum permitted concentration 52%. A closure set is recommended because of the fumes, see page 19.

Areas of application

(For assistance in selecting a system, please see the guide on page 15.)

Bases	Saline solutions	Acids	Organic solvents		Hydrofluoric acid (HF)
			polar	non-polar	
Dispensette® III					
		Dispensette® Organic			
					Dispensette® HF

Parts in contact with medium

- Dispensette® III: borosilicate glass, ceramic, platinum-iridium, ETFE, FEP, PFA and PP (discharge tube safety screw cap)
- Dispensette® Organic: borosilicate glass, ceramic, tantalum, ETFE, FEP, PFA and PP (discharge tube safety screw cap)
- Dispensette® HF: ceramic, platinum-iridium, ETFE, FEP, PFA and PP (discharge tube safety screw cap)

Operating limits

- Dispensette® III: vapor pressure max. 500 mbar
viscosity max. 500 mm²/s
temperature max. 40 °C
density max. 2.2 g/cm³
- Dispensette® Organic: vapor pressure max. 500 mbar
viscosity max. 500 mm²/s
temperature max. 40 °C
density max. 2.2 g/cm³
- Dispensette® HF: vapor pressure max. 500 mbar
viscosity max. 500 mm²/s
temperature max. 40 °C
density max. 3.8 g/cm³

A Closer Look...

The Digital · Easy Calibration type has a digital display and all the features that make dispensing safer and convenient.



Mechanical/digital display

The mechanical volume setting is easy to read and ensures accurate and reproducible volume control.

Easy Calibration Technique

Calibration and adjustments according to ISO 9001 and GLP are done within seconds. Alteration of factory setting is automatically indicated by a red recalibration flag. For more information please see page 288.

SafetyPrime™ recirculation valve

The SafetyPrime™ recirculation valve (optional) reduces risk of splashes caused by air bubbles during instrument priming and permits recirculation during priming to avoid reagent waste. Valve control knob clearly indicates valve position.

Easy to use

The minimal force needed to operate the floating piston makes serial dispensing convenient and effortless.

Safety discharge system

The integrated safety discharge system reduces the risk of inadvertent dispensing and splashes if discharge tube is improperly installed or missing.

Rotating valve block

To allow the bottle label to face the user, the valve block can be rotated 360°. The 45 mm standard thread plus the included adapters fit common lab bottles.

Discharge tube safety screw cap

Screw cap protects against reagent contact and is easy to attach and remove, even while wearing gloves.

Telescoping filling tube

Adjusts easily to different size bottles – without measuring or cutting.



Use and Handling

Liquid Handling



One-handed operation

Each piston is matched individually with its cylinder to close tolerances. A thin liquid film acts as a non-wearing seal that reduces friction, so dispensing is easy and convenient.



Dispensing sterile fluids

The instrument can be autoclaved at 121 °C and may be fitted with an optional micro-filter to prevent contamination of the bottle contents. Sterile technique must be followed.



Serial dispensing

To facilitate serial dispensing, the optional flexible discharge tube with safety handle permits fast and precise dispensing even into narrow test tubes. The functions of the safety discharge system and SafetyPrime™ recirculation valve are fully maintained with the flexible discharge tube.



Dispensing sensitive reagents

The optional drying tube screws into the ventilation aperture at the rear of the instrument. Filled with a suitable absorbing agent, it can protect sensitive reagents against humidity or CO₂.

General features of the Dispensette® bottle-top dispenser

- Dispensing directly from the supply bottle
- Easy to dismantle for cleaning
- Replaceable filling valves
- Autoclavable at 121 °C
- Conformity certified
- Easy to calibrate and adjust in order to comply with ISO 9001 and GLP guidelines. A positive indicator automatically indicates adjustment from factory settings.



Dispenser Selection Chart

Reagent	Disp. III	Disp. Organic	Reagent	Disp. III	Disp. Organic	Reagent	Disp. III	Disp. Organic
Acetaldehyde	+	+	Cyclohexane		+	Monochloroacetic acid	+	+
Acetic acid (glacial), 100%	+	+	Cyclohexanone	+	+	Nitric acid, 30%	+	+
Acetic acid, 96%	+	+	Cyclopentane		+	Nitric acid, 30-70% *		+
Acetic anhydride		+	Decane	+	+	Nitrobenzene	+	+
Acetone	+	+	1-Decanol	+	+	Oleic acid	+	+
Acetonitrile	+	+	Dibenzyl ether	+	+	Oxalic acid	+	
Acetophenone		+	Dichloroacetic acid		+	n-Pentane		+
Acetyl chloride		+	Dichlorobenzene	+	+	Peracetic acid		+
Acetylacetone	+	+	Dichloroethane		+	Perchloric acid	+	+
Acrylic acid	+	+	Dichloroethylene		+	Perchloroethylene		+
Acrylonitrile	+	+	Dichloromethane		+	Petroleum		+
Adipic acid	+		Diesel oil (Heating oil)		+	Petroleum ether		+
Allyl alcohol	+	+	Diethanolamine	+	+	Phenol	+	+
Aluminium chloride	+		Diethyl ether		+	Phenylethanol	+	+
Amino acids	+		Diethylamine	+	+	Phenylhydrazine	+	+
Ammonia, 20%	+	+	1,2 Diethylbenzene	+	+	Phosphoric acid, 85%	+	+
Ammonia, 20-30%		+	Diethylene glycol	+	+	Phosphoric acid, 85% + Sulfuric acid, 98%, 1:1	+	+
Ammonium chloride	+		Dimethyl sulfoxide (DMSO)	+	+	Piperidine	+	+
Ammonium fluoride	+		Dimethylaniline	+		Potassium chloride	+	
Ammonium sulfate	+		Dimethylformamide (DMF)	+	+	Potassium dichromate	+	
n-Amyl acetate	+	+	1,4 Dioxane		+	Potassium hydroxide	+	
Amyl alcohol (Pentanol)	+	+	Diphenyl ether	+	+	Potassium permanganate	+	
Amyl chloride (Chloropentane)		+	Ethanol	+	+	Propionic acid	+	+
Aniline	+	+	Ethanolamine	+	+	Propylene glycol (Propanediol)	+	+
Barium chloride	+		Ethyl acetate	+	+	Pyridine	+	+
Benzaldehyde	+	+	Ethylbenzene		+	Pyruvic acid	+	+
Benzene (Benzol)	+	+	Ethylene chloride		+	Salicylaldehyde	+	+
Benzine (Gasoline)		+	Fluoroacetic acid		+	Scintillation fluid	+	+
Benzyl chloride	+	+	Formaldehyde, 40%	+		Silver acetate	+	
Benzyl alcohol	+	+	Formamide	+	+	Silver nitrate	+	
Benzylamine	+	+	Formic acid, 100%		+	Sodium acetate	+	
Benzylchloride	+	+	Glycerol	+	+	Sodium chloride	+	
Boric acid, 10%	+	+	Glycol (Ethylene glycol)	+	+	Sodium dichromate	+	
Bromobenzene	+	+	Glycolic acid, 50%	+		Sodium fluoride	+	
Bromonaphthalene	+	+	Heating oil (Diesel oil)		+	Sodium hydroxide, 30%	+	
Butanediol	+	+	Heptane		+	Sodium hypochlorite	+	
1-Butanol	+	+	Hexane		+	Sulfuric acid, 98%	+	+
n-Butyl acetate	+	+	Hexanoic acid	+	+	Tartaric acid	+	
Butyl methyl ether	+	+	Hexanol	+	+	Tetrachloroethylene		+
Butylamine	+	+	Hydriodic acid	+	+	Tetrahydrofuran (THF)		+
Butyric acid	+	+	Hydrobromic acid		+	Tetramethylammonium hydroxide	+	
Calcium carbonate	+		Hydrochloric acid, 20%	+	+	Toluene		+
Calcium chloride	+		Hydrochloric acid, 20-37 %		+	Trichloroacetic acid		+
Calcium hydroxide	+		Hydrogen peroxide, 35%		+	Trichlorobenzene		+
Calcium hypochlorite	+		Isoamyl alcohol	+	+	Trichloroethane		+
Carbon tetrachloride		+	Isobutanol	+	+	Trichloroethylene		+
Chloro naphthalene	+	+	Isocetane		+	Trichlorotrifluoro ethane		+
Chloroacetaldehyde, 45%	+	+	Isopropanol (2-Propanol)	+	+	Triethanolamine	+	+
Chloroacetic acid	+	+	Isopropyl ether	+	+	Triethylene glycol	+	+
Chloroacetone	+	+	Lactic acid	+		Trifluoro ethane		+
Chlorobenzene	+	+	Methanol	+	+	Trifluoroacetic acid (TFA) */**		+
Chlorobutane	+	+	Methoxybenzene	+	+	Turpentine		+
Chloroform		+	Methyl benzoate	+	+	Urea	+	
Chlorosulfonic acid		+	Methyl butyl ether	+	+	Xylene		+
Chromic acid, 50%	+	+	Methyl ethyl ketone	+	+	Zinc chloride, 10%	+	
Chromosulfuric acid	+		Methyl formate	+	+	Zinc sulfate, 10%	+	
Copper sulfate	+		Methyl propyl ketone	+	+			
Cresol		+	Methylene chloride		+			
Cumene (Isopropyl benzene)	+	+	Mineral oil (Engine oil)	+	+			

* use ETFE/PTFE bottle adapter

** use PTFE seal

Hydrofluoric acid (HF): Only the Dispensette® HF is specifically designed to dispense hydrofluoric acid (maximum permitted concentration 52%).

The above recommendations reflect testing completed prior to publication. Always follow instructions in the operating manual of the instrument as well as the reagent manufacturer's specifications. In addition to these chemicals, a variety of organic and inorganic saline solutions (e.g., biological buffers), biological detergents and media for cell culture can be dispensed. Should you require information on chemicals not listed, please feel free to contact BRAND. Status as of: 0212/11





BRAND also offers an on-site **calibration service** (for more information, please see page 291).

Note:

When ordering instruments with DKD certificates, the prefix 'DKD' must be added to the order number, e.g., DKD 4700 321.



Ordering Data

Items supplied:

Each Dispensette® bottle-top dispenser is conformity certified and supplied with performance certificate, discharge tube, telescoping filling tube, SafetyPrime™ recirculation valve (optional), mounting tool and adapters of polypropylene:

Dispensette® nominal volume, ml	Adapter for bottle thread	Filling tube length, mm
0.5	GL 25, GL 28, GL 32	125-240
1, 2, 5, 10	GL 25, GL 28, GL 32, GL 38, S 40	125-240
25, 50, 100	GL 32, GL 38, S 40	170-330
10 (Dispensette® HF only)	GL 32 (ETFE), S 40 (PTFE)	125-240

Dispensette® III, Digital · Easy Calibration

Capacity ml	Subdivision ml	A* ≤ ± %	μl	CV* ≤ %	μl	without SafetyPrime™ recirculation valve Cat. No.	with SafetyPrime™ recirculation valve Cat. No.
0.2 - 2	0.01	0.5	10	0.1	2	4700 320	4700 321
0.5 - 5	0.02	0.5	25	0.1	5	4700 330	4700 331
1 - 10	0.05	0.5	50	0.1	10	4700 340	4700 341
2.5 - 25	0.1	0.5	125	0.1	25	4700 350	4700 351
5 - 50	0.2	0.5	250	0.1	50	4700 360	4700 361

Dispensette® III, Analog-adjustable

Capacity ml	Subdivision ml	A* ≤ ± %	μl	CV* ≤ %	μl	without SafetyPrime™ recirculation valve Cat. No.	with SafetyPrime™ recirculation valve Cat. No.
0.05 - 0.5	0.01	1.0	5	0.2	1	4700 100	4700 101
0.2 - 2	0.05	0.5	10	0.1	2	4700 120	4700 121
0.5 - 5	0.1	0.5	25	0.1	5	4700 130	4700 131
1 - 10	0.2	0.5	50	0.1	10	4700 140	4700 141
2.5 - 25	0.5	0.5	125	0.1	25	4700 150	4700 151
5 - 50	1.0	0.5	250	0.1	50	4700 160	4700 161
10 - 100	1.0	0.5	500	0.1	100	4700 170	4700 171

Dispensette® III, Fixed-volume

Capacity ml	A* ≤ ± %	μl	CV* ≤ %	μl	without SafetyPrime™ recirculation valve Cat. No.	with SafetyPrime™ recirculation valve Cat. No.
1	0.5	5	0.1	1	4700 210	4700 211
2	0.5	10	0.1	2	4700 220	4700 221
5	0.5	25	0.1	5	4700 230	4700 231
10	0.5	50	0.1	10	4700 240	4700 241
Special fixed volumes: 0.5-100 ml (please state when ordering)					4700 290	4700 291

* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are well within the limits of DIN EN ISO 8655-5. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation

Dispensette® Organic, Digital · Easy Calibration

Capacity ml	Subdivision ml	A* ≤ ± % μl	CV* ≤ % μl	without SafetyPrime™ recirculation valve Cat. No.	with SafetyPrime™ recirculation valve Cat. No.
0.5 - 5	0.02	0.5 25	0.1 5	4730 330	4730 331
1 - 10	0.05	0.5 50	0.1 10	4730 340	4730 341
2.5 - 25	0.1	0.5 125	0.1 25	4730 350	4730 351
5 - 50	0.2	0.5 250	0.1 50	4730 360	4730 361

Dispensette® Organic, Analog-adjustable

Capacity ml	Subdivision ml	A* ≤ ± % μl	CV* ≤ % μl	without SafetyPrime™ recirculation valve Cat. No.	with SafetyPrime™ recirculation valve Cat. No.
0.5 - 5	0.1	0.5 25	0.1 5	4730 130	4730 131
1 - 10	0.2	0.5 50	0.1 10	4730 140	4730 141
2.5 - 25	0.5	0.5 125	0.1 25	4730 150	4730 151
5 - 50	1.0	0.5 250	0.1 50	4730 160	4730 161
10 - 100	1.0	0.5 500	0.1 100	4730 170	4730 171

Dispensette® Organic, Fixed-volume

Capacity ml	A* ≤ ± % μl	CV* ≤ % μl	without SafetyPrime™ recirculation valve Cat. No.	with SafetyPrime™ recirculation valve Cat. No.
5	0.5 25	0.1 5	4730 230	4730 231
10	0.5 50	0.1 10	4730 240	4730 241
Special fixed volumes: 2-100 ml (please state when ordering)			4730 290	4730 291

Dispensette® HF, Analog-adjustable

Capacity ml	Subdivision ml	A* ≤ ± % μl	CV* ≤ % μl	without SafetyPrime™ recirculation valve Cat. No.	with SafetyPrime™ recirculation valve Cat. No.
1 - 10	0.2	0.5 50	0.1 10	4700 040	4700 041

* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are well within the limits of DIN EN ISO 8655-5. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation



Accessories and Spare Parts

(Other spare parts and accessories can be found in the operating manual.)

Discharge tubes with integrated valve

Pack of 1.



Description	Nominal volume ml	Shape	Length mm	Cat. No.
■ for Dispensette® III	0.5, 1, 2, 5, 10	fine tip	90	7079 15
	5, 10	standard	90	7079 16
	25, 50, 100	standard	120	7079 17
	25, 50, 100	fine tip	120	7079 18
■ for Dispensette® Organic	0.5, 1, 2, 5, 10	fine tip	90	7079 35
	5, 10	standard	90	7079 36
	25, 50, 100	standard	120	7079 37
	25, 50, 100	fine tip	120	7079 38
■ for Dispensette® HF	10	standard	90	7079 19

SafetyPrime™ recirculation valves

Pack of 1.



Description	Cat. No.
■ for Dispensette® III 1-100 ml	7060 80
■ for Dispensette® III 0.5 ml	7060 81
■ for Dispensette® Organic	7060 90
■ for Dispensette® HF	7060 85

Bottle adapters

For Dispensette®, Titrette®, seripettor® and QuikSip™.

PP or ETFE. Adapters of ETFE offer higher chemical resistance. Pack of 1.



Outer thread	for bottle thread/ground joint	Material	Cat. No.
GL 32	GL 25	PP	7043 25
GL 32	GL 28 / S 28	PP	7043 28
GL 32	GL 30	PP	7043 30
GL 32	GL 45	PP	7043 45
GL 45	GL 32	PP	7043 96
GL 45	GL 35	PP	7044 31
GL 45	GL 38	PP	7043 97
GL 45	S* 40	PP	7043 43
GL 32	GL 25	ETFE	7043 75
GL 32	GL 28 / S 28	ETFE	7043 78
GL 32	GL 30	ETFE	7043 80
GL 32	GL 45	ETFE	7043 95
GL 45	GL 32	ETFE	7043 98
GL 45	GL 38	ETFE	7043 99
GL 45	S* 40	PTFE	7043 91
GL 32	NS 19/26	PP	7044 19
GL 32	NS 24/29	PP	7044 24
GL 32	NS 29/32	PP	7044 29

* buttress thread

Discharge tube with Luer-Lock attachment for micro filter

FEP/PP.

Pack of 1.

Cat. No. 7079 28*

* not suitable for HF and Peroxide



Threaded bottles, coated and uncoated, you can find on page 249.

Telescoping filling tubes

FEP. Adjusts to various bottle heights.
Pack of 1.



Nominal volume ml	Outer Ø mm	Length mm	Cat. No.
0.5, 1, 2, 5, 10	6	70-140	7042 02
		125-240	7042 03
		195-350	7042 08
		250-480	7042 01
25, 50, 100	7.6	170-330	7042 04
		250-480	7042 05

Flexible discharge tubing

PTFE, coiled, length 800 mm, with safety handle.
Pack of 1.



Nominal volume ml	Discharge tube Outer Ø mm	Inner Ø mm	Cat. No.
1, 2, 5, 10	3	2	7079 25*
25, 50, 100	4.5	3	7079 26*

* not suitable for HF and Peroxide

Filling valve with sealing washer

Pack of 1.



Description	Nominal volume ml	Cat. No.
for Dispensette® III, Dispensette® Organic	0.5, 1, 2, 5, 10	6697
for Dispensette® III, Dispensette® Organic	25, 50, 100	6698
for Dispensette® HF	10	6622

Filling valve with olive-shaped nozzle made of PEEK

For frequent autoclaving with the filling tube mounted, this filling valve with tube nozzle is recommended. PEEK has limited chemical resistance!
Pack of 1.



Description	Nominal volume ml	Cat. No.
for Dispensette® III, Dispensette® Organic	0.5, 1, 2, 5, 10	6637
for Dispensette® III, Dispensette® Organic	25, 50, 100	6638

Seals

PTFE. Spare seals for discharge tube, SafetyPrime™ and filling valve.
Pack of 5 each type.

Cat. No.	6696
----------	------



Seal for valve block

PTFE. For highly volatile reagents.
Pack of 1.

Cat. No.	7044 86
----------	---------



Air vent cap for micro filter with Luer-cone

PP. Air vent cap and PTFE-sealing ring.
Pack of 1 each.

Cat. No.	7044 95
----------	---------



Drying tube

Drying tube and seal, without drying agent. Pack of 1.

Cat. No.	7079 30
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Remote Dispensing System for Drum Dispensing

for Dispensette® III and Dispensette® Organic

- Dispense accurate volumes directly from drums and bulk refills
- The Dispensette® can be mounted on a wall, a ring stand or on lab furniture
- A filter in the drum adapter minimizes risk of contaminating high-purity reagents
- A quick-release connector with integrated valves allows quick changing of the bulk container
- The remote dispensing system allows storage of the drum up to 10 meters (30 feet) away from the Dispensette®. The max. delivery height is approximately 1.2 m.

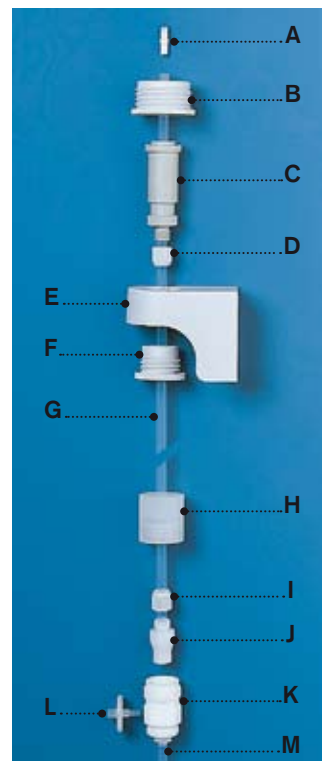
Standard supply:

without Dispensette®, for drums with 3/4" inner thread, consisting of:

- A)** Plug-in adapter, PTFE (only for Dispensettes ≤ 10 ml)
- B)** Thread adapter, PP (GL 45/32)
- C)** Strain relief, PP
- D)** Locking screw, PP
- E)** Wall mounting unit, PP
- F)** Thread adapter, PP (GL 32/28)
- G)** Filling tube, FEP, 3 m, outer Ø 7.6 mm
- H)** Mounting screw, PP
- I)** Locking screw, PP
- J)** Coupling, ETFE, with ball valve
- K)** Drum adapter, PTFE, for drums with inner-thread of 3/4", with ball valve (incl. closure cap)
- L)** Membrane filter, 3 µm, non-sterile
- M)** Filling tube, 0.47 m, outer Ø 6.9 mm

Note:

Observe all Safety Instructions, Operating Exclusions and Limitations of the Dispensette® III and the Dispensette® Organic.



Cat. No. 7042 61

* not suitable for HF and Peroxide

Operating Exclusions

Never use the remote dispensing system:

1. with SafetyPrime™ recirculation valve. It has to be removed before use!
2. for pressurized vessels
3. for liquids attacking borosilicate glass, Al₂O₃-ceramic, PFA, ETFE, FEP or PTFE
4. for Peroxide (due to catalytic reaction)
5. for carbon disulfide (CS₂), due to risk of explosion!

Accessories

Description	Dimensions	Cat. No.
Filling tube, FEP	10 m, outer Ø 7.6 mm	7042 67
Filling tube, FEP	1 m, outer Ø 6.9 mm	7042 69
Filling tube, FEP	1.4 m, outer Ø 6.0 mm	7042 09
Filling tube, FEP	1.5 m, outer Ø 7.6 mm	7042 10
Thread adapter, steel	outer thread 2", inner thread 3/4"	7042 70
Thread adapter, PTFE, for direct mounting of Dispensette® on drum	outer thread 3/4", outer thread GL 32	7042 81
Thread adapter, PTFE, to connect remote dispensing system with drums with GL outer thread	inner thread 3/4", inner thread GL 32	7042 82
Support rod connector for wall mounting unit		7042 68
Shelf clamp for wall mounting unit		7042 72



Support rod connector



Shelf clamp

seripettor®

Bottle-top Dispenser

- seripettor®
- seripettor® *pro* **NEW!**

seripettor® and seripettor® *pro* are innovative bottle-top dispensers from BRAND with a special design. They provide a cost-effective alternative to high-end dispensers for routine laboratory use.

Precise, rugged, low-cost.



Models

Two models, seripettor® and seripettor® pro, are available to simplify your routine dispensing operations. These dispensers will serve in a wide variety of applications – when dispensing buffer solutions, culture media, vitamin solutions, acids, bases, saline solutions or many polar solvents. Even special cases can be managed; for example, the seripettor® bottle-top dispenser can handle agar culture media up to a max. of 60 °C, while the seripettor® pro bottle-top dispenser can be used for dispensing many essential oils.

■ Operating range: seripettor®

– Aqueous solutions

Routinely used biological buffer solutions and detergents, antifoaming agents, culture media, vitamin solutions and so on can be dispensed. Hydrogen peroxide can also be dispensed.

Agar culture media can be dispensed at up to a max. of 60 °C.

– Acids

Weak, dilute or non-oxidizing acids can be dispensed.

– Alkaline solutions

The components of the instrument are compatible with alkaline solutions, such as NaOH, KOH and ammonia.

– Polar solvents

e.g., polar solvents such as ethanol, methanol, acetylacetone, etc.



■ Operating range: seripettor® pro

The seripettor® pro bottle-top dispenser extends the operating range to include the dispensing of

- acids such as concentrated HCl
- polar solvents such as acetone
- essential oils
- UV-sensitive reagents

Information on use with your specific media can be found in the guidelines for dispenser selection on page 24, or ask BRAND.

Use and Handling



One-handed operation

For dispensing, press down gently on the piston. The automatic lifting action of a spring pushes the piston up. This automatically fills the dispensing cartridge.



Serial dispensing

The optional flexible discharge tube with safety handle makes it easier to dispense in long series (it connects to the valve block with an adapter).



Dispensing sterile liquids

1. Mount the valve block with filling tube onto the bottle and cover the valve block with cap. Fix the autoclavable sterile membrane filter (0.2 µm) laterally and autoclave at 121 °C.
2. On a Clean-bench (sterile hood), remove the cap from the valve block, screw in a new sterile dispensing cartridge and mount the pump assembly. You're ready to dispense!





A Closer Look...

The design of the seripettor® bottle-top dispenser makes it possible for the user to replace any functional parts when needed, quickly and easily without the use of tools. Cleaning and maintenance work is reduced to a minimum.



Replaceable dispensing cartridge

If the dispenser's removable piston seal becomes worn, it is easy and inexpensive to replace. One spare cartridge included free.

Pump assembly with lifting spring

The automatic lifting action of a spring pushes the piston up. This automatically fills the dispensing cartridge.

Volume settings

Scalloped track allow for quick and exact setting of desired volume. The selected volume can be easily read.



Valve block

Valve block (45 mm) and included adapters (32 and 40 mm) match the threads of the most common reagent bottles. (See page 18 for an overview of available bottle adapters.)

Cap for discharge tube

Stopper cap or screw cap (depending on the model).

Materials of construction

	seripettor®	seripettor® pro
Pump assembly	PC	PPO/PEI (for UV protections)
Lifting spring	spring steel	Hastalloy (stainless)
Dispensing cartridge*	PE/PP	PE/PP
Valve block*	PP	PP
Valves*	PP/EPDM	ETFE/borosilicate glass/Al ₂ O ₃ /Pt-Ir
Discharge tube*	PP	PTFE/ETFE/FEP/PFA/borosilicate glass/Al ₂ O ₃ /Pt-Ir
Filling tube*	PP	Telescoping filling tube, FEP/PTFE
Cap for discharge tube*	Stopper cap, PP	Screw cap, PP

* parts in contact with the media

Dispenser Selection Chart

Reagent	seri- pettor®	seripet- tor® pro	Reagent	seri- pettor®	seripet- tor® pro	Reagent	seri- pettor®	seripet- tor® pro
Acetaldehyde		+	Calcium chloride	+	+	Mineral oil (Engine oil)		+
Acetic acid, 5%	+	+	Calcium hydroxide	+	+	Monochloroacetic acid		+
Acetic acid, 96%		+	Calcium hypochlorite	+	+	Nitric acid, 10%		+
Acetic acid (glacial), 100%		+	Chloroacetaldehyde, 45%		+	Oxalic acid	+	+
Acetone		+	Chloroacetic acid		+	Perchloric acid		+
Acetonitrile		+	Chromic acid, 50%		+	Phenol		+
Acetophenone	+		Copper sulfate	+	+	Phosphoric acid, 85%		+
Acetylacetone	+	+	Cumene (Isopropyl benzene)		+	Piperidine		+
Acrylic acid		+	Diethylene glycol	+	+	Potassium chloride	+	+
Acrylonitrile		+	Dimethyl sulfoxide (DMSO)		+	Potassium dichromate	+	+
Adipic acid	+	+	Dimethylaniline		+	Potassium hydroxide	+	+
Agar (60 °C)	+		Essential oil		+	Potassium hydroxide in ethanol	+	+
Allyl alcohol	+	+	Ethanol	+	+	Potassium permanganate	+	+
Aluminium chloride	+	+	Formaldehyde, 40%	+	+	Propionic acid	+	+
Amino acids	+	+	Formamide	+	+	Propylene glycol (Propanediol)	+	+
Ammonia, 30%	+	+	Formic acid, 100%		+	Pyridine		+
Ammonium chloride	+	+	Glycerol	+	+	Pyruvic acid	+	+
Ammonium fluoride	+	+	Glycol (Ethylene glycol)	+	+	Salicylaldehyde		+
Ammonium sulfate	+	+	Glycolic acid, 50%	+	+	Salicylic acid	+	+
Amyl alcohol (Pentanol)	+	+	Hexanoic acid	+	+	Silver acetate	+	+
n-Amyl acetate		+	Hexanol		+	Silver nitrate	+	+
Aniline		+	Hydriodic acid	+	+	Sodium acetate	+	+
Barium chloride	+	+	Hydrobromic acid		+	Sodium chloride	+	+
Benzaldehyde		+	Hydrochloric acid, 37%		+	Sodium dichromate	+	+
Benzyl alcohol		+	Hydrogen peroxide, 35%	+		Sodium fluoride	+	+
Benzylamine		+	Isoamyl alcohol		+	Sodium hydroxide, 30%	+	+
Benzylchloride		+	Isobutanol	+	+	Sodium hypochlorite	+	+
Boric acid, 10%	+	+	Isopropanol (2-Propanol)	+	+	Sulfuric acid, 10%	+	+
Butanediol	+	+	Lactic acid	+	+	Tartaric acid		+
1-Butanol		+	Methanol	+	+	Urea	+	+
Butylamine		+	Methyl benzoate		+	Zinc chloride, 10%	+	+
n-Butyl acetate		+	Methyl ethyl ketone	+	+	Zinc sulfate, 10%	+	+
Calcium carbonate	+	+	Methyl propyl ketone		+			

Note: seripettor® and seripettor® pro are not suitable for HF. Only the Dispensette® HF is specifically designed to dispense hydrofluoric acid (page 17).

The above recommendations reflect testing completed prior to publication. Always follow instructions in the operating manual of the instrument as well as the reagent manufacturer's specifications. In addition to these chemicals, a variety of organic and inorganic saline solutions (e.g., biological buffers), biological detergents and media for cell culture can be dispensed. Should you require information on chemicals not listed, please feel free to contact BRAND. Status as of: 0311/6

Operating limits

Vapor pressure

seripettor®

seripettor® pro

up to 500 mbar

Density

up to 2.2 g/cm³

Temperature

15 to 40 °C

15 to 40 °C

agar cultures up to 60 °C

Viscosity

2 ml instrument: 1000 mm²/s2 ml instrument: 1000 mm²/s10 ml instrument: 150 mm²/s10 ml instrument: 150 mm²/s25 ml instrument: 75 mm²/s25 ml instrument: 75 mm²/s

Ordering Data

seripettor®

Items supplied:

Each seripettor® bottle-top dispenser is supplied with discharge tube, filling tube, spare dispensing cartridge and PP adapters (GL 45/32 and GL 45/S40).

Volume ml	Subdivision ml	A* ≤ ± %	μl	CV* ≤ %	μl	Cat. No.
0.2 - 2	0.04	1.2	24	0.2	4	4720 120 NEW!
1 - 10	0.2	1.2	120	0.2	20	4720 140
2.5 - 25	0.5	1.2	300	0.2	50	4720 150



Liquid Handling

seripettor® pro **NEW!**

Items supplied:

Each seripettor® bottle-top dispenser is supplied with discharge tube, filling tube, spare dispensing cartridge, mounting tool and PP adapters (GL 45/32 and GL 45/S40).

Volume ml	Subdivision ml	A* ≤ ± %	μl	CV* ≤ %	μl	Cat. No.
0.2 - 2	0.04	1.2	24	0.2	4	4720 420
1 - 10	0.2	1.2	120	0.2	20	4720 440
2.5 - 25	0.5	1.2	300	0.2	50	4720 450



* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. A = Accuracy, CV = Coefficient of variation

Accessories and Spare Parts

(Other spare parts and accessories can be found in the operating manual.)

Note: Dispensing cartridges are not autoclavable.

Dispensing cartridges

For seripettor® and seripettor® pro. Non-sterile and sterile. Piston (PE), cylinder (PP).



Description	Pack of	Cat. No.
2 ml, non-sterile	3	7045 00
10 ml, non-sterile	3	7045 02
25 ml, non-sterile	3	7045 04
2 ml, sterile (individually wrapped)	7	7045 07
10 ml, sterile (individually wrapped)	7	7045 06
25 ml, sterile (individually wrapped)	5	7045 08

Flexible discharge tube

For seripettor® and seripettor® pro. PTFE, coiled, length approx. 800 mm, with safety handle. Pack of 1.



Nominal volume	Cat. No.
2 + 10 ml	7045 22*
25 ml	7045 23*

* not suitable for peroxides



Pump assembly seripettor®

PC, stainless steel
lifting spring.
Pack of 1.

Description	Cat. No.
2 ml	7045 41
10 ml	7045 42
25 ml	7045 44



Discharge tube seripettor®

PP, incl. closure cap and
EPDM discharge valve.
Pack of 1.

Description	Cat. No.
Fine tip (2 ml)	7045 18
Standard (10 + 25 ml)	7045 20



Valve set seripettor®

1 filling valve (filling valve
body, O-ring) 1 discharge
valve, 2 seals.

Cat. No.	6790
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See page 18 for an
overview of available
bottle adapters.



Pump assembly seripettor® pro

PPO. PEI (UV protection).
Hastaloy (stainless) lifting
spring.
Pack of 1.

Description	Cat. No.
2 ml	7045 51
10 ml	7045 48
25 ml	7045 49



Discharge tube seripettor® pro

PP. With integrated valve
with seal.
Pack of 1.

Description	Cat. No.
2 ml	7079 15
10 ml	7079 16
25 ml	7079 18

Discharge tube adapters are
ordered separately.

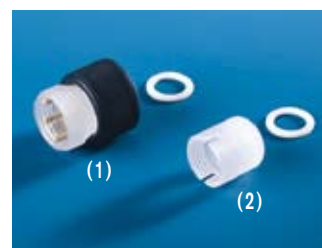


Filling valve seripettor® pro

Filling valve with seal.
Pack of 1.

Description	Cat. No.
2 + 10 ml	6697
25 ml	6698

Filling valves are ordered sepa-
rately.



(1) Adapter for discharge tube seripettor® pro

PP. With seal.
Pack of 1.

Cat. No.	6208
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(2) Adapter for filling valve seripettor® pro

PP. With seal.
Pack of 1.

Cat. No.	6707
----------	------

Filling tubes seripettor®

PP. Autoclavable design with
additional O-rings.

Length mm	Pack of	Cat. No.
250	2	7045 32
500	2	7045 34
250, with O-ring	1	7045 36
500, with O-ring	1	7045 38



Telescopic filling tubes seripettor® pro

FEP. Adjusts to various
bottle heights.
Pack of 1.

Nominal volume ml	Outer Ø mm	Length mm	Cat. No.
2 + 10	6	70-140	7042 02
		125-240	7042 03
		195-350	7042 08
25	7.6	250-480	7042 01
		170-330	7042 04
		250-480	7042 05



NEW!

Titrette®

Bottle-top Burette

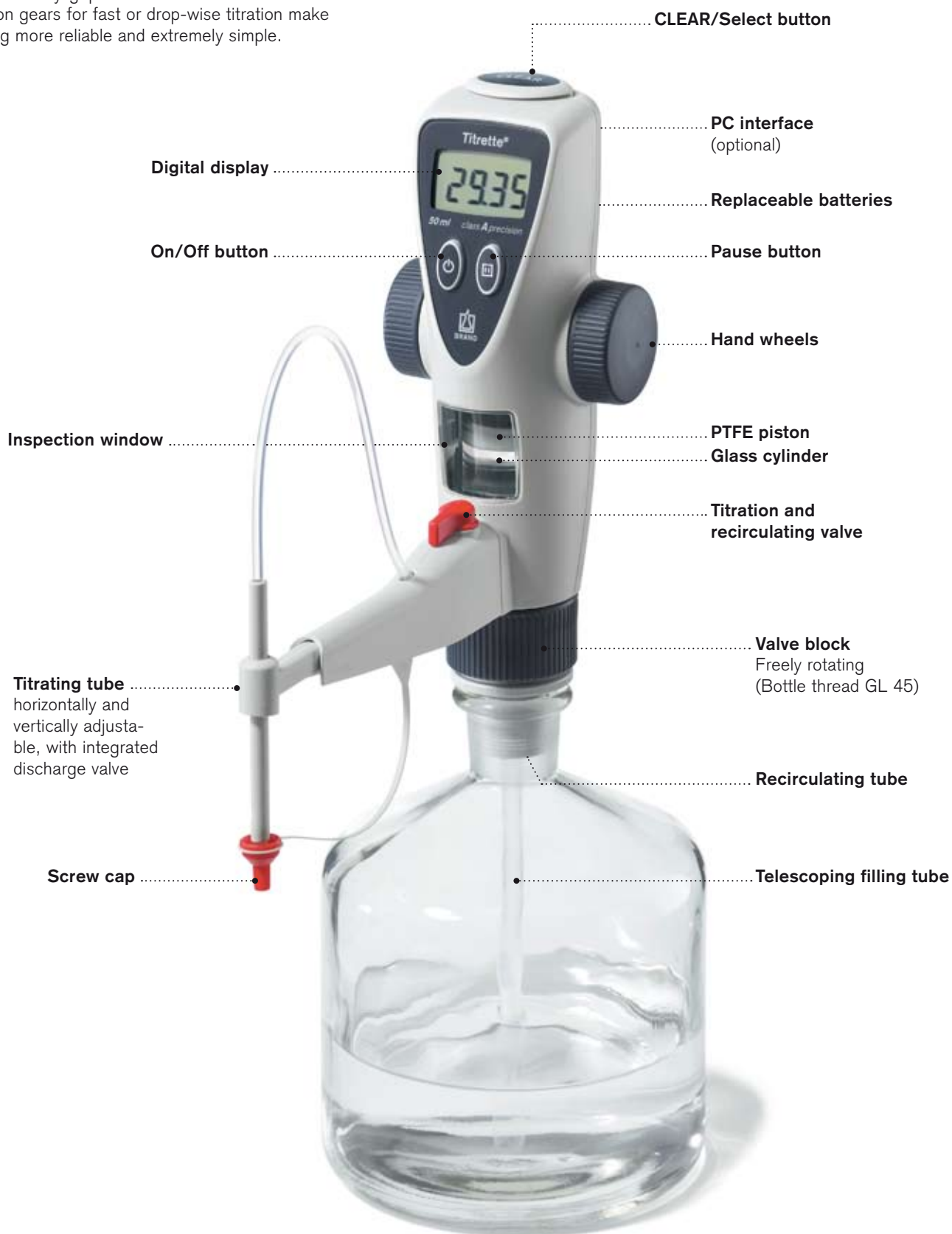
Easy dropwise titration, a compact, high-precision design, replaceable piston/cylinder assembly and an optional PC interface – these are just some of the features of this successor to the successful Digital Burette. With the Titrette® bottle-top burette, you can titrate quickly and reliably with highest precision, even in close quarters, with no power hookup needed – in the lab, in production, or in the field.

**The next generation
Digital Burette.**



A Closer Look...

The control elements of the Titrette® bottle-top burette have an intuitive layout. Separate buttons for On/Off and Pause; CLEAR button allows user to reset the display and select functions. Easy-grip hand wheel action and smooth precision gears for fast or drop-wise titration make handling more reliable and extremely simple.



Use and Handling



Smooth operation

No switching is needed to change between filling and titration. The dispenser automatically detects whether you are filling or titrating by the direction of hand wheel rotation. With the optimized gear ratio, you can fill the instrument quickly and still titrate drop-wise very slowly and sensitively.



User serviceable

The dispenser is quickly and easily dismantled within a few minutes – for cleaning, to replace the piston/cylinder, or to replace the batteries. Now you can carry out maintenance conveniently and easily in the lab, and the instrument is ready to use again in minutes.

Light-weight and compact

The compact design and the light weight ensure good stability. The titrating tube can be adjusted horizontally and vertically. This provides flexibility when positioning the instrument, e.g., when using a magnetic stirrer or different bottle sizes.



Light protection

For protection of light-sensitive media, the clear inspection windows can be replaced with the amber colored windows (included).



Liquid Handling

Useful extras

The dispenser is equipped with four helpful additional electronic functions:

Adjustment with Easy Calibration

With Easy Calibration technology, the instrument can be adjusted quickly and easily – with no tools! A small 'CAL' icon in the display indicates that adjustment is in progress.

Calibration schedule

The next calibration date can be stored under 'GLP', and called up each time the instrument is turned on. The GLP and the year and month of the scheduled date are then shown continuously.

Save power with Auto Power Off

The instrument switches off automatically after longer periods of inactivity. The current display value is stored, and returned to the display after the power is switched on again manually. Under 'APO' (Auto Power Off), the inactivity period until automatic power off can be set from 1 to 30 minutes.

Changing decimal place settings

For use as a micro-burette, the titrated volume display can be switched from 2 to 3 decimal places under 'dP' (decimal point). Above 20.00 ml, the display automatically switches to 2 decimal places.





PC interface (optional)

The instrument is available with an optional RS 232 communications interface. Advantages compared to the standard configuration:

- The titration results are automatically transmitted to the PC by double-clicking on the CLEAR key. This eliminates transcription errors while recording primary data, and complies with an important requirement of GLP.
- With each data transfer, the burette sends the titrated volume, the serial number of the instrument, the nominal volume and the adjustment value, as well as the next scheduled calibration date. Thus, all raw data is collected.

The transmitted data is recognized as keyboard inputs by the PC. This universal input format ensures that the instrument is compatible with all PC applications that accept keyboard inputs.

To connect the instrument to a USB interface, simply use a standard USB/RS 232 adapter.



Range of application

The instrument can be used for the following titration media (maximum concentration 1 mol/l):

Acetic acid	Potassium bromide bromate solution
Alcoholic potassium hydroxide solution	Potassium dichromate solution
Ammonium iron (II) sulfate solution	Potassium hydroxide solution
Ammonium thiocyanate solution	Potassium iodate solution
Barium chloride solution	Potassium permanganate solution
Bromide bromate solution	Potassium thiocyanate solution
Cerium (IV) sulfate solution	Silver nitrate solution
EDTA solution	Sodium arsenite solution
Hydrochloric acid	Sodium carbonate solution
Hydrochloric acid in Acetone	Sodium chloride solution
Iodide Iodate solution	Sodium hydroxide solution
Iodine solution	Sodium nitrite solution
Iron (II) sulfate solution	Sodium thiosulfate solution
Nitric acid	Sulfuric acid
Oxalic acid solution	Tetra-n-butylammonium hydroxide solution
Perchloric acid	Triethanolamine in Acetone
Perchloric acid in glacial acetic acid	Zinc sulfate solution
Potassium bromate solution	

The above recommendations reflect testing completed prior to publication. Always follow instructions in the operating manual of the instrument as well as the reagent manufacturer's specifications. Should you require information on chemicals not listed, please feel free to contact BRAND. Status as of: 0311/4

When the instrument is properly handled, dispensed liquid will only come into contact with the following chemically resistant materials: borosilicate glass, Al_2O_3 , ETFE, PFA, FEP, PTFE, platinum-iridium; PP (screw cap).

Limitations of use

Chlorinated and fluorinated hydrocarbons or chemical combinations which form deposits may make the piston difficult to move or may cause jamming.

Compatibility of the instrument for a special application (e.g., trace material analysis) must be checked by the user. For additional information, please contact the manufacturer.

The instrument is not autoclavable!

Operating limits

This instrument is designed for titrating liquids, observing the following physical limits:

- +15 °C to +40 °C (59 °F to 104 °F) of instrument and reagent
- Vapor pressure up to 500 mbar
- Viscosity up to 500 mm²/s
- Altitude: maximum 3000 m above sea level
- Relative humidity: 20% to 90%

Comparison of error limits

Volume ml	Partial volume ml	Titrette® bottle-top burette				Bottle-top burettes according to DIN EN ISO 8655-3				Glass burettes Class A acc. to DIN EN ISO 385
		A* ≤ ± %	μl	CV* ≤ %	μl	A* ≤ ± %	μl	CV* ≤ %	μl	EL** ± μl
25	25	0.07	18	0.025	6	0.2	50	0.1	25	30
	12.5	0.14	18	0.05	6	0.4	50	0.2	25	30
	2.5	0.70	18	0.25	6	2	50	1	25	30
50	50	0.06	30	0.02	10	0.2	100	0.1	50	50
	25	0.12	30	0.04	10	0.4	100	0.2	50	50
	5	0.60	30	0.20	10	2	100	1	50	50

* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are well within the limits of DIN EN ISO 8655-3. Conformity certified to DIN 12600.

A = Accuracy, CV = Coefficient of variation

** Error limit: EL = A + 2CV, according to ISO 8655-6 Annex B

The maximum resolution of the display:

25 ml instrument: 0.001 ml, above 20 ml titration volume 0.01 ml;
50 ml instrument: 0.002 ml, above 20 ml titration volume 0.01 ml.

The error limits for Class A burettes according to DIN EN ISO 385 are met.

Note:

If you need an official certification which confirms the error limits that are much stricter than those of DIN EN ISO 8655-3, we recommend a calibration certificate from an accredited calibration laboratory (e.g., the DKD laboratory at BRAND).

Ordering Data

Titrette®

Items supplied:

Each Titrette® bottle-top burette is conformity certified and supplied with performance certificate, telescoping filling tube (170 - 330 mm), recirculation tube, 2 batteries (AAA/UM4/LR03), 3 PP bottle adapters (GL 45/32, GL 45/S 40, GL 32/NS 29/32), 2 amber colored light shield inspection windows.

Volume	Standard Cat. No.	with RS 232 interface* Cat. No.
25 ml	4760 151	4760 251
50 ml	4760 161	4760 261
°SH (25 ml)	4760 451**	—

* Additionally included:
interface cable (Sub-D plug connector, 9-pin), one CD (driver software and open RS232 communication protocol).
The CD also includes an example application in XLS-file format, as well as a special operating manual.

** For the determination of the acidity of milk and liquid dairy products using the Soxhlet-Henkel method (4 °SH = 1 ml).

BRAND also offers an on-site **calibration service** (for more information, please see page 291).



Note:

When ordering instruments with DKD certificates, the prefix 'DKD' must be added to the order number, e.g., DKD 4760 161.

Accessories and Spare Parts

(Other spare parts and accessories can be found in the operating manual.)



Titration tube

With screw cap and integrated discharge and recirculation valve. Pack of 1.

up to serial number 12J

Cat. No.	7075 26
----------	---------

from serial number 01K

Cat. No.	7075 29
----------	---------



Telescoping filling tubes

FEP.

Pack of 1.

170 - 330 mm

Cat. No.	7042 04
----------	---------

250 - 480 mm

Cat. No.	7042 05
----------	---------



Filling valve

With olive-shaped nozzle and sealing ring. Pack of 1.

Cat. No.	6636
----------	------



Inspection window

1 set colorless and 1 set amber colored (light shield).

Cat. No.	6783
----------	------



Piston

Pack of 1.

for vol. 25 ml

Cat. No.	7075 30
----------	---------

for vol. 50 ml

Cat. No.	7075 32
----------	---------



Dispensing cylinder with valve block

Pack of 1.

for vol. 25 ml

up to serial number 12J

Cat. No.	7075 34
----------	---------

from serial number 01K

Cat. No.	7075 35
----------	---------

for vol. 50 ml

up to serial number 12J

Cat. No.	7075 36
----------	---------

from serial number 01K

Cat. No.	7075 37
----------	---------



See page 18 for an overview of available **bottle adapters**.



Threaded bottles, coated and uncoated, you can find on page 249.

Transferpette®

Pipetting System

BRAND offers the ideal pipette for every hand:

- Transferpette® S with the central pipetting button and one-handed volume setting
- Transferpette® with the pipetting key on the side
- Transferpette® electronic with motor drive

BRAND has been developing and manufacturing single-channel and multichannel piston-operated pipettes for more than 25 years. Special attention is always paid to optimum ergonomics and reduction of injuries caused by prolonged strain (such as Repetitive Strain Injury Syndrome, RSI).

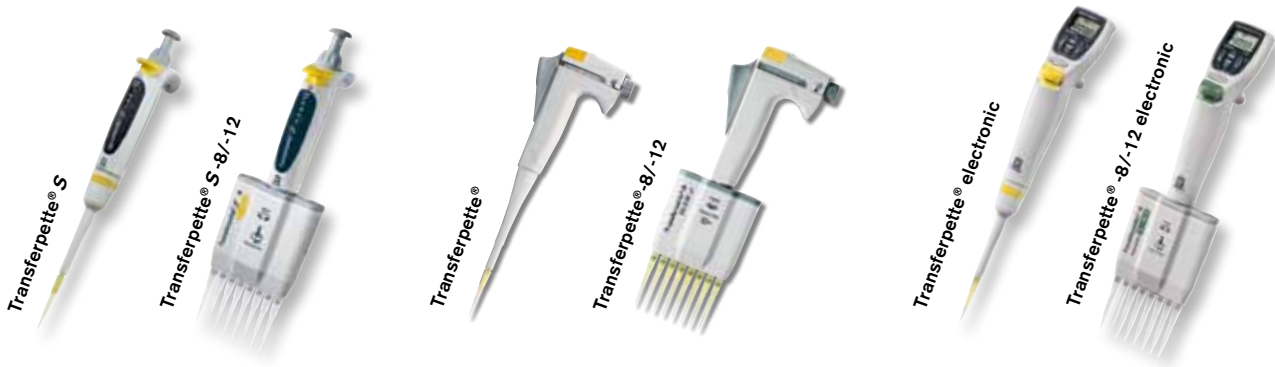
The ideal pipette for every hand.





Pipetting – A Routine Laboratory Procedure

Pipetting is one of the most frequent tasks in the laboratory. The right choice of pipette is critical to performing this repetitive task accurately and strain-free.



What are the special features to look for?

■ Pipetting key

To fit your preferred working style, choose either the Transferpette® pipettes with the pipetting key on the side or the Transferpette® S pipettes with the central pipetting button. The Transferpette® electronic pipettes only need a brief tap on the pipetting button to activate the piston.

■ Tip ejector

All Transferpette® models have separate tip ejection. This reduces the risk of accidental tip ejection.

■ Adjustability

Piston-operated pipettes are calibrated in compliance with the monitoring of measuring instruments according to EN ISO 8655. All Transferpette® models feature the Easy Calibration Technique that allows adjustment without tools (please see page 288).

■ Autoclavability

No compromises! Depending on the model, either the complete pipette shaft (Transferpette®, Transferpette® electronic) or the entire pipette (Transferpette® S) can be autoclaved at 121 °C (2 bar), acc. DIN EN 285.

■ Tip cone

Pipette and pipette tip form a single system. Both components have been developed by BRAND and are perfectly matched. This ensures an optimum fit between the Transferpette® pipettes and the PLASTIBRAND® pipette and filter tips.

For your convenience, the tip cone is also designed to accept tips made by other leading manufacturers.

Which Transferpette® is right for you?

	Transferpette® S	Transferpette®	Transferpette® electronic
Side pipetting key		✓	
Central pipetting button	✓		✓
Separate tip ejection	✓	✓	✓
Easy Calibration Technique	✓	✓	✓
Entire shaft is autoclavable	✓	✓	✓
Entire pipette is autoclavable	✓		
Corrosion-resistant piston	✓	✓	✓
Universal tip cone	✓	✓	✓
Volume display	4-position	3/4-position*	4-position
Volume range	0.1 µl - 10 ml	0.1 µl - 5 ml	0.5 µl - 5 ml
Motor driven			✓

* depending on volume range



Transferpette® S

Single and Multichannel Pipettes

A new performance standard among pipettes with a central pipetting button! BRAND's Transferpette® S pipettes.

Transferpette® S models are the product of intensive ergonomic and operational studies and the application of modern innovative materials. The new Transferpette® S models are the perfect manual pipettes for demanding laboratory applications for scientists who prefer the central pipetting button.

The Transferpette® S pipettes provide all of the features required by users working in the life sciences field: robust, one-handed operation, completely autoclavable, high precision and Easy Calibration technique for lasting reliability.

Transferpette® S

Solutions for Science



Liquid Handling



Models

Lightweight – robust – low force:

The piston-operated pipette Transferpette® S provides maximum versatility and optimum quality over the entire volume range.

There are 8 single-channel pipettes available in the 0.1 µl to 10 ml range in the Digital and Fixed models.

There are 5 different multichannel pipettes available in the 0.5 to 300 µl volume range.

Features

- Large, central pipetting button and separate ejection function
- True one-handed operation for both right- and left-handers
- The Transferpette® S is completely autoclavable at 121 °C (2 bar), acc. DIN EN 285.
- Volume-change protection
- 4-position volume display, always clearly visible
- Transferpette® S features Easy Calibration technique – readjustment without special tools (please see page 288 for further details) – Changes from factory settings are clearly visible externally.
- Short stroke of only 12.5 mm to reduce the risk of RSI (Repetitive Strain Injury)
- Corrosion-resistant piston and ejector
- Color-coded for easy selection of the right tip
- Transferpette® S 0.1-1 µl – maximum precision for molecular biology work, especially when pipetting enzymes.
- CE-IVD-compliant

Transferpette® S

Transferpette® S-8



Optimal performance will be achieved with the use of genuine PLASTIBRAND® premium tips. **Pipette and filter tips**, see pages 83-90.

A Closer Look...

A central pipetting button, the one-handed operation, precise 4-position volume settings and a volume display that can be easily read by both right- and left-handed operators are only a few examples of the attention to detail in the design of the Transferpette® S pipette.



Liquid Handling



The freely rotating stand provides safe storage for Transferpette® S and Transferpette® S-8/-12 pipettes.



BRAND also offers an on-site **calibration service** (for more information, please see page 291).

Note:

When ordering instruments with DKD certificates, the prefix 'DKD' must be added to the order number, e.g., DKD 7047 28.

Ordering Data

Items supplied:

Each Transferpette® S Digital adjustable / Fixed volume pipette is conformity certified and supplied with performance certificate and rack mount.

Transferpette® S, Digital adjustable

Capacity μl	Description	A* ≤ ± %	μl	CV* ≤ %	μl	Subdivision μl	Tip type**	Cat. No.
0.1 -	1 D-1	2	0.02	1.2	0.012	0.001	A, I	7047 68
0.5 -	10 D-10	1	0.1	0.5	0.05	0.01	A, B, I**, J	7047 70
2 -	20 D-20****	0.8	0.16	0.4	0.08	0.02	C, D, K, L	7047 72
10 -	100 D-100	0.6	0.6	0.2	0.2	0.1	C, D, K**, L	7047 74
20 -	200 D-200****	0.6	1.2	0.2	0.4	0.2	C, D, K**, L**, M	7047 78
100 -	1000 D-1000	0.6	6	0.2	2	1	E, F, N	7047 80
500 -	5000 D-5000	0.6	30	0.2	10	5	G	7047 82
1000 -	10000 D-10000	0.6	60	0.2	20	10	H	7047 84

Transferpette® S, Fixed volume

Capacity μl	Description	A* ≤ ± %	μl	CV* ≤ %	μl	Tip type**	Cat. No.
10	F-10	1	0.1	0.5	0.05	A, B, J	7047 08
20	F-20****	0.8	0.16	0.4	0.08	C, D, K, L	7047 16
25	F-25	0.8	0.2	0.4	0.1	C, D, L	7047 20
50	F-50	0.8	0.4	0.4	0.2	C, D, L	7047 28
100	F-100	0.6	0.6	0.2	0.2	C, D, L	7047 38
200	F-200****	0.6	1.2	0.2	0.4	C, D, M	7047 44
500	F-500	0.6	3	0.2	1	E, F, N	7047 54
1000	F-1000	0.6	6	0.2	2	E, F, N	7047 62

* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are well within the limits of DIN EN ISO 8655-2. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation

*** See page 56 for the definition of the tip types.

*** Tip volume less than pipettes nominal volume

**** For use only with 2-200 μl pipette tips

Accessories

(Other accessories for Transferpette® S pipettes can be found on page 40 and in the operating manual.)

Starter Kit

Items supplied: 3 Transferpette® S Digital adjustable pipettes, 3 x Tip-Box (filled), 3 rack mounts.

Type	The kit includes the following Transferpette® S models	Cat. No.
MICRO	D-1, D-10, D-100	7047 90
MIDI	D-20, D-200, D-1000	7047 91
MACRO	D-1000, D-5000, D-10000	7047 92
STANDARD	D-10, D-100, D-1000	7047 93



A Closer Look...

Easy Handling – a particular advantage of the new multichannel pipette is the easy operation, e.g., when performing serial pipetting of immunological assays, while making serial dilutions or when filling 96-well plates for cell cultures.



Stepped surface Sealing ring of FKM

Shafts and sealing rings are made of resilient FKM material, and are designed so that only minimal attachment force is needed for solid and parallel tip seating. The stepped design allows the ejection force to be sequentially distributed to the tips within fractions of a second and thus drastically reduces the force required.



Individual shafts with seals which can be easily unscrewed with only a simple gripping tool, which is supplied. Tip cones and seals can now be easily cleaned or replaced. This patented procedure eliminates the expense of long service outages, providing long service life and low operating costs.



Ordering Data

Items supplied:

Each Transferpette® S-8/-12 pipette is conformity certified and supplied with performance certificate, 1 Tip-Box, filled with PLASTIBRAND® pipette tips, 1 Tip-Rack for refilling, 1 shelf/rack mount, 1 reagent reservoir, 1 set of sealing rings made of FKM.

Transferpette® S-8

NEW!

Capacity µl	Description	A* ≤ ± %	CV* ≤ %	Subdivision µl	Tip type**	Cat. No.
0.5 - 10	M8-10	1.6	1.0	0.01	A, B, I***, J	7037 00
5 - 50	M8-50	0.8	0.4	0.1	C, D, K***, L, M	7037 06
10 - 100	M8-100	0.8	0.3	0.2	C, D, K***, L, M	7037 08
20 - 200	M8-200	0.8	0.3	0.2	C, D, K***, L***, M	7037 10
30 - 300	M8-300	0.6	0.3	0.2	C***, D, L***, M***	7037 12



Transferpette® S-12

NEW!

Capacity µl	Description	A* ≤ ± %	CV* ≤ %	Subdivision µl	Tip type**	Cat. No.
0.5 - 10	M12-10	1.6	1.0	0.01	A, B, I***, J	7037 20
5 - 50	M12-50	0.8	0.4	0.1	C, D, K***, L, M	7037 26
10 - 100	M12-100	0.8	0.3	0.2	C, D, K***, L, M	7037 28
20 - 200	M12-200	0.8	0.3	0.2	C, D, K***, L***, M	7037 30
30 - 300	M12-300	0.6	0.3	0.2	C***, D, L***, M***	7037 32

* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are well within the limits of DIN EN ISO 8655-2. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation

** See page 56 for the definition of the tip types.

*** Tip volume less than pipettes nominal volume

Accessories

Transferpette® S · Transferpette® S-8/-12

(Other accessories and spare parts can be found in the operating manual.)



Bench-top rack

for 6 Transferpette® S or Transferpette® S-8/-12 pipettes. Pack of 1.

Cat. No. 7048 05



Shelf/rack mount

Shelf/rack mount for all Transferpette® S single instruments. Pack of 1.

Cat. No. 7048 10



Filter

for Transferpette® S 0.5-5 ml pipettes. Pack of 25.

Cat. No. 7046 52

for Transferpette® S 1-10 ml pipettes. Pack of 25.

Cat. No. 7046 53



Transferpette®

Single and Multichannel Pipettes

The Transferpette® pipette from BRAND is designed for routine lab and research applications in a shape that is adapted to the anatomy of the human hand. The special handle shape with the side pipetting key allows the Transferpette® pipette to lie loosely and lightly in your hand.

The Transferpette® models are particularly well suited for prolonged pipetting, or for anyone who is susceptible to RSI syndrome due to repetitive laboratory procedures.



Liquid Handling



Features

- Side pipetting key relieves strain; separate ejector function limits errors.
- Pipette shafts/manifold are entirely autoclavable at 121 °C (2 bar), acc. DIN EN 285.
- Transferpette® Digital adjustable models and Transferpette®-8/-12 feature Easy Calibration technique – readjustment without special tools (please see page 288 for further details).
- Corrosion-resistant piston and ejector
- Colored tip ejector caps indicate appropriate tips to use.
- Transferpette® 0.1-1 µl – maximum precision for molecular biology work, especially when pipetting enzymes.
- A variety of pipette stands for optimum storage of the Transferpette® pipette
- CE-IVD-compliant

Models

Economical – accurate – versatile:

With only 5 instruments you can cover the entire volume range from 0.1 µl to 5 ml. You can choose from 10 models of the digital-adjustable Transferpette® pipette and from 12 models of the fixed-volume type.

There are 7 different multichannel pipettes available in the 0.5 to 300 µl volume range.



The microliter pipettes Transferpette® 0.1-1 µl and Transferpette® S 0.1-1 µl can be used to pipette the smallest volumes down to 0.1 µl with the highest precision.

In these instruments, which work exclusively with BRAND nano-cap™ pipette tips, the air cushion is greatly minimized in order to attain the highest precision when pipetting.

The smallest volumes of liquid can be taken up with good visibility, and positioned in a microcentrifuge tube, for example.

A Closer Look...

The Transferpette® pipette is designed to the shape of the human hand for maximum comfort.

Pipetting key

The side mounted pipetting key reduces hand fatigue, especially when performing serial pipetting operations.

Hand grip

The textured housing ensures a firm grip, and is UV resistant.

Tip cone

The taper is designed to fit PLASTIBRAND® and most other leading manufacturers tips.

Pipette shaft

The slim shaft (autoclavable at 121 °C) makes it possible to pipette in narrowest vessels without removing the tip ejector.

Volume adjustment

Changing volume is easy without snagging gloves. Detents prevent inadvertent volume changes.



Easy Calibration Technique

Calibration and adjustments according to ISO 9001 and GLP are done within seconds.



Optimal performance will be achieved with the use of genuine PLASTIBRAND® premium tips.

Pipette and filter tips,
see pages 83-90.



Ordering Data

Transferpette®, Digital adjustable

Items supplied:

Each Transferpette® Digital adjustable pipette is conformity certified and supplied with performance certificate.

Capacity μl		A* ≤ ± %	μl	CV* ≤ %	μl	Subdivision μl	Tip type**	Cat. No.
0.1 -	1	2	0.02	1.2	0.012	0.005	A, I	7041 01
0.5 -	10	1	0.1	0.8	0.08	0.05	A, B, I***, J	7041 02
2 -	20	0.8	0.16	0.4	0.08	0.1	A, B, J***	7041 03
2 -	20	0.8	0.16	0.4	0.08	0.1	C, D, K, L	7041 04
5 -	50	0.8	0.4	0.4	0.2	0.1	C, D, K***, L	7041 72
10 -	100	0.6	0.6	0.2	0.2	0.1	C, D, K***, L	7041 74
20 -	200	0.6	1.2	0.2	0.4	1	C, D, K***, L***, M	7041 78
25 -	250	0.6	1.5	0.2	0.5	1	E, F	7041 76
100 -	1000	0.6	6	0.2	2	1	E, F, N	7041 80
500 -	5000	0.6	30	0.2	10	10	G	7041 82



Transferpette®, Fixed volume

Items supplied:

Each Transferpette® Fixed volume pipette is conformity certified and supplied with performance certificate and calibration key.

Capacity μl	A* ≤ ± %	μl	CV* ≤ %	μl	Tip type**	Cat. No.
5	1	0.05	0.8	0.04	C, D, K, L	7041 06
10	1	0.1	0.8	0.08	C, D, K, L	7041 08
20	0.8	0.16	0.4	0.08	C, D, K, L	7041 16
25	0.8	0.2	0.4	0.1	C, D, L	7041 20
50	0.8	0.4	0.4	0.2	C, D, L	7041 28
100	0.6	0.6	0.2	0.2	C, D, L	7041 38
200	0.6	1.2	0.2	0.4	C, D, M	7041 44
200	0.6	1.2	0.2	0.4	E, F	7041 46
250	0.6	1.5	0.2	0.5	E, F	7041 48
500	0.6	3	0.2	1	E, F, N	7041 54
1000	0.6	6	0.2	2	E, F, N	7041 62
2000	0.6	12	0.2	4	G	7041 64

* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are within the limits of DIN EN ISO 8655-2. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation

** See page 56 for the definition of the tip types.

*** Tip volume less than pipettes nominal volume

BRAND also offers an on-site **calibration service** (for more information, please see page 291).

Note:

When ordering instruments with DKD certificates, the prefix 'DKD' must be added to the order number, e.g., DKD 7041 01.



Accessories

(Other accessories and spare parts can be found in the operating manual.)

PipSet Transferpette® Digital adjustable

The PipSet contains of three Transferpette® pipettes (0.5-10 µl, 10-100 µl, 100-1000 µl), one bench-top rack and one filled Tip Box N for each Transferpette® pipette. Pack of 1.

Cat. No.	7041 90
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Pipetting keys, colored

For Transferpette® and Transferpette®-8/-12 pipettes. Incl. 2 stickers per key. Pack of 5.

Color	Cat. No.
light green	7040 70
pink	7040 71
blue	7040 72
beige	7040 73
dark gray	7040 74
assorted colors	7040 75



Bench-top rack

Incl. 1 or 2 adapters for Transferpette® pipettes 2 ml or 0.5-5 ml. Pack of 1.



Description	Cat. No.
for 1 x 3 Transferpette® pipettes	7032 03
for 2 x 3 Transferpette® pipettes (Rondell)	7032 08

Wall/rack mount

Pack of 1.

Description	Cat. No.
for 1 x 3 Transferpette® pipettes*	7032 10

* Not suitable for the 0.5-5 ml or 2 ml Transferpette®

Individual stand

For Transferpette® pipettes 0.5-5 ml, 2 ml and Transferpette® electronic pipettes 0.5-5 ml. Pack of 1.

Cat. No.	7053 86
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Filter

For Transferpette® 0.5-5 ml pipettes. Pack of 25.

Cat. No.	7046 52
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A Closer Look...

The effortless ease of operation and its unique ergonomic shape make working with the Transferpette®-8/-12 piston-operated pipette so comfortable. The use of high-quality materials makes it exceptionally light in weight, while special FKM V-rings and the stepped shape of the ejector significantly reduce the ejection force needed. Your hand remains relaxed and loose, even during a prolonged pipetting operation.

Pipetting key

The side mounted pipetting key helps to reduce hand fatigue, especially when performing serial pipetting operations.

Hand grip

The textured housing ensures a firm grip, and is UV resistant.

Volume adjustment

Changing volumes is easy without snagging gloves. Detents prevents inadvertent volume changes.



Easy Calibration Technique

Calibration and adjustments according to ISO 9001 and GLP are done within seconds.

Manifold

Autoclavable at 121 °C and freely rotated over 360° to adapt to your most comfortable pipetting position.

Stepped tip ejector

The stepped tip ejector ensures a tight tip seal with minimal tip ejection force.

Tip cone

The taper is designed to fit PLASTIBRAND® and most other leading manufacturers tips.



Individual shafts and seals can easily be replaced in the laboratory.

Ordering Data

Items supplied:

Each Transferpette®-8/-12 pipette is conformity certified and supplied with performance certificate, 1 Tip-Box, filled with PLASTIBRAND® pipette tips, 1 Tip-Rack for refilling, 1 stand, 1 reagent-reservoir, 1 set of sealing rings made of FKM.

Transferpette®-8

Capacity μl	A* ≤ ± %	μl	CV* ≤ %	μl	Subdivision μl	Tip type**	Cat. No.
0.5 - 10	1.6	0.16	1.0	0.1	0.05	A, B, I***, J	7036 00
2 - 20	1.0	0.2	0.6	0.12	0.1	A, B, J***	7036 02
2.5 - 25	1.0	0.25	0.6	0.15	0.1	C, D, K***, L, M	7036 04
5 - 50	0.8	0.4	0.4	0.2	0.1	C, D, K***, L, M	7036 06
10 - 100	0.8	0.8	0.3	0.3	0.1	C, D, K***, L, M	7036 08
20 - 200	0.8	1.6	0.3	0.6	1	C, D, K***, L***, M	7036 10
30 - 300	0.6	1.8	0.3	0.9	1	C***, D, L***, M***	7036 12



Transferpette®-12

Capacity μl	A* ≤ ± %	μl	CV* ≤ %	μl	Subdivision μl	Tip type**	Cat. No.
0.5 - 10	1.6	0.16	1.0	0.1	0.05	A, B, I***, J	7036 20
2 - 20	1.0	0.2	0.6	0.12	0.1	A, B, J***	7036 22
2.5 - 25	1.0	0.25	0.6	0.15	0.1	C, D, K***, L, M	7036 24
5 - 50	0.8	0.4	0.4	0.2	0.1	C, D, K***, L, M	7036 26
10 - 100	0.8	0.8	0.3	0.3	0.1	C, D, K***, L, M	7036 28
20 - 200	0.8	1.6	0.3	0.6	1	C, D, K***, L***, M	7036 30
30 - 300	0.6	1.8	0.3	0.9	1	C***, D, L***, M***	7036 32



* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are within the limits of DIN EN ISO 8655-2. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation

** See page 56 for the definition of the tip types.

*** Tip volume less than pipettes nominal volume

Accessories

(Other accessories and spare parts can be found in the operating manual.)



Individual stand

For 1 Transferpette®-8/-12 or 1 Transferpette® S -8/-12 pipette. Pack of 1.

Cat. No. 7034 40



Reagent reservoir,
PP, non-sterile or sterile,
please see page 55.



Transferpette® electronic

Single and Multichannel Pipettes

The Transferpette® electronic piston-operated pipette combines the widely recognized features of BRAND mechanical pipettes with the advantages of electronic apparatus.

Comfortable design, balanced weight distribution, intuitive software and user-friendly technical documentation were the key objectives in developing the Transferpette® electronic pipette.

TUV Rhineland/Berlin-Brandenburg has confirmed the design as ergonomically sound and easy to use after rigorous field testing. It was the first pipette ever granted such recognition as a comprehensive, ergonomic concept.



Models

Ergonomics – approved and certified.

Transferpette® electronic single channel pipette is available in 5 different models: 0.5-10 µl, 2-20 µl, 20-200 µl, 100-1000 µl and 0.5-5 ml.

The Transferpette®-8/-12 electronic multichannel pipette is available in 5 different models: 0.5-10 µl, 1-20 µl, 5-100 µl, 10-200 µl and 15-300 µl.



Transferpette®
electronic



Transferpette®-8
electronic



Features

■ Ergonomic

- functional, ergonomic housing design
- individually adjustable finger rest

■ Easy operation

- intuitive menu structure
- comprehensively illustrated user manual

■ Innovative

- significantly reduced tip attachment and ejection forces using universal tips

■ Resistant

- Corrosion-resistant piston and ejector

■ Five convenient programs

(Please see page 50 for details)

- Pipetting
- Reverse pipetting
- Mixing
- GEL-Electrophoresis
- Dispensing

■ Ready for use

- 4000 pipetting cycles with each battery charge
- battery refresh function
- even during recharging

■ CE-IVD-compliant

Liquid Handling



Optimal performance will be achieved with the use of genuine PLASTIBRAND® premium tips. **Pipette and filter tips**, see pages 83-90.

Functions

The Programs

Liquid Handling



Pipetting (PIP Mode)

The 'standard' program.
The set volume is aspirated by the pipette,
and then discharged.



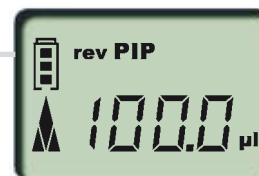
Mixing of Samples (PIPMix Mode)

Program for mixing of liquids. The sample is
repeatedly aspirated and discharged, and the
number of mixing cycles is displayed.



Reverse Pipetting (revPIP Mode)

Program specially designed for the pipetting
of liquids with a high viscosity, high vapor
pressure or foamy media.



Pipetting with Electrophoresis (GEL Mode)*

Program for the loading of electrophoresis gels**.
The required sample volume is aspirated at the desired,
adjustable speed, and is then discharged very slowly.
The exact volume of liquid discharged is shown in the
display as it is discharged.



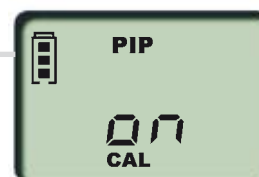
Dispensing (DISP Mode)

A program for the dispensing of liquids in a series
of equal aliquots. A volume that has been aspirated
is dispensed in steps.



Easy Calibration Technique (CAL Mode)

Program for making quick adjustments to the instrument,
without tools. By changing the factory setting, <CAL>
appears automatically in the display (please see page
289 for more information).



Battery-Refresh (batt Mode)

Regeneration function for increased performance and
extending the service life of the batteries. The world's
first microliter pipette with this function.



* The GEL mode is not included in the single channel pipettes 1000 µl and 5000 µl
because these volumes are rarely used in electrophoresis.

** Patent pending

A Closer Look...

The single channel pipette Transferpette® electronic was **the first microliter pipette worldwide** to be recognized with the 'Ergonomics Approved' certificate from the Technical Control Board Rhineland/Berlin-Brandenburg! Independent user tests confirm the ergonomics and the operating ease of the product and system! A user acceptance rating of **1.54** is an outstanding result.

You can obtain information about the Transferpette® electronic pipette at www.tuv.com, ID No. 0011105500.



Ordering Data

Transferpette® electronic

Items supplied:

Each Transferpette® electronic pipette is conformity certified and supplied with performance certificate, battery, AC adapter, silicone oil.

Capacity µl	Subdiv. µl	A* ≤ ± %	CV* ≤ %	Tip type**	With AC adapter for	Cat. No.
0.5 - 10	0.01	1.0	0.1	0.4	0.04	A, B, I***, J
						Europe (continental) (230V/50Hz)
						UK/Ireland (230V/50Hz)
						USA/Japan (110V/50-60Hz)
						Australia (240V/50Hz)
2 - 20	0.02	1.0	0.2	0.4	0.08	A, B, J***
						Europe (continental) (230V/50Hz)
						UK/Ireland (230V/50Hz)
						USA/Japan (110V/50-60Hz)
						Australia (240V/50Hz)
20 - 200	0.2	0.8	1.6	0.2	0.4	C, D, K***, L***, M
						Europe (continental) (230V/50Hz)
						UK/Ireland (230V/50Hz)
						USA/Japan (110V/50-60Hz)
						Australia (240V/50Hz)
100 - 1000	1.0	0.6	6	0.2	2	E, F, N
						Europe (continental) (230V/50Hz)
						UK/Ireland (230V/50Hz)
						USA/Japan (110V/50-60Hz)
						Australia (240V/50Hz)
500 - 5000	5.0	0.6	30	0.2	10	G
						Europe (continental) (230V/50Hz)
						UK/Ireland (230V/50Hz)
						USA/Japan (110V/50-60Hz)
						Australia (240V/50Hz)

* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are well within the limits of DIN EN ISO 8655-2. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation

** See page 56 for the definition of the tip types.

*** Tip volume less than pipettes nominal volume

Accessories

(Other accessories and spare parts can be found in the operating manual.)

3-device charging stand for Transferpette® electronic (up to 1000 µl)

Pack of 1.

for Transferpette® electronic with AC adapter for	Cat. No.
Europe (continental)	7053 90
UK/Ireland	7053 91
USA/Japan	7053 92
Australia	7053 93



Individual stand for Transferpette® electronic

Pack of 1.

for Transferpette® electronic	Cat. No.
up to 1000 µl	7053 85
500-5000 µl	7053 86



A Closer Look...

The optimal position of the thumb relative to the functional elements of the pipette is the starting point for a relaxed grip. Avoiding RSI is the key.

The optimum design, the layout of the controls, and the adjustable finger rest provide a Transferpette®-8/-12 electronic multichannel pipette that fits the hand like a glove. Perfect for right-handers and left-handers alike!

The Transferpette®-8/-12 electronic pipette was the world's first electronic multichannel pipette to receive the Ergonomics Certificate. The User Acceptance Rating of **1.55** is unrivaled anywhere!



Ordering Data

Items supplied:

Each Transferpette®-8/-12 electronic pipette is conformity certified and supplied with performance certificate, battery, AC adapter, device stand, Tip-Box SL, refill units, reagent reservoir, 1 set of sealing rings made of FKM, silicone oil.

Transferpette®-8 electronic



Capacity μl	Subdiv. μl	A* ≤ ± %		CV* ≤ %		Tip type	With AC adapter for	Cat. No.
0.5 - 10	0.01	1.2	0.12	0.8	0.08	A, B, I***, J	Europe (continental) (230V/50Hz)	7053 99
							UK/Ireland (230V/50Hz)	7054 09
							USA/Japan (110V/50-60Hz)	7054 19
							Australia (240V/50Hz)	7054 29
1 - 20	0.02	1.0	0.2	0.5	0.1	A, B, J***	Europe (continental) (230V/50Hz)	7054 00
							UK/Ireland (230V/50Hz)	7054 10
							USA/Japan (110V/50-60Hz)	7054 20
							Australia (240V/50Hz)	7054 30
5 - 100	0.1	0.8	0.8	0.25	0.25	C, D, K***, L, M	Europe (continental) (230V/50Hz)	7054 03
							UK/Ireland (230V/50Hz)	7054 13
							USA/Japan (110V/50-60Hz)	7054 23
							Australia (240V/50Hz)	7054 33
10 - 200	0.2	0.8	1.6	0.25	0.5	C, D, K***, L***, M	Europe (continental) (230V/50Hz)	7054 04
							UK/Ireland (230V/50Hz)	7054 14
							USA/Japan (110V/50-60Hz)	7054 24
							Australia (240V/50Hz)	7054 34
15 - 300	0.5	0.6	1.8	0.25	0.75	C***, D, L***, M***	Europe (continental) (230V/50Hz)	7054 06
							UK/Ireland (230V/50Hz)	7054 16
							USA/Japan (110V/50-60Hz)	7054 26
							Australia (240V/50Hz)	7054 36

* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are well within the limits of DIN EN ISO 8655-2. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation

** See page 56 for the definition of the tip types.

*** Tip volume less than pipettes nominal volume

Note:

When ordering instruments with DKD certificates, the prefix 'DKD' must be added to the order number, e.g., DKD 7053 99.

BRAND also offers an on-site **calibration service** (for more information, please see page 291).



Transferpette®-12 electronic

Capacity μl	Subdiv. μl	A* ≤ ± % μl	CV* ≤ % μl	Tip type	With AC adapter for	Cat. No.		
0.5 - 10	0.01	1.2	0.12	0.8	0.08	A, B, I***, J	Europe (continental) (230V/50Hz)	7054 49
							UK/Ireland (230V/50Hz)	7054 59
							USA/Japan (110V/50-60Hz)	7054 69
							Australia (240V/50Hz)	7054 79
1 - 20	0.02	1.0	0.2	0.5	0.1	A, B, J***	Europe (continental) (230V/50Hz)	7054 50
							UK/Ireland (230V/50Hz)	7054 60
							USA/Japan (110V/50-60Hz)	7054 70
							Australia (240V/50Hz)	7054 80
5 - 100	0.1	0.8	0.8	0.25	0.25	C, D, K***, L, M	Europe (continental) (230V/50Hz)	7054 53
							UK/Ireland (230V/50Hz)	7054 63
							USA/Japan (110V/50-60Hz)	7054 73
							Australia (240V/50Hz)	7054 83
10 - 200	0.2	0.8	1.6	0.25	0.5	C, D, K***, L***, M	Europe (continental) (230V/50Hz)	7054 54
							UK/Ireland (230V/50Hz)	7054 64
							USA/Japan (110V/50-60Hz)	7054 74
							Australia (240V/50Hz)	7054 84
15 - 300	0.5	0.6	1.8	0.25	0.75	C***, D, L***, M***	Europe (continental) (230V/50Hz)	7054 56
							UK/Ireland (230V/50Hz)	7054 66
							USA/Japan (110V/50-60Hz)	7054 76
							Australia (240V/50Hz)	7054 86



* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are well within the limits of DIN EN ISO 8655-2. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation

** See page 56 for the definition of the tip types.

*** Tip volume less than pipettes nominal volume

Accessories

(Other accessories and spare parts can be found in the operating manual.)



Reagent reservoir

PP, high clarity.
Capacity 60 ml.
Autoclavable (121 °C).

Non-sterile, with lid.
Pack of 10.

Cat. No. 7034 59

Sterile, without lid.
Packed individually.
Pack of 100.

Cat. No. 7034 11

Sterile, without lid.
5 per bag, pack of 200.

Cat. No. 7034 09

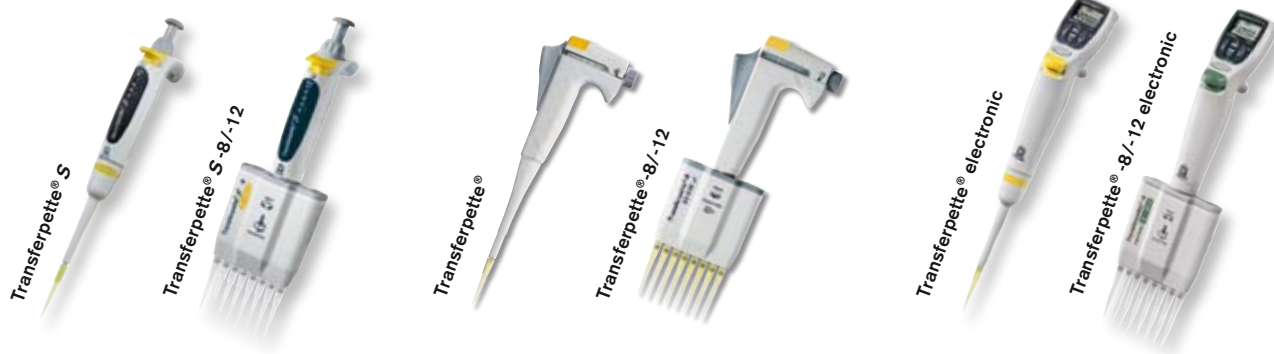
The right pipette tip for your Transferpette®

PLASTIBRAND® pipette tips are tested for BRAND and most of the pipette types of Gilson®, Thermo Fisher Scientific Finnpiptette®, Eppendorf® and Biohit.

The 5 ml tip is exclusively tested for BRAND and Thermo Fisher Scientific Finnpiptette®. The 10 ml tip is suitable for BRAND, Eppendorf® and Gilson®.



Liquid Handling



**Pipette tips/
Filter tips**
Volume range



0.1 - 20 µl
0.5 - 20 µl
2 - 200 µl
5 - 300 µl
50 - 1000 µl
50 - 1250 µl
0.5 - 5 ml
1 - 10 ml
0.1 - 1 µl
0.5 - 10 µl
2 - 20 µl
5 - 100 µl
5 - 200 µl
50 - 1000 µl

		Transferpette® S Transferpette® Transferpette® electronic*												Transferpette® S -8/-12 Transferpette®-8/-12 Transferpette®-8/-12 electronic*										
		Nominal volume												Nominal volume										
		1 µl	5 µl	10 µl	20 µl	20 µl**	25 µl	50 µl	100 µl	200 µl	250 µl	500 µl	1000 µl	2 ml	5 ml	10 ml	10 µl	20 µl	25 µl	50 µl	100 µl	200 µl	300 µl	
A	0.1 - 20 µl	✓		✓	✓												✓	✓						
B	0.5 - 20 µl			✓	✓												✓	✓						
C	2 - 200 µl		✓			✓	✓	✓	✓	✓									✓	✓	✓	✓	✓	✓
D	5 - 300 µl		✓			✓	✓	✓	✓	✓									✓	✓	✓	✓	✓	✓
E	50 - 1000 µl										✓	✓	✓											
F	50 - 1250 µl										✓	✓	✓											
G	0.5 - 5 ml													✓	✓									
H	1 - 10 ml															✓								
I	0.1 - 1 µl	✓		✓													✓							
J	0.5 - 10 µl			✓	✓												✓	✓						
K	2 - 20 µl		✓			✓	✓	✓	✓	✓									✓	✓	✓	✓	✓	
L	5 - 100 µl		✓			✓	✓	✓	✓	✓									✓	✓	✓	✓	✓	✓
M	5 - 200 µl									✓									✓	✓	✓	✓	✓	✓
N	50 - 1000 µl											✓	✓											

✓ = Tip volume less than pipette's nominal volume

*) Electronic pipettes are not available in all specified volumes

**) Transferpette® with yellow color code

Transferpettor

Piston-operated pipette

The Transferpettor pipette is ideal for liquids when air displacement pipettes just won't work. Viscous, foaming, high vapor pressure: the Transferpettor pipette can handle them all, with the precision and accuracy you expect from a BRAND pipette. This is the pipette for your most demanding pipetting operations.

The pipette for difficult media.



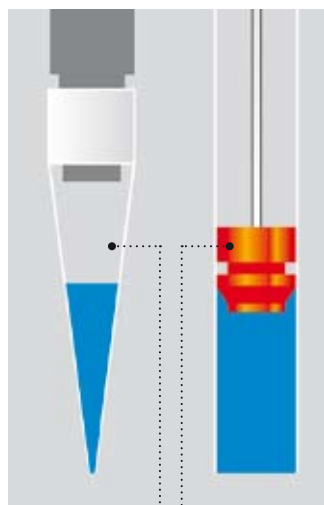


A Closer Look...

The Transferpettor pipette operates on the positive displacement principle.

In contrast with air displacement pipettes, the piston is in direct contact with the aspirated liquid. The movable, precision-fit piston always glides smoothly along the walls of the capillaries and tips, right on through to the last drop that can be clearly observed as it leaves the opening.

In this way, the results obtained are exactly reproducible regardless of the pipetting rate and environmental conditions.



Air-interface principle

Positive displacement principle

There is no need to discard tips after each pipetting operation, since residual wetting is negligible.

However, in cases where no carry-over can be tolerated, for example with infectious or radioactive media, a different BRAND Transferpette® model is recommended, such as an air displacement pipette with a disposable tip for convenient operation (page 33).



The Transferpettor pipette is suitable for media with:

- Density up to 13.6 g/cm³
- Viscosity up to 50,000 mm²/s
- Vapor pressure up to 500 mbar

Working temperature range:

- 15 °C to 40 °C

Volume range 1 µl to 10 ml:

- Transferpettor fixed volume and digital adjustable pipette up to 200 µl:
Caps: glass
Seals: PTFE
- Transferpettor digital adjustable pipette above 100 µl:
Caps: PP
Seals: PE



Application



Media which tend to foam

- surfactant solutions



Media with high vapor pressure

- alcohols, ether, hydrocarbons



Highly viscous media and media with high density

- highly concentrated protein solutions, oils, resins, fats
- glycerin, mercury, sulfuric acid



Liquid Handling

Ordering Data

Transferpettor, Digital-adjustable

Capacity μl	A* ≤ ± %	μl	CV* ≤ %	μl	Subdivision μl	Color code	Cat. No.
2.5 - 10	1.0	0.1	0.8	0.08	0.01	orange	7018 07
5 - 25	0.8	0.2	0.5	0.125	0.1	2 x white	7018 12
10 - 50	0.6	0.3	0.4	0.2	0.1	green	7018 17
20 - 100	0.6	0.6	0.4	0.4	0.1	blue	7018 22
100 - 500	0.5	2.5	0.2	1.0	1.0	green	7028 04
200 - 1000	0.5	5.0	0.2	2.0	1.0	yellow	7028 06
1000 - 5000	0.5	25.0	0.2	10.0	10.0	red	7028 10
2000 - 10000	0.5	50.0	0.2	20.0	10.0	orange	7028 12

Transferpettor, Fixed-volume

Capacity μl	A* ≤ ± %	μl	CV* ≤ %	μl	Color code	Cat. No.
1	4.0	0.04	4.0	0.04	white	7018 42
2	2.5	0.05	2.0	0.04	white	7018 44
5	1.0	0.05	0.8	0.04	white	7018 53
10	1.0	0.1	0.8	0.08	orange	7018 58
20	0.8	0.16	0.5	0.1	black	7018 63
25	0.8	0.2	0.4	0.1	2 x white	7018 64
50	0.6	0.3	0.4	0.2	green	7018 68
100	0.6	0.6	0.4	0.4	blue	7018 73
200	0.5	1.0	0.2	0.4	red	7018 78

* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are within the limits of DIN EN ISO 8655-2. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation



Items supplied:

Each Transferpettor pipette is conformity certified and supplied with performance certificate.

Accessories and Spare Parts

Caps, glass

Conformity certified.
Pack of 100
(except 100/200 µl: pack of 50).

For nominal volume, µl	Color code	Cat. No.
1, 2, 3, 4, 5	white	7019 00
10	orange	7019 02
20	black	7019 04
25	2 x white	7019 06
50	green	7019 08
100 / 200	blue / red	7019 10



Caps, PP

Conformity certified.
Pack of 10.

For capacity µl	Color code	Cat. No.
100 - 500	green	7028 52
200 - 1000	yellow	7028 54
1000 - 5000	red	7028 58
2000 - 10000	orange	7028 60



Combi-pack Caps and Seal

Conformity certified.
Caps, PP: pack of 2. Seal, PE: pack of 1.

For capacity µl	Color code	Cat. No.
100 - 500	green	7028 83
200 - 1000	yellow	7028 84
1000 - 5000	red	7028 85
2000 - 10000	orange	7028 86

Repair set

1 allen key, 1 piston rod with fitted PTFE Transferpettor-Seal (for capacities ≥ 20 µl), 1 calibrating gauge, 1 screwdriver, 3 clamping discs, 1 fixing-screw, 3 Transferpettor-Seals, PTFE, 1 mounting block (for capacities ≥ 20 µl).

For capacity µl	Cat. No.
1, 2, 5	7019 64
10	7019 65
20, 25	7019 66
50	7019 67
100, 200	7019 68

Seals, PTFE

Conformity certified.
Pack of 3.

For capacity µl	Cat. No.
20, 25	7019 20
50	7019 22
100, 200	7019 24



Seals, PE

Conformity certified.
Pack of 10.

For capacity µl	Cat. No.
100 - 500	7028 64
200 - 1000	7028 66
1000 - 5000	7028 70
2000 - 10000	7028 72



Transferpettor-Station

Accommodates 2 instruments
0.5 to 10 ml with accessories.
Pack of 1.

Cat. No.	7028 90
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Transferpettor-Station

Accommodates 4 instruments
up to 200 µl with accessories.
Pack of 1.

Cat. No.	7019 60
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Piston rod

For capacities ≥ 20 µl, provided with seal.
Pack of 3.

For capacity µl	Cat. No.
1, 2, 5	7019 28
10	7019 30
20, 25	7019 32
50	7019 34
100	7019 36
200	7019 38

HandyStep®

Repetitive Pipette

Serial pipetting can be quick and easy with the BRAND HandyStep® repetitive pipette. Ergonomic and durable, the instrument, in conjunction with PD-Tips, gives you as many as 49 repetitive dispensings from a single aspiration.

The simple operation of the HandyStep® repetitive pipette, combined with the positive displacement PD-Tips, makes it ideal for versatile use in fields like microbiology, immunology and biochemistry.

Simply accurate.

Time after time.



A Closer Look...

The HandyStep® repetitive pipette is contoured to fit your hand comfortably. All controls are designed for intuitive use with one hand.

The HandyStep® repetitive pipette is suitable for PLASTIBRAND® PD-Tips, Combitips®, Combitips® plus, Repet-Tips, Encode™-Tips and other compatible positive displacement tips.



Dispensing lever

Optimized for smooth dispensing of even the smallest volumes.

Volume selector

Five easy-to-select settings control dispensing volume. Right or left-hand operation.

Multifunction lock/filling knob

Single lever simplifies mounting and filling of tips.

Scale on the PD-Tip

Graduations on the side of the PD-Tip offer visual confirmation of volume. Multiply the volume selector setting by the smallest scale value to determine the dispensed volume.

Sample calculation 5 ml PD-Tip

Smallest volume unit: $1 \triangleq 100 \mu\text{l}$

Stroke setting 2:

$100 \mu\text{l} \times 2 \triangleq 200 \mu\text{l} / \text{step}$

Settings and volume ranges

Stroke settings	1	2	3	4	5
Number of steps	49	24	15	11	9
PD-Tip ml	Dispensing volume μl				
0.1	2	4	6	8	10
0.5	10	20	30	40	50
1	20	40	60	80	100
1.25	25	50	75	100	125
2.5	50	100	150	200	250
5	100	200	300	400	500
10	200	400	600	800	1000
12.5	250	500	750	1000	1250
25	500	1000	1500	2000	2500
50	1000	2000	3000	4000	5000



Use and Handling

A close-tolerance stepping mechanism allows the HandyStep® repetitive pipette to offer precise repetition of the selected volume. With up to 49 dispensing steps from each aspiration, it is ideal for making aliquots of stock liquids.

The instrument works on the positive displacement principle, making it suitable for routine dispensing, as well as for difficult liquids. Viscous, high density or high vapor pressure liquids can be dispensed while maintaining accuracy and precision.

- Ergonomic
- One-hand operation
- Superior handling
- Maintenance-free
- Factory adjusted
- CE-**IVD**-compliant



Great for serial pipetting



Perfect for filling individual wells in microtiter plates

Accuracy table HandyStep® repetitive pipette with PLASTIBRAND® PD-Tips, conformity certified.

HandyStep® with PD-Tips	Volume range μl	Nominal volume ($A^* \leq \pm \%$)		Nominal volume ($CV^* \leq \%$)	
		10 %	2 %	10 %	2 %
0.1 ml	2 - 10	1.6	8.0	2.0	5.0
0.5 ml	10 - 50	0.8	4.0	0.6	1.4
1.0 ml	20 - 100	0.8	4.0	0.4	1.0
1.25 ml	25 - 125	0.8	4.0	0.3	0.8
2.5 ml	50 - 250	0.7	3.5	0.2	0.8
5.0 ml	100 - 500	0.5	2.5	0.2	0.6
10.0 ml	200 - 1000	0.4	2.0	0.2	0.5
12.5 ml	250 - 1250	0.3	1.5	0.2	0.4
25.0 ml	500 - 2500	0.3	1.5	0.2	0.4
50.0 ml	1000 - 5000	0.3	1.5	0.15	0.4

* Calibrated to deliver (TD, Ex). Error limits according to the nominal capacity (= maximum volume) indicated on the instrument, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth, steady operation. The error limits are within the limits of DIN EN ISO 8655-5. Conformity certified to DIN 12600. A = Accuracy, CV = Coefficient of variation



Information for **PLASTIBRAND® PD-Tips** with size encoding on pages 91-92.



Ordering Data



HandyStep®

Items supplied:

Each HandyStep® repetitive pipette is conformity certified and supplied with performance certificate and wall support.

Cat. No.	7051 00
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BRAND also offers an on-site **calibration service** (for more information, please see page 291).

Accessory

Wall support

Pack of 1.

Cat. No.	7051 20
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HandyStep® electronic

Repetitive Pipette

The HandyStep® electronic repetitive pipette was designed to provide effortless pipetting for repetitive serial dispensing. Reduced operating forces, intuitive menu and easy-to-read display further simplify repetitive pipetting.

**Convenient, high precision,
non-fatiguing.**





A Closer Look...

■ 7.01 µl – 70.1 µl – 1.01 ml – 11.4 ml?

Any volume you require from 1.0 µl to 50 ml

■ Patented automatic tip size recognition of the PLASTIBRAND® PD-Tips with size encoding

■ Compatible system: will accept most third-party dispenser tips

■ Versatile operation with 3 modes: Dispensing – Automatic Dispensing – Pipetting

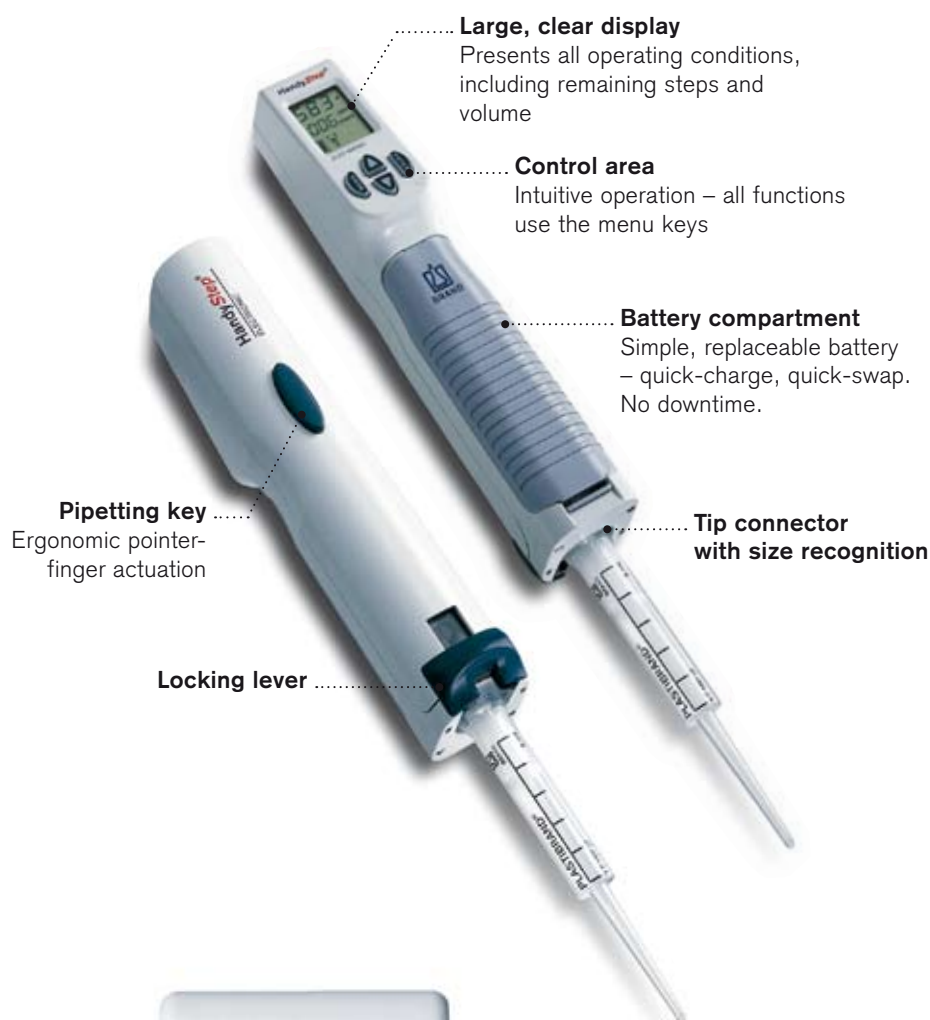
■ Patented learning function for individual adjustments of intervals in automatic dispensing

■ Separate speed adjustment for filling and dispensing, independently adjustable

■ NiMH battery pack – easy to replace, charges in as little as 2.5 hours!

■ Charge the storage battery either in the instrument or separately in the charger

■ CE-IVD-compliant





Use and Handling

Dispensing (DISP) the standard mode

A predefined volume is dispensed repeatedly.



Automatic Dispensing (AUTO-DISP)

The instrument uses its patented learning function to calculate the average time interval between your first three dispensing steps, and automatically continues to work at this rhythm. No need to calculate and enter time intervals manually!



Pipetting (PIP)

Single aspiration/dispense positive displacement function. Ideal for pipetting viscous or volatile fluids.



Accuracy table HandyStep® electronic repetitive pipette with PLASTIBRAND® PD-Tips, conformity certified

HandyStep® electronic with PD-Tip	Volume range	Subdivision		Nominal volume (A* ≤ ± %)				Nominal volume (CV* ≤ %)			
				100%	50%	10%	1%	100%	50%	10%	1%
0.1 ml	1 µl - 100 µl	1 µl - 100 µl	0.1 µl	1.0	1.2	1.6	16	0.5	1.0	2.0	12
0.5 ml	5 µl - 500 µl	5 µl - 100 µl 100 µl - 500 µl	0.1 µl 1 µl	0.9	0.9	0.9	9	0.25	0.5	1	6
1.0 ml	10 µl - 1 ml	10 µl - 1 ml	1 µl	0.6	0.6	0.9	8	0.2	0.3	0.6	4
1.25 ml	12.5 µl - 1250 µl	12.5 µl - 100 µl 100 µl - 1000 µl 1 ml - 1.25 ml	0.5 µl 1 µl 10 µl	0.6	0.6	0.9	8	0.15	0.3	0.6	3.5
2.5 ml	25 µl - 2500 µl	25 µl - 1000 µl 1 ml - 2.5 ml	1 µl 10 µl	0.5	0.5	0.8	8	0.1	0.2	0.4	2.5
5.0 ml	50 µl - 5000 µl	50 µl - 1000 µl 1 ml - 5 ml	1 µl 10 µl	0.5	0.5	0.8	8	0.08	0.15	0.3	1.5
10.0 ml	100 µl - 10 ml	100 µl - 10 ml	10 µl	0.4	0.4	0.5	5	0.08	0.15	0.25	1.25
12.5 ml	125 µl - 12.5 ml	125 µl - 1000 µl 1 ml - 10 ml 10 ml - 12.5 ml	5 µl 10 µl 100 µl	0.4	0.4	0.5	5	0.08	0.15	0.25	1.25
25.0 ml	250 µl - 25 ml	250 µl - 10 ml 10 ml - 25 ml	10 µl 100 µl	0.3	0.3	0.3	3	0.08	0.15	0.25	1.25
50.0 ml	500 µl - 50 ml	500 µl - 10 ml 10 ml - 50 ml	10 µl 100 µl	0.3	0.3	0.3	3	0.08	0.15	0.25	1.25

* Error limits refer to the nominal volumes and partial volumes relative to the PD-Tip, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth operation. The error limits defined in ISO 8655 are not exceeded. A = Accuracy, CV = Coefficient of variation

Compatible with third-party dispenser tips!

The special tip connector of the HandyStep® electronic repetitive pipette will accept most common dispenser tips such as Combitips®, Combitips® plus, Repet-Tips, Encode™-Tips, and others. Simply enter the tip size manually.

Ordering Data



HandyStep® electronic

Items supplied:

Each HandyStep® electronic is conformity certified and supplied with performance certificate, NiMH battery pack, charging dock and AC adapter. One each PD-Tip size 0.5 ml, 1.25 ml, 2.5 ml, 5 ml and 12.5 ml.

AC adapter	Cat. No.
Europe (continental) (230 V/50 Hz)	7050 00
UK/Ireland (230 V/50 Hz)	7050 01
USA/Japan (110 V/50-60 Hz)	7050 02
Australia (240 V/50 Hz)	7050 03
without charging dock	7050 04

BRAND also offers an on-site **calibration service** (for more information, please see page 291).



The ideal combination: PLASTIBRAND® PD-Tips and HandyStep® electronic

The HandyStep® electronic repetitive pipette saves time and prevents errors through automatic tip size recognition of the PLASTIBRAND® PD-Tips. The size of these tips is encoded in their piston (patented). After inserting the tip, the size is automatically recognized and displayed, making it easy to select the volume to be dispensed. When a new PD-Tip of the same size is inserted, all instrument settings are maintained. Information for PLASTIBRAND® PD-Tips with size encoding on page 92.

Accessories

AC adapter for charging dock

Pack of 1.

Description	Cat. No.
Europe (continental) (230 V/50 Hz)	7050 50
UK/Ireland (230 V/50 Hz)	7050 51
USA/Japan (110 V/50-60 Hz)	7050 52
Australia (240 V/50 Hz)	7050 53



Charging dock

Without AC adapter.
Pack of 1.

Cat. No.	7050 20
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NiMH Battery Pack

Pack of 1.

Cat. No.	7050 25
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Pipetting Aids

Pipetting aids from BRAND excel by their comfortable grips, superior control, light weight and rugged reliability:

- **accu-jet® pro**
- **macro**
- **micro**
- **micro-classic**

Exceptional control.

Comfort grip. Easy to use.



A Closer Look...



Specifications

- Weight: 190 g
- Operating and charging temperature: +10 °C to +35 °C
- Pipetting speed: 50 ml in less than 10 seconds
- For glass and plastic pipettes from 0.1 to 200 ml
- Approx. eight hours of continuous pipetting (with a 10 ml pipette) without recharging
- Battery pack: NiMH battery 2.4 V / 700 mAh

Use and Handling

Comfortable

Ergonomic handgrip, weight only 190 g, perfectly balanced design – for fatigue-free pipetting even in prolonged operations.

Sensitive

With accu-jet® pro pipette controller, you have continuously variable speed control using just two buttons. In addition, you can select your preferred maximum motor speed to improve sensitivity and control with low-volume pipettes.

Powerful and quiet

At maximum motor speed, a 50 ml pipette is filled in less than 10 seconds. Now that's fast! Motor and pump operate quietly and with very low vibration. The longer you use it, the more you will appreciate it.

Power to spare

No need to worry about having enough battery power left to finish your series. A flashing LED light will alert you approx. two hours in advance.



Single-handed operation

All with one hand: select the delivery mode (gravity-delivery/blow-out) and adjust the motor speed range with your thumb; use variable button pressure for finest control of filling and delivery speed.

Advanced charging

The intelligent battery charger prevents overcharging of the NiMH battery. It effectively reduces the lazy-battery-effect (shortened operating time due to premature recharging). A flashing LED indicates when the storage battery needs charging. Charging time is 4 hours. After that, the charger automatically switches to a pulsed, long-term charging mode. The pipette controller is always ready for action, even while being charged.

Tidy storage

Keep your instrument within reach by placing it inverted on your lab bench. Or store it in the wall support, saving space.

Four colors

Select from four colors to individualize your pipette controller.



Liquid Handling

Ordering Data

accu-jet® pro

Items supplied:

Each pipette controller is supplied with nickel-metal hydride battery, 2 battery compartment covers, wall support, AC adapter (100 - 240 V; 50/60 Hz) and 2 spare membrane filters 0.2 µm, sterile.

Color accu-jet® pro	dark blue Cat. No.	magenta Cat. No.	green Cat. No.	royal blue Cat. No.
with AC adapter for				
Europe (continental)	263 00	263 01	263 02	263 03
UK/Ireland	263 10	263 11	263 12	263 13
USA	263 30	263 31	263 32	263 33
Australia	263 20	263 21	263 22	263 23
Japan	263 40	263 41	263 42	263 43
without AC adapter	263 04	–	–	–



Spare Parts

(Other spare parts and accessories can be found in the operating manual.)

Description	Cat. No.
Membrane filter 0,2 µm (PP, PTFE), sterile	265 30
Pipette adapter with non-return valve	265 08
Nickel-metal hydride battery pack	266 30

macro Pipette Controller

Ideal handling

The unique valve system makes bellows compression easy. With one small sensitive lever, filling and delivery are easily controlled. Precise meniscus adjustment is effortless. A hydrophobic membrane filter protects the macro pipette controller from liquid penetration.

Economical

The silicone adapter on the macro pipette controller fits the entire range of volumetric and graduated pipettes, both glass and plastic, from 0.1 to 200 ml. There is no need for multiple instruments. The macro pipette controller is fully autoclavable at 121 °C.

Award winning design

The combination of easy-to-use controls, light weight (106 g) and relaxed operation makes the macro pipette controller ideal for repetitive pipetting even for inexperienced user.



Volumetric and measuring pipettes can be found on pages 130-138.

Ordering Data



macro Pipette Controller

Items supplied:

Each pipette controller is supplied with spare membrane filter 3 µm.

Color	Cat. No.
gray	261 00
green	261 51
blue	261 52
magenta	261 54

Spare parts for macro Pipette Controller

Description	Pack of	Cat. No.
Membrane filter 3 µm (PP, PTFE), non-sterile	1	260 52
Membrane filter 3 µm (PP, PTFE), non-sterile	10	260 56
Adapter (silicone), length 44 mm	1	261 46
Adapter support (PP), gray, length 49 mm	1	261 48
Valve system (PP, PTFE, silicone)	1	261 28
Suction bellows (silicone) with screw ring (PP)	1	260 37

micro Pipette Controller

The micro pipette controller is an indispensable accessory for sampling with disposable micropipettes with ring mark and many small volume pipettes up to 1 ml (e.g., blood diluting and blood sugar pipettes) with aspiration end-Ø max. 5 mm.

The micro reduces the hazards of infection and is autoclavable at 121 °C.

The integrated ejection device allows the disposal of contaminated pipettes up to 50 µl without touching them, thus helping to prevent the transmission of dangerous viruses such as hepatitis B or HIV.

The micro is extremely light and very convenient.

micro Pipette Controller

Pack of 1.

Cat. No.	258 00
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Spare suction system

Pack of 3.

Cat. No.	258 05
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A high-performance team:
micro Pipette Controller and
BLAUBRAND® Disposable
Micropipettes, page 202.



Liquid Handling

micro-classic Pipette Controller

Working under a microscope requires utmost concentration and therefore comfortable and reliable instruments.

The micro-classic pipette controller with its ergonomic shape and simple handling offers comfort and convenience for this strenuous job. It is a must in IVF and medical laboratories. Suitable for disposable micropipettes with ring mark and other small volume pipettes up to 1 ml (e.g., blood diluting pipettes) with aspiration end-Ø max. 5 mm. The micro-classic adapts to right- and left-handed operation. Adapter and suction tube are autoclavable at 121 °C.

The micro-classic minimizes the risk of contamination when working with infectious material.

micro-classic Pipette Controller

Each pipette controller is supplied with 2 spare suction tubes. Pack of 1.

Cat. No.	259 00
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Spare adapter with suction tube

Pack of 3.

Cat. No.	259 31
----------	--------



Pipette fillers

Simple pipetting aids made of natural rubber for one-mark and graduated pipettes. Control of the functions by squeezing the appropriate valves between thumb and forefinger.



Pipette filler

Standard model, for pipettes up to 10 ml.

Pipette filler with 3 valves.

Valve A: Release air

Valve S: Filling

Valve E: Delivery

Pack of 1.

Cat. No.	253 00
----------	--------



Pipette filler

Universal model, for pipettes up to 100 ml.

Pipette filler with 3 valves.

Valve A: Release air

Valve S: Filling

Valve E: Delivery

Pack of 1.

Cat. No.	253 15
----------	--------



Pipette filler

Flip model, for pipettes up to 100 ml.

Pipette filler with 2 valves.

Release air through an automatic valve.

Valve ↑: Filling

Valve ↓: Delivery

Pack of 1.

Cat. No.	254 00
----------	--------

QuikSip™ BT-Aspirator

The QuikSip™ bottle-top aspirator from BRAND is designed for safe and fast aspiration of common laboratory liquids used in biology, food chemistry and medicine.

- Safe removal of supernatants (up to max. 25 ml per plunger stroke), e.g., biological solutions, nutrient media, polar solvents, aqueous solutions
- Works without vacuum pump.
- Fingertip vacuum control using the cell-culture™-unit.
- Works as single channel or 8-channel aspirator (manifold optional).
- For use with disposable pipette tips, micro-pipettes and glass pasteur pipettes.
- Adapter and suction tube of the cell-culture™-unit are autoclavable at 121 °C (2 bar), acc. DIN EN 285. Dispensing cartridge and pump unit are not autoclavable.

Easy to operate and to handle.





Ordering Data

QuikSip™ BT-Aspirator

Items supplied:

1 QuikSip™ BT-Aspirator,
1 cell-culture™-unit incl. suction tube and
3 adapters, with operating manual, spare
dispensing cartridge and 2 PP adapters
(GL 45/32 and GL 45/S 40).

Cat. No.	
	4723 150

Spare parts Quik-Sip™

Description	Cat. No.
Seals for QuikSip™ (Pack of 5)	6788
Filling tube (PP) with filling valve (PP/EDPM)	7045 75
Discharge valve (PP/EDPM) with seal (EDPM)	7045 80

Spare parts cell-culture™

Pack of 1.

Spare parts	Cat. No.
Adapter (SI, PVC) for glass Pasteur pipettes	259 60
Adapter (PVC) for capillaries, micro pipettes	259 33
Adapter (PP) for pipette tips	259 61
Suction tube (SI), 2 m	259 62



cell-culture™-unit

Single channel device. Complete
with suction tube and 3 adapters.

Cat. No.	
	259 50

Accessories and Spare Parts



8-channel manifold

PP. Autoclavable (121 °C).
Pack of 1.

Cat. No.	
	7045 26



Dispensing cartridge

Piston (PE), cylinder (PP).
Pack of 3.

Cat. No.	
	7045 04



Adapter

PP. Pack of 1.

Outer-thread	for bottle thread	Cat. No.
GL 32	GL 25	7043 25
GL 32	GL 28	7043 28
GL 45	S* 40	7043 43
GL 32	GL 45	7043 45
GL 45	GL 32	7043 96
GL 45	GL 38	7043 97

* buttress rim



Cap

PP. Cap for valve block.
Autoclavable (121 °C).
Pack of 1.

Cat. No.	
	7045 54



Membrane filter

Membrane filter, 0.2 µm.
Pack of 10 in PE-bag,
non-sterile, autoclavable
(121 °C). Pack of 1.

Cat. No.	
	265 35

EASYCAL™ 4.0

Calibration Software

BRAND calibration software is compatible with nearly all liquid handling instruments and glass or plastic volumetric instruments. Now you can calibrate and track measuring instruments to GLP and ISO 9001 standards without calculators or scratch paper. EASYCAL™ 4.0 software from BRAND performs all accuracy and precision calculations, matches them to standards and generates a report.

Calibration without calculation.





A Closer Look...

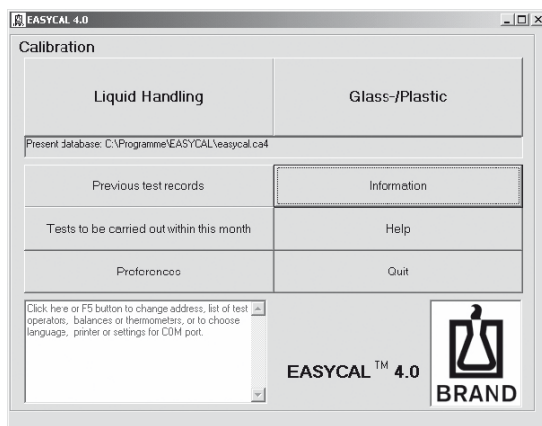
- For testing of liquid handling instruments and volumetric instruments of glass and plastic, according to ISO 8655, ISO 4787 etc.
- Open software, suitable for all volumetric instruments, irrespective of the manufacturer.
- Continual control of the actual results during testing by means of a traffic-light indicator.
- Reminder function for outstanding calibrations.
- Recording of primary data in accordance with GLP.
- Reliable transmission, calculation and saving of measurement data.



EASYCAL™ 4.0 carries out all calculations automatically and compares them with the error limits specified in current standards or your individual preset limit values. The error limits of many instruments, and the settings of over 100 balances, are already preset in the software.

In the case of multichannel pipettes, the result of each individual channel is compared with the error limits.

After entering the weighing values (primary data), all calculations are carried out automatically. Automatic import of the weighing values is only available in the professional version.



Start screen:

This determines whether a liquid handling or volumetric measuring device of glass/plastic is to be tested.

EASYCAL 4.0 Test record													
BRAND													
Instrument: Transferette No. 10 µl 4 Thermometer: Goldbrand No. 1 Balance: Sartorius SA No. 3 Relative humidity 50% ± 30% Atmosphere pressure abs(hPa): 1013 Temperature: 22 °C / 71.60 °F Correction factor α: 1.00228 Note													
Results from gravimetric tests: Test volume: 10 (µl) Value: 0.97 Channel-No. 1 2 3 4 5 6 7 8 9 10 11 12 X 1 (mg) 0.92 0.95 0.93 0.96 0.87 0.94 0.91 0.91 0.91 X 2 (mg) 0.92 0.95 0.94 0.98 0.9 0.94 0.99 0.93 X 3 (mg) 0.87 0.95 0.88 0.95 0.89 0.9 0.95 0.87 X 4 (mg) 0.92 0.98 0.94 0.98 0.92 0.94 0.96 0.97 X 5 (mg) 0.88 0.9 0.95 0.99 0.92 0.93 0.95 0.94 X 6 (mg) X 7 (mg) X 8 (mg) X 9 (mg) X 10 (mg) X Mean (mg) 0.90 0.96 0.92 0.97 0.90 0.93 0.95 0.92 V Mean (g) 0.93 0.95 0.96 10.00 0.93 0.96 0.98 0.96 A(%) Actvs -0.66 -0.05 -0.43 0.01 -0.68 -0.37 -0.18 -0.43 CV(%) Actvs 0.25 0.28 0.33 0.11 0.21 0.17 0.29 0.37 Result A 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Result CV 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0													
5 weighings per channel EX Test volume: 5 (µl) Value: 4.98 Channel-No. 1 2 3 4 5 6 7 8 9 10 11 12 X 1 (mg) 5.05 5.03 5.04 5.01 5.07 5.05 5.03 5.04 X 2 (mg) 5.02 5.06 5.05 5.05 5.06 5.05 5.02 5.05 X 3 (mg) 5 5.04 5.03 5.02 5.01 5.01 5.03 5.03 X 4 (mg) 4.98 5.01 5.01 4.97 5 5.03 5 5 X 5 (mg) 4.97 5.02 5 4.96 4.98 5 4.99 4.99 X 6 (mg) X 7 (mg) X 8 (mg) X 9 (mg) X 10 (mg) X Mean (mg) 4.99 5.04 5.02 5.01 5.01 5.02 5.02 5.02 V Mean (g) 5.01 5.05 5.04 5.02 5.02 5.04 5.03 5.04 A(%) Actvs 0.21 1.05 0.81 0.49 0.49 0.73 0.69 0.73 CV(%) Actvs 0.39 0.41 0.39 0.82 0.71 0.40 0.48 0.49 Result A 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Result CV 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0													
The test was carried out according to ISO 8655 Next test 05.2005 Result: Gravimetric test ok Test date: 01.02.2005 Test Operator: Andrea Smeikal Signature:													

You can print out a clear and conclusive report to GLP standards. The test results are also stored in an easily sorted database. The test certificate can be saved in various formats (e.g., Microsoft® Word or Excel).

Quit calibration early?

After entering three weighing values (either manually or via data transmission from the balance), EASYCAL™ 4.0 executes a background comparison of the results with the error limits. A traffic-light indicator (green/red) displays whether your results exceed the error limits.

EASYCAL™ also helps you with testing times and intervals. You will be automatically reminded which tests are due.

In the event of unsuccessful testing, the test equipment can be designated as a 'defective device'. You can cancel this selection after successful cleaning or repair.

Liquid Handling

Ordering Data

EASYCAL™ 4.0

Items supplied:

CD-ROM with EASYCAL™ software in 5 languages (German/English/French/Spanish/Dutch), manual and testing instructions (SOPs) in 4 languages in PDF format for single- and multichannel pipettes, hand-held dispensers, bottle-top burettes and dispensers and volumetric measuring instruments of glass/plastic.

Version	Description	Cat. No.
Professional Version	automatic import of measurement values	7084 40
Basic Version	manual entry of measurement values	7084 45
Upgrade		on request
Network license		on request



Demo version EASYCAL™ 4.0

A demo version of our software is available for download from www.brand.de. With this, you can test EASYCAL™ for 4 weeks before deciding to purchase the full version.

System requirements:

PC with 32 MB RAM, Microsoft® Windows® 98/NT with SP6 / ME / 2000 / XP, SVGA graphic card with 256 colors, mouse, CD-ROM drive, Microsoft® Paint.

For connection of the professional version of EASYCAL™ with the balance, please obtain the necessary interface cable from the balance manufacturer.

EASYCAL™ supports balances such as those from Sartorius, Kern, A&D, Ohaus, etc. Mettler Toledo balances are only partially compatible (AT and AG series).

Accessories

Protection against evaporation

Avoid time-consuming evaporation traps or an expensive dual-pan balance! Pipettes < 50 µl can be surprisingly easy to calibrate using EASYCAL™ testing tubes (available as an accessory) or using the new micro-weighing container.



EASYCAL™ test tubes

For pipettes < 50 µl.
Pack of 250.

Cat. No.	7084 62
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Pipette holder (clip)

For test tubes.
Pack of 10.

Cat. No.	7086 05
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Attach testing tube

1. Tare the testing tube and clip. Remove the testing tube from the balance after taring. Pipette the sample from the pipette tip into the testing tube.
2. Place filled testing tube with clip on the balance; note mass. Done!



Micro-weighing container

incl. 10 filters and
3 cover caps.

Cat. No.	7084 70
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Filter pack

20 replacement filters
(capacity approx. 1000 µl).

Cat. No.	7084 71
----------	---------

Cover cap set

3 spare closures.

Cat. No.	7084 72
----------	---------

Micro-weighing container

The extremely small cap opening and internal filter provides simple protection against evaporation.

Life Science

Consumables

Research – and even routine applications – in the biosciences are unimaginable today without high quality plastic consumables. Increasingly sensitive detection methods rely on ever higher quality from lab disposables. In addition to pipette tips, filter tips, micro-centrifuge tubes and PD-Tips, BRAND Life Science also provides a variety of other high-performance products for PCR, storage, immunology and cell culture technology.

For High Quality Analyses.



Life Science products

Quality is our highest priority – for reliable analyses and reproducible results

For nearly 25 years, BRAND has provided high-performance products for a variety of applications in the life sciences. We start by asking users around the world for input on product details, and then select raw materials and design injection-molding tools to ensure the highest product performance. Finally, the entire manufacturing process is strictly controlled, with quality assurance testing in accredited third-party laboratories.

Starting Materials

The proper selection of raw materials is a significant step in the manufacture of high-quality products. In addition to physical and chemical testing, the optical properties of the final product often play a central role, as in cuvette and microplate manufacture. Over many years, polypropylene and polystyrene have earned their place as preferred materials for life science consumables. More recently, BRAND has added a new highperformance, UV-transparent plastic to its raw material options for disposable cuvettes and HTS microplates.



Clean-room Production

BRAND disposable articles for the life science area are produced under controlled clean-room conditions. To achieve this and depending on the intended application of the product, Class 100 to 100,000 clean-rooms are available (ISO 14 644-1 Class 5 to 8).



Advantages of PP

■ High resistance to chemicals

Deep-well plates and microplates can be used with DMSO and other aggressive chemicals.

■ Good temperature resistance

Containers remain stable even at high temperatures; these products are generally autoclavable at 121 °C (2 bar), acc. DIN EN 285.

■ Minimal retention

PCR vessels, micro tubes and tips have no residual wetting and the material is biologically inert – no adhesion of biomolecules to the surfaces.

Advantages of PS

■ Good optical characteristics

Colorimetric tests like ELISA and microanalyses can be carried out with PS microplates.

■ Easily modifiable surface

Physicochemical treatments can modify the surface so as to be suitable for applications in cell culture or immuno-analyses.



Internal Quality Controls and Independent Laboratory Tests

All products are subjected to a number of optical and functional tests before they are tested for molecular-biological contaminants. For example, PCR products are tested for evaporation losses and PCR plates are subjected to stringent vacuum tests to ensure that the systems satisfy your highest expectations. After the disposable items have successfully completed this internal process, the products are examined by an independent accredited laboratory. Sensitive detection methods are used to ensure that the products, depending on the intended use, contain no DNA, DNase, RNase, endotoxins or ATP.

Pipette Tips and Filter tips

PLASTIBRAND® pipette tips and filter tips are manufactured and racked with a minimum of human contact under cleanroom conditions at BRAND's state-of-the-art facility. This is how we ensure the uniformly high quality of the tips.

- High-purity polypropylene
- Manufactured without lubricants
- Cadmium-free pigments
- Autoclavable at 121 °C (2 bar), acc. DIN EN 285
- Environmentally friendly packaging systems
- CE-marked according to IVD-Directive 98/79 EC.



Life Science



PLASTIBRAND® Pipette Tips

0.1 - 20 µl nano-cap™

The nano-cap™ tip was specially developed for the nanoliter range and hence is ideal for molecular biological applications such as PCR*. It is 37 mm long, and features a capillary rise that is even visible to the naked eye at 0.1 µl. The capillary part of the tip conveniently fills gel wells for gel electrophoresis systems from most manufacturers. Suitable for pipettes up to 20 µl. The racked tips are colorless and placed into a grey-colored tip tray.



0.5 - 20 µl

The slender design and 46 mm length allow pipetting in microtubes and microplates without touching the walls. The tip is graduated at 2 µl and 10 µl for quick volume check. The racked tips are colorless and placed into a grey-colored tip tray.



2 - 200 µl

A tested and proven universal tip! It is 50 mm long and can be used for virtually all pipettes with yellow color code. Bulk tips are yellow colored. The racked tips are colorless and placed into a yellow-colored tip tray.



5 - 300 µl

The tip is suitable for reverse pipetting and plate washing. It is 52 mm long and can also be used for pipettes with yellow color code. It is particularly suited for working with multichannel pipettes. The racked tips are colorless and placed into a green-colored tip tray.



50 - 1000 µl

Proven universal tip for routine laboratory and research pipetting! Its length is 70 mm. Bulk tips are blue colored. The racked tips are colorless and placed into a blue-colored tip tray.



50 - 1250 µl

This tip is ideal for pipetting from narrow vessels and for reverse pipetting because it is 82 mm long and has a slender shape. The graduations at 250, 500 and 1000 µl allow quick volume check. The racked tips are colorless and placed into an orange-colored tip tray.



0.5 - 5 ml

Particularly slender shape, at 160 mm length and approx. 9.6 mm diameter! This allows pipetting even from narrow volume measuring equipment such as volumetric flasks with NS 12/21.

Suitable for microliter pipette Transferpette® and Thermo Fisher Scientific Finnpiquette®.



1 - 10 ml

156.5 mm length and approx. 15 mm diameter! Ideal for working with the microliter pipette Transferpette® S 10 ml. Compatible with Eppendorf® and Gilson® systems.



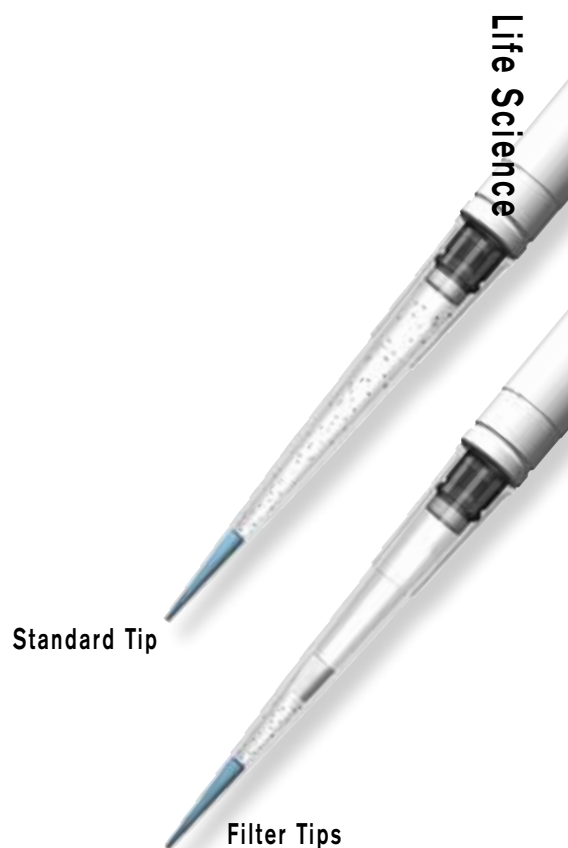
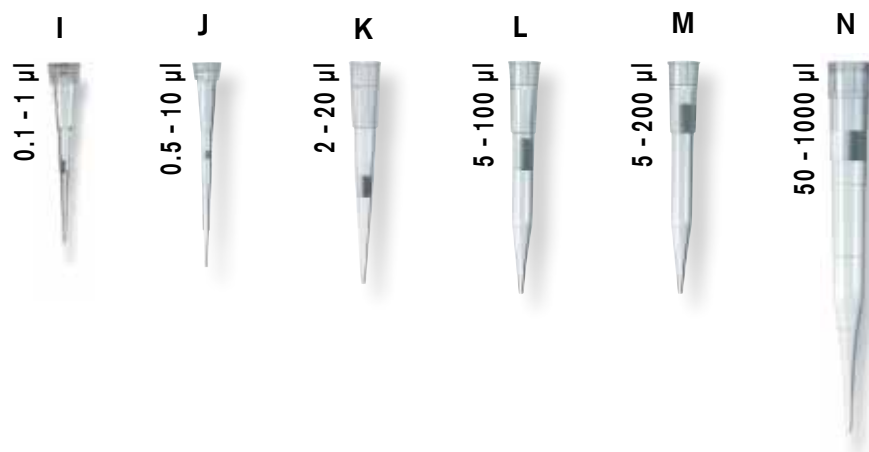
PLASTIBRAND® Filter Tips

Filter tips are especially suited for working with PCR techniques, and fully meet the requirements for microbiology and radioisotope work.

The integrated hydrophobic polyethylene filter serves as a barrier against aerosols formed during pipetting.

PLASTIBRAND® filter tips are produced from colorless granules under the most stringent cleanroom conditions and are automatically racked.

They are autoclavable at 121 °C (2 bar), acc. DIN EN 285.



The disadvantages of self-sealing filter tips

Self-sealing filter tips have a PE filter that swells through possible additives on contact with liquids. This causes development of a barrier that should not let any liquid pass.

Since this behavior is only initiated by diffusing liquids, a considerable part of the sample is already in the filter and cannot be recovered. This is clearly a disadvantage with expensive, laboriously produced samples. In addition, additives in the polyethylene filter can contaminate the sample.

The advantages of non-self-sealing filter tips

Non-self-sealing filter tips have a PE filter that is free from chemical additives. Permeability is controlled by the combination of pore size and filter length, so that no aerosols can reach the pipette shaft. These filters function with consistent reliability. On the other hand, liquids can pass very slowly should they accidentally contact the filter. Since the filter does not swell, the sample can be recovered from the filter by simply actuating the pipette's blow-out function, or by centrifugation if necessary. This is clearly an important advantage of non-self-sealing filters, especially when working with valuable samples. As an added advantage, the absence of filter additives protects samples from this source of contamination.

Non-self-sealing Filter tips PLASTIBRAND®

Filter tips protect the pipette shafts from contamination, and thus lessen the risk of cross-contamination and faulty measuring results.



Package types

in bulk

in bags

All tips and filter tips are produced under the latest state-of-the-art clean room conditions and automatically shrink-wrapped in bags and packaged in cardboard boxes, without human contact.



racked, non-sterile

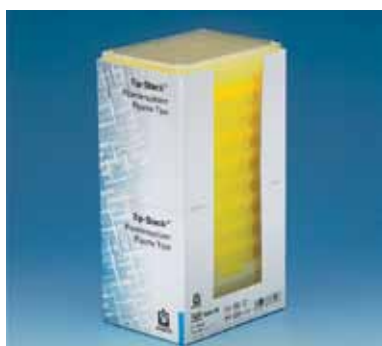
Tip-Rack + Tip-Set

Tip-Racks and Tip-Box = Tip-Set. Two individual refill units (racks) are packed countered into a space-saving carton. Refill units that include a tip box are called a Tip-Set.



Tip-Box N

PP box with push-on lid. Available in 2 different heights: low form for 96 tips up to 300 µl, high form for 100 tips with 1000 µl or 1250 µl. Stackable and repeatedly autoclavable at 121 °C (2 bar), acc. DIN EN 285.



Tip-Stack™ for pipette tips 2-200 µl

Space-saving, environmentally compatible refill system for Tip-Box N and Tip-Box SL. 10 stacked 96-tip trays filled with 2-200 µl tips = 960 tips; one Tip-Box N included.

BIO-CERT®

racked, sterile

Tip-Rack S + Tip-Set S

Suitable for the autoclaved Tip-Box or Tip-Box N. BIO-CERT® refill unit, protected in an environmentally compatible packaging of recyclable PET. Refill units that include a tip box are called a Tip-Set S.



Tip-Box N sterile

Polypropylene box with push-on lid. Available in 2 different heights. Low form for 96 tips up to 300 µl, high form for 100 tips with 1000 µl or 1250 µl. Stackable and repeatedly autoclavable at 121 °C (2 bar), acc. DIN EN 285. Boxes individually packed in bag with perforation.



Tip-Box SL

Innovative, convenient, polycarbonate box with slide & swing lid. Keeps unused tips covered while working with single channel and multichannel pipettes. Not stackable. Autoclavable at 121 °C (2 bar), acc. DIN EN 285.



Tip-Box PC (empty)

PC. This sturdy box has a sliding lid, can be stacked, and may be autoclaved up to 121 °C (2 bar), acc. DIN EN 285.



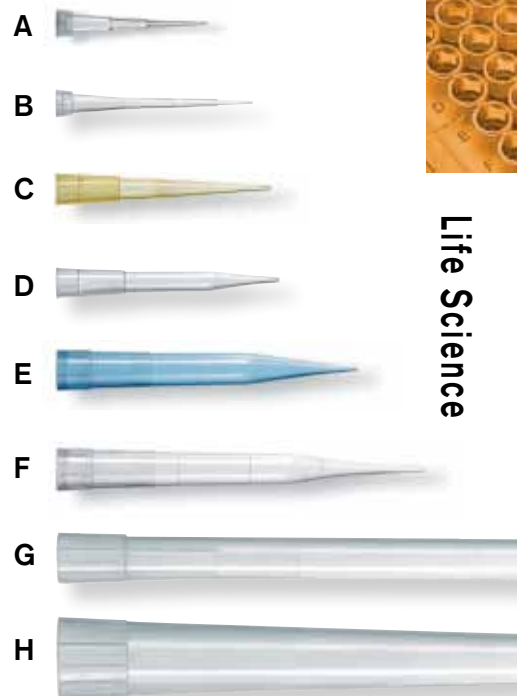
Tip-Box 5/10 ml

The 5 ml and 10 ml tips are only available as a racked tip version in the specially corresponding Tip-Box.

For detailed information about BIO-CERT®, see page 293 'Technical Information'!

Pipette tips, bulk, non-sterile

Capacity	Quantity	Packing unit	Cat. No.
0.1 - 20 µl	2000	2 bags (1000 each)	7025 04
0.5 - 20 µl	2000	2 bags (1000 each)	7025 26
	10000	10 bags (1000 each)	7025 65
2 - 200 µl	1000	1 bag (1000 each)	7025 16
	10000	10 bags (1000 each)	7025 56
5 - 300 µl	1000	1 bag (1000 each)	7025 33
	10000	10 bags (1000 each)	7025 68
50 - 1000 µl	1000	2 bags (500 each)	7025 21
	5000	10 bags (500 each)	7025 61
50 - 1250 µl	1000	2 bags (500 each)	7025 81
	4000	8 bags (500 each)	7025 84
0.5 - 5 ml	200	1 bag (200 each)	7025 95
	1000	5 bags (200 each)	7026 00
1 - 10 ml	200	2 bags (100 each)	7026 03
	1000	10 bags (100 each)	7026 04



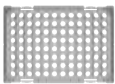
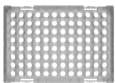
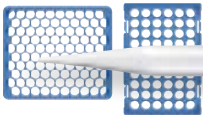
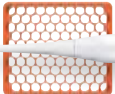
Filter tips, bulk, non-sterile

Capacity	Quantity	Packing unit	Cat. No.
0.1 - 1 µl	960	1 bag (960 each)	7021 11
0.5 - 10 µl	960	1 bag (960 each)	7021 00
2 - 20 µl	960	1 bag (960 each)	7021 02
5 - 100 µl	960	1 bag (960 each)	7021 04
5 - 200 µl	960	1 bag (960 each)	7021 06
50 - 1000 µl	1000	1 bag (1000 each)	7021 08



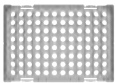
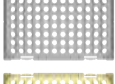
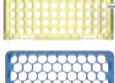


Pipette tips, racked, non-sterile

	Capacity	Type	Quantity	Packing unit	Cat. No.
 A	0.1 - 20 µl	Tip-Rack	960	10 racks (96 each)	7023 12
		Tip-Set	480	5 racks (96 each) + 1 box	7023 04
		Tip-Box-N	480	5 boxes (96 each)	7024 08
		Tip-Box-SL	96	1 box (96 each)	7022 02
 B	0.5 - 20 µl	Tip-Rack	960	10 racks (96 each)	7023 50
		Tip-Set	480	5 racks (96 each) + 1 box	7023 45
		Tip-Box-N	480	5 boxes (96 each)	7024 11
		Tip-Box-SL	96	1 box (96 each)	7022 04
 C	2 - 200 µl	Tip-Rack	960	10 racks (96 each)	7023 15
		Tip-Set	480	5 racks (96 each) + 1 box	7023 05
		Tip-Stack™	960	10 racks (96 each) + 1 box	7024 05
		Tip-Box-N	480	5 boxes (96 each)	7024 13
		Tip-Box-SL	96	1 box (96 each)	7022 06
 D	5 - 300 µl	Tip-Rack	960	10 racks (96 each)	7023 53
		Tip-Set	480	5 racks (96 each) + 1 box	7023 41
		Tip-Box-N	480	5 boxes (96 each)	7024 15
		Tip-Box-SL	96	1 box (96 each)	7022 08
 E	50 - 1000 µl	Tip-Rack 1*	960	16 racks (60 each)	7023 20
		Tip-Rack 2	1000	10 racks (100 each)	7023 22
		Tip-Set	500	5 racks (100 each) + 1 box	7023 13
		Tip-Box-N	480	5 boxes (100 each)	7024 14
		Tip-Box-SL	96	1 box (60 each)	7022 10
 F	50 - 1250 µl	Tip-Rack	1000	10 racks (100 each)	7023 24
		Tip-Set	500	5 racks (100 each) + 1 box	7023 14
		Tip-Box-N	480	5 boxes (100 each)	7024 18
G	0.5 - 5 ml	Tip-Box 5 ml	28	1 Box (28 each)	7026 05
H	1 - 10 ml	Tip-Box 10 ml	18	1 Box (18 each)	7026 08

* also suitable for Tip-Box SL.

Filter tips, racked, non-sterile

	Capacity	Description	Quantity	Packing unit	Cat. No.
 I	0.1 - 1 µl	Tip-Rack	960	10 racks (96 each)	7023 54
 J	0.5 - 10 µl	Tip-Rack	960	10 racks (96 each)	7023 55
 K	2 - 20 µl	Tip-Rack	960	10 racks (96 each)	7023 57
 L	5 - 100 µl	Tip-Rack	960	10 racks (96 each)	7023 59
 M	5 - 200 µl	Tip-Rack	960	10 racks (96 each)	7023 61
 N	50 - 1000 µl	Tip-Rack	1000	10 racks (100 each)	7023 65

NEW!

Tip-Boxes, empty, non-sterile

Tip-Box, PC

Packing unit 1 box.

Cat. No.	7023 00
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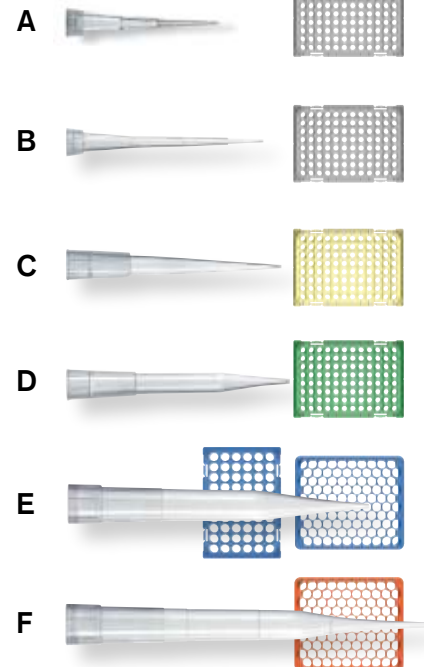
Tip-Box, SL

Packing unit 1 box.

Cat. No.	7022 00
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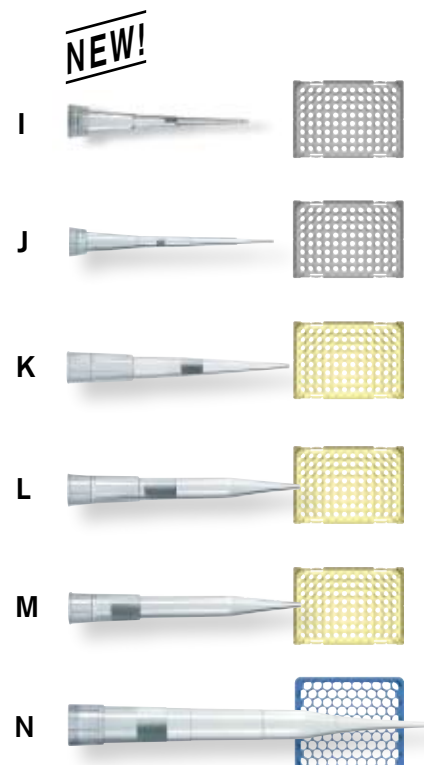
Pipette tips, racked, sterile **BIO-CERT®**

Capacity	Description	Quantity	Packing unit	Cat. No.
0.1 - 20 µl	Tip-Rack S	960	10 racks (96 each)	7024 28
	Tip-Set S	480	5 racks (96 each) + 1 box	7024 19
	Tip-Box N sterile	960	10 boxes (96 each)	7024 40
0.5 - 20 µl	Tip-Rack S	960	10 racks (96 each)	7024 31
	Tip-Set S	480	5 racks (96 each) + 1 box	7024 21
	Tip-Box N sterile	960	10 boxes (96 each)	7024 42
2 - 200 µl	Tip-Rack S	960	10 racks (96 each)	7024 33
	Tip-Set S	480	5 racks (96 each) + 1 box	7024 23
	Tip-Box N sterile	960	10 boxes (96 each)	7024 44
5 - 300 µl	Tip-Rack S	960	10 racks (96 each)	7024 35
	Tip-Set S	480	5 racks (96 each) + 1 box	7024 25
	Tip-Box N sterile	960	10 boxes (96 each)	7024 46
50 - 1000 µl	Tip-Box N sterile	1000	10 boxes (100 each)	7024 48
50 - 1250 µl	Tip-Box N sterile	1000	10 boxes (100 each)	7024 50



Filter tips, racked, sterile **BIO-CERT®**

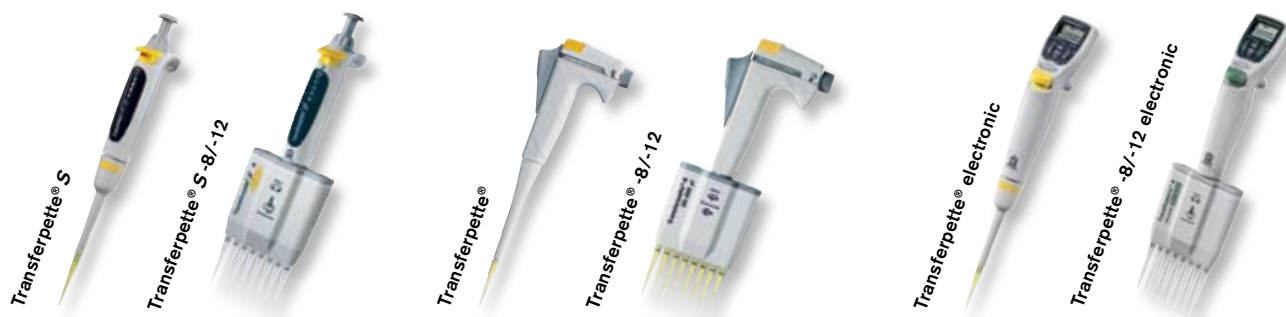
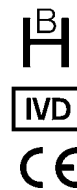
Capacity	Description	Quantity	Packing unit	Cat. No.
0.1 - 1 µl	Tip-Rack S	960	10 racks (96 each)	7021 39
	Tip-Set S	480	5 racks (96 each) + 1 box	7021 19
	Tip-Box N sterile	960	10 boxes (96 each)	7021 59
0.5 - 10 µl	Tip-Rack S	960	10 racks (96 each)	7021 40
	Tip-Set S	480	5 racks (96 each) + 1 box	7021 20
	Tip-Box N sterile	960	10 boxes (96 each)	7021 60
2 - 20 µl	Tip-Rack S	960	10 racks (96 each)	7021 42
	Tip-Set S	480	5 racks (96 each) + 1 box	7021 22
	Tip-Box N sterile	960	10 boxes (96 each)	7021 62
5 - 100 µl	Tip-Rack S	960	10 racks (96 each)	7021 44
	Tip-Set S	480	5 racks (96 each) + 1 box	7021 24
	Tip-Box N sterile	960	10 boxes (96 each)	7021 64
5 - 200 µl	Tip-Rack S	960	10 racks (96 each)	7021 46
	Tip-Set S	480	5 racks (96 each) + 1 box	7021 26
	Tip-Box N sterile	960	10 boxes (96 each)	7021 66
50 - 1000 µl	Tip-Box N sterile	1000	10 boxes (100 each)	7021 68



The right pipette tip

PLASTIBRAND® pipette tips are tested for BRAND pipettes and most of the pipette types of Gilson®, Thermo Fisher Scientific Finnpiptette®, Eppendorf® and Biohit.

The 5 ml tip is exclusively tested for BRAND pipettes and Thermo Fisher Scientific Finnpiptette®. The 10 ml tip is suitable for BRAND, Eppendorf® and Gilson®.



Optimum results are achieved in combination with the BRAND microliter pipettes. PLASTIBRAND® quality tips seat perfectly for precise analyses.

**Pipette tips/
Filter tips**
Volume range

Transferpette® S
Transferpette®
Transferpette®
electronic*
Nominal Volume

Transferpette® S -8/-12
Transferpette®-8/-12
Transferpette®-8/-12
electronic*
Nominal Volume

		1 µl	5 µl	10 µl	20 µl	20 µl**	25 µl	50 µl	100 µl	200 µl	250 µl	500 µl	1000 µl	2 ml	5 ml	10 ml	10 µl	20 µl	25 µl	50 µl	100 µl	200 µl	300 µl
0.1 - 20 µl	A	✓		✓	✓												✓	✓					
0.5 - 20 µl	B			✓	✓												✓	✓					
2 - 200 µl	C		✓			✓	✓	✓	✓	✓									✓	✓	✓	✓	✓
5 - 300 µl	D		✓			✓	✓	✓	✓	✓									✓	✓	✓	✓	✓
50 - 1000 µl	E										✓	✓	✓										
50 - 1250 µl	F										✓	✓	✓										
0.5 - 5 ml	G													✓	✓								
1 - 10 ml	H															✓							
0.1 - 1 µl	I	✓		✓													✓						
0.5 - 10 µl	J			✓	✓												✓	✓					
2 - 20 µl	K		✓			✓	✓	✓	✓	✓									✓	✓	✓	✓	
5 - 100 µl	L		✓			✓	✓	✓	✓	✓									✓	✓	✓	✓	✓
5 - 200 µl	M									✓									✓	✓	✓	✓	✓
50 - 1000 µl	N											✓	✓										

✓ = Tip volume less than pipette's nominal volume

*) Electronic pipettes are not available in all specified volumes

**) Transferpette® with yellow color code

PD-Tips

PLASTIBRAND® Precision Dispenser Tips



The PLASTIBRAND® PD-Tips with patented size encoding are the ideal system component for the repetitive pipette HandyStep® electronic (with automatic tip size recognition) and HandyStep® from BRAND. The conformity-certified PD-Tips comply with ISO 8655 requirements and come with a batch certificate. CE-marked according to IVD-Directive 98/79 EC. PD-Tips are available either non-sterile or sterile/endotoxin-free (individually wrapped), as well as in **BIO-CERT®** quality. (See page 293 for detailed information).

- PLASTIBRAND® PD-Tips can be used also with compatible, third-party dispensing systems. The automatic size detection option is available in HandyStep® electronic, Gilson® Repetman® and Rainin AutoRep™ E. In addition, PD-Tips can be used with the repetitive pipette HandyStep®, Rainin AutoRep™ M, Eppendorf® Multipette® 4780 and EDOS® 521 among others.
- PLASTIBRAND® PD-Tips are made from high-quality materials (Cylinder: PP/ Piston: PE-HD, 0.1 ml: LCP).
- PD-Tips work on the direct displacement principle and are therefore particularly suitable for dispensing of fluids with high viscosity, high vapor pressure, etc.



Information about the **HandyStep® electronic** and **HandyStep®** on pages 61-68.

Accuracy table PLASTIBRAND® PD-Tips with BRAND repetitive pipette HandyStep® electronic

PD-Tip size, ml	Volume range	Nominal volume (A* ≤ ± %)				Nominal volume (CV* ≤ %)			
		100%	50%	10%	1%	100%	50%	10%	1%
0.1	1.0 µl - 100 µl	1.0	1.2	1.6	16.0	0.5	1.0	2.0	12.0
0.5	5.0 µl - 500 µl	0.9	0.9	0.9	9.0	0.25	0.5	1.0	6.0
1.0	10.0 µl - 1 ml	0.6	0.6	0.9	8.0	0.2	0.3	0.6	4.0
1.25	12.5 µl - 1250 µl	0.6	0.6	0.9	8.0	0.15	0.3	0.6	3.5
2.5	25.0 µl - 2500 µl	0.5	0.5	0.8	8.0	0.1	0.2	0.4	2.5
5.0	50.0 µl - 5000 µl	0.5	0.5	0.8	8.0	0.08	0.15	0.3	1.5
10.0	100 µl - 10 ml	0.4	0.4	0.5	5.0	0.08	0.15	0.25	1.25
12.5	125 µl - 12.5 ml	0.4	0.4	0.5	5.0	0.08	0.15	0.25	1.25
25.0	250 µl - 25 ml	0.3	0.3	0.3	3.0	0.08	0.15	0.25	1.25
50.0	500 µl - 50 ml	0.3	0.3	0.3	3.0	0.08	0.15	0.25	1.25

* Error limits refer to the nominal volumes and partial volumes relative to the PD-Tip, obtained with instrument and distilled water at equilibrium with ambient temperature at 20 °C, and with smooth operation. The error limits defined in ISO 8655 are not exceeded. A = Accuracy, CV = Coefficient of variation





PD-Tips, non-sterile

PLASTIBRAND® Precision Dispenser Tips

Capacity ml	Pack of	Cat. No.
0.1	100	7024 02
0.5	100	7023 70
1.0	100	7024 06
1.25	100	7023 72
2.5	100	7023 74
5	100	7023 76
10	100	7024 07
12.5	100	7023 78
25*	50	7023 80
50*	25	7023 82
PD-Tip Set (20 PD tips each in sizes of 0.5, 1, 1.25, 2.5, 5, 10 and 12.5 ml)		7023 68

* incl. 1 adapter

PD-Tips, sterile

PLASTIBRAND® Precision Dispenser Tips, individually wrapped



Capacity ml	Pack of	sterile/endotoxin-free Cat. No.	BIO-CERT® Cat. No.
0.1	100	7024 04	7026 83
0.5	100	7023 84	7026 84
1.0	100	7024 36	7026 85
1.25	100	7023 86	7026 86
2.5	100	7023 88	7026 88
5	100	7023 90	7026 90
10	100	7024 38	7026 91
12.5	100	7023 92	7026 92
25*	25	7023 94	7026 94
50*	25	7023 96	7026 96

* incl. 1 adapter

For detailed information about BIO-CERT®, see page 293 'Technical Information'!

Adapter

for size 25 and 50 ml PD-Tips, PP, autoclavable. Non-sterile or sterile.

Description	Cat. No.
non-sterile	7023 98
BIO-CERT®	7023 99

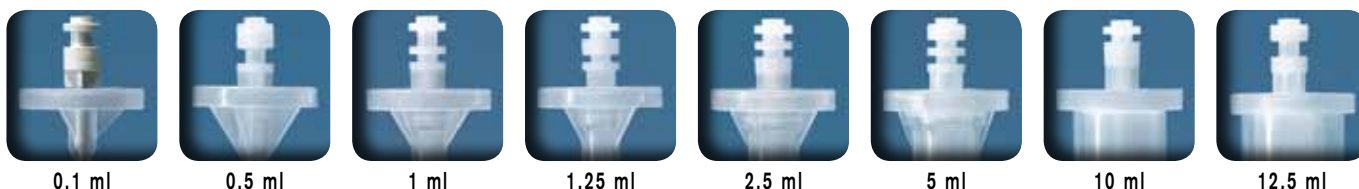
Note:

PD-Tips are not autoclavable.



25 ml

50 ml



0.1 ml

0.5 ml

1 ml

1.25 ml

2.5 ml

5 ml

10 ml

12.5 ml

Microcentrifuge Tubes

Quality features

- Uniform lid thickness ensures trouble-free piercing.
- Consistent wall thickness.
- Tight fitting attached lid provides leak-free seal, yet reopens easily.
- High clarity.
- Autoclavable at 121 °C (2 bar), acc. DIN EN 285



Relative Centrifugal Force (RCF)

Quoted RCF (g) values are determined with 20 °C water being centrifuged for 20 min.

Actual stress limit may be affected by conditions such as rotor positioning, reagents, run time and temperature. Specified RCF values should only be used as a comparative guide (DIN 58970).

To calculate RCF:

$$\text{RCF} = 1.118 \cdot r \cdot \left(\frac{n}{1000} \right)^2$$

Example:

Rotation radius **r = 180 mm**
(vertical distance between center of rotation axis and bottom of centrifuge tube)

Speed **n = 6000 min⁻¹**

$$\begin{aligned} \text{RCF} &= 1.118 \cdot 180 \cdot \left(\frac{6000}{1000} \right)^2 \\ &= 7245 \end{aligned}$$





Microcentrifuge tubes 0.5 ml, with lid

PP. Pack of 1000.

RCF max.	Lid membrane Ø mm	Thickness lid membrane mm	Outer-Ø mm	Height mm
10000 (at 20 °C, t _e 20 min)	5.4	0.3	7.9	31.4
Cat. No.	7805 07			

Microcentrifuge tubes 1.5 ml, with lid

PP. Frosted marking area, subdivisions for approximate volume determination.
CE-marked according to IVD-Directive 98/79 EC.

RCF max.	Lid membrane Ø mm	Thickness lid membrane mm	Outer-Ø mm	Height mm
20000 (at 20 °C, t _e 20 min)	8.5	0.3	10.75	40.8

Pack of 500
(1 bag).

Cat. No.	7805 00
----------	---------

Pack of 3000
(6 bags of 500).

Cat. No.	7805 02
----------	---------

colored
Pack of 500.

Color	Cat. No.
yellow	7805 21
blue	7805 22
green	7805 23
orange	7805 24
amber*	7805 25



* The amber-colored reaction tubes are particularly suitable for light-sensitive reagents.

BIO-CERT®

Sterile and free of endotoxins, DNA, RNase and ATP.

Pack of 450 (30 blister packs of 15 tubes).

Cat. No.	7804 00
----------	---------



Microcentrifuge tubes 1.5 ml, without lid

PP. non-sterile, Pack of 12 000 (6 bags of 2000).

RCF max.	Outer-Ø mm	Height mm
6000 (at 20 °C, t _e 20 min)	11	39.5
Cat. No.	7805 05	

Microcentrifuge tubes 2 ml, with lid

PP. Frosted marking area, subdivisions for approximate volume determination.
Lid membrane with a piercing area. Pack of 500.

RCF max.	Lid membrane Ø mm	Thickness lid membrane mm	Outer-Ø mm	Height mm
20000 (at 20 °C, t _e 20 min)	8.5	0.3	10.7	41.15
Cat. No.	7805 50			



Micro tubes with screw caps

Screw cap micro tubes are ideal for storage of serums and blood samples, and for boiling, centrifugation, etc.



Versatile

Micro tubes with screw caps are available in different formats, designs and quality grades. Micro tubes of PP and screw caps of PE or PP are precisely matched to ensure a secure seal.



with sealing cone

Micro tubes with sealing cone are particularly suitable for the storage of sensitive samples, since they avoid the risk of contamination from existing silicone seals. These tubes are not autoclavable.



with silicone seal

Micro tubes are sealed extremely well with silicone seals, without contact between the sample and the sealing ring. The containers are suitable for the storage of samples in the gaseous phase of liquid nitrogen. Micro tubes with silicone seals are autoclavable at 121 °C (2 bar), acc. DIN EN 285.



with tamper-evident screw cap with silicone seal

The tamper-evident screw cap guarantees the user an uncontaminated sample. A visible ring acts as an anti-tamper seal, which breaks when the cap is first opened. The micro tubes have a silicone seal, and are suitable for the storage of samples in the gaseous phase of liquid nitrogen. The micro tubes with tamper-evident screw cap are autoclavable at 121 °C (2 bar), acc. DIN EN 285.

Colored screw caps and colored cap inserts are available separately!



Micro tubes

attached screw cap with sealing cone, non-sterile

PP, ungraduated, screw cap PE. Operating range: -90 °C to +100 °C.
Available separately: colored cap inserts (PP) for identification.
Pack of 1000.

Capacity ml	Description	Cat. No.
0.5	self-standing	7807 00
1.5	self-standing	7807 01
1.5	round-bottom	7807 02
2	self-standing	7807 03
2	round-bottom	7807 04

attached screw cap with silicone seal, non-sterile

PP, graduated, screw cap PP. With frosted marking area.
Operating range: -196 °C to +121 °C. Available separately: colored cap inserts (PP) for identification. Pack of 1000.



Capacity ml	Subdiv. up to ml	Description	Cat. No.
0.5*	–	self-standing	7807 10
1.5	1	self-standing	7807 11
1.5	1	round-bottom	7807 12
2	1.2	self-standing	7807 13
2	1.4	round-bottom	7807 14

* ungraduated

bulk screw cap (PP) with silicone seal, sterile (SAL 10⁻⁶)

PP, graduated. With frosted marking area. Operating range: -196 °C to +121 °C.
DNA, DNase, and RNase-free, endotoxin-free, non-mutagenic, non-toxic.
Pack of 500.



Capacity ml	Description	sterile with cap Cat. No.
0.5*	self-standing	7807 50
1.5	self-standing	7807 51
1.5	round-bottom	7807 52
2	self-standing	7807 53
2	round-bottom	7807 54

without bulk screw cap, non-sterile

PP, graduated. With frosted marking area. Operating range: -196 °C to +121 °C.
Pack of 1000.

Capacity ml	Description	non-sterile without cap Cat. No.
0.5*	self-standing	7807 30
1.5	self-standing	7807 31
1.5	round-bottom	7807 32
2	self-standing	7807 33
2	round-bottom	7807 34

* ungraduated

with tamper-evident screw cap, sterile (SAL 10⁻⁶)

PP, graduated. With frosted marking area. Operating range: -196 °C to +121 °C.
DNA, DNase, and RNase-free, endotoxin-free, non-mutagenic, non-toxic.
Pack of 500.

Capacity ml	Description	Cat. No.
0.5*	self-standing	7807 55
1.5	self-standing	7807 56
1.5	round-bottom	7807 57
2	self-standing	7807 58
2	round-bottom	7807 59

* ungraduated

**NEW!**

Life Science

without tamper-evident screw cap, non-sterile

PP, ungraduated. Operating range: -196 °C to +121 °C.
Pack of 1000.

Capacity ml	Description	Cat. No.
0.5	self-standing	7807 60
1.5	self-standing	7807 61
1.5	round-bottom	7807 62
2	self-standing	7807 63
2	round-bottom	7807 64

**Cap inserts, colored**

for micro tubes with attached or
bulk screw caps

PP. Applications: -196 °C to +121 °C.
Pack of 500.

Cap insert Color	Cat. No.
white	7807 20
blue	7807 21
red	7807 22
green	7807 23
yellow	7807 24

**Screw caps, colored**

for micro tubes 7807 30 - 7807 34,
7807 50 - 7807 54

PP. Applications: -196 °C to +121 °C.
Pack of 1000.

Cap Color	Cat. No.
white	7807 40
blue	7807 41
red	7807 42
green	7807 43
yellow	7807 44

**Tamper-evident screw caps, colored**

for micro tubes 7807 60 - 7807 64

PP. Applications: -196 °C to +121 °C.
Pack of 1000.

Cap Color	Cat. No.
transparent	7807 70
blue	7807 71
green	7807 72
purple	7807 73
red	7807 74
yellow	7807 75



Accessories Microcentrifuge Tubes



Microcentrifuge tube rack

PP, grey. Numbered positions for 20 microcentrifuge tubes, 1.5 ml. Autoclavable at 121 °C (2 bar), acc. DIN EN 285. Pack of 1.

Positions	Length mm	Width mm	Height mm	Cat. No.
20	210	70	37	7806 05



0.5 ml adapter for Cat. No. 7806 05

PP. Microcentrifuge tube racks can be equipped with inserts to accommodate 0.5 ml microcentrifuge tubes. Easy permanent assembly. Pack of 20.

Cat. No.	7806 08
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Microcentrifuge tube racks

PP. Stackable racks with alphanumeric positions. Operating temperature -20 °C to +90 °C. Autoclavable at 121 °C (2 bar), acc. DIN EN 285. Density 1.2 g/cm³. Will not float in waterbath. Racks are supplied in two-pieces (Ø 11 mm, for microcentrifuge tubes) or three-pieces (Ø 13 mm, for cryogenic tubes) for convenient and permanent assembly. L x W x H in mm: 265 x 126 x 38. Pack of 5.

For Ø up to mm	Positions	white Cat. No.	blue Cat. No.	red Cat. No.	yellow Cat. No.
11	8 x 16	43410 50	43410 51	43410 52	43410 53
13	6 x 14	43410 00	43410 01	43410 02	43410 03



Mini cooler

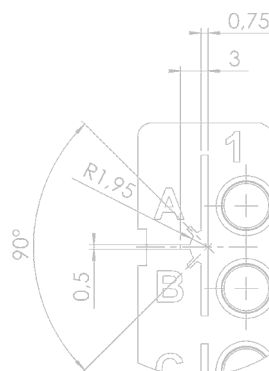
PC. Mini coolers are designed to protect a wide range of solutions (enzymes, DNA, RNA, cell suspensions) by helping to maintain freezer temperatures on the lab bench. Durable polycarbonate filled with non-toxic gel. Mini coolers hold twelve 0.5 ml to 2.0 ml tubes.

Bench temp. maintained	Time held	Color	Cat. No.
0 °C	60 min.	red	1149 30
-20 °C	60 min.	yellow	1149 35
-70 °C	45 min.	white	1149 40

PCR

Tubes, plates, racks

BRAND has significantly expanded its product range of extra-thin-wall disposable products, which were specially developed to satisfy the demands of PCR applications. Single tubes, strips of 8 and 12, and, for high sample throughput, PCR plates in 24-well, 48-well, 96-well, and 384-well formats are available. Thus, there is an optimal product for every application.



Features

- Suitable for use in common thermal cyclers.
- PP, extra-thin uniform wall thicknesses to provide the optimal thermal transfer and short cycle times.
- Manufactured under the most modern cleanroom conditions.
- DNase-, DNA- and RNase-free.
- Autoclavable at 121 °C (20 min.).

Real-Time PCR?

qPCR outstanding!

qPCR PCR Plates = Plates that fit in quantitative Real-Time thermal cyclers

qPCR PCR Tubes = Tubes with highly transparent caps for sensitive detection of fluorescence signals

qPCR PCR Seals = Seals, highly transparent for sensitive detection of fluorescence signals

Note: Autoclaves can be a source of contamination for disposable products.

The Polymerase Chain Reaction (PCR) is covered by international patents. Use of the PCR process may require a license.





Single PCR tubes

with attached caps

PP. 0.2 ml and 0.5 ml PCR tubes with attached caps are compatible with leading thermal cyclers with heated lids. The caps are easy to open and close without tools, yet ensure a tight fit to reduce sample evaporation. The various colors of the PCR tubes allow fast sample classification. Pack of 1000.

Capacity ml	Description	Color	Cat. No.
0.2	domed cap	clear	7813 00
0.2	flat cap	clear	7813 05
		rose	7813 01
		yellow	7813 02
		green	7813 03
		blue	7813 04
0.5	flat cap	clear	7813 10
		rose	7813 11
		yellow	7813 12
		green	7813 13
		blue	7813 14



Strips of 8 PCR Tubes

with attached cap strips

PP. 8 connected 0.2 ml tubes with attached cap strips. Domed caps facilitate one-handed operation. Pack of 125 strips, 1000 vessels, total.

Cat. No.	7813 30
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Strips of 8 PCR Tubes

with attached flat individual caps

PP. 8 connected 0.2 ml - or 0.15 ml vessels with attached, flat individual caps – ideal protection against contamination. The highly transparent cap makes them ideal for real-time PCR. Available in standard and low-profile versions. Pack of 120 Strips, 960 vessels total.

Description	Capacity ml	Color	Cat. No.
Standard	0.2	clear	7813 32
Low Profile	0.15	clear	7813 33

Strips of 8 PCR Tubes

with detached cap strips

PP. 8 connected 0.2 ml tubes. Separate, domed or flat caps are available in strips of 8. They are easy to open and close without tools. The tubes have a holding strap at one end, and the cover strips on each cap have a small lip on the side for careful, contamination-free opening. Pack of 125 strips, 1000 vessels or caps, total.

Capacity ml	Color	Strips of 8 PCR tubes Cat. No.	Strips of 8 PCR caps domed Cat. No.	Strips of 8 PCR caps flat* Cat. No.
0.2	clear	7813 20	7813 40	7813 34
0.2	rose	7813 21	7813 41	-
0.2	yellow	7813 22	7813 42	-
0.2	green	7813 23	7813 43	-
0.2	blue	7813 24	7813 44	-

* flat caps suitable for Real-Time PCR.

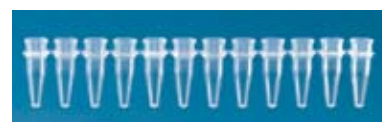


Strips of 12 PCR Tubes

with detached cap strips

PP. 12 connected 0.2 ml tubes. The separate domed caps are available in strips of 12. They ensure a secure seal. Pack of 125 strips, 1500 vessels or caps, total.

Capacity ml	Color	Strips of 12 PCR tubes Cat. No.	Strips of 12 PCR caps Cat. No.
0.2	clear	7812 80	7812 90
0.2	rose	7812 81	7812 91
0.2	yellow	7812 82	7812 92
0.2	green	7812 83	7812 93
0.2	blue	7812 84	7812 94



PCR Box/Rack

sorted by color (red, yellow, green, purple, blue)



PP. Suitable for sample preparation, for keeping and storing 0.2 ml single vessels, 8-strips, and 12-strips, and 96-well PCR plates. These racks can also be stacked without lids. Withstand temperatures from -80 to +121 °C. Pack of 5.

Cat. No.	7813 62
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PCR Mini cooler

with transparent lid

PP. For protecting samples from warming. The mini PCR cooler keeps samples at 4 °C for approximately 3 hours. The insulating gel changes from violet to pink at 7 °C. Suitable for 0.2 ml single vessels, 8-strips, and 12-strips, as well as 96-well PCR plates. Pack of 2.

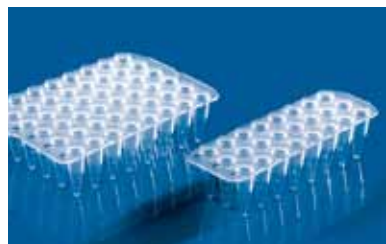
Cat. No.	7812 60
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You will find **sealing films** for various applications on page 108.

PCR Plates

The ultra thin-walled PCR plate design facilitates constant, rapid and precise heat transfer. The smooth vessel interior minimizes the binding of enzymes and nucleic acid to the walls. The raised lips of the wells protect against cross-contamination, allowing a reliable seal with the sealing mat tailored to the plates.



24-well and 48-well PCR Plates

PP. 0.2 ml wells. These plates reduce material costs and allow work on a compact PCR plate even with small sample throughputs.

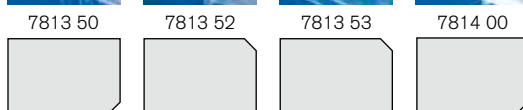
Number of wells	Description	Pack of	Cat. No.
24	no skirt	40 (5 plates per bag)	7814 11 
48	no skirt	20 (5 plates per bag)	7814 15 



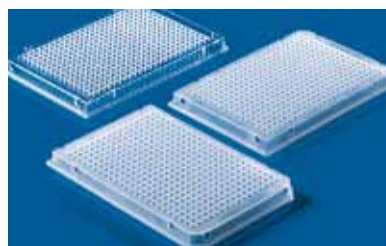
96-well PCR Plates

PP. 0.2 ml wells. 96-well plates are standard for PCR applications. Different variants facilitate the optimal use in the most common thermal cyclers.

Description	Pack of	Cat. No.
No skirt	50 (5 plates per bag)	7813 50 
Elevated skirt	50 (10 plates per bag)	7813 52 
Full skirt	50 (10 plates per bag)	7813 53 
Half skirt	50 (5 plates per bag)	7814 00



Position of cut away corners



7813 45 7813 47 7813 48

384-well PCR Plates

The 40 µl wells can hold sample volumes of 2 µl to 30 µl. This helps to reduce reagents costs and shortens cycle times. The plates can be filled using multichannel pipettes or robotic systems.

Description	Pack of	Cat. No.
Full skirt, PP	50 (10 plates per bag)	7813 45
Full skirt, PP	50 (10 plates per bag)	7813 47 
Full skirt, rigid plate	50 (10 plates per bag)	7813 48



Position of cut away corners

Please note the compatibility table on page 294.

White PCR products for qPCR

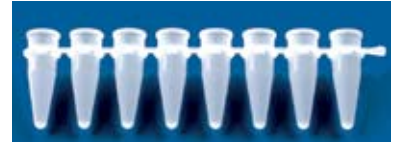
The use of Real-Time PCR (qPCR) is becoming increasingly widespread. In particular, the direct quantification of the DNA formed can be achieved by the use of fluorescence measurement. The new line of white PCR products by BRAND offers significantly better results in this application than transparent 8-tube strips or plates. The different products in this line are uniformly colored with TiO₂ (titanium dioxide), so that in combination with the smooth surfaces, the optimum reflection of the fluorescence signal is provided.

Strips of 8 PCR tubes

separate cap strips

PP. Same design as 7813 20 – 24, page 101, but white for qPCR.

Description	Volume ml	Pack of	Cat. No.
Standard	0.2	125 strips per bag	7813 25

NEW!
qPCR


Matching, qPCR-suitable strips of 8 caps; see page 101, Cat. No. 7813 34!

24- and 48-well PCR-Plates

PP, white. For qPCR. 0.2 ml wells.

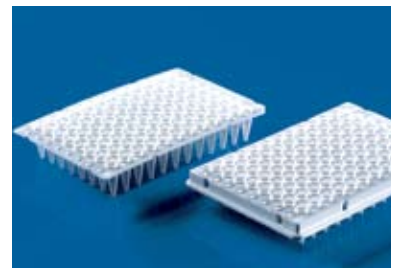
Amount wells	Description	Pack of	Cat. No.
24	No skirt	40 (5 plates per bag)	7814 12
48	No skirt	20 (5 plates per bag)	7814 16

NEW!


96-well PCR-Plates

PP, white. For qPCR. 0.2 ml wells.

Description	Pack of	Cat. No.
No skirt	50 (5 plates per bag)	7813 54
Half skirt	50 (5 plates per bag)	7813 57

NEW!


7813 54 Position of cut away corners



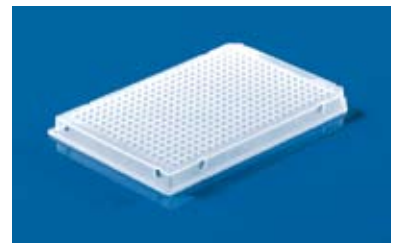
7813 57 Position of cut away corners



384-well PCR-Plates

PP, white. For qPCR. 0.03 ml wells.

Description	Pack of	Cat. No.
Full skirt	50 (10 plates per bag)	7813 58

NEW!


7813 58 Position of cut away corners

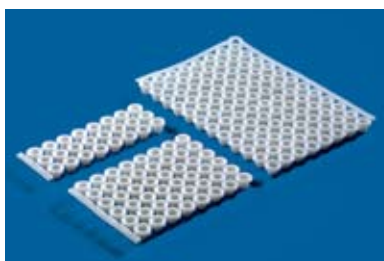


PCR Sealing Mats

PCR sealing mats have been designed to fit BRAND PCR plates exactly and reduce evaporation losses by up to 75% compared to conventional systems. They are characterized by their high flexibility, tight sealing, autoclavability and are easily pierced by pipette tips.



The sealing mats can be easily pierced with standard pipette tips



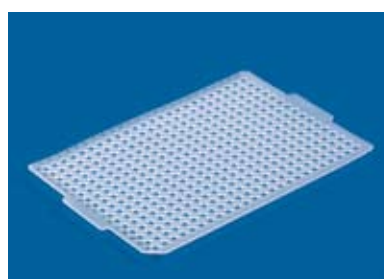
24-, 48- and 96-well

Product	Material	Pack of	Cat. No.
24-well mat (for Cat. No. 7814 11)	TPE	10	7814 02
48-well mat (for Cat. No. 7814 15)	TPE	10	7814 03
96-well mat (for Cat. No. 7813 50, 7814 00)	TPE	5	7814 05



96-well

Product	Material	Pack of	Cat. No.
96-well mat (for Cat. No. 7813 52, 7813 53)	silicone	10	7814 07



384-well

Product	Material	Pack of	Cat. No.
384-well mat (for Cat. No. 7813 45, 7813 47)	silicone	10	7814 08

Sample Storage

BRAND has developed a number of disposable products of polypropylene and polystyrene especially for the storage of life science samples. These products are popular for applications including cell biology, molecular biology, drug discovery tests, and screening.

Features

- Polypropylene for high chemical resistance, e.g., DMSO, phenol, chloroform
- Autoclavable at 121 °C (2 bar), acc. DIN EN 285 (PP-plates)
- Optimal sample mixing and recovery using U-bottom wells
- Alphanumeric code and cut-away corner simplify sample identification and orientation
- Can be used with multichannel pipettes and automatic liquid handling systems from all leading manufacturers





96-well Microplate

U-bottom wells, non-sterile

PP. For volumes up to 300 µl. Compatible with virtually all leading microplate centrifuges. Raised rings around the orifice of each well minimize possible cross-contamination. The plates can be sealed using self-adhesive films, such as DMSO-resistant sealing film (cross-cut) with alphanumeric coding (for more information, see page 108). Pack of 100 (10 per bag).

Cat. No.	7013 30
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Deep-well Plates

96-well, U-bottom wells, non-sterile

PP and PS. 12 x 8 configuration, capacities 0.5 ml, 1.1 ml, 1.2 low profile and 2.2 ml. Designed for a wide range of applications, such as High-Throughput Screening (HTS), tests requiring a mother plate, cell and tissue cultures, serial dilutions, reagent transfer and sample storage down to -80 °C (PP) resp. -20 °C (PS). Deep-well plates are manufactured in the SBS format and are stackable for easy storage.



Capacity ml	Material	well shape	Pack of	Cat. No.
0.5	PP	round	48	7013 46
1.1	PP	round	24	7013 50
1.1	PS	round	32	7013 52
1.2 low profile	PP	round	50	7013 40
2.2	PP	square	24	7013 54

Deep-well Plate

384-well, U-bottom wells, non-sterile

PP. 24 x 16 configuration, capacity 0.3 ml. Designed for a wide range of applications, such as High-Throughput Screening (HTS), tests requiring a mother plate, cell and tissue cultures, serial dilutions, reagent transfer and sample storage down to -80 °C. Deep-well plates are manufactured in the SBS format and are stackable for easy storage. Pack of 48.

Cat. No.	7013 55
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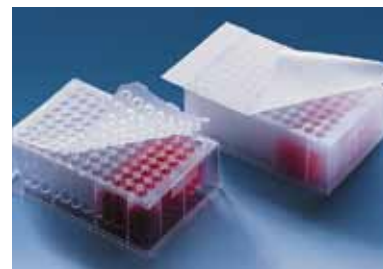


Microtitration plates and deep-well plates are available also **with bar codes**. More information at www.brand.de.

Cover mats for Deep-well Plates

Cover mats reduce the maximum volume of wells.
Adhesive sealing films can also be used.

Description	Material	Pack of	Cat. No.
for 0.3 ml 384-well plates	Silicone	50	7013 57
for 0.5 ml 96-well plates	PP	50	7013 58
for 1.1 ml 96-well plates	mod. PE	24	7013 60
for 1.2 ml 96-well plates, low profile	TPE	50	7013 68
for 2.2 ml 96-well plates	EVA	24	7013 62



Tubes 1.2 ml, Rack Packed

tubes and rack, non-sterile

PP tubes and rack are autoclavable at 121 °C (2 bar), acc. DIN EN 285 (caps, PE, are not autoclavable). Ideal for biological tests, such as PCR, cell uptake studies, RIA and EIA. Designed for storing and freezing down to -80 °C, and for transporting reagents and samples. Compatible with standard microplates and suitable for working with multichannel pipettors. (Size of tubes: outer Ø 8.8 mm, height 45 mm.)

Description	Material	Pack of	Cat. No.
Rack with 96 individual tubes	PP	10	7815 00
Rack with 12 strips of 8 tubes	PP	10	7815 10
Individual tubes	PP	960	7815 20
Strip of 8 tubes	PP	120	7815 25
Individual caps	PE	960	7815 30
Strip of 8 caps	PE	120	7815 35
Rack with grid, empty	PP	10	7815 40



NEW!

96 tube racks with 0.65 ml or 1.2 ml tubes

Non-sterile, for use with robots

Tubes and rack are autoclavable at 121 °C (2 bar), acc. DIN EN 285 (cover mat/strip, TPE, not autoclavable). Tubes, racks, and lids can withstand temperatures as low as -80 °C. The seal of the tubes is pressure-tested. Thanks to the stable connection between the mounting plate and the racks, the stackable SBS racks are especially well-suited for use with robots and other automated dispensing systems. Coded tubes (A1 - H12) and rack sides suitable for barcode labels simplify sample organization.

Description	Material	Pack of	Cat. No.
Rack with lid for 0.65 ml tubes, empty*	PP	50	7815 62
Rack with lid with 96 coded 0.65 ml tubes*	PP	50	7815 65
Refill unit of 96 coded 0.65 ml tubes*	PP	50	7815 72
Single 0.65 ml tube w/o coding	PP	5000	7815 75
Rack with lid for 1.2 ml tubes, empty*	PP	50	7815 63
Rack with lid with 96 coded 1.2 ml tubes*	PP	50	7815 66
Refill unit of 96 coded 1.2 ml tubes*	PP	50	7815 73
Single 1.2 ml tube w/o coding	PP	5000	7815 76
Strip of 8 lids, pierceable	TPE	1000	7815 82
Cover mat for 96 tubes, pierceable	TPE	100	7815 83

* Not available in the USA.



Sealing Films, Self-adhesive

In case the microplates need not only to be covered, but also securely sealed, self-adhesive sealing films are available. These film sheets can be easily applied on the plates and removed also without the use of expensive equipment. They are available in different versions and are especially well-suited for storage or cell- and tissue-culture.



for ELISA, PCR

PP. Allows visual inspection. Temperature range -40 °C to +125 °C. Single film. Packs of 100 sheets.

Cat. No.	7813 90
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for automation

PE top, underside PP with adhesive. Easy to pierce with pipette tips. Inert, chemically resistant. Temperature range -40 °C to +90 °C. Single film. Packs of 50 sheets.



Cat. No.	7013 70
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for ELISA, Real-Time PCR



Polyester. High-transparency. Allows visual inspection. Temperature range -20 °C to +120 °C. Single film. Packs of 100 sheets.

Cat. No.	7813 91
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for storage, ELISA, PCR

PP. DMSO resistant. Allows visual inspection. Temperature range -80 °C to +120 °C. Single film. Pack of 100 sheets.

Cat. No.	7013 67
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for cold storage

Aluminum. Easy to pierce with pipette tips. Temperature range -80 °C to +120 °C. Packs of 100 sheets. Single film or 1 roll.



for fluorescence measurement

Vinyl, black. Light-absorbent. Temperature range -40 °C to +80 °C. Single film. Packs of 50 sheets.

Cat. No.	7013 71
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Single sheets

Cat. No.	7813 81
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Roll

Cat. No.	7813 80
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for luminescence measurement

Vinyl, white. Reflective. Temperature range -40 °C +80 °C. Single film. Packs of 50 sheets.

Cat. No.	7013 72
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for cell and tissue culture

Rayon. Gas-permeable. Temperature range -20 °C to +80 °C. Single film. Non-sterile: Packs of 100 sheets, Sterile: Packs of 50 sheets.

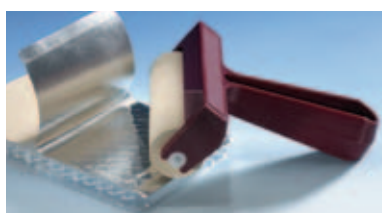


Non-sterile

Cat. No.	7013 64
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Sterile

Cat. No.	7013 65
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Roller

Hard rubber. For simple, even pressure of self-adhesive films. Pack of 1.

Cat. No.	7013 80
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Cryogenic Tubes

Designed for storage of biological material, such as microorganisms, human and animal cells, etc. in the gaseous phase of liquid nitrogen. PP, graduated, Outer-Ø 12.5 mm. Large frosted marking area and colored cap inserts for easy sample identification. Temperature stability to -196 °C. γ -ray sterile (SAL 10^{-6}) and autoclavable at 121 °C (2 bar), acc. DIN EN 285. Marked with the CE symbol according to the IVD Directive 98/79 EC. Tubes without ring stands can be centrifuged at up to an RCF of 14000 g. Pack of 1000 (10 bags of 100)

Cryogenic tubes are sterile, RNase-, DNase-, DNA- and endotoxin-free.

with external thread

Screw-on cap with silicone seal

Pack of 1000 (10 bags of 100)

Capacity ml	Subdivision up to ml	Description	Height mm	Cat. No.
1.2	1.0	self-standing	41	1148 30
2.0	1.8	round-bottom	47	1148 31
2.0	1.8	self-standing	49	1148 32
3.0	3.0	self-standing	70	1148 33
4.0	3.6	self-standing	76	1148 34
5.0	4.5	self-standing	90	1148 35



with internal thread

Screw-on cap with sealing cone

Pack of 1000 (10 bags of 100).

Capacity ml	Subdivision up to ml	Description	Height mm	Cat. No.
1.2	1.0	self-standing	41	1148 40
2.0	1.8	self-standing	49	1148 41
2.0	1.8	round-bottom	48	1148 42
4.0	3.6	round-bottom	70	1148 43
4.0	3.6	self-standing	71	1148 44
5.0	4.6	round-bottom	90	1148 45



Cap inserts

PP. Fit for all sizes.
Pack of 500.

Color	Cat. No.
white	1148 50
blue	1148 51
red	1148 52
green	1148 53
yellow	1148 54





Storage boxes

PC. For cryogenic tubes. Operating range (in the gaseous phase of liquid nitrogen) -196 °C to +121 °C. Autoclavable at 121 °C (2 bar), acc. DIN EN 285. Pack of 4.

for cryogenic tubes ml	Positions	Length mm	Width mm	Height mm	Cat. No.
1.2 and 2	81	132	132	52	1148 62
3, 4 and 5/**	81	132	132	95	1148 64
1.2 and 2**	100	132	132	52	1148 66

* Pack of 5 ** Internal thread *** external thread



Cryogenic tube rack

PP, blue. For 50 self-standing cryogenic tubes. Pack of 4.

Cat. No.	1148 60
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Microcentrifuge tube racks

PP. Operating temperature -20 °C to +90 °C. Autoclavable at 121 °C (2 bar), acc. DIN EN 285. Density 1.2 g/cm³, will not float in waterbath. L x W x H: 265 x 126 x 38. Pack of 5.

Positions	white Cat. No.	blue Cat. No.	red Cat. No.	yellow Cat. No.
6 x 14	43410 00	43410 01	43410 02	43410 03



Mini cooler

PC. Mini coolers are designed to protect a wide range of solutions (enzymes, DNA, RNA, cell suspensions) by helping to maintain freezer temperatures on the lab bench. Durable polycarbonate filled with non-toxic gel. Mini coolers hold twelve 0.5 ml to 2.0 ml tubes.

Bench temp. maintained	Time held	Color	Cat. No.
0 °C	60 min.	red	1149 30
-20 °C	60 min.	yellow	1149 35
-70 °C	45 min.	white	1149 40



BRANDplates® Microplates

Modern research methods require high-quality disposables. BRANDplates®, the new generation of microplates from BRAND, can be used in all important fields of life science.

For this comprehensive line, three new immunological and four new cell culture surfaces have been developed under the most modern production conditions.

The new product line covers a multitude of standard applications (e.g., homogenous assays, screenings) as well as applications in the fields of immunology and cell culture technique.

■ Non-treated surfaces

pureGrade™
pureGrade™ S

■ Immunology

immunoGrade™
hydroGrade™
lipoGrade™

■ Cell culture

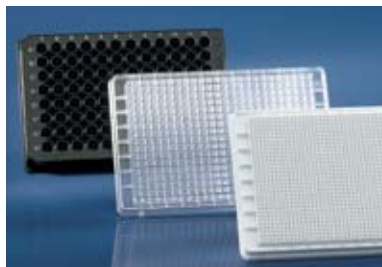
cellGrade™
cellGrade™ plus
cellGrade™ premium
inertGrade™

The BRANDplates® product range has grown to more than 130 different microplates. To assist you in the selection and to give a quick overview, we offer the BRANDplates® Selection Guide, available on the internet at www.brand.de.



Surfaces

BRANDplates® Microplates



pureGrade™

- Non-treated, non-sterile surface.
- The standard plate for most applications.
- Particularly applicable for homogenous assays, screening, and for storage.

pureGrade™ S

- Non-treated surface, sterile.
- Sterilized via β -radiation.
- Especially suited for bacteriological assays.



immunoGrade™

- Optimized for the immobilization of IgG, offering highest binding capacity for molecules with mixed hydrophilic and hydrophobic regions.
- The surface of choice for the majority of standard ELISAs.
- Suitable for solid phase immunoassays.
- Comparable to 'high-binding' plates from other manufacturers.

hydroGrade™

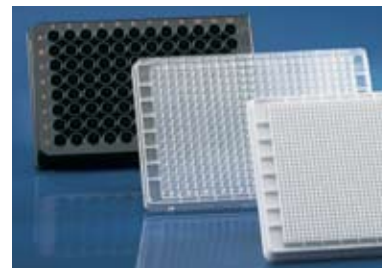
- Strongly hydrophilic, with high affinity to hydrophilic molecules, such as glycoproteins and peptides, antibodies with predominantly hydrophilic regions, and nucleic acids.
- An alternative to the immunoGrade™ surface when performing solid phase assays.
- Alternative for homogeneous assays with hydrophobic molecules, that remain in solution.

lipoGrade™

- Strongly hydrophobic (lipophilic), for immobilization of biomolecules with predominantly hydrophobic regions.
- An alternative to the immunoGrade™ surface for the immobilization of molecules, such as lipoproteins or peptides.
- Specially suited for liquid phase assays when the reaction component should stay in solution. The majority of hydrophilic biomolecules are not immobilized on this surface.

cellGrade™

- Standard plate for the cultivation of adherent cell lines.
- PS-surface with different chemical groups, such as carboxyl and hydroxyl groups, that are freely accessible.
- Surface is hydrophilic compared with non-treated PS.
- Serum components are easily bound onto the freely accessible chemical groups, allowing an indirect adhesion of cells.



cellGrade™ plus

- For cultivation of fastidious cell lines.
- In addition to carboxyl and hydroxyl chemical groups, free amino groups are present on the surface.
- The surface has a protein-like composition, so cells can directly attach and spread out.
- Cells adhere faster, better rate of yield.
- Sensitive cell lines can be cultivated.
- Suited for serum reduced cultivation of cells.

cellGrade™ premium

- Poly-D-Lysine-equivalent surface, with analogous results regarding growth performance and cell morphology.
- Optimal adhesion of cells to the surface reduces cell damage when washing frequently.
- Cultivation of cell lines with the highest demands on their environment.
- Surface suited for serum-free and serum-reduced cultivation of cells.
- Good shelf life at room temperature.
- Alternative option to biologically coated surfaces.

inertGrade™*

- Especially suited for cell cultures, when adhesion is not desired.
- Optimized surface characteristics reduce cell adhesion and protein adsorption, minimizing enzyme and cellular activation.
- Inhibits early differentiation of stem cells.

All BRANDplates® microplates are free from

- Endotoxins < 0.01 EU/ml
- DNA, DNase, RNase
- Cytotoxic substances according to DIN EN ISO 10993

All sterilization is performed via β -radiation in a validated process according to ISO 11137 and the AAMI-guidelines. A SAL of 10^{-6} is guaranteed.
The sterility meets the requirements of the Ph.Eur. and the USP 29.

* available in 2009

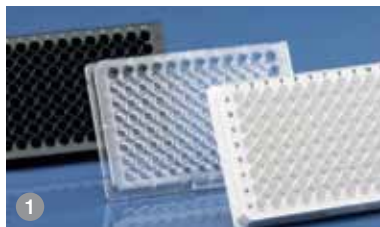


pureGrade™ Microplates

96-well

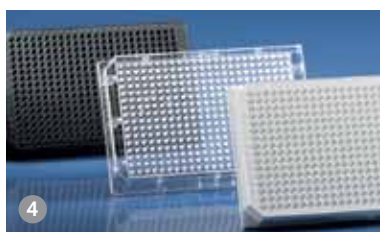
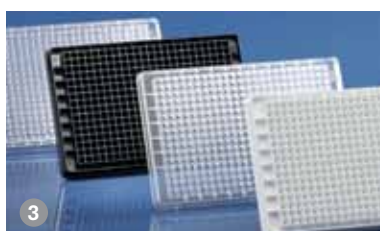
PS. Non-treated, non-sterile.

For homogenous assays, screenings, storage, etc.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
1 96-well standard microplates				
transparent, UV-Polymer* ¹	UV [†] F-bottom	350 µl	50 (5 bags of 10 plates)	7816 14
transparent	U-bottom	330 µl	100 (20 stacks of 5 plates)	7816 00
transparent	V-bottom	360 µl	100 (20 stacks of 5 plates)	7816 01
transparent	F-bottom	350 µl	100 (20 stacks of 5 plates)	7816 02
transparent	C-bottom	350 µl	100 (20 stacks of 5 plates)	7816 03
white	U-bottom	330 µl	100 (20 stacks of 5 plates)	7816 04
white	F-bottom	350 µl	100 (20 stacks of 5 plates)	7816 05
black	U-bottom	330 µl	100 (20 stacks of 5 plates)	7816 07
black	F-bottom	350 µl	100 (20 stacks of 5 plates)	7816 08
2 96-well microplates with transparent bottom				
white	F-bottom	330 µl	100 (4 bags of 25 plates)	7816 10
black	F-bottom	330 µl	100 (4 bags of 25 plates)	7816 11

* slightly hydrophilized, bottom UV-transparent film, 25 µm wall thickness, skirt PS, transmission at 240 nm 80%

¹ not available in USA

384-well

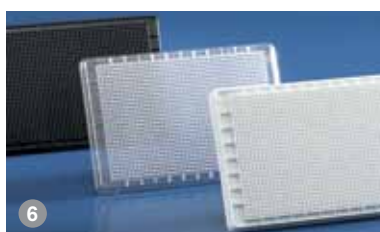
PS or UV-polymer. Non-treated, non-sterile.

For homogenous assays, screenings, storage, etc.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
3 384-well standard microplates				
transparent, UV-polymer*	UV [†] F-bottom	100 µl	50 (5 bags of 10 plates)	7816 28
transparent	F-bottom	100 µl	50 (5 bags of 10 plates)	7816 20
white	F-bottom	100 µl	50 (5 bags of 10 plates)	7816 21
black	F-bottom	100 µl	50 (5 bags of 10 plates)	7816 22
4 384-well low volume microplates				
transparent	F-bottom	30 µl	50 (2 bags of 25 plates)	7816 23
white	F-bottom	30 µl	50 (2 bags of 25 plates)	7816 24
black	F-bottom	30 µl	50 (2 bags of 25 plates)	7816 25
5 384-well microplates with transparent bottom				
white	F-bottom	120 µl	50 (2 bags of 25 plates)	7816 26
black	F-bottom	120 µl	50 (2 bags of 25 plates)	7816 27

* slightly hydrophilized, plate completely of UV-transparent material, transmission at 240 nm 70%



1536-well

PS. Non-treated, non-sterile.

For homogenous assays, screenings, storage, etc.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
6 1536-well standard microplates				
transparent	F-bottom	10 µl	50 (5 bags of 10 plates)	7816 40
white	F-bottom	10 µl	50 (5 bags of 10 plates)	7816 41
black	F-bottom	10 µl	50 (5 bags of 10 plates)	7816 42

pureGrade™ S Microplates

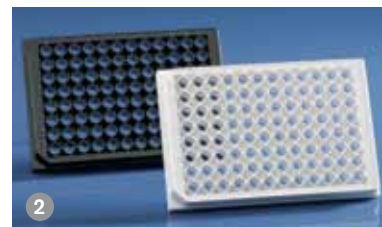
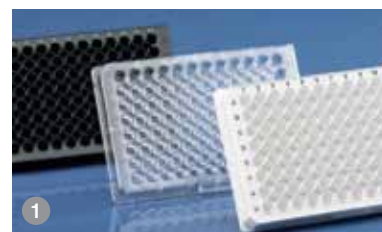
96-well

PS. Non-treated, sterile.

For bacteriological assays, screenings, storage, etc.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
1 96-well standard microplates				
transparent	U-bottom	330 µl	50 (single packed, with lid)	7816 60
transparent	V-bottom	360 µl	50 (single packed, with lid)	7816 61
transparent	F-bottom	350 µl	50 (single packed, with lid)	7816 62
transparent	C-bottom	350 µl	50 (single packed, with lid)	7816 63
white	F-bottom	350 µl	50 (single packed, with lid)	7816 65
black	F-bottom	350 µl	50 (single packed, with lid)	7816 68
2 96-well microplates with transparent bottom				
white	F-bottom	330 µl	50 (single packed, with lid)	7816 70
black	F-bottom	330 µl	50 (single packed, with lid)	7816 71



384-well

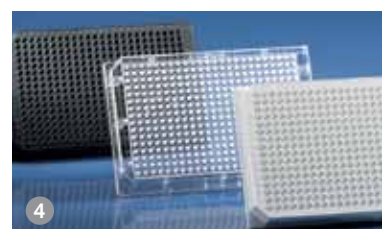
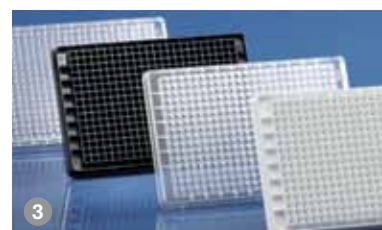
PS or UV-polymer. Non-treated, sterile.

For bacteriological assays, screenings, storage, etc.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
3 384-well standard microplates				
transparent, UV-polymer*	F-bottom	100 µl	50 (single packed, with lid)	7816 88
transparent	F-bottom	100 µl	50 (single packed, with lid)	7816 80
white	F-bottom	100 µl	50 (single packed, with lid)	7816 81
black	F-bottom	100 µl	50 (single packed, with lid)	7816 82
4 384-well low volume microplates				
transparent	F-bottom	30 µl	50 (single packed, with lid)	7816 83
white	F-bottom	30 µl	50 (single packed, with lid)	7816 84
black	F-bottom	30 µl	50 (single packed, with lid)	7816 85
5 384-well microplates with transparent bottom				
white	F-bottom	120 µl	50 (single packed, with lid)	7816 86
black	F-bottom	120 µl	50 (single packed, with lid)	7816 87

* slightly hydrophilized



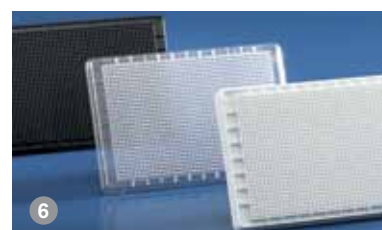
1536-well

PS. Non-treated, sterile.

For bacteriological assays, screenings, storage, etc.

NEW!

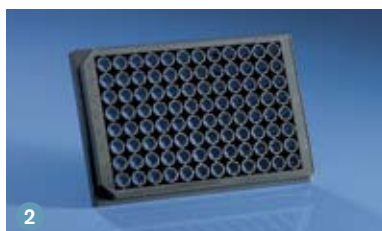
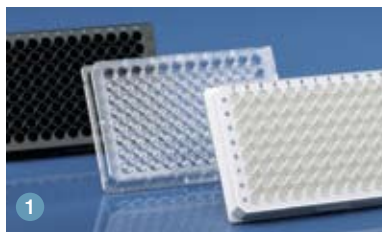
Color	Bottom	Well volume	Pack of	Cat. No.
6 1536-well standard microplates				
transparent	F-bottom	10 µl	50 (single packed, with lid)	7817 00
white	F-bottom	10 µl	50 (single packed, with lid)	7817 01
black	F-bottom	10 µl	50 (single packed, with lid)	7817 02



immunoGrade™ Microplates

96-well

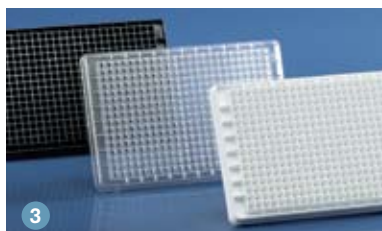
PS, non-sterile. Optimized for the immobilization of IgG, standard ELISA assay.

NEW!


Color	Bottom	Well volume	Pack of	Cat. No.
1 96-well standard microplates				
transparent	U-bottom	330 µl	100 (20 stacks of 5 plates)	7817 20
transparent	V-bottom	360 µl	100 (20 stacks of 5 plates)	7817 21
transparent	F-bottom	350 µl	100 (20 stacks of 5 plates)	7817 22
transparent	C-bottom	350 µl	100 (20 stacks of 5 plates)	7817 23
white	U-bottom	330 µl	100 (20 stacks of 5 plates)	7817 24
white	C-bottom	350 µl	100 (20 stacks of 5 plates)	7817 26
black	U-bottom	330 µl	100 (20 stacks of 5 plates)	7817 27
black	C-bottom	350 µl	100 (20 stacks of 5 plates)	7817 29
2 96-well microplates with transparent bottom				
black	F-bottom	330 µl	100 (20 stacks of 5 plates)	7817 31

384-well

PS, non-sterile. Optimized for the immobilization of IgG, standard ELISA assay.

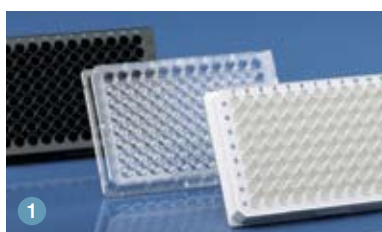
NEW!


Color	Bottom	Well volume	Pack of	Cat. No.
3 384-well standard microplates				
transparent	F-bottom	100 µl	50 (10 stacks of 5 plates)	7817 40
white	F-bottom	100 µl	50 (10 stacks of 5 plates)	7817 41
black	F-bottom	100 µl	50 (10 stacks of 5 plates)	7817 42

hydroGrade™ Microplates

96-well

PS, non-sterile. Hydrophilic. For solid phase with hydrophilic molecules and liquid phase with hydrophobic molecules, resp.

NEW!


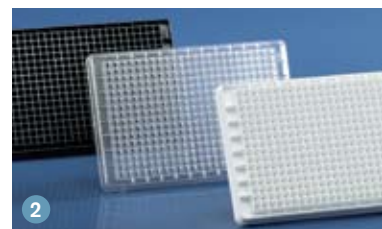
Color	Bottom	Well volume	Pack of	Cat. No.
1 96-well standard microplates				
transparent	U-bottom	330 µl	100 (20 stacks of 5 plates)	7817 80
transparent	F-bottom	350 µl	100 (20 stacks of 5 plates)	7817 82
transparent	C-bottom	350 µl	100 (20 stacks of 5 plates)	7817 83
white	U-bottom	330 µl	100 (20 stacks of 5 plates)	7817 84
white	C-bottom	350 µl	100 (20 stacks of 5 plates)	7817 86
black	U-bottom	330 µl	100 (20 stacks of 5 plates)	7817 87
black	C-bottom	350 µl	100 (20 stacks of 5 plates)	7817 89

384-well

PS, non-sterile. Hydrophilic. For solid phase with hydrophilic molecules and liquid phase with hydrophobic molecules, resp.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
2 384-well standard microplates				
transparent	F-bottom	100 µl	50 (10 stacks of 5 plates)	7818 00
white	F-bottom	100 µl	50 (10 stacks of 5 plates)	7818 01
black	F-bottom	100 µl	50 (10 stacks of 5 plates)	7818 02



lipoGrade™

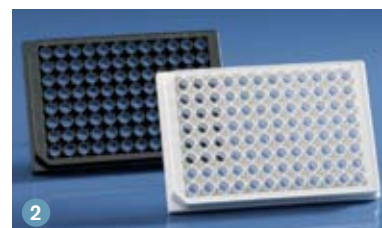
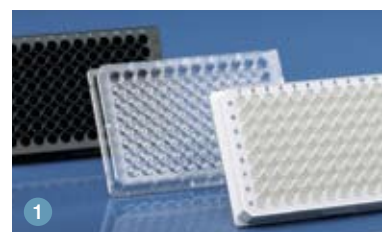
Microplates

96-well

PS, non-sterile. Lipophilic/hydrophobic. For solid phase with hydrophobic molecules and liquid phase with hydrophilic molecules, respectively.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
1 96-well standard microplates				
transparent	U-bottom	330 µl	100 (20 stacks of 5 plates)	7818 40
transparent	V-bottom	360 µl	100 (20 stacks of 5 plates)	7818 41
transparent	F-bottom	350 µl	100 (20 stacks of 5 plates)	7818 42
transparent	C-bottom	350 µl	100 (20 stacks of 5 plates)	7818 43
white	U-bottom	330 µl	100 (20 stacks of 5 plates)	7818 44
white	C-bottom	350 µl	100 (20 stacks of 5 plates)	7818 46
black	U-bottom	330 µl	100 (20 stacks of 5 plates)	7818 47
black	C-bottom	350 µl	100 (20 stacks of 5 plates)	7818 49
2 96-well microplates with transparent bottom				
white	F-bottom	330 µl	100 (20 stacks of 5 plates)	7818 50
black	F-bottom	330 µl	100 (20 stacks of 5 plates)	7818 51

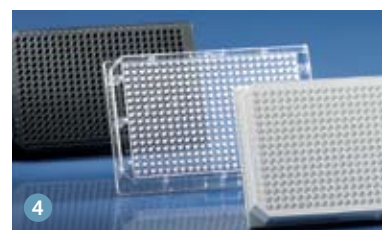
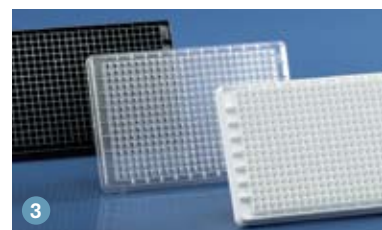


384-well

PS, non-sterile. Lipophilic/hydrophobic. For solid phase with hydrophobic molecules and liquid phase with hydrophilic molecules, respectively.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
3 384-well standard microplates				
transparent	F-bottom	100 µl	50 (10 stacks of 5 plates)	7818 60
white	F-bottom	100 µl	50 (10 stacks of 5 plates)	7818 61
black	F-bottom	100 µl	50 (10 stacks of 5 plates)	7818 62
4 384-well low volume microplates				
transparent	F-bottom	30 µl	50 (10 stacks of 5 plates)	7818 63
white	F-bottom	30 µl	50 (10 stacks of 5 plates)	7818 64
black	F-bottom	30 µl	50 (10 stacks of 5 plates)	7818 65
5 384-well microplates with transparent bottom				
white	F-bottom	120 µl	50 (10 stacks of 5 plates)	7818 66
black	F-bottom	120 µl	50 (10 stacks of 5 plates)	7818 67



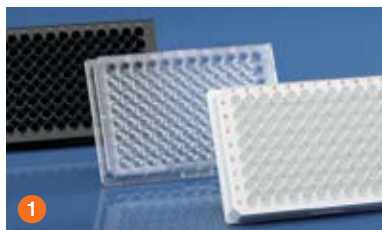
cellGrade™

Microplates

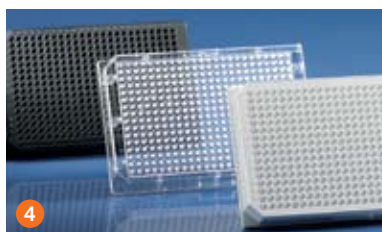
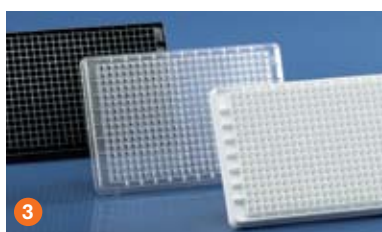
96-well

PS, sterile. For standard cell culture applications.

NEW!



Color	Bottom	Well volume	Pack of	Cat. No.
1 96-well standard microplates				
transparent	U-bottom	330 µl	50 (individually wrapped, with lid)	7819 60
transparent	V-bottom	360 µl	50 (individually wrapped, with lid)	7819 61
transparent	F-bottom	350 µl	50 (individually wrapped, with lid)	7819 62
transparent	C-bottom	350 µl	50 (individually wrapped, with lid)	7819 63
white	F-bottom	350 µl	50 (individually wrapped, with lid)	7819 65
black	F-bottom	350 µl	50 (individually wrapped, with lid)	7819 68
2 96-well microplates with transparent bottom				
white	F-bottom	330 µl	50 (individually wrapped, with lid)	7819 70
black	F-bottom	330 µl	50 (individually wrapped, with lid)	7819 71



384-well

PS, sterile. For standard cell culture applications.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
3 384-well standard microplates				
transparent	F-bottom	100 µl	50 (individually wrapped, with lid)	7819 80
white	F-bottom	100 µl	50 (individually wrapped, with lid)	7819 81
black	F-bottom	100 µl	50 (individually wrapped, with lid)	7819 82
4 384-well low volume microplates				
transparent	F-bottom	30 µl	50 (individually wrapped, with lid)	7819 83
white	F-bottom	30 µl	50 (individually wrapped, with lid)	7819 84
black	F-bottom	30 µl	50 (individually wrapped, with lid)	7819 85
5 384-well microplates with transparent bottom				
white	F-bottom	120 µl	50 (individually wrapped, with lid)	7819 86
black	F-bottom	120 µl	50 (individually wrapped, with lid)	7819 87

1536-well

PS, sterile. For standard cell culture applications.

NEW!



Color	Bottom	Well volume	Pack of	Cat. No.
6 1536-well standard microplates				
transparent	F-bottom	10 µl	50 (individually wrapped, with lid)	7820 00
white	F-bottom	10 µl	50 (individually wrapped, with lid)	7820 01
black	F-bottom	10 µl	50 (individually wrapped, with lid)	7820 02

cellGrade™ plus

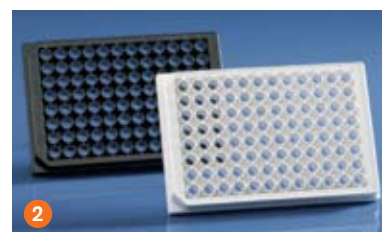
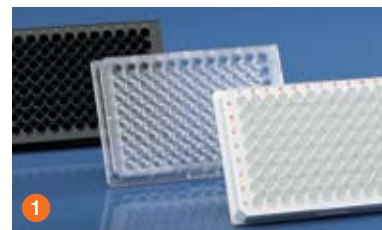
Microplates

96-well

NEW!

PS, sterile. For cultivation of fastidious cell lines and for serum-reduced cultivation.

Color	Bottom	Well volume	Pack of	Cat. No.
1 96-well standard microplates				
transparent	F-bottom	350 µl	50 (individually wrapped, with lid)	7820 22
white	F-bottom	350 µl	50 (individually wrapped, with lid)	7820 25
black	F-bottom	350 µl	50 (individually wrapped, with lid)	7820 28
2 96-well microplates with transparent bottom				
white	F-bottom	330 µl	50 (individually wrapped, with lid)	7820 30
black	F-bottom	330 µl	50 (individually wrapped, with lid)	7820 31

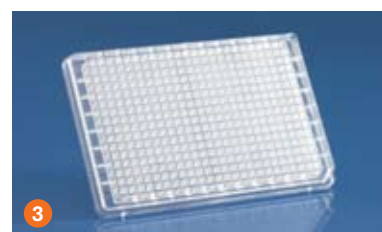


384-well

NEW!

PS, sterile. For cultivation of fastidious cell lines and for serum-reduced cultivation.

Color	Bottom	Well volume	Pack of	Cat. No.
3 384-well standard microplates				
transparent	F-bottom	100 µl	50 (individually wrapped, with lid)	7820 40
4 384-well microplates with transparent bottom				
white	F-bottom	120 µl	50 (individually wrapped, with lid)	7820 46
black	F-bottom	120 µl	50 (individually wrapped, with lid)	7820 47



cellGrade™ premium

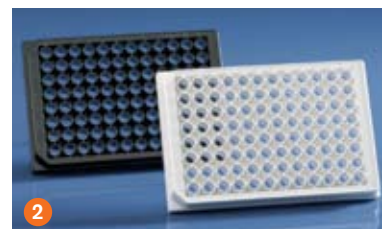
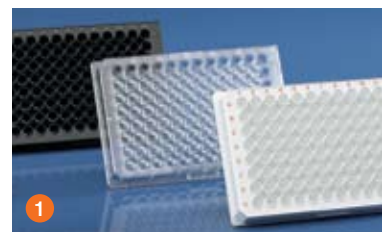
Microplates

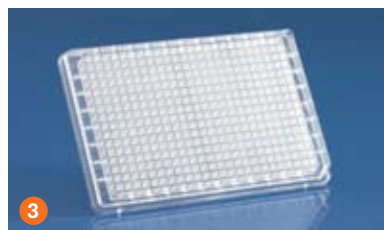
96-well

NEW!

PS, sterile. For the most demanding cell lines, and for serum-reduced and serum-free cultivation.

Color	Bottom	Well volume	Pack of	Cat. No.
1 96-well standard microplates				
transparent	F-bottom	350 µl	50 (individually wrapped, with lid)	7820 82
white	F-bottom	350 µl	50 (individually wrapped, with lid)	7820 85
black	F-bottom	350 µl	50 (individually wrapped, with lid)	7820 88
2 96-well microplates with transparent bottom				
white	F-bottom	330 µl	50 (individually wrapped, with lid)	7820 90
black	F-bottom	330 µl	50 (individually wrapped, with lid)	7820 91





cellGrade™ premium 96-well microplates, see previous page.

384-well

PS, sterile. For the most demanding cell lines, and for serum-reduced and serum-free cultivation.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
3 384-well standard microplates				
transparent	F-bottom	100 µl	50 (individually wrapped, with lid)	7821 00
4 384-well microplates with transparent bottom				
white	F-bottom	120 µl	50 (individually wrapped, with lid)	7821 06
black	F-bottom	120 µl	50 (individually wrapped, with lid)	7821 07

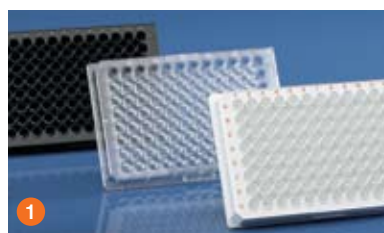
inertGrade™*

Microplates

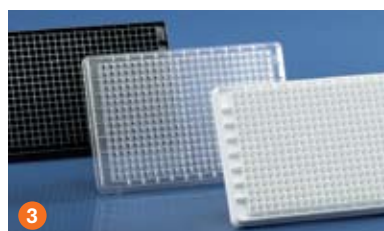
96-well

PS, sterile. For cultivation of suspension and stem cells.

NEW!



Color	Bottom	Well volume	Pack of	Cat. No.
1 96-well standard microplates				
transparent	U-bottom	330 µl	50 (individually wrapped, with lid)	7819 00
transparent	F-bottom	350 µl	50 (individually wrapped, with lid)	7819 02
white	U-bottom	330 µl	50 (individually wrapped, with lid)	7819 04
white	F-bottom	350 µl	50 (individually wrapped, with lid)	7819 05
white	C-bottom	350 µl	50 (individually wrapped, with lid)	7819 06
black	U-bottom	330 µl	50 (individually wrapped, with lid)	7819 07
black	F-bottom	350 µl	50 (individually wrapped, with lid)	7819 08
black	C-bottom	350 µl	50 (individually wrapped, with lid)	7819 09
2 96-well microplates with transparent bottom				
white	F-bottom	330 µl	50 (individually wrapped, with lid)	7819 10
black	F-bottom	330 µl	50 (individually wrapped, with lid)	7819 11



384-well

PS, sterile. For cultivation of suspension and stem cells.

NEW!

Color	Bottom	Well volume	Pack of	Cat. No.
3 384-well standard microplates				
transparent	F-bottom	100 µl	50 (individually wrapped, with lid)	7819 20
white	F-bottom	100 µl	50 (individually wrapped, with lid)	7819 21
black	F-bottom	100 µl	50 (individually wrapped, with lid)	7819 22
4 384-well microplates with transparent bottom				
white	F-bottom	120 µl	50 (individually wrapped, with lid)	7819 26
black	F-bottom	120 µl	50 (individually wrapped, with lid)	7819 27

* available in 2009

At a Glance

Use our BRANDplates®
microplates Selection Guide
at www.brand.de

96-well Microplates

Type		Non-treated		Immunological surfaces			Cell culture surfaces			
Standard										
Color	Bottom / Well volume	pureGrade™	pureGrade™ S	immunoGrade™	hydroGrade™	lipoGrade™	cellGrade™	cellGrade™ plus	cellGrade™ premium	inertGrade™
transparent	U / 330 µl	7816 00	7816 60	7817 20	7817 80	7818 40	7819 60	–	–	7819 00
transparent	V / 360 µl	7816 01	7816 61	7817 21	–	7818 41	7819 61	–	–	–
transparent	F / 350 µl	7816 02	7816 62	7817 22	7817 82	7818 42	7819 62	7820 22	7820 82	7819 02
transparent	C / 350 µl	7816 03	7816 63	7817 23	7817 83	7818 43	7819 63	–	–	–
white	U / 330 µl	7816 04	–	7817 24	7817 84	7818 44	–	–	–	7819 04
white	F / 350 µl	7816 05	7816 65	–	–	–	7819 65	7820 25	7820 85	7819 05
white	C / 350 µl	–	–	7817 26	7817 86	7818 46	–	–	–	7819 06
black	U / 330 µl	7816 07	–	7817 27	7817 87	7818 47	–	–	–	7819 07
black	F / 350 µl	7816 08	7816 68	–	–	–	7819 68	7820 28	7820 88	7819 08
black	C / 350 µl	–	–	7817 29	7817 89	7818 49	–	–	–	7819 09
With transparent bottom										
Color	Bottom / Well volume	pureGrade™	pureGrade™ S	immunoGrade™	hydroGrade™	lipoGrade™	cellGrade™	cellGrade™ plus	cellGrade™ premium	inertGrade™
white	F / 330 µl	7816 10	7816 70	–	–	7818 50	7819 70	7820 30	7820 90	7819 10
black	F / 330 µl	7816 11	7816 71	7817 31	–	7818 51	7819 71	7820 31	7820 91	7819 11

384-well HTS Microplates

Type		Non-treated		Immunological surfaces			Cell culture surfaces			
Standard										
Color	Bottom / Well volume	pureGrade™	pureGrade™ S	immunoGrade™	hydroGrade™	lipoGrade™	cellGrade™	cellGrade™ plus	cellGrade™ premium	inertGrade™
transparent	F / 100 µl	7816 20	7816 80	7817 40	7818 00	7818 60	7819 80	7820 40	7821 00	7819 20
white	F / 100 µl	7816 21	7816 81	7817 41	7818 01	7818 61	7819 81	–	–	7819 21
black	F / 100 µl	7816 22	7816 82	7817 42	7818 02	7818 62	7819 82	–	–	7819 22
Standard, Low Volume										
Color	Bottom / Well volume	pureGrade™	pureGrade™ S	immunoGrade™	hydroGrade™	lipoGrade™	cellGrade™	cellGrade™ plus	cellGrade™ premium	inertGrade™
transparent	F / 30 µl	7816 23	7816 83	–	–	7818 63	7819 83	–	–	–
white	F / 30 µl	7816 24	7816 84	–	–	7818 64	7819 84	–	–	–
black	F / 30 µl	7816 25	7816 85	–	–	7818 65	7819 85	–	–	–
Standard, UV*										
Color	Bottom / Well volume	pureGrade™	pureGrade™ S	immunoGrade™	hydroGrade™	lipoGrade™	cellGrade™	cellGrade™ plus	cellGrade™ premium	inertGrade™
UV-transparent	F / 100 µl	7816 28*	7816 88	–	–	–	–	–	–	–
* for wavelengths down to 220 nm										
With transparent bottom										
Color	Bottom / Well volume	pureGrade™	pureGrade™ S	immunoGrade™	hydroGrade™	lipoGrade™	cellGrade™	cellGrade™ plus	cellGrade™ premium	inertGrade™
white	F / 120 µl	7816 26	7816 86	–	–	7818 66	7819 86	7820 46	7821 06	7819 26
black	F / 120 µl	7816 27	7816 87	–	–	7818 67	7819 87	7820 47	7821 07	7819 27

* UV-transparent microplate, 96-well, Cat. No. 7816 14 (see page 114)

1536-well UHTS Microplates

Type		Non-treated		Immunological surfaces			Cell culture surfaces			
Standard										
Color	Bottom / Well volume	pureGrade™	pureGrade™ S	immunoGrade™	hydroGrade™	lipoGrade™	cellGrade™	cellGrade™ plus	cellGrade™ premium	inertGrade™
transparent	F / 10 µl	7816 40	7817 00	–	–	–	7820 00	–	–	–
white	F / 10 µl	7816 41	7817 01	–	–	–	7820 01	–	–	–
black	F / 10 µl	7816 42	7817 02	–	–	–	7820 02	–	–	–

inertGrade™ microplates available in 2009

Lids

for 96-well Standard Plates

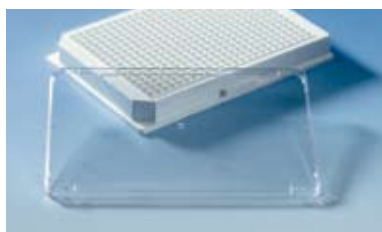
For BRANDplates® microplates Cat. No.:
7816 00-08, 7816 60-68, 7817 20-29, 7817 80-89, 7818 40-49, 7819 00-09,
7819 60-68, 7820 22-28, 7820 82-88



Condensation rings	Height	Sterile	Pack of	Cat. No.
yes	8 mm	–	100 (5 lids per bag)	7821 50
no	8 mm	–	100 (5 lids per bag)	7821 51

for 96-well Plates with Transparent Bottom for all 384-well Plates

For BRANDplates® microplates Cat. No.:
7816 10-28, 7816 70-88, 7817 31-42, 7818 00-02, 7818 50-67,
7819 10-27, 7819 70-87, 7820 30-47, 7820 90-7821 07



Condensation rings	Height	Sterile	Pack of	Cat. No.
no	4.5	–	50 (10 lids per bag)	7821 52

for all 1536-well Plates

For BRANDplates® microplates Cat. No.:
7816 40-42, 7817 00-02, 7820 00-02



Condensation rings	Height	Sterile	Pack of	Cat. No.
no	5.5	–	50 (10 lids per bag)	7821 53

Sealing films for microplates can be
found on page 108.

Cuvettes

For more than 25 years, BRAND has been one of the leading manufacturers of disposable plastic cuvettes. Macro and semi-micro cuvettes of PS and PMMA are now standard in every laboratory. This product line was recently extended with the plastic UV-Cuvettes. The new UV-transparent cuvettes are available in various types and replace sensitive and expensive glass or quartz cuvettes in many areas.

Quality features:

- Clear, clean optical path with indication of optical path orientation
- Manufactured under controlled room conditions and packaged fully automatically, without human contact
- Packed grouped by mold cavity number to ensure lowest variation of extinction coefficient
- UV-Cuvettes available as micro, semi-micro and macro cuvettes





UV-Cuvette micro

Center height: 8.5 mm or 15 mm

Specially designed for photometric determination of proteins, ssDNA, dsDNA, RNA and oligonucleotides in the UV range. Usable starting from 220 nm.

Ideally suited for measurements at 260 nm, 280 nm and in the visible range.

Standard 10 mm light path. Sample volumes as small as 70 µl are sufficient.

Individually wrapped UV-Cuvettes micro are free of DNase, DNA and RNase!

Center height mm	Pack of	Cat. No.
8.5	100	7592 00
8.5	500	7592 10
8.5	100 single wrapped, free of DNase, DNA and RNase	7592 15
15	100	7592 20
15	500	7592 30
15	100 single wrapped, free of DNase, DNA and RNase	7592 35

Information on selecting the UV-Cuvette **compatible with the beam height** of your photometer can be found at **www.brand.de**

Caps for UV-Cuvette micro

PE. Round covers allow a tight closure and make it possible to store samples down to -20 °C. Pack of 100.



Color		Cat. No.
blue		7592 40
yellow		7592 41
green		7592 42
orange		7592 43



UV-Cuvette macro and semi-micro

Ideally suited for determinations in water analysis, chemistry, and in life science applications. Usable with most polar solvents, acids and alkaline solutions.

Drastically reduced risk of contamination and lower costs compared to quartz glass cuvettes. 10 mm light path. Pack of 100 per carton.

Description	Cat. No.
UV-Cuvette semi-micro	7591 50
UV-Cuvette macro	7591 70

Standard Cuvettes macro and semi-micro

PS and PMMA. Grouped by mold cavity number.
Pack of 1000 (10 boxes of 100 cuvettes per box.)

Description	Material	Cat. No.
macro cuvette	PS	7590 05
semi-micro cuvette	PS	7590 15
macro cuvette	PMMA	7591 05
semi-micro cuvette	PMMA	7591 15

Magnetic stir bars for macro cuvettes can be found on page 242-245.



Life Science

Cuvette rack

PP, grey. Numbered positions. Autoclavable (121 °C).
Suitable for standard 10 mm path-length cuvettes. Pack of 1.

Description	Length mm	Width mm	Height mm	Cat. No.
for 16 cuvettes	210	70	38	7595 00



Disposable stirring spatula

PS. Pack quantity 10000 = 20 bags of 500 per pack.

Description	Stem diameter mm	Length mm	Cat. No.
PS	3	120 mm	7598 00

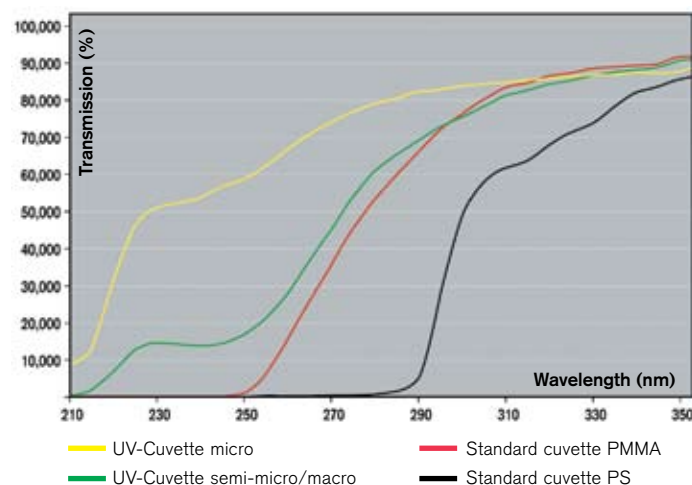


Technical Data

Overview Table

Cuvette type	Filling volume min.	Filling volume max.	Dimensions Window (W x H)	Range of application	Standard deviation in extinction units
UV-Cuvette micro, z = 8.5	70 µl	850 µl	2 x 3.5 mm (min.)	from 220 to 900 nm	240 nm ≤ ± 0.007 300 nm ≤ ± 0.005
UV-Cuvette micro, z = 15	70 µl	550 µl	2 x 3.5 mm (min.)		
UV-Cuvette macro	2.5 ml	4.5 ml	10 x 35 mm		
UV-Cuvette semi-micro	1.5 ml	3.0 ml	4.5 x 23 mm		
macro cuvette (PMMA)	2.5 ml	4.5 ml	10 x 35 mm	from 300 to 900 nm	320 nm ≤ ± 0.004
semi-micro cuvette (PMMA)	1.5 ml	3.0 ml	4.5 x 23 mm		
macro cuvette (PS)	2.5 ml	4.5 ml	10 x 35 mm	from 340 to 900 nm	360 nm ≤ ± 0.005
semi-micro cuvette (PS)	1.5 ml	3.0 ml	4.5 x 23 mm		

Transmission curves of different cuvettes



To achieve reproducible results: Before the actual measurement, always determine the blank value for the cuvette, and determine the linear range of measurement by means of a calibration curve.

Chemical resistance* of plastic cuvettes

Substance	PS	PMMA	UV-Cuvette
Acetic acid, 100%	–	–	+
Acetone	–	–	+
Ammonia	+	+	+
Benzaldehyde	–	–	+
Butanone	–	–	+
Chloroform	–	–	–
Dioxane	–	–	+
DMF	–	–	+
Ethyl acetate	–	–	+
Hexane	–	+	–
Hydrochloric acid, 36%	+	–	+
Hydrofluoric acid, 10%	+	+	+
Isopropanol	+	+	+
Nitric acid, 65%	–	–	+
Sodium hydroxide	+	+	+

* Short time resistance, 30 min. Longer-term storage of these chemicals should be confirmed by the user. Request a free sample.

Grouping by Mold Cavity

A plastic injection mold with 8 separate cavities can produce 8 cuvettes at a time. Minor dimensional variations between the cavities are unavoidable despite the most advanced technology. This may result in a greater variation of extinction values between cuvettes from different cavities. Therefore, BRAND automatically packages cuvettes originating from the same cavity in each carton of 100, 500 or 1000 cuvettes to minimize variation in extinction coefficients.

For best results, use cuvettes from the same cavity number for each series of analyses.

Various photometric methods are currently available for determining the concentration and purity of nucleic acids and proteins.

Protein determination using UV cuvettes:

$$C_{\text{Protein (mg/ml)}} = 1.55 \times A_{280 \text{ nm}} - 0.76 \times A_{260 \text{ nm}}$$

Nucleic acid determination using UV cuvettes:

$$C_{\text{DNA (µg/ml)}} = 50 \times A_{260 \text{ nm}} \times \text{dilution factor}$$

$$C_{\text{RNA (µg/ml)}} = 40 \times A_{260 \text{ nm}} \times \text{dilution factor}$$

Volumetric Instruments

Precision analysis requires measuring instruments with consistently high precision. Every BLAUBRAND® volumetric instrument is individually calibrated. Statistical process controls ensure strict compliance with predefined specifications. BLAUBRAND® – quality you can rely on.

Quality from the very start.
BLAUBRAND®.



Volumetric Instruments

Precision

The intended application determines which measuring instrument should be used. Precision analysis requires measuring instruments with consistently high precision. Even the most sophisticated automated systems will only deliver reliable results if the volumetric instruments used in preparing the samples meet the required precision.

BLAUBRAND® volumetric instruments represent the highest degree of technical perfection. They are made of glasses which are highly resistant to nearly all chemical substances – a prerequisite for durable precision.

Calibration

Every glass volumetric measuring instrument is individually calibrated. Computer-controlled systems ensure maximum precision in a fully automated production line.

'Statistical Process Control' (SPC) guarantees production of volumetric instruments with the smallest deviation from nominal capacity (accuracy) and narrow scatter of individual values (coefficient of variation).

Types of calibration

'TC, In': The contained quantity of liquid corresponds exactly to the capacity indicated on the instrument (e. g., graduated cylinders and volumetric flasks).

'TD, Ex': The delivered quantity of liquid corresponds exactly to the capacity indicated on the instrument (e. g., pipettes and burettes).

Silk-screening

Silk-screen printing follows calibration. BRAND uses flexible screen stencils for all graduated pipettes, burettes, graduated cylinders, and mixing cylinders. Thus, the volume markings on the stencil exactly match the calibration marks, at all capacities. Even intermediate volumes on BRAND volumetric instruments are extremely precise. For silk-screen printing BRAND uses special inks designed for volumetric instruments.

Class A/AS

Volumetric instruments of class A/AS are within the error limits defined by DIN and ISO and are according to DIN 12 600 admissible for conformity certification.



Graduation: ring marks at major graduations



Marks and inscriptions in high contrast blue enamel. It represents the optimum combination of resistance and readability.



Marks and inscriptions in ETERNA amber stain. It diffuses into the glass surface and can only be removed by abrasion. It is used for volumetric instruments which are subjected to particularly aggressive cleaning methods.

Class B

Volumetric instruments of class B are within twice the error limits for class A/AS as defined by DIN and ISO.



Graduation: short graduation marks



Marks and inscriptions in high contrast white enamel.



ETERNA marks and inscriptions in amber stain are particularly resistant to aggressive cleaning methods.

Firing

High quality inks combined with carefully controlled annealing processes provide durable graduations. The most modern manufacturing technology is used for controlled heating and cooling. The maximum temperature is between 400 and 550 °C, depending on the type of glass.

Quality assurance

The QM system is DIN EN ISO 9001 certified, and includes ongoing testing during the manufacturing process with final random sample testing in compliance with DIN ISO 3951 at final inspection. (See page 282 for further information.)

Heating of volumetric instruments

All reusable BLAUBRAND® and SILBERBRAND volumetric instruments can be heated up to 250 °C in a dry box or sterilizer without having to worry about a change in volume. Use only gradual heating and cooling because abrupt temperature changes cause thermal stress and may result in glass breakage.

BLAUBRAND® Volumetric instruments with certificate



Conformity certified

All BLAUBRAND® volumetric instruments are conformity certified. With the sign , BRAND confirms that the instruments are manufactured according to "Eichordnung", the German Federal Weights and Measures Regulations. This sign of conformity is printed directly on the instruments, according to DIN 12600.



One batch certificate per packing unit!

All reusable BLAUBRAND® volumetric instruments are supplied with one batch certificate per packing unit of the manufacturer. This facilitates the initial performance verification – also with the monitoring of measuring equipment – as the data can directly be transferred from the certificate. Certificates can also be downloaded via internet: www.brand.de.

Volumetric Instruments

Certificates

Batch certificate

The batch number, and mean value plus standard deviation for the batch, along with the date of issue are documented on the certificate. The measuring instrument bears the batch number that is burnt in using easy-to-read digital numbers:

09.02

(Batch number:
Year of Manufacture/Batch)

Individual certificate

The batch number, the individual serial number, the measured volume, measurement uncertainty, and the date of issue are documented on the certificate. The measuring instrument bears the batch and serial numbers that are burnt in using easy-to-read digital numbers:

09.02 0756

(Individual serial number:
Year of Manufacture/Batch/
Consecutive Instrument
Number)

USP Individual certificate

BLAUBRAND® volumetric instruments can be delivered with volume error limits in compliance with United States Pharmacopeia (USP). Each instrument is individually calibrated and checked. Both the instrument and the certificate show an individual serial number indicating year of manufacture, and the USP logo.

(* Volumetric flasks are also available with USP batch certificate. USP certificates cannot be provided for wide neck graduated flasks.)

DKD Calibration certificate

This certificate is issued by the DKD (German Calibration Service) calibration laboratory at BRAND. By virtue of DKD's extensive international collaborations (EA Treaty, ILAC-MRA), the DKD calibration certificate is internationally recognized. Both the instrument and the certificate show the individual serial number and the year and month of issue.

1001
DKD-K-20701
09-02

Ordering note

If you require all of your BLAUBRAND® volumetric instruments to come from one batch for statistical testing equipment monitoring, please so indicate by placing a 2 in front of the BRAND catalog number. With dealer-specific catalog numbers please add the phrase "from one batch". Please proceed in like manner when requesting individual, USP or DKD certificates.

How it's done! Ordering example:

Volumetric instrument/ Certificate	BRAND Cat. No.
100 ml Volumetric flask with batch certificate	372 49
100 ml Volumetric flask, total order from one batch (to the extent possible)	2 372 49
100 ml Volumetric flask with individual certificate	9 372 49
100 ml Volumetric flask with DKD calibration certificate	DKD 372 49
100 ml Volumetric flask with USP individual certificate	USP 369 49

Single Volume Pipettes

Inscriptions on a BLAUBRAND® bulb pipette

Manufacturer

BLAUBRAND trademark for the highest quality grade volumetric instruments

Nominal volume

Error limit

Symbol for the conformity certification of BRAND, according to 'Eichordnung', the German Federal Weights and Measures Regulations and to DIN 12 600

ISO association mark

Country of origin

Reference temp. (20 °C), waiting time (5 seconds), calibration (TD, Ex = to deliver)

Class 'A', the highest quality grade, 'S' for swift delivery

DIN EN ISO 648

In the new DIN EN ISO 648, the waiting time for single volume pipettes of class AS was reduced from 15 to 5 seconds.

Specifications, available sizes

Bulb pipettes with one or two marks, calibrated to deliver (TD, Ex).

Capacity ml	Color-Code (ISO 1769)	Length mm (± 10 mm)	BLAUBRAND® waiting time 5 s	SILBERBRAND no waiting time
			Error limit ± ml	Error limit ± ml
0.5	2 x black	300	0.005	0.007
1	blue	300	0.008	0.010
2	orange	330	0.010	0.015
2.5	–	330	0.010	–
3	black	330	0.010	0.015
4	2 x red	400	0.015	–
5	white	400	0.015	0.025
6	2 x orange	400	0.015	–
7	2 x green	400	0.015	–
8	blue	440	0.02	–
9	black	440	0.02	–
10	red	440	0.02	0.03
15	green	510	0.03	0.04
20	yellow	510	0.03	0.04
25	blue	520	0.03	0.04
30	black	520	0.03	–
40	white	540	0.05	–
50	red	540	0.05	0.07
100	yellow	585 (± 15 mm)	0.08	0.12

Single volume pipettes are frequently called bulb pipettes, as well.

BLAUBRAND bulb pipettes provide the highest accuracy.

Strict statistical quality controls assure maintenance of these high standards.

All BLAUBRAND® bulb pipettes are supplied with a batch number and an accompanying batch certificate in the original packaging.

On request, they are also available with an individual certificate, USP individual certificate or DKD calibration certificate. (For information about batch, individual or DKD certificates see pages 129 and 284.)



Bulb pipettes, 1 mark

**BLAUBRAND®, class AS,
conformity certified**

AR-Glas®. DIN EN ISO 648.
Calibrated to deliver (TD, Ex).
Incl. one batch certificate
0.5 to 2 ml: Pack of 12;
2.5 to 100 ml: Pack of 6.

NEW!

Capacity ml	Cat. No.
0.5	297 01
1	297 02
2	297 03
2.5	297 04
3	297 05
4	297 06
5	297 07
6	297 08
7	297 09
8	297 10
9	297 11
10	297 12
15	297 13
20	297 14
25	297 15
30	297 16
40	297 17
50	297 18
100	297 19



Volumetric Instruments

Bulb pipettes, 1 mark

**BLAUBRAND® ETERNA, class AS,
conformity certified**

AR-Glas®. DIN EN ISO 648.
Calibrated to deliver (TD, Ex).
Incl. one batch certificate
1 and 2 ml: Pack of 12;
5 to 25 ml: Pack of 6.

NEW!

Capacity ml	Cat. No.
1	305 02
2	305 03
5	305 07
10	305 12
20	305 14
25	305 15
50	305 18

Bulb pipettes, 2 marks

**BLAUBRAND®, class AS,
conformity certified**

AR-Glas®. DIN EN ISO 648.
Calibrated to deliver (TD, Ex).
Incl. one batch certificate
0.5 to 2 ml: Pack of 12;
3 to 50 ml: Pack of 6.

NEW!

Capacity ml	Cat. No.
0.5	297 21
1	297 22
2	297 23
3	297 25
5	297 27
10	297 32
15	297 33
20	297 34
25	297 35
50	297 38



Capacity ml	Cat. No.
0.5	295 01
1	295 02
2	295 03
3	295 05
5	295 07
10	295 12
15	295 13
20	295 14
25	295 15
50	295 18
100	295 19

Bulb pipettes, 1 mark

SILBERBRAND ETERNA, class B

AR-Glas®. DIN EN ISO 648.
Calibrated to deliver (TD, Ex).
0.5 to 2 ml: Pack of 12;
3 to 100 ml: Pack of 6.

NEW!



Capacity ml	Error limit ± ml	Cat. No.
1	0.015	314 02
2	0.02	314 03
5	0.03	314 07
10	0.04	314 12
20	0.06	314 14
25	0.06	314 15

Bulb pipettes, piston type

SILBERBRAND

AR-Glas®. Calibrated to deliver (TD, Ex).
Integrated piston pipetting aid with retaining spring. Pack of 1.



Bulb pipettes, 1 mark

PLASTIBRAND®

PP. High clarity. Calibrated to deliver (TD, Ex). Resistant to breakage. Exposure to temperatures up to 60 °C will not cause permanent exceeding of error limits!
Cleaning temperature below 60 °C is recommended to preserve marks and inscriptions.
1 and 2 ml: Pack of 12; 5 to 50 ml: Pack of 6.

Capacity ml	Error limit ± ml	Length mm ± 10 mm	Cat. No.
1	0.02	300	300 02
2	0.02	300	300 03
5	0.03	300	300 07
10	0.04	440	300 12
25	0.06	450	300 15
50	0.1	460	300 18

Graduated Pipettes

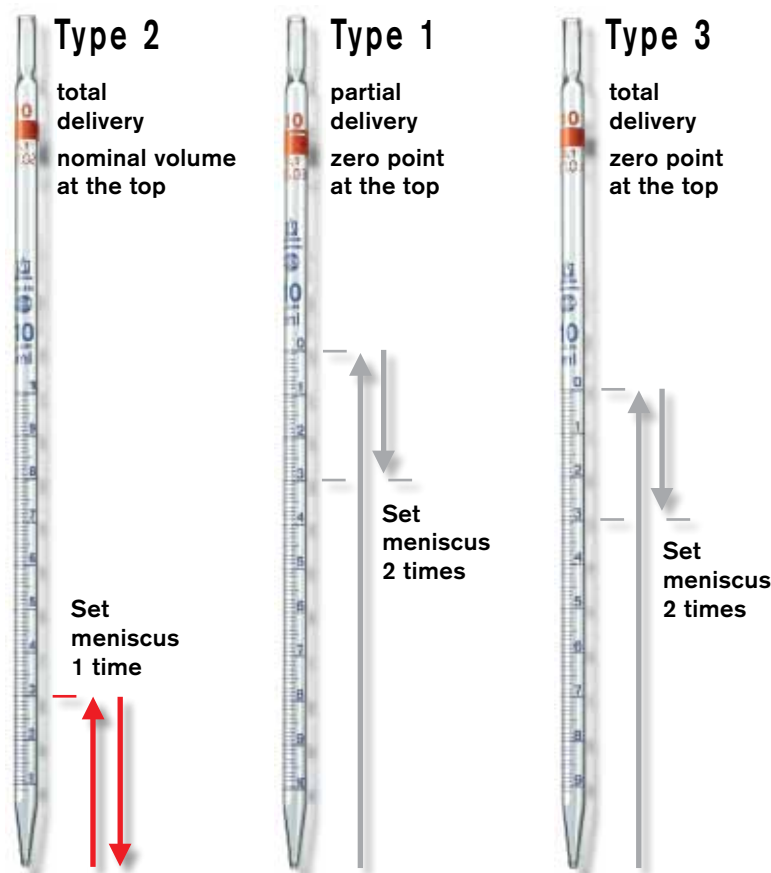
In the new DIN EN ISO 835, the waiting time for graduated pipettes was reduced from 15 to 5 seconds and the type 2, total delivery, nominal volume at top, was included. We recommend the graduated pipette type 2 as with these pipettes the meniscus needs to be set only once to achieve exact pipetting. In contrast, with types 1 and 3, there is a risk of over-dispensing while setting the meniscus the second time. In such a case, the sample would have to be prepared again.

Precision pipette tip



Optimized flow geometry in the tip ensures reliable liquid dispensing from bulb and graduated pipettes. The mechanical resilience of the tip and its fire-polished edges ensure a long service life.

BLAUBRAND® graduated Pipettes, class AS



Technical data, available sizes

Graduated pipettes are calibrated to contain (TC, In) respectively to deliver (TD, Ex).

Capacity ml	Subdiv. ml	Color-Code (ISO 1769)	Length mm (± 10 mm)	Calibr.	BLAUBRAND® waiting time 5 s		SILBERBRAND no waiting time	
					Calibr.	EL* ± ml	Calibr.	EL* ± ml
0.1	0.001	2 x green	360	In	0.001	–	–	–
0.2	0.002	2 x white	360	In	0.002	–	–	–
0.5	0.01	2 x yellow	360	Ex	0.006	Ex	0.008	0.008
1	0.01	yellow	360	Ex	0.007	Ex	0.010	0.010
1	0.1	red	360	Ex	0.007	Ex	0.010	0.010
2	0.01	2 x white	360	Ex	0.010	Ex	0.015	0.015
2	0.02	black	360	Ex	0.010	Ex	0.015	0.015
2	0.1	green	360	Ex	0.010	Ex	0.015	0.015
5	0.05	red	360	Ex	0.030	Ex	0.05	0.05
5	0.1	blue	360	Ex	0.030	Ex	0.05	0.05
10	0.1	orange	360	Ex	0.05	Ex	0.08	0.08
20	0.1	2 x yellow	360	Ex	0.1	Ex	0.15	0.15
25	0.1	white	450	Ex	0.1	Ex	0.15	0.15
50	0.5	–	450	Ex	0.2	–	–	–

* EL: Error limit

DIN EN ISO 835

In the new DIN EN ISO 835, the waiting time for graduated pipettes of class AS was reduced from 15 to 5 seconds.

All BLAUBRAND® graduated pipettes are supplied with a batch number and an accompanying batch certificate in the original packaging. On request, they are also available with an individual certificate, USP individual certificate or DKD calibration certificate. (For information about batch, individual or DKD certificates see pages 129 and 284.)



Graduated pipettes, Type 2, total delivery

NEW!

BLAUBRAND®, class AS, nominal volume at the top, conformity certified

AR-Glas®. DIN EN ISO 835. Calibrated to deliver (TD, Ex). Incl. one batch certificate.
Pack of 12; (20, 25, 50 ml: Pack of 6).

Capacity ml	Subdivision ml	Cotton plug upper end	Cat. No.
0.5	0.01	no	278 16
1	0.01	no	278 17
1	0.01	yes	278 27
1	0.1	no	278 18
2	0.02	no	278 19
2	0.02	yes	278 28
2	0.1	no	278 20
5	0.05	yes	278 21
5	0.1	yes	278 22
10	0.1	yes	278 23
20	0.1	yes	278 24
25	0.1	yes	278 25
50*	0.5	yes	278 26

* in addition to the ISO range



Graduated pipettes, Type 2, total delivery

NEW!

BLAUBRAND® ETERNA, class AS, nominal volume at the top, conformity certified

AR-Glas®. DIN EN ISO 835. Calibrated to deliver (TD, Ex). Incl. one batch certificate.
Pack of 12 (20, 25, 50 ml: Pack of 6).

Capacity ml	Subdivision ml	Cotton plug upper end	Cat. No.
0.5	0.01	no	278 36
1	0.01	no	278 37
1	0.01	yes	278 47
2	0.02	no	278 39
2	0.02	yes	278 48
5	0.05	yes	278 41
5	0.1	yes	278 42
10	0.1	yes	278 43
20	0.1	yes	278 44
25	0.1	yes	278 45

Graduated pipettes, Type 1, partial delivery

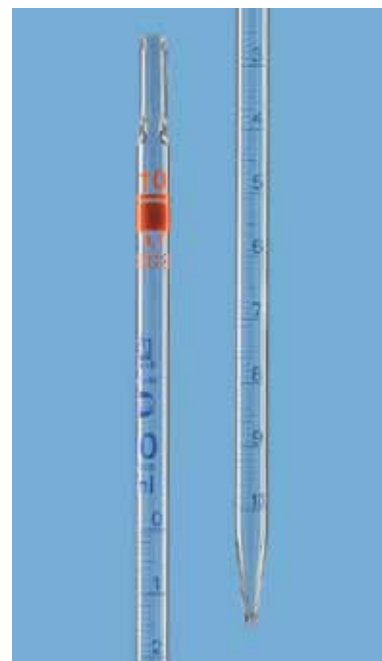
BLAUBRAND®, class AS, zero point at the top, conformity certified

AR-Glas®. DIN EN ISO 835. Calibrated to deliver (TD, Ex).

Incl. one batch certificate. Pack of 12 (25 ml: Pack of 6).

Capacity ml	Subdivision ml	Cotton plug upper end	Cat. No.
0.5	0.01	no	277 21
1	0.01	no	277 22
2*	0.01	no	277 24
2	0.02	no	277 25
5	0.05	yes	277 27
10	0.1	yes	277 29
25	0.1	yes	277 31

* in addition to the ISO range, not conformity certified



Volumetric Instruments

Graduated pipettes, Type 1, partial delivery

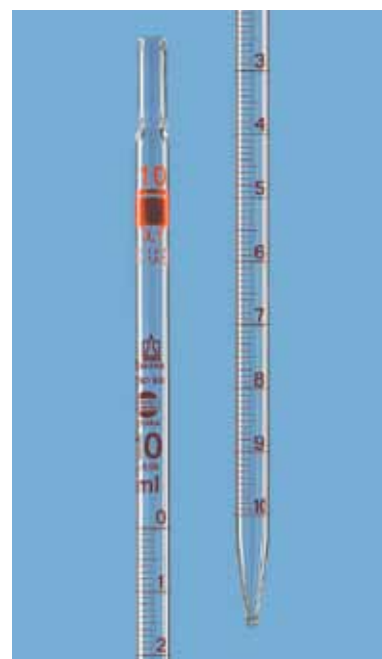
BLAUBRAND® ETERNA, class AS, zero point at the top, conformity certified

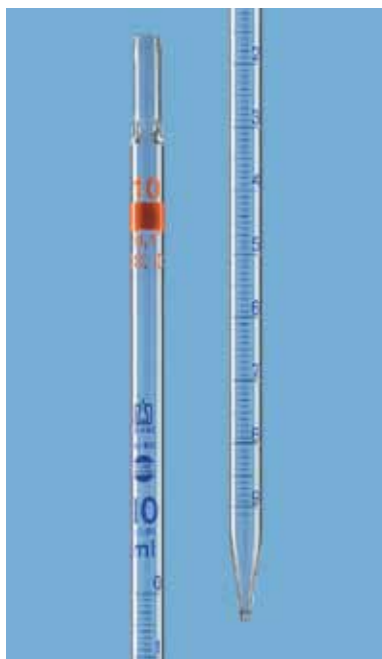
AR-Glas®. DIN EN ISO 835. Calibrated to deliver (TD, Ex). incl. one batch certificate.

Pack of 12 (25 ml: Pack of 6).

Capacity ml	Subdivision ml	Cotton plug upper end	Cat. No.
0.5	0.01	no	277 48
1	0.01	no	277 49
2*	0.01	no	277 51
2	0.02	no	277 52
5	0.05	yes	277 54
10	0.1	yes	277 56
25	0.1	yes	277 58

* in addition to the ISO range, not conformity certified





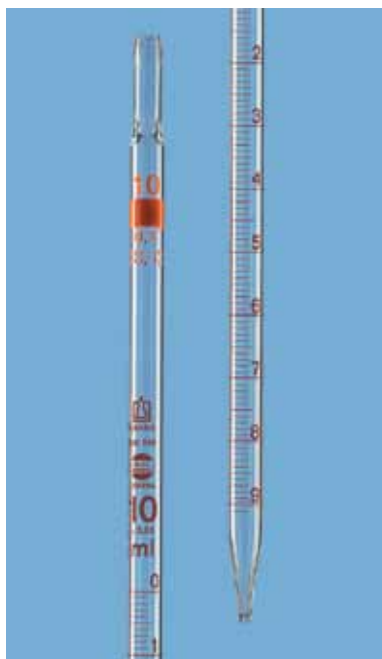
Graduated pipettes, Type 3, total delivery

BLAUBRAND®, class AS, zero point at the top, conformity certified

AR-Glas®. DIN EN ISO 835. Calibrated to deliver (TD, Ex). Incl. one batch certificate.
0.5 to 10 ml: Pack of 12; 20 to 50 ml: Pack of 6.

Capacity ml	Subdivision ml	Cotton plug upper end	Cat. No.
0.5	0.01	no	277 05
1	0.01	no	277 06
1	0.01	yes	273 06
1	0.1	no	277 07
2**	0.01	no	277 08
2	0.02	no	277 09
2	0.02	yes	273 09
2	0.1	no	277 10
5	0.05	yes	277 11
5	0.1	yes	277 12
10	0.1	yes	277 13
20	0.1	yes	277 14
25	0.1	yes	277 15
50*	0.5	yes	277 16

* in addition to the ISO range ** in addition to the ISO range, not conformity certified



Graduated pipettes, Type 3, total delivery

BLAUBRAND® ETERNA, class AS, zero point at the top, conformity certified

AR-Glas®. DIN EN ISO 835. Calibrated to deliver (TD, Ex). Incl. one batch certificate.
0.5 to 10 ml: Pack of 12; 20 and 25 ml: Pack of 6.

Capacity ml	Subdivision ml	Cotton plug upper end	Cat. No.
0.5	0.01	no	284 05
1	0.01	no	284 06
1	0.01	yes	273 16
2	0.02	no	284 09
2	0.02	yes	273 19
5	0.05	yes	284 11
5	0.1	yes	284 12
10	0.1	yes	284 13
20	0.1	yes	284 14
25	0.1	yes	284 15

Cotton cord

100% cotton wool, degreased, approx.
13 g/10 m. Pack of 1 kg.

Cat. No.	282 05
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The use of cotton plugs

Cotton plugs may prolong delivery time and may therefore influence the accuracy of measurement. In tests using BRAND pipettes that have had cotton plugs inserted by a cotton plugging machine, the results were within the indicated error limits.

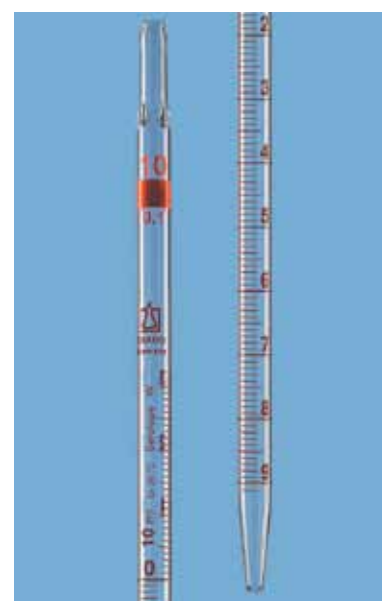
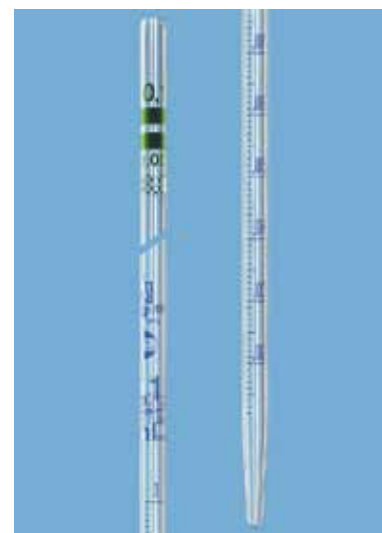
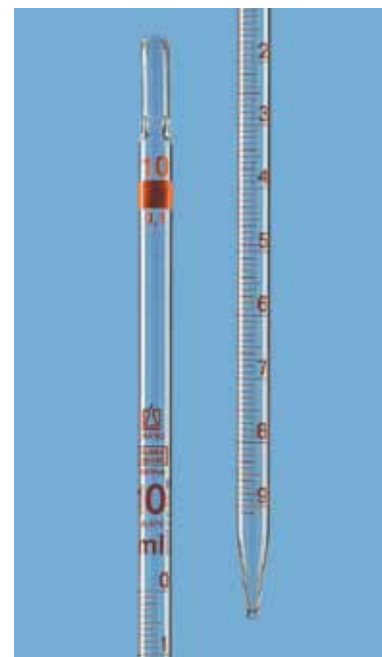
Graduated pipettes, Type 3, total delivery

SILBERBRAND ETERNA, class B, zero point at the top

AR-Glas®. DIN EN ISO 835. Calibrated to deliver (TD, Ex).
0.5 to 10 ml: Pack of 12; 20 and 25 ml: Pack of 6.

Capacity ml	Subdivision ml	Cotton plug upper end	Cat. No.
0.5*	0.01	no	270 69
1	0.01	no	270 70
1	0.01	yes	272 06
1*	0.1	no	270 71
2*	0.01	no	270 72
2	0.02	yes	272 09
2	0.02	no	270 73
2	0.1	no	270 74
5	0.05	yes	270 75
5*	0.1	yes	270 76
10	0.1	yes	270 77
20*	0.1	yes	270 78
25*	0.1	yes	270 79

* in addition to the ISO range



Graduated pipettes, calibrated to contain

BLAUBRAND®, class A, conformity certified

AR-Glas®. Error limits and subdivisions according to DIN 12689. Length 360 mm.
Calibrated to contain (TC, In). Incl. one batch certificate. Pack of 12.

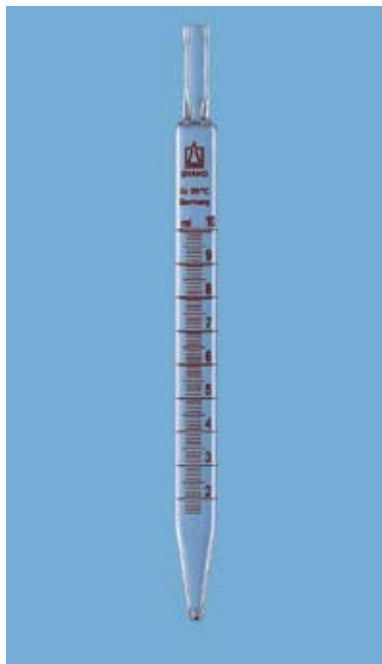
Capacity ml	Subdivision ml	Cotton plug upper end	Cat. No.
0.1	0.001	no	277 02
0.2	0.002	no	277 04

Graduated pipettes, serological

Large tip diameter, total delivery

AR-Glas®. Calibrated to deliver (TD, Ex). Tip Ø: (1 and 2 ml); approx. 2 mm, (5, 10 and 25 ml); approx. 3 mm. Graduations and inscriptions in ETERNA amber stain.
Short graduation marks. 1 to 10 ml: Pack of 12; 25 ml: Pack of 6.

Capacity ml	Error limit $\pm$ ml	Subdivision ml	negative range ml	Cotton plug upper end	Cat. No.
1	0.02	0.01	-0.2	yes	271 07
2	0.04	0.02	-0.4	yes	271 09
5	0.1	0.1	-2	yes	271 12
10	0.2	0.1	-3	yes	271 13
25	0.4	0.1	-5	yes	271 15



Graduated pipettes, tissue culture

Short type, total delivery

AR-Glas®. Calibrated to deliver (TD, Ex). Graduations and inscriptions in ETERNA amber stain. Ring marks at major graduations. Length 230 mm.

1 to 10 ml: Pack of 12; 25 ml: Pack of 6.

Capacity ml	Error limit $\pm$ ml	Subdivision ml	Cotton plug upper end	Cat. No.
1	0.02	0.1	yes	271 60
2	0.04	0.1	yes	271 64
5	0.1	0.1	yes	271 66
10	0.2	0.1	yes	271 67
25	0.4	0.2	yes	271 79

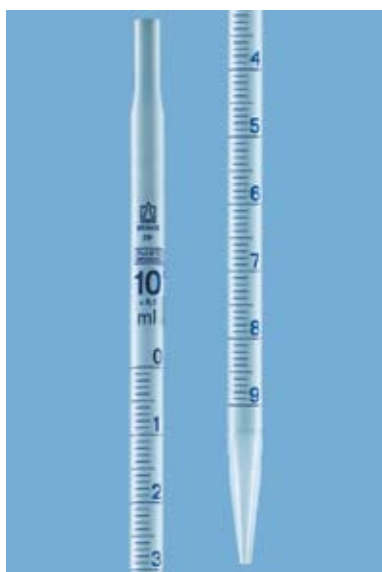


Graduated pipettes, piston type

SILBERBRAND, total delivery

AR-Glas®. Calibrated to deliver (TD, Ex). Integrated piston pipetting aid with retaining spring. Pack of 1.

Capacity ml	Error limit $\pm$ ml	Subdivision ml	Cat. No.
1	0.01	0.01	311 06
2	0.02	0.02	311 09
5	0.05	0.05	311 11
10	0.1	0.1	311 13
25	0.2	0.1	311 15



Graduated pipettes, made of plastic

PLASTIBRAND®

PP. High clarity. Calibrated to deliver (TD, Ex). Resistant to breakage. Suction tube outer Ø max. 8 mm. Exposure to temperatures up to 60 °C will not cause permanent exceeding of error limits! Cleaning temperature below 60 °C is recommended to preserve marks and inscriptions. Pack of 12.

Capacity ml	Error limit $\pm$ ml	Subdivision ml	Length mm $\pm$ 10 mm	Cat. No.
1	0.02	0.1	300	276 07
2	0.02	0.1	300	276 10
5	0.05	0.1	330	276 12
10*	0.1	0.1	330	276 13
10	0.1	0.1	320	276 14

* Suction tube outer Ø 10 mm

Volumetric Flasks



BRAND volumetric flasks provide the highest accuracy. Strict statistical quality controls ensure maintenance of these high standards. Volumetric flasks are indispensable for preparing dilutions and standard solutions. Standard volumetric flasks are supplied with a square-grip PP stopper with a dripping tip. These stoppers reduce the danger of breakage if a flask tips over, and help to prevent it from rolling off the workbench.

All BLAUBRAND® volumetric flasks are supplied with a batch number and an accompanying batch certificate in the original packaging. On request, they are available also with an individual certificate, or DKD calibration certificate. With the exception of the wide neck design, the graduated flasks are also available with USP individual and batch certificates.

BLAUBRAND® Volumetric Flasks – Durable Quality

Specifications, available sizes

Volumetric flasks are always calibrated to contain (TC, In).

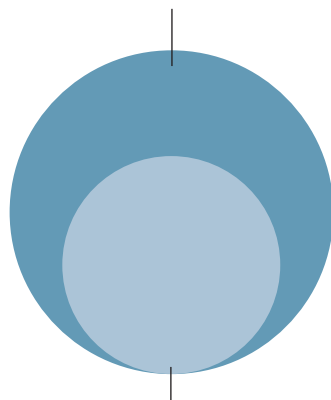
Volumetric flasks, trapezoidal

Capacity ml	Neck inner Ø mm	Neck size	BLAUBRAND®	
			Error limit ± ml	
1	7 ± 1	7/16	0.025	
2	7 ± 1	7/16	0.025	
5	7 ± 1	7/16	0.025	
10 W	9 ± 1	10/19	0.04	
20	9 ± 1	10/19	0.04	
25	9 ± 1	10/19	0.04	
50	11 ± 1	12/21	0.06	
W = Wide neck				

Trapezoidal volumetric flasks

Small capacity standard volumetric flasks can tip over more easily due to their higher center of gravity. Trapezoidal measuring flasks have a much larger base area which greatly improves stability!

Twice (!) the base area compared to standard volumetric flasks of the same capacity



Volumetric flask, standard type

Volumetric flasks, standard type

Capacity ml	Neck inner Ø mm	Neck size	BLAUBRAND®		SILBERBRAND
			Error limit ± ml		Error limit ± ml
5 W	9 ± 1	10/19	0.04	–	
10 W	9 ± 1	10/19	0.04	0.06	
20	9 ± 1	10/19	0.04	0.06	
20 W	11 ± 1	12/21	0.06	–	
25	9 ± 1	10/19	0.04	0.06	
25 W	11 ± 1	12/21	0.06	–	
50	11 ± 1	12/21	0.06	0.09	
50 W	13 ± 1	14/23	0.10	–	
100	13 ± 1	12/21	0.10	0.15	
100	13 ± 1	14/23	0.10	–	
200	15.5 ± 1.5	14/23	0.15	0.25	
250	15.5 ± 1.5	14/23	0.15	0.25	
500	19 ± 2	19/26	0.25	0.40	
1000	23 ± 2	24/29	0.40	0.60	
1000 W	27.5 ± 2.5	29/32	0.60	–	
2000	27.5 ± 2.5	29/32	0.60	0.90	
5000	38 ± 3	34/35	1.2	1.8	
10000	48 ± 4	45/40	2.0	–	

W = Wide neck



Volumetric flasks, trapezoidal

BLAUBRAND®, class A, conformity certified

DURAN®. DIN EN ISO 1042. Calibrated to contain (TC, In). Incl. one batch certificate. Pack of 2.

Capacity ml	Error limit ± ml	Neck size	with PP stopper Cat. No.	with glass stopper Cat. No.
1	0.025	7/16	364 01	364 12
2	0.025	7/16	364 02	364 13
5	0.025	7/16	364 03	364 14
10 W	0.04	10/19	364 04	364 15
20	0.04	10/19	364 06	364 17
25	0.04	10/19	364 07	364 18
50	0.06	12/21	364 08	364 19

W = Wide neck

Volumetric flasks

BLAUBRAND®, class A, conformity certified

DURAN®. DIN EN ISO 1042. Calibrated to contain (TC, In). Incl. one batch certificate. 5 to 500 ml: Pack of 2; 1000 to 10000 ml: Pack of 1.

Capacity ml	Error limit ± ml	Neck size	with PP stopper Cat. No.	with glass stopper Cat. No.
5 W	0.04	10/19	372 38	372 56
10 W	0.04	10/19	372 43	372 67
20	0.04	10/19	372 46	372 57
20 W	0.06	12/21	372 45	372 68
25	0.04	10/19	372 47	372 58
25 W	0.06	12/21	372 93	372 94
50	0.06	12/21	372 48	372 59
50 W	0.10	14/23	372 90	372 88
100	0.10	12/21	372 49	372 60
100	0.10	14/23	372 91	372 89
200	0.15	14/23	372 50	372 61
250	0.15	14/23	372 51	372 62
500	0.25	19/26	372 52	372 63
1000	0.4	24/29	372 53	372 64
1000 W	0.6	29/32	372 34	-
2000	0.6	29/32	372 54	372 65
5000	1.2	34/35	372 55	372 66
10000*	2.0	45/40	372 36	-

W = Wide neck * in addition to the DIN range

BLAUBRAND®, USP, class A, conformity certified

DURAN®. DIN EN ISO 1042. Calibrated to contain (TC, In). Incl. one USP batch certificate. 5 to 500 ml: Pack of 2; 1000 and 2000 ml: Pack of 1.

Capacity ml	Error limit ± ml	Neck inner Ø mm	Neck size	with PP stopper Cat. No.
5	0.020	7 ± 1	10/19*	369 38
10	0.020	7 ± 1	10/19*	369 43
25	0.03	9 ± 1	10/19	369 47
50	0.05	11 ± 1	12/21	369 48
100	0.08	13 ± 1	14/23	369 49
200	0.10	15.5 ± 1.5	14/23	369 50
250	0.12	15.5 ± 1.5	14/23	369 51
500	0.15	19 ± 2	19/26	369 52
1000	0.30	23 ± 2	24/29	369 53
2000	0.5	27.5 ± 2.5	29/32	369 54

* Neck/ground socket connection enlarged

Volumetric flasks

BLAUBRAND® ETERNA, class A, conformity certified

DURAN®. DIN EN ISO 1042. Calibrated to contain (TC, In). Incl. one batch certificate.
5 to 500 ml: Pack of 2; 1000 and 2000 ml: Pack of 1.

Capacity ml	Error limit ± ml	Neck size	with PP stopper Cat. No.
5 W	0.04	10/19	368 38
10 W	0.04	10/19	368 43
20	0.04	10/19	368 45
20 W	0.06	12/21	368 46
25	0.04	10/19	368 41
25 W	0.06	12/21	368 42
50	0.06	12/21	368 47
50 W	0.10	14/23	368 48
100	0.10	14/23	368 49
200	0.15	14/23	368 50
250	0.15	14/23	368 51
500	0.25	19/26	368 52
1000	0.4	24/29	368 53
2000	0.6	29/32	368 54

W = Wide neck



Volumetric Instruments

Volumetric flasks, PUR Plastic coated

NEW!

BLAUBRAND® PURprotect, class A, conformity certified

DURAN®. DIN EN ISO 1042. Calibrated to contain (TC, In). Incl. one batch certificate.
50 to 500 ml: Pack of 2; 1000 ml: Pack of 1. **Delivery date to be agreed upon.**

Capacity ml	Error limit ± ml	Neck size	with PP stopper Cat. No.
50 W	0.10	14/23	365 48
100	0.10	14/23	365 49
200	0.15	14/23	365 50
250	0.15	14/23	365 51
500	0.25	19/26	365 52
1000	0.4	24/29	365 53

W = Wide neck

Further sizes on request.



Synthetic coating for better protection

The PUR coating envelops the volumetric flasks like a protection skin. In the event of breakage, the safety coating helps contain the glass fragments. Compared to uncoated glass flasks the electrostatic charge is not increased.

The light blue coating facilitates optical distinction. The maximum operating temperature at dry heat is 135 °C (exposure time < 30 min). Frequent autoclaving at 121 °C reduces splintering protection. Cleaning up to max. 95 °C.





Volumetric flasks with 3 marks, DKD-calibrated

NEW!

BLAUBRAND®, class A, conformity certified

DURAN®, DIN EN ISO 1042. Calibrated to contain (TC, In). Incl. DKD-certificate. The volumetric flask with 3 marks is used to check the functioning of a dispenser. The mark in the middle shows the nominal volume, the upper and lower marks show the error limits as specified in the table below. If the error limit is exceeded even with repeated measurements, the dispenser is defective. The DKD-calibrated volumetric flask does not replace the gravimetric test of the monitoring of measuring instruments according to ISO 8655. Pack of 1. **Delivery date to be agreed upon.**

Capacity ml	upper/lower mark $\pm$ ml	Neck inner Ø mm	Neck size	with PP stopper Cat. No.
10	0.070	7 ± 1	10/19*	382 04
25	0.175	9 ± 1	10/19	382 06
50	0.350	11 ± 1	12/21	382 08
100	0.700	13 ± 1	14/23	382 10

* enlarged ground joint

Further sizes on request.



Volumetric flasks, amber glass

BLAUBRAND®, class A, conformity certified

DURAN®, DIN EN ISO 1042. Calibrated to contain (TC, In). Interchangeable PP or amber glass stopper. Incl. one batch certificate. 5 to 500 ml: Pack of 2; 1000 ml: Pack of 1.

Capacity ml	Error limit $\pm$ ml	Neck size	with PP stopper Cat. No.	with glass stopper Cat. No.
5 W	0.04	10/19	374 01	374 38
10 W	0.04	10/19	374 02	374 43
20	0.04	10/19	374 03	374 46
25	0.04	10/19	374 04	374 47
50	0.06	12/21	374 05	374 48
50 W	0.10	14/23	374 06	374 45
100	0.10	14/23	374 07	374 49
200	0.15	14/23	374 08	374 50
250	0.15	14/23	374 09	374 51
500	0.25	19/26	374 10	374 52
1000	0.4	24/29	374 11	374 53

W = Wide neck



Volumetric flasks, beaded rim

BLAUBRAND®, class A, conformity certified

DURAN®, DIN EN ISO 1042. Calibrated to contain (TC, In). Incl. one batch certificate. 5 to 500 ml: Pack of 2; 1000 ml: Pack of 1.

Capacity ml	Error limit $\pm$ ml	Cat. No.
10 W	0.04	370 45
20	0.04	370 46
25	0.04	370 47
50	0.06	370 48
100	0.10	370 49
200	0.15	370 50
250	0.15	370 51
500	0.25	370 52
1000	0.4	370 53

W = Wide neck

Volumetric flasks

SILBERBRAND, class B

DURAN®. DIN EN ISO 1042. Calibrated to contain (TC, In).
5 to 500 ml: pack of 2; 1000 to 5000 ml: pack of 1.

Capacity ml	Error limit ± ml	Neck size	with PP stopper Cat. No.
10 W	0.06	10/19	367 43
20	0.06	10/19	367 46
25	0.06	10/19	367 47
50	0.09	12/21	367 48
100	0.15	12/21	367 49
200	0.25	14/23	367 50
250	0.25	14/23	367 51
500	0.4	19/26	367 52
1000	0.6	24/29	367 53
2000	0.9	29/32	367 54
5000	1.8	34/35	367 55

W = Wide neck



Volumetric Instruments

Volumetric flask for oil content determination

SILBERBRAND

Borosilicate glass 3.3. DIN 51368. Interchangeable hollow glass stopper size 19/26.
Calibrated to contain (TC, In). For determination of oil content in aqueous oil emulsions
(e.g. drilling oil). Pack of 1.

Capacity ml	Subdivision ml	Cat. No.
100 ml (Error limit ± 0.2 ml)	0 - 5 ml (Error limit ± 0.10 ml); 5 - 30 ml (Error limit ± 0.5 ml)	3655 38



Volumetric flasks for sugar analysis

SILBERBRAND

Borosilicate glass 3.3. Error limits according to class B. Calibrated to contain (TC, In).
For Kohlrausch sugar analysis. Pack of 2.

Capacity ml	Error limit ± ml	Cat. No.
100	0.20	4020 38
200	0.30	4020 46





Volumetric flasks with screw cap, PFA PLASTIBRAND®

Error limits according to class A, DIN EN ISO 1042. Calibrated to contain (TC, In). Incl. one batch certificate. Autoclavable, easy to clean. PFA screw cap with molded sealing ring. Exposure to temperatures up to 121 °C (autoclaving) will not cause permanently exceeded error limits! Cleaning up to max. 60 °C is recommended to preserve marks and inscriptions. Pack of 1.

Capacity ml	Error limit ± ml	Height* mm	Thread	Cat. No.
10 W	0.04	90	GL 18	362 08
25	0.04	108	GL 18	362 20
50	0.06	143	GL 18	362 28
100	0.10	166	GL 18	362 38
250	0.15	222	GL 25	362 48
500	0.25	262	GL 25	362 54

W = Wide neck * without screw cap

Thread	Cat. No.
GL 18	1292 50
GL 25	1292 52

Replacement screw caps for volumetric flasks PFA

PFA. Pack of 1.

Volumetric flasks, PMP, transparent

PLASTIBRAND®

With PP stopper. Error limits according to class A respectively B, DIN EN ISO 1042. Class A incl. one batch certificate. Calibrated to contain (TC, In). Exposure to temperatures up to 121 °C (autoclaving) will not cause permanently exceeded error limits! Cleaning up to max. 60 °C is recommended to preserve marks and inscriptions. Pack of 1.

Capacity ml	Error limit 'A' ± ml	Error limit 'B' ± ml	Height* mm	Neck size	Cat. No. Error limit 'A'	Cat. No. Error limit 'B'
10 W	0.04	0.08	90	10/19	361 70	361 08
25	0.04	0.08	108	10/19	361 72	361 20
50	0.06	0.12	146	12/21	361 74	361 28
100	0.10	0.20	173	14/23	361 76	361 38
250	0.15	0.30	225	19/26	361 78	361 48
500	0.25	0.5	258	19/26	361 80	361 54
1000	0.4	0.8	298	24/29	361 82	361 62

W = Wide neck * without stopper

Volumetric flasks, PP, high clarity

PLASTIBRAND®

With PP stopper. Error limits according to class B, DIN EN ISO 1042. Calibrated to contain (TC, In). Exposure to temperatures up to 60 °C will not cause permanently exceeded error limits! Cleaning up to max. 60 °C is recommended to preserve marks and inscriptions. Pack of 1.

Capacity ml	Error limit ± ml	Height* mm	Neck size	Cat. No.
10 W	0.08	90	10/19	360 08
25	0.08	108	10/19	360 20
50	0.12	146	12/21	360 28
100	0.20	173	14/23	360 38
250	0.30	225	19/26	360 48
500	0.5	258	19/26	360 54
1000	0.8	298	24/29	360 62

W = Wide neck * without stopper

Graduated Cylinders

BRAND graduated and mixing cylinders provide the highest accuracy. Strict statistical quality controls ensure maintenance of these high standards.

All BLAUBRAND® graduated cylinders are supplied with a batch number and an accompanying batch certificate in the original packaging. On request, they are also available with an individual certificate, USP individual certificate or DKD calibration certificate.

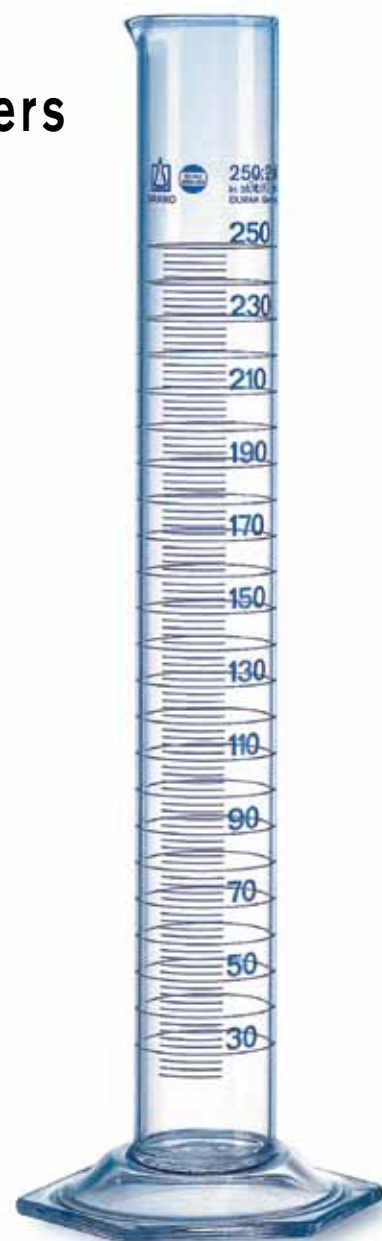
Graduation and Reading



BLAUBRAND®. Ring marks at major graduations. Reading at lowest point of meniscus.



SILBERBRAND. Short graduation marks. Reading at lowest point of meniscus.

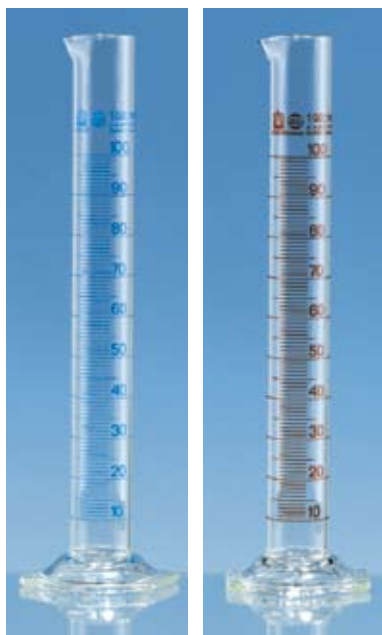


Specifications, available sizes

Graduated and mixing cylinders are always calibrated to contain (TC, In).

Capacity ml	Subdivision ml	BLAUBRAND® tall form	SILBERBRAND tall form	SILBERBRAND low form
		Error limit ± ml	Error limit ± ml	Error limit ± ml
5	0.1	0.05	0.08	–
10	0.2	0.10	0.15	0.3
25	0.5	0.25	0.4	0.5
50	1	0.5	0.8	1
100	1	0.5	0.8	1
250	2	1.0	1.5	2
500	5	2.5	4	5
1000	10	5	8	10
2000	20	10	15	20

Our PLASTIBRAND® class A+ measuring cylinders made of PMP (conformity certified) are low-price high-quality alternative to glass cylinders (see page 149-150).

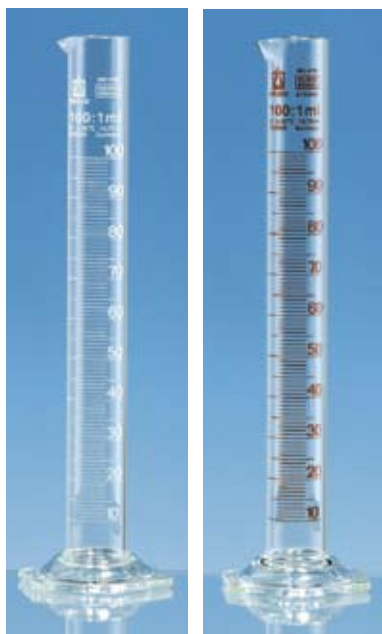


Graduated cylinders, tall form

BLAUBRAND® or BLAUBRAND® ETERNA, class A, conformity certified, ring marks at major graduations

DURAN®. DIN EN ISO 4788. Calibrated to contain (TC, In). Incl. one batch certificate. With spout and hexagonal base. 5 to 500 ml: Pack of 2; 1000 and 2000 ml: Pack of 1.

Capacity ml	Subdivision ml	Height mm	BLAUBRAND® Cat. No.	BLAUBRAND® ETERNA Cat. No.
5	0.1	115	321 05	327 05
10	0.2	140	321 08	327 08
25	0.5	170	321 20	327 20
50	1	200	321 28	327 28
100	1	260	321 38	327 38
250	2	335	321 48	327 48
500	5	365	321 54	327 54
1000	10	465	321 62	327 62
2000	20	505	321 64	327 64



Graduated cylinders, tall form

SILBERBRAND or SILBERBRAND ETERNA, class B, short graduation marks

DURAN®. DIN EN ISO 4788. Calibrated to contain (TC, In). With spout and hexagonal base. 5 to 500 ml: Pack of 2; 1000 and 2000 ml: Pack of 1.

Capacity ml	Subdivision ml	Height mm	SILBERBRAND Cat. No.	SILBERBRAND ETERNA Cat. No.
5	0.1	115	-	319 05
10	0.2	140	317 08	319 08
25	0.5	170	317 20	319 20
50	1	200	317 28	319 28
100	1	260	317 38	319 38
250	2	335	317 48	319 48
500	5	365	317 54	319 54
1000	10	465	317 62	319 62
2000	20	505	317 64	319 64

Graduated cylinders, tall form

SILBERBRAND ETERNA, class B, short graduation marks

DURAN®. DIN EN ISO 4788. Calibrated to contain (TC, In). With spout. With detachable hexagonal base and protective collar of PP (not autoclavable).

10 to 500 ml: Pack of 2; 1000 ml: Pack of 1.

Capacity ml	Subdivision ml	Height mm	Cat. No.
10	0.2	135	319 09
25	0.5	170	319 21
50	1	190	319 29
100	1	260	319 39
250	2	335	319 49
500	5	370	319 55
1000	10	450	319 63



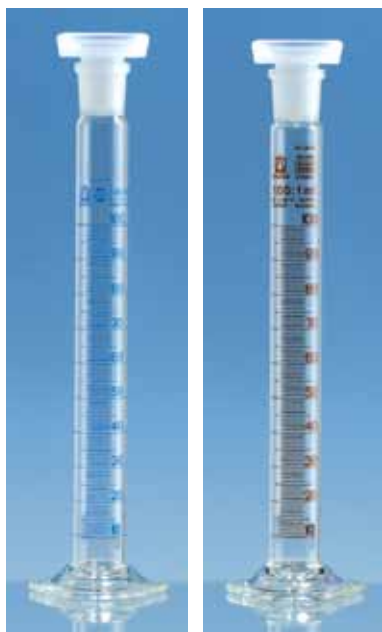
Graduated cylinders, low form

SILBERBRAND ETERNA, class B, short graduation marks

DURAN®. DIN EN ISO 4788. Calibrated to contain (TC, In). With spout and hexagonal base. Pack of 2; 1000 ml and 2000 ml: Pack of 1.

Capacity ml	Subdivision ml	Height mm	Cat. No.
10	1	90	420 08
25	1	115	420 20
50	2	145	420 28
100	2	165	420 38
250	5	195	420 48
500	10	250	420 54
1000	20	285	420 62
2000	50	340	420 64





Mixing cylinders

BLAUBRAND®, class A, conformity certified,
or **SILBERBRAND ETERNA**, class B

DURAN®. DIN EN ISO 4788. Calibrated to contain (TC, In). BLAUBRAND® mixing cylinders incl. one batch certificate. With PP stopper and hexagonal base.
10 to 500 ml: Pack of 2; 1000 ml: Pack of 1.

Capacity ml	Subdivision ml	Neck size	Height** mm	BLAUBRAND® Cat. No.	SILBERBRAND ETERNA Cat. No.
10	0.2	10/19	160	324 08	339 08
25	0.5	14/23	190	324 20	339 20
50	1	19/26	220	324 28	339 28
100	1	24/29	285	324 38	339 38
250	2	29/32	350	324 48	339 48
500*	5	34/35	395	324 54	339 54
1000*	10	45/40	500	324 62	339 62

* with octagonal stopper, PE ** without stopper

Dispensers, tilt measure

Bottletop dispensing head

Dispensing head DURAN®. Calibrated to deliver (TD, Ex). Inscriptions in green enamel. The automatic dispenser is particularly well-suited for dispensing suspensions. Complete with reservoir bottle, borosilicate glass 4.1, capacity 1000 ml, neck size 29/32. Pack of 1.

Capacity ml	Error limit ± ml	Height incl. bottle mm	Dispensing head Cat. No.	Complete with bottle Cat. No.
5	1.0	270	430 55	430 05
10	1.0	270	430 58	430 08
20	2.0	280	430 66	430 16
25	2.5	280	430 70	430 20
50	5	280	430 78	430 28
100	10	290	430 88	430 38

Accessories for dispensers, tilt measure

Joint clip

Stainless-steel. Neck size 29/32.
Pack of 1.

Cat. No.	556 18
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Ground joint sleeve

PTFE. Neck size 29/32.
Pack of 10.

Cat. No.	514 22
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Reservoir bottle

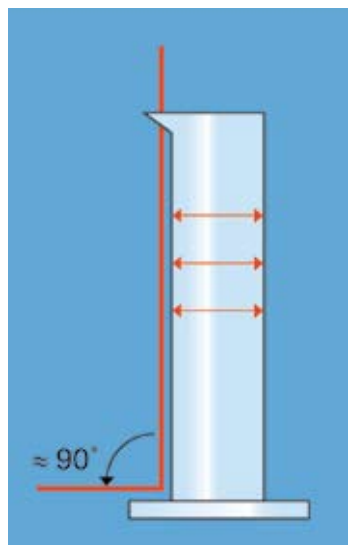
Borosilicate glass 4.1.
Capacity 1000 ml. Neck size 29/32.
Pack of 1.

Description	Cat. No.
Borosilicate glass 4.1	1269 63

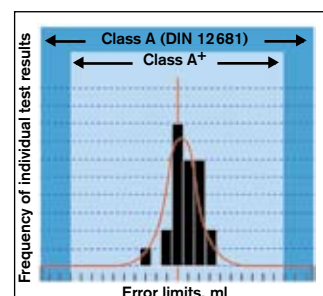
Plastic Graduated Cylinders

PLASTIBRAND® graduated cylinders are made of high-quality plastics which provide excellent chemical resistance. The nearly perfect cylindrical design allows equal graduation marks.

- Strengthened rim increases overall dimensional stability
- Functional spout minimizes spills
- Hexagonal base with knobs for increased stability
- Easy-to-read graduations
- Extremely durable



PLASTIBRAND® Graduated cylinders, class A⁺



Class A⁺ compared to Class A

PLASTIBRAND® class A⁺ graduated cylinders are specified with 20% tighter error limits than required by DIN 12681 (shown above). PLASTIBRAND® class A⁺ error limits are maintained after 20 washing and 10 sterilization cycles at 121 °C. (DIN 12681 requires only 10 washing and 3 sterilization cycles.)

Graduated cylinders A⁺, PMP

PLASTIBRAND®, class A⁺, conformity certified, tall form, with blue printed scale

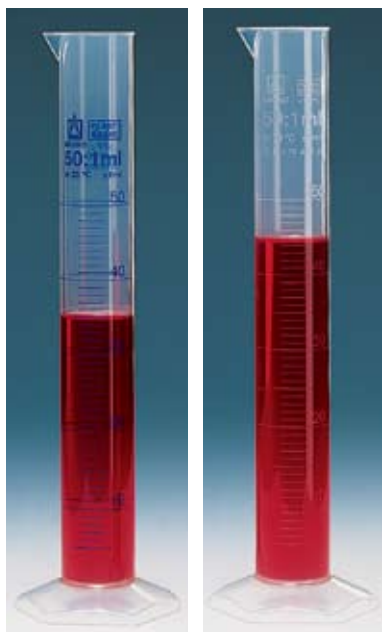
PMP, transparent. DIN 12681 and ISO 6706. Calibrated to contain (TC, In). Incl. one batch certificate. A particularly high-quality printing ink is used in the PLASTIBRAND® graduated cylinders. Exposure to temperatures up to 121 °C (autoclaving) will not cause permanently exceeded error limits! Cleaning temperature below 60 °C is recommended to preserve marks and inscriptions.

10 to 500 ml: Pack of 2; 1000 and 2000 ml: Pack of 1.

Capacity ml	Subdivision ml	Error limit A ⁺ ± ml	Error limit A ± ml	Height mm	Cat. No.
10	0.2	0.08	0.10	145	351 08
25	0.5	0.20	0.25	170	351 20
50	1	0.4	0.5	200	351 28
100	1	0.4	0.5	250	351 38
250	2	0.8	1.0	315	351 48
500	5	2.0	2.5	360	351 54
1000	10	4	5	440	351 62
2000	20	8	10	535	351 64

Error limit A⁺: Actual error limits of PMP graduated cylinders from BRAND
Error limit A: Nominal error limits according to DIN 12681



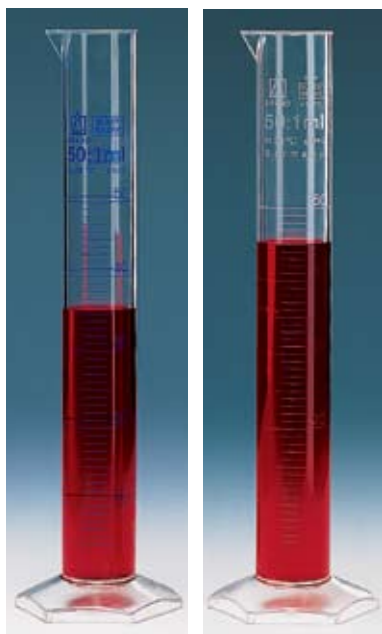


Graduated cylinders, PP

tall form, PLASTIBRAND®, class B,
with blue printed scale or embossed scale

PP, high clarity. DIN 12 681 and ISO 6706. Calibrated to contain (TC, In). Exposure to temperatures up to 80 °C will not cause permanently exceeded error limits! Cleaning temperature below 60 °C is recommended to preserve marks and inscriptions.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Height mm	Pack of	blue scale Cat. No.	embossed scale Cat. No.
10	0.2	0.20	145	10	348 08	350 08
25	0.5	0.5	170	10	348 20	350 20
50	1	1.0	200	10	348 28	350 28
100	1	1.0	250	10	348 38	350 38
250	2	2.0	315	5	348 48	350 48
500	5	5	360	5	348 54	350 54
1000	10	10	440	5	348 62	350 62
2000	20	20	535	1	348 64	350 64

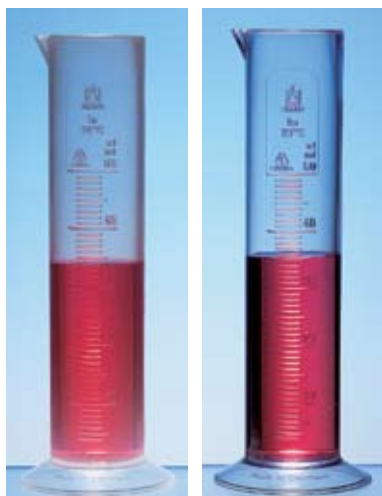


Graduated cylinders, PMP

tall form, PLASTIBRAND®, class B,
with blue printed scale or embossed scale

PMP, transparent. DIN 12 681 and ISO 6706. Calibrated to contain (TC, In). Exposure to temperatures up to 121 °C (autoclaving) will not cause permanently exceeded error limits! Cleaning temperature below 60 °C is recommended to preserve marks and inscriptions. For autoclaving, we recommend the design with embossed scale.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Height mm	Pack of	blue scale Cat. No.	embossed scale Cat. No.
10	0.2	0.20	145	10	347 08	349 08
25	0.5	0.5	170	10	347 20	349 20
50	1	1.0	200	10	347 28	349 28
100	1	1.0	250	10	347 38	349 38
250	2	2.0	315	5	347 48	349 48
500	5	5	360	5	347 54	349 54
1000	10	10	440	5	347 62	349 62
2000	20	20	535	1	347 64	349 64



Graduated cylinders, PP and SAN

low form, PLASTIBRAND®, with embossed scale

PP, high clarity. SAN, transparent. Calibrated to contain (TC, In). Exposure to temperatures up to 80 °C will not cause permanently exceeded error limits!

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Pack of	PP Best.-Nr.	SAN Best.-Nr.
25	0.5	0.5	10	416 20	415 20
50	1.0	1.0	10	416 28	415 28
100	2.0	2.0	10	416 38	415 38
250	5.0	5.0	5	416 48	415 48
500	10.0	10	5	416 54	415 54
1000	20.0	20	5	416 62	415 62

Burettes and Automatic Burettes

Graduation and reading



BLAUBRAND® Schellbach Stripe

Ring marks at major graduations.
Reading at point of contact of the two tips.



SILBERBRAND Schellbach Stripe

Short marks at major graduations.
Reading at point of contact of the two tips.



SILBERBRAND

Short marks at major graduations.
Reading at lowest point of meniscus.

Specifications

Burettes and automatic burettes are always calibrated to deliver (TD, Ex).

Waiting times:

BLAUBRAND® – waiting time 30 sec. SILBERBRAND – no waiting time

Note:

A waiting time is usually not necessary if a titration is performed (see DIN EN ISO 385).

All BLAUBRAND® burettes and automatic burettes are supplied with a batch number and an accompanying batch certificate in the original packaging. On request, they are available also with an individual certificate, USP individual certificate or DKD calibration certificate. (See pages 129 and 284 for more information on batch, individual and DKD certificates.)

The needle-valve stopcock

PTFE valve spindle

Operates smoothly and is yet tight, even without lubrication, so there are no grease residues on the burette. The valve spindle is replaceable.

Tight seal without force

A gentle turn is all it takes to close the burette valve.

Precision burette tip



Precise drop by drop control. Drop size remains constant – from the first to the last drop. The liquid stream breaks off precisely and does not creep along the outside edge.





Burettes, lateral stopcock

BLAUBRAND®, class AS, conformity certified

DURAN®. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Schellbach stripe. Incl. one batch certificate. Length approx. 800 mm. Pack of 2.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Stopcock with	Cat. No.
10	0.02	0.02	PTFE spindle	138 44
25	0.05	0.03	PTFE spindle	138 47
50	0.1	0.05	PTFE spindle	138 48
10	0.02	0.02	Glass key	138 84
25	0.05	0.03	Glass key	138 87
50	0.1	0.05	Glass key	138 88



Burettes, straight stopcock

BLAUBRAND®, class AS, conformity certified

DURAN®. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Schellbach stripe. Incl. one batch certificate. Length approx. 800 mm. Pack of 2.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Stopcock with	Cat. No.
10	0.02	0.02	PTFE spindle	124 84
25	0.05	0.03	PTFE spindle	124 87
50	0.1	0.05	PTFE spindle	124 88
10	0.02	0.02	Glass key	124 64
25	0.05	0.03	Glass key	124 67
50	0.1	0.05	Glass key	124 68



Micro burettes, Bang pattern, lateral stopcock

BLAUBRAND®, class AS, conformity certified

DURAN®. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Schellbach stripe. Incl. one batch certificate. Available with needle valve stopcock with PTFE spindle (PTFE key in intermediate stopcock) or STJ glass stopcock (glass key in intermediate stopcock). With base. Pack of 2.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Length mm	Stopcock with	Cat. No.
2	0.01	0.01	660	PTFE spindle	245 95
5	0.01	0.01	900	PTFE spindle	245 97
10	0.02	0.02	900	PTFE spindle	245 99
2	0.01	0.01	660	Glass key	245 45
5	0.01	0.01	900	Glass key	245 47
10	0.02	0.02	900	Glass key	245 49

Micro burettes, Bang pattern, straight stopcock

BLAUBRAND®, class AS, conformity certified

DURAN®. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Schellbach stripe. Incl. one batch certificate. Available with needle valve stopcock with PTFE spindle (PTFE key in intermediate stopcock) or STJ glass stopcock (glass key in intermediate stopcock). Pack of 2.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Length mm	Stopcock with	Cat. No.
2	0.01	0.01	600	PTFE spindle	242 65
5	0.01	0.01	820	PTFE spindle	242 67
10	0.02	0.02	820	PTFE spindle	242 69
2	0.01	0.01	600	Glass key	242 55
5	0.01	0.01	820	Glass key	242 57
10	0.02	0.02	820	Glass key	242 59



Burettes, lateral stopcock

SILBERBRAND, class B

DURAN®. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Schellbach stripe. Length approx. 800 mm. Pack of 2.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Stopcock with	Cat. No.
10	0.02	0.03	PTFE spindle	135 63
25	0.05	0.05	PTFE spindle	135 66
50	0.1	0.08	PTFE spindle	135 68
25	0.05	0.05	Glass key	135 06
50	0.1	0.08	Glass key	135 08



Burettes, straight stopcock

SILBERBRAND, class B

DURAN®. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Schellbach stripe. Length approx. 800 mm. Pack of 2.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Stopcock with	Cat. No.
10	0.02	0.03	PTFE spindle	120 93
25	0.05	0.05	PTFE spindle	120 96
50	0.1	0.08	PTFE spindle	120 98





Burettes, straight stopcock

SILBERBRAND, class B

DURAN®. DIN EN ISO 385. Calibrated to deliver (TD, Ex).
Length approx. 800 mm. Pack of 2.

Capacity ml	Subdivision ml	Error limit ± ml	Stopcock with	Cat. No.
10	0.02	0.03	PTFE spindle	120 83
25	0.05	0.05	PTFE spindle	120 86
50	0.1	0.08	PTFE spindle	120 88
10	0.02	0.03	Glass key	120 03
25	0.05	0.05	Glass key	120 06
50	0.1	0.08	Glass key	120 08



Burettes, straight stopcock

SILBERBRAND

DURAN®.
10 ml and 25 ml: Error limit according to class B, DIN EN ISO 385.
50 ml: DIN EN ISO 385, class B.
Calibrated to deliver
(TD, Ex). Schellbach stripe. Pack of 2.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Stopcock with	Cat. No.
10*	0.05	0.05	470	Glass key	120 13
25*	0.1	0.08	520	Glass key	120 16
50	0.1	0.08	790	Glass key	120 18

* reduced distance between subdivision marks

Burettes, amber glass, lateral stopcock

SILBERBRAND

Borosilicate glass 5.4.

25 ml: Error limit according to class B, DIN EN ISO 385.

50 ml: DIN EN ISO 385, class B.

Calibrated to deliver (TD, Ex). Pack of 2.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Length mm	Stopcock with	Cat. No.
25*	0.1	0.08	550	PTFE key	120 56
50	0.1	0.10	800	PTFE key	120 58
25*	0.1	0.08	550	Glass key	120 52
50	0.1	0.10	800	Glass key	120 54

* reduced distance between subdivision marks



Volumetric Instruments

Burettes, amber glass, straight stopcock

SILBERBRAND

Borosilicate glass 5.4.

25 ml: Error limit according to class B, DIN EN ISO 385.

50 ml: DIN EN ISO 385, class B.

Calibrated to deliver (TD, Ex). Pack of 2.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Length mm	Stopcock with	Cat. No.
25*	0.1	0.08	550	PTFE key	135 36
50	0.1	0.10	800	PTFE key	135 38
25*	0.1	0.08	550	Glass key	135 32
50	0.1	0.10	800	Glass key	135 34

* reduced distance between subdivision marks



The Modular Burette Concept!

The Compact Burette from BRAND.



- with PTFE stopcock
- fast to dismantle and easy to clean
- simple repair – all individual components replaceable!

Compact Burettes

BLAUBRAND®, class AS, conformity certified

DURAN®, removable PTFE stopcock. DIN EN ISO 385. Calibrated to deliver (TD, Ex).
Items supplied: Burette tube with Schellbach stripe; Stopcock with precision tip.
Incl. one batch certificate. Pack of 1.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Cat. No.
10	0.02	0.02	795	139 13
25	0.05	0.03	800	139 16
50	0.1	0.05	800	139 18



Compact Burettes

SILBERBRAND

AR-Glas®, removable PTFE stopcock. Error limits according to class B, DIN EN ISO 385.
Calibrated to deliver (TD, Ex). Items supplied: Burette tube with Schellbach stripe;
Stopcock with precision tip. Pack of 1.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Cat. No.
10*	0.05	0.05	445	139 03
25*	0.1	0.08	510	139 06
50*	0.1	0.10	710	139 08

* reduced distance between subdivision marks



Compact Burettes, amber glass

SILBERBRAND

Borosilicate glass 5.4, removable PTFE stopcock.
25 ml: Error limit according to class B, DIN EN ISO 385.
50 ml: DIN EN ISO 385, class B.
Calibrated to deliver (TD, Ex).
Items supplied: Burette tube with white graduation; Stopcock with precision tip. Pack of 1.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Cat. No.
25*	0.1	0.08	520	139 26
50	0.1	0.10	790	139 28

* reduced distance between subdivision marks

Spare burette tubes

for the Compact burette

BLAUBRAND®, incl. batch certificate, Pack of 1.

Description	Capacity ml	Length mm	Cat. No.
BLAUBRAND®, DURAN®	10	700	139 43
BLAUBRAND®, DURAN®	25	705	139 46
BLAUBRAND®, DURAN®	50	705	139 48
SILBERBRAND, AR-Glas®	10*	350	139 33
SILBERBRAND, AR-Glas®	25*	410	139 36
SILBERBRAND, AR-Glas®	50*	610	139 38
SILBERBRAND, amber glass	25*	425	139 56
SILBERBRAND, amber glass	50	695	139 58

* reduced distance between subdivision marks

Spare burette stopcock

for all Compact burettes and Compact automatic burettes

PTFE. With screw couplings and seals, without burette tip.
Pack of 1.

Cat. No.	118 05
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Spare burette tips

for Compact burettes and Compact automatic burettes

Pack of 1.

For burettes ml	Description	Cat. No.
10 ml	Borosilicate glass 3.3	115 10
25 ml	Borosilicate glass 3.3	115 11
50 ml	Borosilicate glass 3.3	115 12
25 and 50 ml, amber glass	Amber glass, Borosilicate glass 5.4	115 15





Compact burettes, 'Economy'

Burette tubes

SILBERBRAND

AR-Glas®. Error limits according to class B, DIN EN ISO 385. Calibrated to deliver (TD, Ex). Discharge tube with outer Ø 8 mm. For use with PTFE stopcock (Cat. No. 118 00). Pack of 2.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Cat. No.
25*	0.1	0.08	400	100 02
50*	0.1	0.10	620	100 04

* reduced distance between subdivision marks



PTFE stopcock

for burette tubes

With PP tip. Complete with mounting tool. Pack of 1.

Cat. No.	118 00
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Spare burette tip

for PTFE stopcock

PP, with screw cap. Pack of 1.

Cat. No.	116 00
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Automatic burettes, Dr. Schilling pattern

SILBERBRAND

Burette: AR-Glas®. Error limits according to class B, DIN EN ISO 385.
Calibrated to deliver (TD, Ex). Schellbach stripe. Automatic zeroing.
Pack of 1.

Capacity ml	Subdivision ml	Error limit ± ml	With bottle ml	Total height mm	Cat. No.
10*	0.05	0.05	500	530	237 53
15*	0.1	0.08	500	510	237 55
25*	0.1	0.08	1000	620	237 56
50*	0.1	0.10	1000	830	237 58
25, amber glass	0.1	0.08	1000, amber	650	237 66
50, amber glass	0.1	0.10	1000, amber	900	237 68

* reduced distance between subdivision marks

Spare parts for automatic burettes, Dr. Schilling pattern

Spare burettes

Pack of 1.

Capacity ml	Length mm	Cat. No.
10	340	237 13
15	320	237 15
25	390	237 16
50	600	237 18
25, amber glass	420	237 23
50, amber glass	670	237 24

Bases

Pack of 1.

For bottle ml	Cat. No.
500	237 25
1000	237 28

Reservoir bottles

PE-LD. Narrow-mouth bottle with tube bushing. Pack of 1.

Capacity ml	Ø mm	Height mm	Thread GL	Cat. No.
500	75	180	25	1290 55
1000	94	212	28	1290 60
1000, amber	94	212	28	1302 60

Fittings

Micrometer screw with push-button, incl. support clamp. Pack of 1.

For capacity ml	for reservoir bottle ml	Cat. No.
10	500	237 45
15	500	237 46
25 - 50	1000	237 48

Glass discharge tip

AR-Glas®. with silicone tubing.
Pack of 10.

Clear glass

Cat. No.	
	115 00

Amber glass

Cat. No.	
	115 05



Materials:

Filling tube: PVC
Discharge tube: silicone
Reservoir bottle: PE-LD
Base: PE-HD
Fitting, grey: Polyamide
Micrometer screw: brass/PP

- Squeezing bottle allows rapid filling
- Automatic zeroing
- Micrometer screw allows fine titration
- Rough titration by releasing the micrometer screw and using the press button

Note!

Burettes not in use for longer periods should be drained and tubing pressure released by opening the stopcock.



Automatic burettes, Pellet pattern, with intermediate stopcock

BLAUBRAND®, class AS, conformity certified

DURAN®. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Schellbach stripe. Incl. one batch certificate. Available with needle valve stopcock with PTFE spindle (PTFE key in intermediate stopcock) or STJ glass stopcock (glass key in intermediate stopcock). Automatic zeroing. Intermediate stopcock 4 NS/19 for recirculating residual liquid. Total height approx. 1m incl. 2000 ml bottle (soda-lime glass). Pack of 1.

Needle-valve stopcock (PTFE key in intermediate stopcock)

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Description	Cat. No.
10	0.02	0.02	with bottle	227 64
25	0.05	0.03	with bottle	227 67
50	0.1	0.05	with bottle	227 68
10	0.02	0.02	without bottle	227 61
25	0.05	0.03	without bottle	227 62
50	0.1	0.05	without bottle	227 63

Glass stopcock (glass key in intermediate stopcock)

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Description	Cat. No.
10	0.02	0.02	with bottle	227 34
25	0.05	0.03	with bottle	227 37
50	0.1	0.05	with bottle	227 38
10	0.02	0.02	without bottle	227 31
25	0.05	0.03	without bottle	227 32
50	0.1	0.05	without bottle	227 33



Automatic burettes, Pellet pattern, without intermediate stopcock

BLAUBRAND®, class AS, conformity certified

DURAN®. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Schellbach stripe. Incl. one batch certificate. With needle-valve stopcock with PTFE spindle. Automatic zeroing. Total height approx. 1m incl. 2000 ml bottle (soda-lime glass). Pack of 1.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Description	Cat. No.
10	0.02	0.02	with bottle	225 24
25	0.05	0.03	with bottle	225 28
50	0.1	0.05	with bottle	225 30
10	0.02	0.02	without bottle	225 21
25	0.05	0.03	without bottle	225 22
50	0.1	0.05	without bottle	225 23

Automatic burettes, Pellet pattern, without intermediate stopcock

SILBERBRAND, class B

DURAN®. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Schellbach stripe. With needle-valve stopcock with PTFE spindle. Automatic zeroing. Total height incl. 2000 ml bottle (soda-lime glass) approx. 1m. Pack of 1.

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Description	Cat. No.
10	0.02	0.03	with bottle	219 14
25	0.05	0.05	with bottle	219 17
50	0.1	0.08	with bottle	219 18
10	0.02	0.03	without bottle	219 11
25	0.05	0.05	without bottle	219 12
50	0.1	0.08	without bottle	219 13



Automatic burettes, Pellet pattern, with intermediate stopcock

SILBERBRAND, amber glass

Borosilicate glass 5.4.

25 ml: Error limits according to class B, DIN EN ISO 385.

50 ml: DIN EN ISO 385, class B.

Calibrated to deliver (TD, Ex). Available with titration stopcock with PTFE key (PTFE key in intermediate stopcock) or STJ glass stopcock (glass key in intermediate stopcock). Automatic zeroing. Intermediate stopcock 4 NS/19 for recirculating residual liquid.

Total height approx. 1m incl. 2000 ml bottle (soda-lime glass). Pack of 1.

Titration and intermediate stopcock with PTFE key

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Description	Cat. No.
25*	0.1	0.08	with bottle	223 32
50	0.1	0.10	with bottle	223 34
25*	0.1	0.08	without bottle	223 36
50	0.1	0.10	without bottle	223 38

* reduced distance between subdivision marks

Titration and intermediate stopcock with glass key

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Description	Cat. No.
25*	0.1	0.08	with bottle	223 22
50	0.1	0.10	with bottle	223 24
25*	0.1	0.08	without bottle	223 26
50	0.1	0.10	without bottle	223 28

* reduced distance between subdivision marks





Automatic burettes, Pellet pattern, without intermediate stopcock

SILBERBRAND, amber glass

Borosilicate glass 5.4.

25 ml: Error limits according to class B, DIN EN ISO 385.

50 ml: DIN EN ISO 385, class B.

Calibrated to deliver (TD, Ex). Available with titration stopcock with PTFE key or glass key.

Total height approx. 1m incl. 2000 ml bottle (soda-lime glass). Pack of 1.

Titration stopcock with PTFE key

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Description	Cat. No.
25*	0.1	0.08	with bottle	223 12
50	0.1	0.10	with bottle	223 14
25*	0.1	0.08	without bottle	223 16
50	0.1	0.10	without bottle	223 18

* reduced distance between subdivision marks

Titration stopcock with glass key

Capacity ml	Subdivision ml	Error limit $\pm$ ml	Description	Cat. No.
25*	0.1	0.08	with bottle	223 02
50	0.1	0.10	with bottle	223 04
25*	0.1	0.08	without bottle	223 06
50	0.1	0.10	without bottle	223 08

* reduced distance between subdivision marks

Spare key for intermediate stopcock 4 NS/19

for automatic burette, pellet pattern

PTFE or borosilicate glass 5.4, with retention device. Pack of 1.

Description	Clear glass Cat. No.	Amber glass Cat. No.
PTFE key	812 65	812 65
Glass key	812 55	812 56

The Modular Automatic Burette Concept!

Compact Automatic Burettes from BRAND.

- fast to dismantle and easy to clean
- easy to repair – all individual components replaceable!

Compact automatic burettes

BLAUBRAND®, class AS, conformity certified

DURAN®, detachable PTFE stopcock. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Incl. one batch certificate. Items supplied: Burette tube with Schellbach stripe and automatic zeroing, stopcock with precision tip, filling tube (PVC, transparent), pumphead and 2000 ml bottle (soda-lime glass). Pack of 1.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Cat. No.
10	0.02	0.02	775	239 19
25	0.05	0.03	785	239 20
50	0.1	0.05	790	239 21

NEW!

Please order supports, burette clamps and rubber bellows separately (s. pages 166-167).



Volumetric Instruments

Compact automatic burettes

SILBERBRAND

AR-Glas®, detachable PTFE stopcock. Error limits according to class B, DIN EN ISO 385. Calibrated to deliver (TD, Ex). Items supplied: Burette tube with Schellbach stripe and automatic zeroing, stopcock with precision tip, filling tube (PVC, transparent), pumphead and 2000 ml bottle (soda-lime glass). Pack of 1.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Cat. No.
10*	0.05	0.05	455	239 09
25*	0.1	0.08	520	239 10
50*	0.1	0.10	730	239 11

* reduced distance between subdivision marks

NEW!



Compact automatic burettes, amber glass

SILBERBRAND

Borosilicate glass 5.4, detachable PTFE stopcock. Calibrated to deliver (TD, Ex).
 25 ml: Error limit according to class B, DIN EN ISO 385.
 50 ml: DIN EN ISO 385, class B.
 Items supplied: Burette tube with white graduation and automatic zeroing, stopcock with precision tip, filling tube (PVC, transparent), pumphead and 2000 ml bottle (soda-lime glass). Pack of 1.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Cat. No.
25*	0.1	0.08	495	239 29
50	0.1	0.10	780	239 30

* reduced distance between subdivision marks

NEW!



Please order supports, burette clamps and reservoir bottles separately (s. pages 166-167).



Compact automatic burettes

BLAUBRAND®, class AS, conformity certified

DURAN®, detachable PTFE stopcock. DIN EN ISO 385. Calibrated to deliver (TD, Ex). Incl. one batch certificate. Items supplied: Burette tube with Schellbach stripe and automatic zeroing, stopcock with precision tip, filling tube (PVC, transparent) and 1000 ml PE-bottle with base. Pack of 1.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Cat. No.
10	0.02	0.02	775	238 19
25	0.05	0.03	785	238 20
50	0.1	0.05	790	238 21



Compact automatic burettes

SILBERBRAND

AR-Glas®, detachable PTFE stopcock. Error limits according to class B, DIN EN ISO 385. Calibrated to deliver (TD, Ex). Items supplied: Burette tube with Schellbach stripe and automatic zeroing, stopcock with precision tip, filling tube (PVC, transparent) and 1000 ml PE-bottle with base. Pack of 1.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Cat. No.
10*	0.05	0.05	455	238 09
25*	0.1	0.08	520	238 10
50*	0.1	0.10	730	238 11

* reduced distance between subdivision marks



Compact automatic burettes, amber glass

SILBERBRAND

Borosilicate glass 5.4, detachable PTFE stopcock. Calibrated to deliver (TD, Ex).
25 ml: Error limit according to class B, DIN EN ISO 385.
50 ml: DIN EN ISO 385, class B.

Items supplied: Burette tube with white graduation and automatic zeroing, stopcock with precision tip, filling tube (PVC, transparent) and brown 1000 ml PE-bottle with base. Pack of 1.

Capacity ml	Subdivision ml	Error limit ± ml	Length mm	Cat. No.
25*	0.1	0.08	495	238 29
50	0.1	0.10	780	238 30

* reduced distance between subdivision marks

Spare burette tubes

for Compact automatic burettes with automatic zeroing

BLAUBRAND®, incl. batch certificate, Pack of 1.

Description	Capacity ml	Length mm	Cat. No.
BLAUBRAND®, DURAN®	10	680	238 43
BLAUBRAND®, DURAN®	25	690	238 46
BLAUBRAND®, DURAN®	50	695	238 48
SILBERBRAND, AR-Glas®	10*	360	238 33
SILBERBRAND, AR-Glas®	25*	425	238 36
SILBERBRAND, AR-Glas®	50*	635	238 38
SILBERBRAND, amber glass	25*	400	238 66
SILBERBRAND, amber glass	50	685	238 68

* reduced distance between subdivision marks

(Burette clamps, see page 166-167)

Spare burette stopcock

for all Compact burettes and Compact automatic burettes

PTFE. With screw couplings and seals, without burette tip.

Pack of 1.

Cat. No.	118 05
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Spare burette tips

for all Compact burettes and Compact automatic burettes

Pack of 1.

For burettes ml	Description	Cat. No.
10 ml	Borosilicate glass 3.3	115 10
25 ml	Borosilicate glass 3.3	115 11
50 ml	Borosilicate glass 3.3	115 12
25 and 50 ml, amber glass	Amber glass, borosilicate glass 5.4	115 15

Spare filling tube

PVC, transparent.

Inner-Ø 5 mm, Outer-Ø 7 mm, length 1 m.

Pack of 1.

Cat. No.	115 25
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Bases

Pack of 1.

For bottle ml	Cat. No.
500	237 25
1000	237 28

Reservoir bottles

PE-LD. Narrow-mouth bottle with tube bushing. Pack of 1.

Capacity ml	Ø mm	Height mm	Thread GL	Cat. No.
500	75	180	25	1290 55
1000	94	212	28	1290 60
1000, amber	94	212	28	1302 60





Spare reservoir bottles for automatic burettes

Available in clear or amber glass

DURAN® or soda-lime glass. Capacity 2000 ml. Pack of 1.

Material	Ø mm	Height mm	Neck size	Description	Cat. No.
DURAN®	160	200	29/32	Clear glass	233 10
DURAN®	160	200	29/32	Amber glass	233 20
Soda-lime glass	160	200	29/32	Clear glass	1269 65
Soda-lime glass	160	200	29/32	Amber glass	1270 65



Pumphead

for glass reservoir bottle, compact automatic burette

DURAN®, NS 29/32. Fitting length 185 mm. nozzle outer diameter 7 mm. Pack of 1.

Description	Cat. No.
Clear glass	238 75
Amber glass	238 76



Rubber bellows

for automatic burettes

Orange colored, single-bulb rubber bellows. With valve and tubing. Pack of 1.

Cat. No.	234 00
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Joint Clip

Stainless-steel Neck size 29/32. Pack of 1.

Cat. No.	556 18
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Burette clamps

Zinc alloy, nickel-plated. PVC-coated clamps. Pack of 1.

Description	Cat. No.
for 1 burette	165 15
for 2 burettes	165 20

Burette clamp

Castaloy® alloy. Two burettes up to 50 ml can be mounted in seconds. PVC-coated clamps provide a secure grip. Comfortable height adjustment. Graduations remain visible. Very sturdy design, easy to operate. Integral support connector. Ideal for use with burette support (Cat. No. 5778 91). Pack of 1.

Cat. No.	5779 00
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Burette clamps

PP, white. To be mounted on support rods of 8 to 14 mm Ø. Easily affixes the burette by clamping with a non-corroding spring. Pack of 1.

Description	Cat. No.
for 1 burette	165 05
for 2 burettes	165 10



Burette support

Baseplate: PP with rubber feet minimize sliding and protect bench-top. Support rod: Stainless steel. Includes baseplate 210 x 55 mm (L x W). Support rod 550 x 12 mm (L x diameter) Pack of 1.

Cat. No.	238 82
----------	--------



Burette covers

PP. Ribbed inside to prevent suction attachment during titration. Pack of 10.

Inner Ø mm	Height mm	Cat. No.
20	30	164 00





Spare burette stopcocks

Needle-valve stopcocks

BISTABIL, DURAN®/PTFE

Valve housing with precision DURAN® burette tip. Interchangeable PTFE valve spindle, PP cap and retention device. Valve opening 0-2.5 mm. Pack of 1.

For burette capacity ml	Lateral needle-valve stopcock Cat. No.	Straight needle-valve stopcock Cat. No.
2 - 10	821 20	822 20
25	821 21	822 21
50	821 22	822 22
Spare spindle with retention for ml		
2 - 50	821 70	821 70

Glass stopcocks

BISTABIL, DURAN®

Stopcock housing with precision DURAN® burette tip. Interchangeable borosilicate glass stopcock key with retention device. Stopcock size 3NS/12. Pack of 1.

For burette capacity ml	DURAN® Lateral stopcock Cat. No.	DURAN® Straight stopcock Cat. No.
2 - 10	818 05	818 15
25	818 07	818 17
50	818 09	818 19
Spare key with retention for ml		
2 - 10	811 40	810 53
25	811 41	810 53
50	811 42	810 53

Glass stopcocks, amber glass

BISTABIL, Borosilicate glass 5.4

Stopcock housing with burette tip. Interchangeable PTFE or borosilicate glass key with retention device. Stopcock size 3NS/12. Pack of 1.

For burette capacity ml	Lateral stopcock PTFE key Cat. No.	Lateral stopcock Glass key Cat. No.	Straight stopcock PTFE key Cat. No.	Straight stopcock Glass key Cat. No.
25	819 27	819 07	819 37	819 17
50	819 27	819 09	819 39	819 19
Spare key with retention for ml				
25	811 67	811 46	812 48	812 47
50	811 67	811 47	812 48	812 47

Temperature and Density Measurement

For the measurement of temperature and density, BRAND offers high quality thermometers, individually calibrated BLAUBRAND® density bottles, and fast, reliable hydrometers.

Consistent precision.



Density Bottles

BLAUBRAND® density bottles are individually adjusted. The nominal capacity is indelibly engraved on each bottle. Each bottle is calibrated with its own stopper or thermometer; hence, stoppers and thermometers are not interchangeable. Each bottle and its stopper or thermometer is marked with a unique matching identification number.

Certification note:

All BLAUBRAND® pycnometers are supplied with the following certification:

in quantity

- with an individual certificate

upon request

- with a DKD Calibration Certificate (from a DKD-accredited calibration laboratory at BRAND)



Density bottles, uncalibrated

Borosilicate glass 3.3. DIN ISO 3507, Gay-Lussac type. Stopper NS 10/19 with capillary. Top of stopper ground and polished. Nominal capacity printed on the bottom. Pack of 2.

Nominal capacity cm ³	Cat. No.
5	432 05
10	432 08
25	432 20
50	432 28
100	432 38



Density bottles, calibrated

BLAUBRAND®

Borosilicate glass 3.3. DIN ISO 3507, Gay-Lussac type. Calibrated to contain (TC, In). Individual certificate included. Stopper NS 10/19 with capillary. Top of stopper ground and polished. The volume in cm³ is specified to a precision of 3 decimal places. Pack of 1.

Nominal capacity cm ³	Cat. No.
5	433 05
10	433 08
25	433 20
50	433 28
100	433 38



Inscriptions in high
contrast blue enamel

Density bottles, calibrated

BLAUBRAND®.

With thermometer and side capillary

Borosilicate glass 3.3. DIN ISO 3507. Calibrated to contain (TC, In). Individual certificate included. Side capillary with conical ground cap size NS 7/16. Thermometer with enclosed scale, with standard ground joint NS 10/19, range 10 to 35 °C, divided in 0.2 °C, mercury filled. The volume in cm³ is specified to a precision of 3 decimal places. Pack of 1.

Nominal capacity cm ³	Cat. No.
10	434 08
25	434 20
50	434 28
100	434 38



Temperature and Density

Oxygen flasks, Winkler pattern

Soda-lime glass. For the determination of oxygen dissolved in water. The measured volume is indicated to ± 0.01 ml. White labelling area. Solid, obliquely cut standard-ground glass stopper can be secured with a fastening clip.

Each flask is calibrated with its own stopper; hence, stoppers and flasks are not

interchangeable. Each flask and its stopper is marked with a unique matching identification number. Pack of 2.

Nominal capacity ml	Neck Size	Cat. No.
100 - 150	14/23	3860 38
250 - 300	19/26	3860 48



Accessories:

(please order separately)

Fastening clips for oxygen flasks Winkler pattern

Pack of 1.

For Flask	Cat. No.
3860 38	3861 38
3860 48	3861 48



ASTM Centrifuge Tubes

BLAUBRAND® ASTM centrifuge tubes

Borosilicate glass 3.3. Capacity 100 ml.
Withstands RCF up to 700.

Design, accuracy, etc. to meet ASTM
("American Society for Testing and
Materials") specifications.
Pack of 2.

Note:

On request, ASTM centrifuge tubes are
also available with individual quality
certificate by BRAND.

Relative Centrifugal Force (RCF)

$$RCF = 1.118 \cdot r \cdot \left(\frac{n}{1000}\right)^2$$

(see DIN 58 970)

r = Rotation radius in mm

n = Speed

ASTM centrifuge tubes, cylindrical, conical bottom

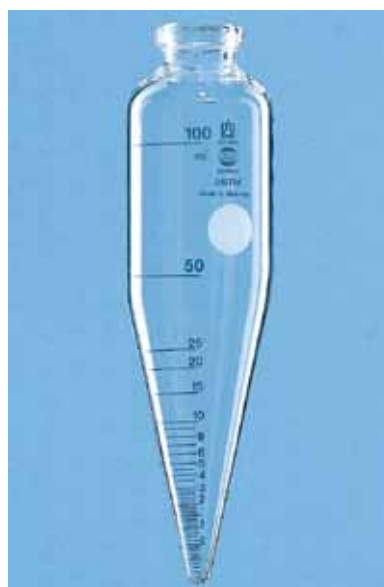
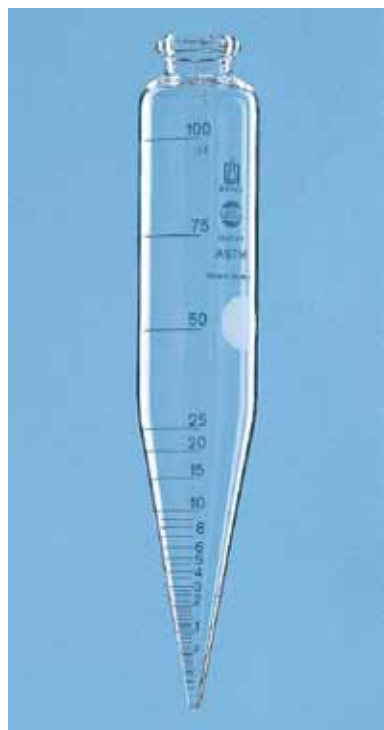
ASTM D 91.
Length max. 203 mm.

Graduation ml	Subdiv. ml
from 0 to 0.5	0.05
from 0.5 to 2	0.10
from 2 to 3	0.20
from 3 to 5	0.50
from 5 to 10	1
from 10 to 25	5
from 25 to 100	25
Cat. No.	3620 38

ASTM centrifuge tubes, cylindrical, conical bottom

Former standard ASTM D 96.
Length max. 167 mm.

Graduation ml	Subdiv. ml
from 0 to 0.5	0.05
from 0.5 to 2	0.10
from 2 to 3	0.20
from 3 to 5	0.50
from 5 to 10	1
from 10 to 25	5
from 25 to 100	25
Cat. No.	3623 38



ASTM centrifuge tubes,
pear-shaped,
cylindrical bottom

Former standard ASTM D 96.
Length max. 160 mm.

Graduation ml	Subdiv. ml
from 0 to 1.5	0.10
from 1.5 to 3	0.50
from 3 to 5	0.50
from 5 to 10	1
from 10 to 25	5
from 25 to 100	25
Cat. No.	3621 38



Temperature and Density

Sedimentation Cones

Imhoff
sedimentation cones

SILBERBRAND. Graduated to
100 ml, ring mark at 1000 ml.
Borosilicate glass 3.3. DIN 12672.

Graduation range ml	Subdiv. ml	Error limit ± ml
0 - 2	0.1	0.1
2 - 10	0.5	0.5
10 - 40	1	1
40 - 100	2	2
Ring mark 1000	–	10



With stopcock.
Pack of 1.

Cat. No.	3876 62
----------	---------



Without stopcock.
Pack of 4.

Cat. No.	3873 62
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Imhoff sedimentation cone

SILBERBRAND.

Graduated to 1000 ml.

Borosilicate glass 3.3. DIN 12672.

Without stopcock. Pack of 4.

Graduation range ml	Subdiv. ml	Error limit ± ml
0 - 2	0.1	0.1
2 - 10	0.5	0.5
10 - 40	1	1
40 - 100	2	2
100 - 1000	50	10

Cat. No.	3874 62
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Imhoff sedimentation cone SAN

PLASTIBRAND®.

Graduated to 1000 ml.

SAN, transparent. DIN 12672.

Screw cap allows drainage. Withstands temperatures up to 85 °C. Pack of 1.

Graduation range ml	Subdiv. ml	Error limit ± ml
0 - 2	0.1	0.1
2 - 10	0.5	0.5
10 - 40	1	1
40 - 100	2	2
100 - 1000	50	10

Cat. No.	3880 00
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Rack for glass and plastic sedimentation cones

PMMA/PP, holds 2 Imhoff sedimentation cones (glass or plastic; with and without stopcock). Compact design and easy to carry, even with cones filled. Pack of 1.

Length mm	Width mm	Height mm	Cat. No.
300	130	400	3880 60



Temperature and Density

Rack for plastic sedimentation cones

PMMA/PP, holds 2 plastic sedimentation cones. Compact design and easy to carry, even with cones filled. Pack of 1.

Length mm	Width mm	Height mm	Cat. No.
300	130	315	3880 50



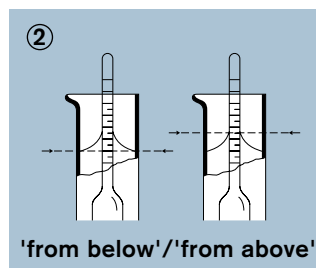
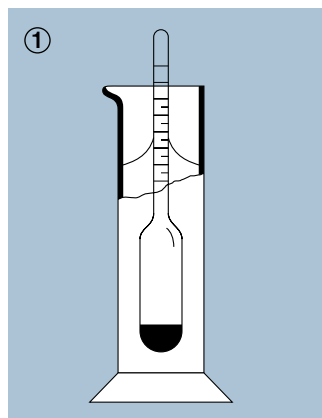


Hydrometers

Measuring Procedures

Hydrometers determine the density of liquids or the concentration of dissolved matter.

Density is frequently indicated in g/cm^3 (g/ml) or in °Baumé. Concentration is indicated in percentage by volume (Vol. %) or in percentage by mass (Weight%). Permissible deviations are within ± 2 graduation marks.



Measuring procedure

Pour the sample into a transparent cylinder (see fig. 1) and adjust its temperature to the indicated reference temperature of the hydrometer. Immediately before measuring, mix well with a glass rod to reduce differing sample densities and temperatures.

A clean hydrometer should only be touched above the scale. Liquid should not adhere more than 5 mm above the reading point.

The meniscus should remain even and not change its shape or height when the stem moves up and down. Hydrometer should first be cleaned carefully in Mucosol® (see page 262).

Once the hydrometer has reached its equilibrium, (floating freely without touching the walls of the cylinder) the density is read "from below" for transparent samples,

non-transparent samples are read "from above". (see fig. 2). Check the temperature of the sample immediately after the reading. Maximum hydrometer measuring temperature should not exceed 70 °C.

Temperature correction

1. Measuring instrument

Certain applications may require a correction to account for the thermal expansion of the hydrometer glass, if the measuring temperature deviates from the reference temperature of the hydrometer. This factor corrects the result corresponding measuring temperature.

$$K_t = (1 - \gamma (t - t_0)) \rho$$

K_t For the density after correction

γ Volume expansion coefficient of the hydrometer glass (25 ± 2) 10^{-6} K^{-1}

t Measuring temperature °C

t_0 Reference temperature °C

ρ Density reading g/ml

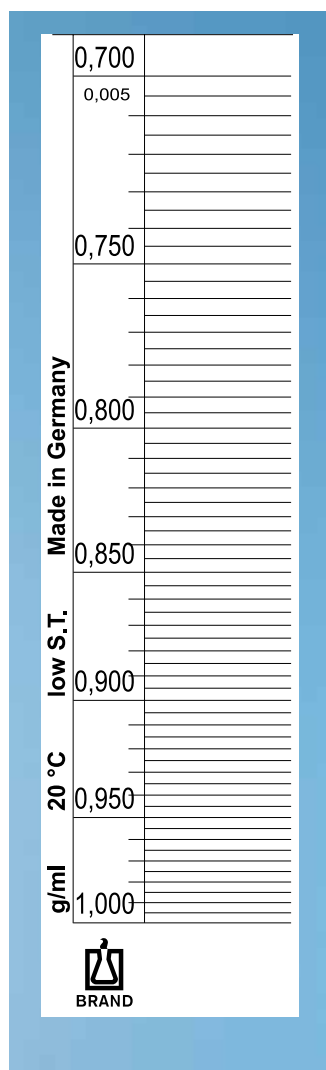
2. Sample

Conversion tables for measured densities to different temperature can be found in many chemical references. These tables can provide expansion coefficients and densities for different sample temperatures and concentrations.

Note:

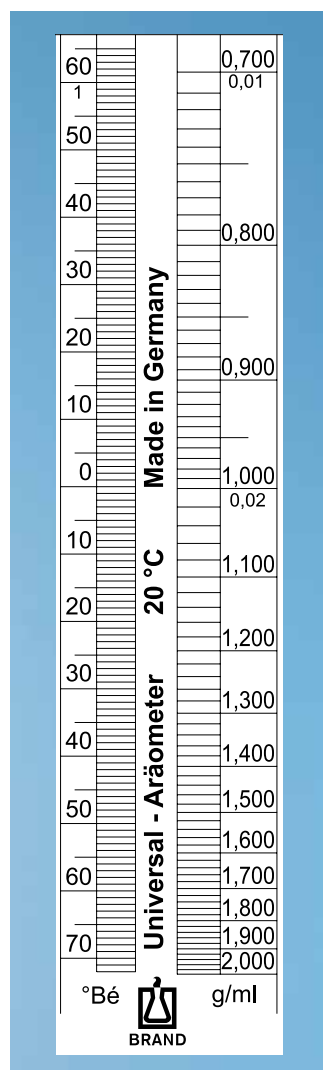
All scales are shown in original size.

Range finder hydrometers



Subdivisions 0.005 g/cm³,
reference temperature 20 °C.
Without thermometer,
approx. 260 - 300 mm long.
Pack of 1.

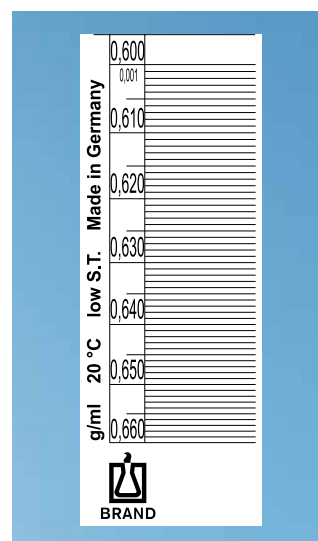
Range g/cm ³	Cat. No.
0.700 - 1.000	9700 10
1.000 - 1.500	9700 12
1.500 - 2.000	9700 14



Subdivisions 0.01 g/cm³,
reference temperature 20 °C.
Without thermometer,
approx. 360 mm long.
Pack of 1.

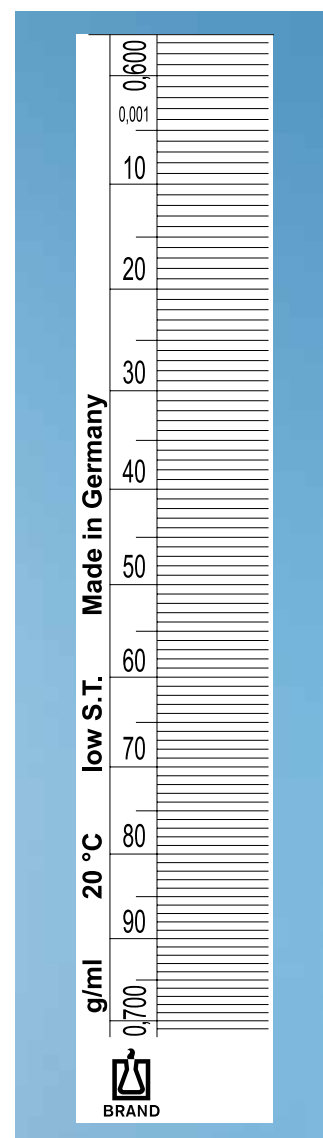
Range g/cm ³	Cat. No.
0.700 - 2.000	9705 10

General purpose hydrometers



Subdivisions 0.001 g/cm³,
reference temperature 20 °C.
Without thermometer,
approx. 160 mm long.
Pack of 1.

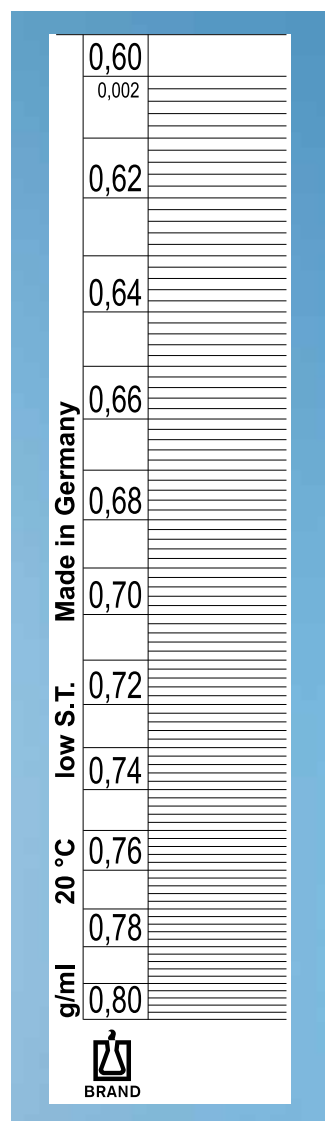
Range g/cm ³	Cat. No.
0.600 - 0.660	9660 30
0.650 - 0.710	9660 31
0.700 - 0.760	9660 32
0.760 - 0.820	9660 33
0.820 - 0.880	9660 34
0.880 - 0.940	9660 35
0.940 - 1.000	9660 36
1.000 - 1.060	9660 37
1.060 - 1.120	9660 38
1.120 - 1.180	9660 39
1.180 - 1.240	9660 40
1.240 - 1.300	9660 41
1.300 - 1.360	9660 42
1.360 - 1.420	9660 43
1.420 - 1.480	9660 44
1.480 - 1.540	9660 45
1.540 - 1.600	9660 46
1.600 - 1.660	9660 47
1.660 - 1.720	9660 48
1.720 - 1.780	9660 49
1.780 - 1.840	9660 50
1.840 - 1.900	9660 51
1.900 - 1.960	9660 52
1.960 - 2.020	9660 53



Subdivisions 0.001 g/cm³,
reference temperature 20 °C.
Without thermometer,
approx. 300 mm long.
Pack of 1.

Range g/cm ³	Cat. No.
0.600 - 0.700	9685 10
0.700 - 0.800	9685 11
0.800 - 0.900	9685 12
0.900 - 1.000	9685 13
1.000 - 1.100	9685 14
1.100 - 1.200	9685 15
1.200 - 1.300	9685 16
1.300 - 1.400	9685 17
1.400 - 1.500	9685 18
1.500 - 1.600	9685 19
1.600 - 1.700	9685 20
1.700 - 1.800	9685 21
1.800 - 1.900	9685 22
1.900 - 2.000	9685 23

General purpose hydrometers

**Without thermometer:**

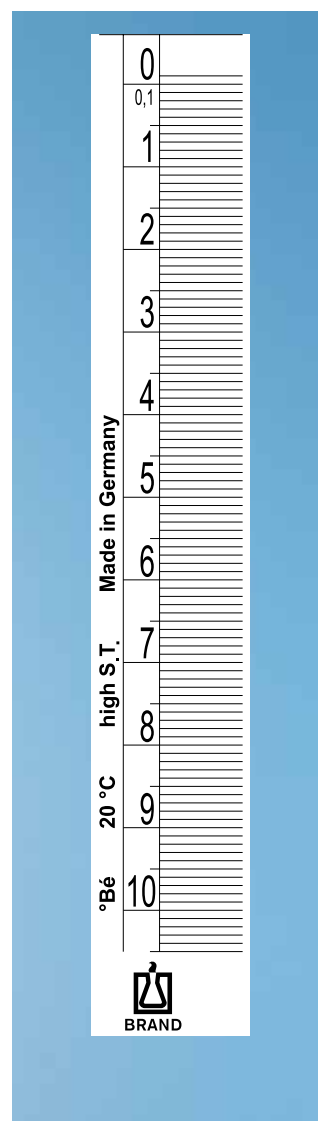
Subdivision 0.002 g/cm³, reference temperature 20 °C. Approx. 280 mm long. Pack of 1.

With thermometer:

Thermometer range: 0-30/40 °C (subdivision 1 °C). Petroleum filled, blue colored. Approx. 330 mm long. Pack of 1.

Range g/cm ³	without thermometer Cat. No.	with thermometer Cat. No.
0.600 - 0.800	9695 10	9696 10
0.800 - 1.000	9695 11	9696 11
1.000 - 1.200	9695 12	9696 12
1.200 - 1.400	9695 13	9696 13
1.400 - 1.600	9695 14	9696 14
1.600 - 1.800	9695 15	9696 15
1.800 - 2.000	9695 16	9696 16

Hydrometers Baumé pattern



For aqueous solutions and liquids with similar surface tensions.

The advantage of this pattern is that the distances between graduation marks remain constant throughout the entire range.

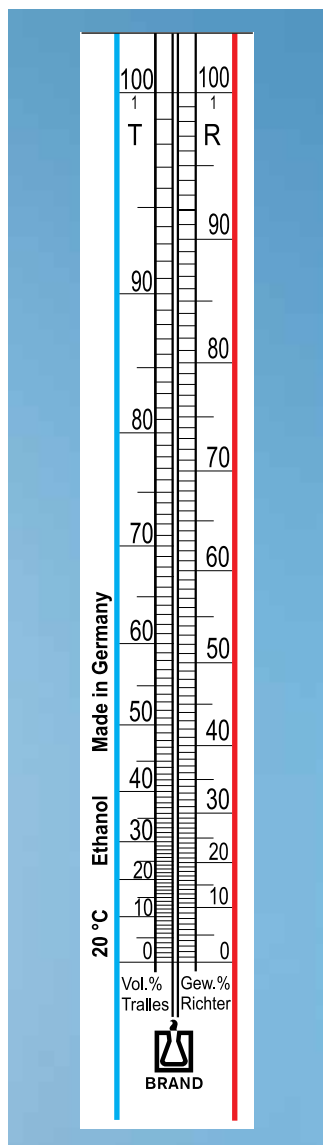
Without thermometer.

Reference temperature 20 °C. Pack of 1.

Range °Bé	Subdivisions °Bé	Length approx. mm	Cat. No.
0 - 35	1	250	9715 28
0 - 50	1	250	9715 34
0 - 70	1	250	9715 35
0 - 10	0.1	285	9715 36
10 - 20	0.1	285	9715 37
20 - 30	0.1	285	9715 38
30 - 40	0.1	285	9715 39
40 - 50	0.1	285	9715 40
50 - 60	0.1	285	9715 41
60 - 70	0.1	285	9715 42

The range 0-70 °C Bé corresponds to the range 1-1.94 g/cm³.

General purpose alcoholometers

**Richter + Tralles pattern**

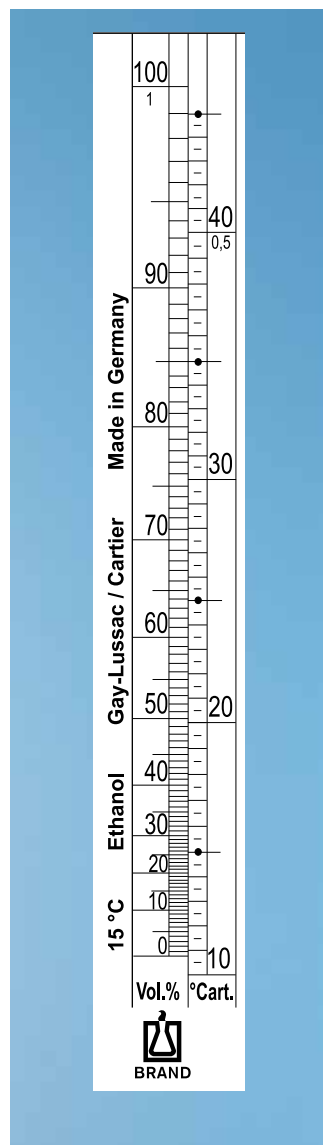
Subdivisions:
1 weight % / 1 vol.%,
reference temperature 20 °C,
range 0-100% (weight/vol.).
Pack of 1.

Without thermometer:
approx. 260 mm long

Cat. No.	
9805 10	

With thermometer:
approx. 330 mm long,
thermometer range: 0-30/
40 °C (subdivisions 1 °C),
petroleum filled, blue colored.

Cat. No.	
9805 60	

**Gay-Lussac + Cartier pattern**

Subdivisions:
1 vol.% / 0.5 °Cartier, refer-
ence temperature 15 °C,
range 0-100 vol.% /
10-45 °Cartier. Pack of 1.

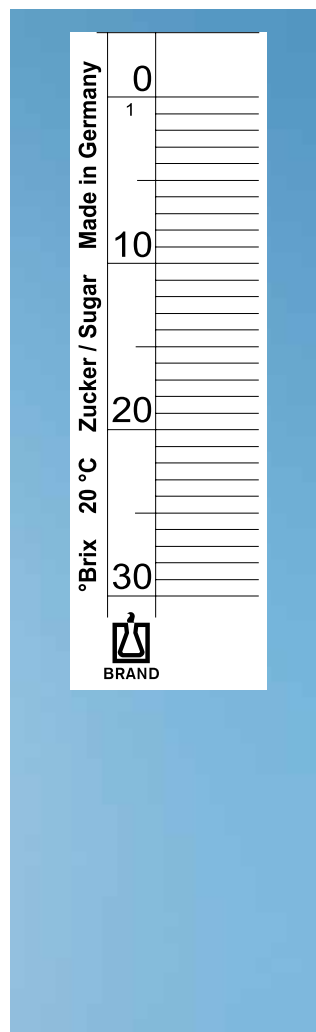
Without thermometer:
approx. 260 mm long

Cat. No.	
9803 10	

With thermometer:
approx. 330 mm long,
thermometer range: 0-30/
40 °C (subdivisions 1 °C),
petroleum filled, blue colored.

Cat. No.	
9803 60	

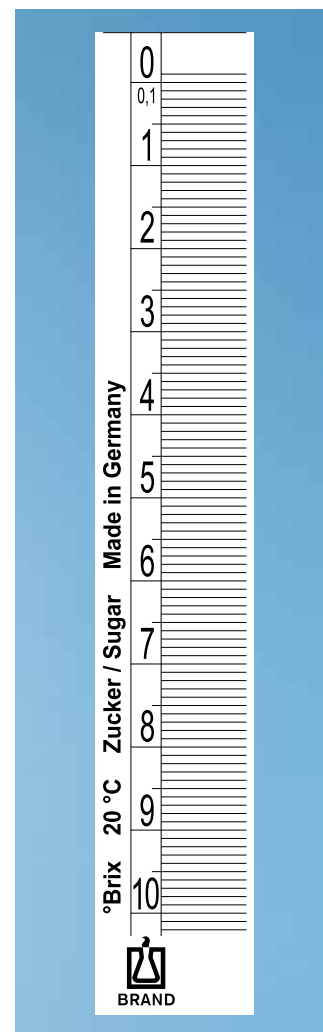
Sugar hydrometers

**Saccharimeters, Brix pattern (Sugar hydrometers)**
(1 °Brix = 1% sugar solution)

Subdivisions: 1 °Brix.
Reference temperature 20 °C.

Without thermometer:
approx. 210 mm long.
Pack of 1.

Range °Brix	Cat. No.
0 - 30	9844 17
30 - 60	9844 18
60 - 90	9844 16



Subdivisions: 0.1 °Brix.
Reference temperature 20 °C.

With thermometer:
approx. 330 mm long.
Thermometer range: 0-40/
50 °C (subdivisions 1 °C).
petroleum filled, blue colored.
Pack of 1.

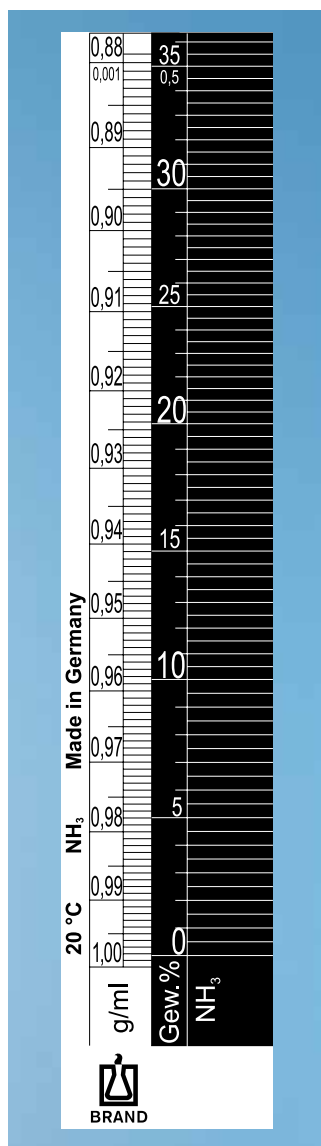
Range °Brix	Cat. No.
0 - 10	9847 10
10 - 20	9847 11
20 - 30	9847 12
30 - 40	9847 13
40 - 50	9847 14
50 - 60	9847 15

Special-purpose hydrometers

Reference temperature 20 °C.
Without thermometer, approx.
290-320 mm long.

All instruments listed below are
supplied with double scales
(weight % and density), elimi-
nating the need for cross ref-
erence documentation.

Pack of 1.



for	Range Weight %	Subdivision Weight %	Cat. No.
Ammonium hydroxide, NH_4OH	0 - 35	0.5	9875 10
Sodium chloride, NaCl	0 - 27	0.5	9926 10
Hydrochloric acid, HCl	0 - 40	0.5	9929 10

Hydrometer cylinders



DURAN®

Ungraduated, with hexagonal
base and spout.

Pack of 1.

Capac. ml	i. H. mm	i. Ø mm	Cat. No.
250	310	35	9874 02
500	340	50	9874 04

Hydrometer cylinders



PP. With spout and overflow
vessel. Hydrometers can
be read while the cylinder
is completely filled. The elas-
ticity of the jar reduces the
risk of hydrometer breakage.
Pack of 1.

Capac. ml	i. H. mm	i. Ø mm	Cat. No.
500	350	50	500 00

Thermometer

BRAND thermometers – premium instruments for measuring temperature.

These high quality thermometers are manufactured in a single casting for a long service life. The dark amber stain is integrated with the glass surface, and is particularly resistant to chemical and physical corrosion.

Note: At temperatures above 150 °C, the thermometer must be carefully preheated approximately to the temperature to be measured before immersion in the fluid.

GOLDBRAND

Precision thermometers, suitable for official certification or officially certified (the official certificate is valid for 15 years).

The accuracy is within the PTB* approved error limits.

SILBERBRAND

General-purpose thermometers for routine applications.

The accuracy remains within twice the PTB* approved error limits.

* PTB (Physikalisch-Technische Bundesanstalt): German Federal Institute of Physics and Metrology



Solid-stem thermometer, yellow coated

The vivid yellow coating on the back of these thermometers clearly contrasts the mercury column and graduations.

Enclosed-scale thermometer

BRAND also carries thermometers with opal glass scales.

Error limits for thermometers

The following error limits are according to "Eichordnung EO 14-1", the German Federal Weights and Measures Regulations.

For thermometers calibrated for total immersion containing **non-wetting** thermometric liquid (e.g., mercury and mercury-thallium alloy) and for thermometers containing **wetting** thermometric liquid (e.g., toluene, pentane and petroleum).

Official error limits for thermometers containing non-wetting thermometric liquids, for the subdivisions:

Temperature range from °C/to °C	0.05 °C	0.1 °C	0.2 °C	0.5 °C	1 °C	2 °C	5 °C
-58 / -10	–	± 0.3	± 0.4	± 0.5	± 1	± 2	± 5
-10 / 110	± 0.1	± 0.2	± 0.3	± 0.5	± 1	± 2	± 5
110 / 210	–	–	± 0.4	± 0.5	± 1	± 2	± 5
210 / 410	–	–	–	± 1	± 2	± 2	± 5
410 / 610	–	–	–	–	± 3	± 4	± 5

Official error limits for thermometers containing wetting thermometric liquids, for the subdivisions:

Temperature range from °C/to °C	0.5 °C	1 °C	2 °C	5 °C
-200 / -110	–	± 3	± 4	± 5
-110 / -10	± 1	± 2	± 4	± 5
-10 / 110	± 1	± 2	± 3	± 5
110 / 210	–	± 3	± 4	± 5

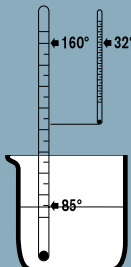
Calibration / Temperature correction (approximation)

Unless marked otherwise, thermometers are calibrated "for total immersion". This means that the meniscus of the mercury column is level with the surface of the liquid being measured. If part of the mercury column

is visible above the liquid surface, a correction may be necessary.

Equation for correction:

$$t_k = t + \frac{(t - t') n}{6250}$$



Example:

Temp. reading: $t = 160\text{ °C}$

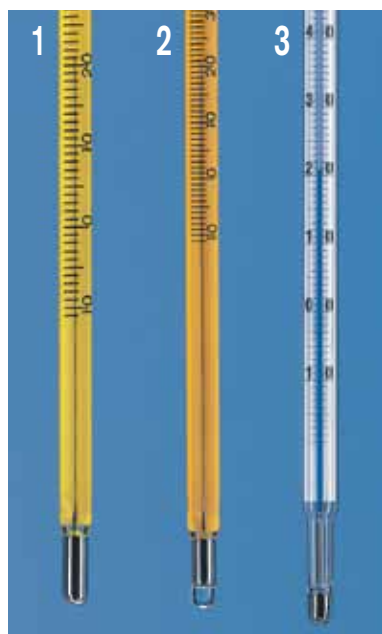
Immersion point: $t' = 85\text{ °C}$

Emerging mercury column:

Mean temperature: $t' = 32\text{ °C}$

Length in °C (on scale): $n = 160 - 85 = 75$

Corrected temp.: $t_k = 161.5\text{ °C}$



1 Solid-stem thermometers

for general purpose, SILBERBRAND

Calibrated for total immersion. Stem Ø 6-7 mm, yellow coated, upper end round. Graduation and inscriptions in dark amber stain. Measuring capillary of oval cross section improves readability. Pack of 1.

Range from / to °C	Subdivisions °C	Overall length mm	Filling	Cat. No.
-35 / 50	1	260	Mercury	8000 01
-10 / 50	1	250	Mercury	8000 02
-10 / 110	1	280	Mercury	8000 03
-10 / 150	1	280	Mercury	8000 04
-10 / 200	1	300	Mercury	8000 05
-10 / 250	2	320	Mercury	8000 96
-10 / 300	2	320	Mercury	8000 97
-10 / 360	2	320	Mercury	8000 98
-10 / 410	2	350	Mercury	8000 99
-35 / 50	1	260	Petroleum, red colored	8001 01
-10 / 100	1	260	Petroleum, red colored	8001 03
-10 / 150	1	260	Petroleum, red colored	8001 04

2 Stirring thermometers, solid-stem

for general purpose, SILBERBRAND

Calibrated for total immersion. With reinforced bottom end for stirring in beakers, etc. Stem Ø 6-7 mm, yellow coated, upper end round. Graduation and inscriptions in dark amber stain. Measuring capillary of oval cross section for better readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivisions in °C	Overall length mm	Cat. No.
-10 / 50	1	300	8005 02
-10 / 110	1	300	8005 03
-10 / 150	1	300	8005 04
-10 / 220	1	300	8005 06
0 / 360	2	300	8005 48
0 / 50	1	150	8006 02
-10 / 110	1	150	8006 03
0 / 150	1	150	8006 04
0 / 220	2	150	8006 46
0 / 360	2	150	8006 48

3 Enclosed-scale thermometers

for general purpose, SILBERBRAND

Calibrated for total immersion. Tube Ø 7-8 mm, upper end with ring. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary, in brilliant blue. Mercury filled. Pack of 1.

Range from / to °C	Subdivisions in °C	Overall length mm	Cat. No.
-35 / 50	1	260	8004 01
-10 / 50	1	200	8004 02
-10 / 100	1	260	8004 03
-10 / 150	1	260	8004 04
-10 / 200	1	300	8004 05
-10 / 250	1	300	8004 06
-10 / 300	1	340	8004 07
-10 / 360	1	340	8004 08
-10 / 420	1	340	8004 09

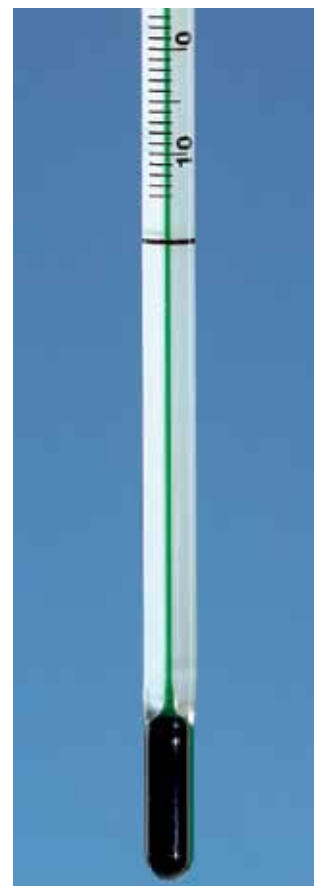
Solid-stem thermometers, without mercury

for general purpose, SILBERBRAND

Calibrated for partial immersion. Immersion depth 76 mm. Stem Ø 6-7 mm, white coated, upper end with ring. Graduation and inscriptions in dark amber stain. Indicator fluid is a green, wetting, thermometric liquid that is also biodegradable. Measuring capillary with large cross section for improved readability. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Cat. No.
-10 / 110	1	300	8002 00
-10 / 110	0.5	300	8002 02
-10 / 150	1	300	8002 04
-10 / 250*	2	300	8002 06
-10 / 360*	2	300	8002 08

* The color may fade due to thermal effects over time



Pocket thermometers, solid-stem

for general purpose, SILBERBRAND

In nickel-plated metal case with bayonet catch and clip. Case Ø 12 mm, overall length 140 mm. Calibrated for total immersion. Stem Ø 6-7 mm, yellow coated. Graduation and inscriptions in dark amber stain. Measuring capillary with oval cross section for improved readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivisions °C	Cat. No.
-30 / 50	1	8385 01
0 / 100	1	8385 03





1 Precision solid-stem thermometers

suitable for official certification, GOLDBRAND

Calibrated for total immersion. Stem Ø 6-7 mm, yellow coated, top end round. Black graduation and inscriptions. Measuring capillary with oval cross section for improved readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
-10 / 50	1	250	8040 02
0 / 50	0.5	250	8040 12
0 / 50	0.2	320	8040 22
0 / 50	0.1	420	8040 32
-10 / 110	1	300	8040 03
0 / 100	0.5	300	8040 13
0 / 100	0.2	400	8040 23
0 / 100	0.1	550	8040 33
-10 / 150	1	300	8040 04
0 / 150	0.5	320	8040 14
0 / 150	0.2	450	8040 24
-10 / 250	1	350	8040 06
0 / 250	0.5	350	8040 16
-10 / 360	1	380	8040 08
0 / 360	0.5	450	8040 18
-10 / 410	1	400	8040 09

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate

2 Precision thermometers, enclosed-scale pattern

DIN 12775, GOLDBRAND

Calibrated for total immersion. Tube Ø 7.5-8.5 mm, upper end with Richter-pattern top and knob. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary, in brilliant blue. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
0 / 50	0.5	220	8045 12
0 / 50	0.1	420	8045 32
0 / 100 **	1	305	8045 03
0 / 100	0.5	270	8045 13
0 / 100	0.1	550	8045 33
0 / 150 **	1	305	8045 04
0 / 150	0.5	350	8045 14
0 / 250 **	1	350	8045 06
0 / 250	0.5	420	8045 16
0 / 360 **	1	380	8045 08

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate

** to DIN 12778

3 Maximum-precision thermometers, enclosed-scale p.

for centrifugation, GOLDBRAND

For measurements in the autoclave. Reading is carried out at 23 °C. No temperature correction is required. Withstands vacuum and pressure to 2 bar. Calibrated for total immersion. Tube Ø 7-8 mm, upper end with Richter-pattern top and knob. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
-10 / 150	1	260	8206 00

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate

1 Precision Anschutz thermometer

(Precision solid-stem thermometers), GOLDBRAND

Calibrated for total immersion. Stem Ø 5-6 mm, yellow coated, upper end with knob. Black graduation and inscriptions. Measuring capillary with oval cross section for improved readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification/ calibratable Cat. No.
0 / 50	0.1	340	8080 32*
50 / 100	0.1	340	8080 33*
100 / 150	0.1	340	8080 34**
150 / 200	0.1	340	8080 35**
200 / 250	0.1	340	8080 36**
250 / 300	0.1	340	8080 37**
300 / 360	0.1	340	8080 38**

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate,

** upon request, available officially tested with calibration certificate and/or DKD calibration certificate.



Temperature and Density

2 Precision high-temperature thermometer

solid-stem thermometer, DIN 12778, GOLDBRAND

Calibrated for total immersion. Stem Ø 5-7 mm, matt finish on reverse side, upper end drawn out and sealed. Black graduation and inscriptions. Measuring capillary with large cross section for improved readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
0 / 610	2	450	8120 10

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate

3 Precision low-temperature thermometer

solid-stem thermometer, GOLDBRAND

Calibrated for total immersion. Stem Ø 6-8 mm, upper end round. Black graduation and inscriptions. Measuring capillary with large cross section for improved readability. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Filling	Suitable for official certification* Cat. No.
-38 / 50	1	260	Hg	8050 01
-38 / 50	0.5	280	Hg	8050 11
-50 / 30	1	280	Toluene, dyed red	8052 02
-50 / 30	0.5	280	Toluene, dyed red	8052 12
-100 / 30**	1	305	Toluene, dyed red	8052 03
-100 / 30	0.5	320	Toluene, dyed red	8052 13

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate,

** to DIN 12778



1 Dropping point thermometer, Ubbelohde pattern

Precision enclosed-scale thermometer with very small, rapid response mercury bulb, to DIN 12785, GOLDBRAND

Calibrated for total immersion. Top tube Ø 9.0-9.6 mm, bottom 3.3-3.7 mm. Upper end round. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary. Mercury filled. Mounted with metal fitting. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
0 / 110	1	240	8711 01

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate

2 Cloud point and setting point thermometers

Precision enclosed-scale thermometer to DIN 12785, GOLDBRAND

Calibrated for 180 mm immersion. Top tube Ø 9-11 mm, bottom 4.5-5.5 mm. Upper end round. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary. Toluene filled, dyed red. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
-70 / 50	1	360	8705 03

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate

3 Congealing point thermometer

Precision solid-stem thermometer, prismatic, to DIN 12785, GOLDBRAND

Calibrated for total immersion. Stem Ø 6-7 mm, yellow coated, upper end with ring. Black graduation and inscriptions. Measuring capillary of oval cross section for improved readability. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Overall length mm	Suitable for official certification* Cat. No.
0 / 100	0.5	300	8668 01

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate

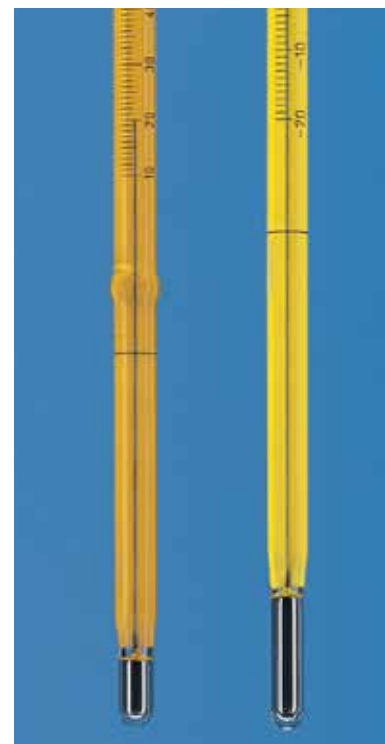
ASTM thermometers

ASTM No.	Range from / to °C	Subdi- vision °C	Overall length mm	Immersion depth mm	Suitable for official certification*/calibratable Cat. No.
1 C	-20 / 150	1	322	76	8800 01
2 C	-5 / 300	1	390	76	8800 02
3 C	-5 / 400	1	415	76	8800 03
5 C	-38 / 50	1	230	108	8800 04
6 C	-80 / 20	1	230	76	8800 05
7 C	-2 / 300	1	385	total immers.	8800 06
8 C	-2 / 400	1	385	total immers.	8800 07
9 C ^w	-5 / 110	0.5	290	57	8800 08
10 C ^w	90 / 370	2	290	57	8800 09
11 C	-6 / 400	2	310	25	8800 10
12 C	-20 / 102	0.2	420	total immers.	8800 11
14 C	38 / 82	0.1	375	79	8800 13
15 C	-2 / 80	0.2	395	total immers.	8800 14
16 C	30 / 200	0.5	395	total immers.	8800 15
17 C ^w	19 / 27	0.1	275	total immers.	8800 16
18 C ^w	34 / 42	0.1	275	total immers.	8800 17
20 C ^w	57 / 65	0.1	275	total immers.	8800 19
22 C ^w	95 / 103	0.1	275	total immers.	8800 21
23 C	18 / 28	0.2	212	90	8800 22
24 C	39 / 54	0.2	237	90	8800 23
33 C	-38 / 42	0.2	420	50	8800 27
34 C	25 / 105	0.2	420	50	8800 28
35 C	90 / 170	0.2	420	50	8800 29
36 C	-2 / 68	0.2	405	45	8800 30
37 C	-2 / 52	0.2	395	100	8800 31
39 C	48 / 102	0.2	395	100	8800 33
40 C	72 / 126	0.2	395	100	8800 34
41 C	98 / 152	0.2	395	100	8800 35
42 C	95 / 255	0.5	395	100	8800 36
44 C ^T	18.6 / 21.4	0.05	305	total immers.	8800 86
45 C ^T	23.6 / 26.4	0.05	305	total immers.	8800 87
46 C ^T	48.6 / 51.4	0.05	305	total immers.	8800 88
49 C	20 / 70	0.2	305	65	8800 37
54 C	20 / 100.6	0.2	310	total immers.	8800 90
56 C	19 / 35	0.02	585	total immers.	8800 40
57 C ^w	-20 / 50	0.5	287	57	8800 41
61 C	32 / 127	0.2	380	79	8800 42
62 C	-38 / 2	0.1	379	total immers.	8800 43
63 C	-8 / 32	0.1	379	total immers.	8800 44
64 C ^T	25 / 55	0.1	379	total immers.	8800 45
66 C ^T	75 / 105	0.1	379	total immers.	8800 47
67 C ^T	95 / 155	0.2	379	total immers.	8800 48
82 C ^w	-15 / 105	1	162	30	8800 52
83 C ^w	15 / 70	1	171	40	8800 53
86 C ^w	95 / 175	1	167	35	8800 56
88 C ^w	10 / 200	1	287	57	8800 58
89 C	-20 / 10	0.1	370	76	8800 59
90 C	0 / 30	0.1	370	76	8800 60
91 C	20 / 50	0.1	370	76	8800 61
92 C	40 / 70	0.1	370	76	8800 62
93 C	60 / 90	0.1	370	76	8800 63
94 C	80 / 110	0.1	370	76	8800 64
95 C	100 / 130	0.1	370	76	8800 65**
102 C	123 / 177	0.2	395	100	8800 69
103 C	148 / 202	0.2	395	100	8800 70
104 C	173 / 227	0.2	395	100	8800 71**
105 C	198 / 252	0.2	395	100	8800 72**
106 C	223 / 277	0.2	395	100	8800 73**
107 C	248 / 302	0.2	395	100	8800 74**
110 C ^T	133.6 / 136.4	0.05	305	total immers.	8800 79**
114 C	-80 / 20	0.5	300	total immers.	8800 78
120 C ^T	38.6 / 41.4	0.05	305	total immers.	8800 84
121 C ^T	98.6 / 101.4	0.05	305	total immers.	8800 85

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate,

** upon request, available officially tested with calibration certificate and/or DKD calibration certificate.

^w Beaded type, ^T Thermometer with auxiliary scale at 0 °C



ASTM thermometers

precision solid-stem thermometers, GOLDBRAND

Design, accuracy, etc. to meet ASTM ("American Society for Testing and Materials") specifications. Clear contrast through yellow coating. Black graduation and inscriptions. Mercury filled, under nitrogen (except 6 C and 114 C which are toluene filled). All thermometers without metal fittings. Pack of 1.



a: Immersion depth
b: Fitting length

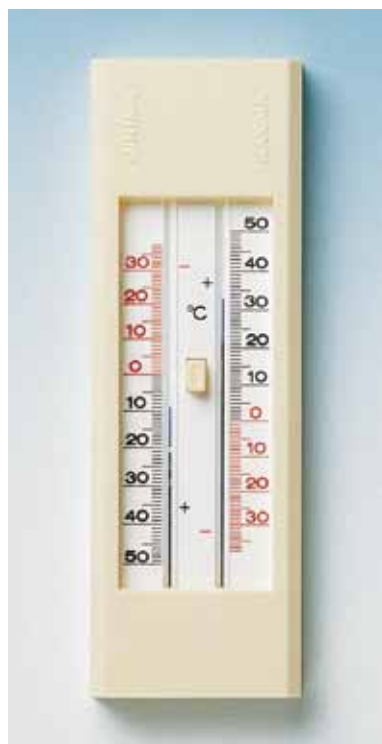
Precision thermometers with standard ground-glass joint

enclosed-scale thermometer, NS 14/23, GOLDBRAND

Calibrated for partial immersion, with indication of the mean mercury column temperature. Top tube Ø 10.5-11.5 mm, bottom 7-8 mm. Upper end with round finished seal. Opal glass scale with black graduation and inscriptions. Prismatic measuring capillary, in brilliant blue. Mercury filled. Pack of 1.

Range from / to °C	Subdivision °C	Fitting length approx. mm	Immersion depth approx. mm	Suitable for official certification* Cat. No.
-10 / 150	0.5	50	27	8130 49
-10 / 150	0.5	60	37	8130 50
-10 / 150	0.5	75	52	8130 51
-10 / 250	1	50	27	8130 59
-10 / 250	1	60	37	8130 60
-10 / 250	1	75	52	8130 61

* upon request, officially calibrated with calibration certificate and/or DKD calibration certificate



Maximum-minimum thermometer Six's pattern

With push button for automatic resetting. Weather resistant plastic housing. Temperature range -30 to 50 °C, subdivisions 1 °C. Ethanol/Mercury, in round capillary. Indicating cursors of blue glass with sealed-in wire tack. Pack of 1.

Description	Height mm	Width mm	Cat. No.
without top shield, with 2 lateral plastic brackets	230	60	8200 00
with removable top shield and eyelet for wall mounting	230	60	8205 00

Clinical Laboratory

Clinical laboratories see a wide range of specimens and use a great variety of methods. PLASTIBRAND® products for the medical laboratory are subjected to rigid quality control procedures. This ensures precise results – when it counts.

When results matter.

PLASTIBRAND®





Sample cup

for Technicon®-Analyzer

PS, transparent. CE-marked according to IVD-Directive 98/79 EC.
Packed in bags of 1000.

Capacity ml	Upper Ø mm	Lower Ø mm	Height mm	Pack of	Cat. No.
1.5	15	12.2	22.7	10000	1150 15
2	14.8	12.8	24.9	10000	1150 16
4	17	13.3	38	6000	1150 17



Push-on caps

for Analyzer Sample cup

PE. Suitable for Technicon® 1.5 ml sample tubes.
CE-marked according to IVD-Directive 98/79 EC.
Pack of 1000.

Cat. No.	1150 20
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Sample cup

with Snap cap

PS, transparent. PE snap cap.
Pack quantity: 1000 = 10 bags of 100.

Capacity ml	Ø mm	Height mm	Cat. No.
12	22	38	7220 60



Sample cup

for Coulter Counter®

PS, transparent. PE lid. CE-marked according to IVD-Directive 98/79 EC.
Pack quantity: 1000 = 4 bags of 250.

Capacity ml	Ø mm	Height mm	Cat. No.
20	32	56	7220 55

Jar with snap-on lid

Jar PS, snap-on lid PE-LD. Conical shape. Pack of 1000.

Capacity ml	max. Ø mm	Height mm	Cat. No.
25	47	32	623 15



Jars with push-on lid

PP. Pack of 10.

Capacity ml	max. Ø mm	Height mm	Cat. No.
approx. 40	56	25	618 15
approx. 80	75	30	618 20



Jar with screw cap

PP. Conical shape. Pack of 500.

Capacity ml	max. Ø mm	Height mm	Cat. No.
30	57	32	623 10





Urine beaker

with press-on lid

PP, with red PE lid. For hygienic and odorless urine sample handling. Lid is simply sealed by being pressed on. Easy to use: simply cut off integrated spout tip and insert test strip. CE-marked according to IVD-Directive 98/79 EC.

Description	Capacity ml	Subdivision ml	Ø mm	Height mm	Pack of	Cat. No.
Beaker	125	25	65	70	1000*	7589 01
Red Lid	–	–	70	–	1000*	7589 02

* Beakers: Pack of 1000, lids: Pack of 2 x 500.



Urine beaker

with screw cap

PP, PE screw cap. For hygienic urine sample handling. CE-marked according to IVD-Directive 98/79 EC.

Description	Capacity ml	Subdivision ml	Ø mm	Height mm	Pack of	Cat. No.
non-sterile (green cap)	100	20	65	75	1000*	7589 05
γ-ray sterile (yellow cap)	100	20	65	75	240**	7589 10

* Beakers: Pack of 1 x 1000, lids: Pack of 2 x 500 ** 48 bags of 5



Faeces container

with screw cap

PS. With label. Easy to use with PS screw cap which serves as a sample scoop grip. CE-marked according to IVD-Directive 98/79 EC. Pack of 400.

Description	Capacity ml	Ø mm	Height mm	Cat. No.
non-sterile (blue cap)	30	26	92	623 05



Sterilization indicator tape

Self-adhesive crêpe paper containing thermoactive pigments. The white colored strips turn brown after autoclaving (121 °C: after approx. 20 min., 134 °C: after approx. 5 min.). Pack quantity: 1 roll.

Length m	Width mm	Cat. No.
50	19	617 50

Disposal bags

for collection of disposable items after use

PP/PA. Caution: Risk of injury! Never put sharp objects such as needles into plastic bags. Bags must be open during sterilization.

PP, autoclavable (121 °C).

PA, autoclavable (134 °C) and hot-air sterilization at 180 °C.

Description	Length mm	Width mm	Pack of	Cat. No.
PP	300	200	100	7597 05
PA	300	200	50	7597 10



Clinical Laboratory

Stand for disposal bags

Epoxy-coated steel wire, with rubber feet. Not autoclavable. Pack of 1.

Description	Inner Ø mm	Height mm	Cat. No.
with 100 disposal bags of PP	120	250	7597 00
with 50 disposal bags of PA	120	250	7597 01

Workstation storage/dispenser boxes

PMMA, white and clear. Available in two sizes. Ideal for storing and dispensing small laboratory items like pipette tips, microcentrifuge tubes, pasteur pipettes, etc. Removeable top cover with hinged front cover. Pack of 1.

Description	Length mm	Width mm	Height mm	Cat. No.
large	165	152	355	1319 00
small	165	152	178	1319 02





Petri dish

Soda-lime glass. Excellent glass quality and workmanship. Dish and lid are flat inside and outside and are free from bubbles and streaks. Cut edges are fire-polished. Pack of 10.

Lid Ø mm	Dish height (base) mm	Cat. No.
40	12	4557 01
60	15	4557 17
80	15	4557 32
100	15	4557 42
100	20	4557 43
150	25	4557 51



Petri dish

PS. Transparent, with lid, disposable. Available with or without vent lid. Dishes and lids are assembled robotically to reduce the risk of contamination. Pack of 480 = 24 bags of 20.

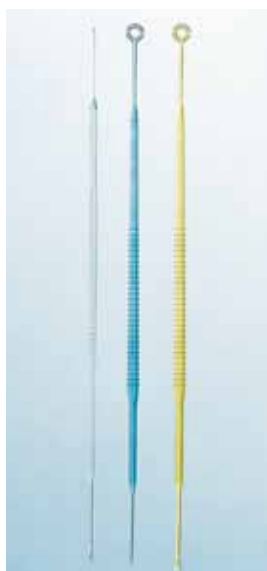
Description	Lid Ø mm	Height mm	Cat. No.
without vent	94	16	4520 00
with vent lid	94	16	4520 05



Petri dish

PS. With or without vent. Dishes and lids are assembled robotically to reduce the risk of contamination. Pack of 1620 = 108 bags of 15.

Description	Lid Ø mm	Height mm	Cat. No.
without vent	55	14	4520 15
with vent lid	55	14	4520 10



Inoculation loops

with needle, disposable

PS. For inoculation of nutrient media. Available either with loop at one end and needle at the other or loops at both ends. High flexibility permits gentle streaking without damaging the nutrient surface. γ -ray sterilized. Pack quantity: 1000 = 50 bags of 20.

Description	Color	Cat. No.
Capacity of loop: 1 μ l	natural	4522 01
Capacity of loop: 10 μ l	blue	4522 10
Capacity of loop: 1 + 10 μ l	yellow	4522 15

Culture tubes

Rimless or with screw cap (GL thread)

Soda-lime glass. Screw cap, PP, with white TPE elastomer seal. Autoclavable (121 °C). Pack of 100.

Description	Ø mm	Height mm	Wall thickness, mm	RCF max.	Pack of	Cat. No.
with thread GL 14 and screw cap	12	100	1	3000	100	1139 31
with thread GL 18 and screw cap	16	100	1	3000	100	1139 35
with thread GL 18 and screw cap	16	160	1	1800	100	1139 41
with thread GL 18 and screw cap	18	180	1	1100	100	1139 43
rimless	10	75	0.6	3000	250	1141 05
rimless	12	75	0.6	3000	250	1141 06
rimless	12	100	0.6	3000	144	1141 10
rimless	16	100	0.7	2600	78	1141 15
rimless	16	125	0.7	1800	105	1141 20
rimless	16	160	0.7	1500	100	1141 25
rimless	18	180	0.7	900	121	1141 30



Clinical Laboratory

Centrifuge tubes

Rimless, round bottom

PC. Embossed graduation, subdivisions approx. 1 mm. Transparent, slight yellow tint. Withstands RCF up to 5000. Pack of 10.

Capacity ml	Subdivision ml	Ø mm	Height mm	Cat. No.
50	1	35	99	7810 29
100	2	41	115	7810 39
100	2	45	98	7810 40

Polycarbonate strength may be dramatically reduced when it is autoclaved or treated with alkaline cleaning agents.



Centrifuge tubes

with screw cap

PP, translucent. Withstands RCF up to 3000. Graduated, available non-sterile and γ -ray sterilized in 15 ml or 50 ml. Screw cap PE with sealing cone. High clarity. CE-marked according to IVD-Directive 98/79 EC.

Capacity ml	Description	γ -ray sterile/non-sterile	Ø mm	Height mm	Pack of	Cat. No.
13	without base	non-sterile	17	120	750 (5 x 150)	1148 17
13	without base	sterile	17	120	750 (5 x 150)	1148 18
50	without base	non-sterile	30	114	300 (6 x 50)	1148 20
50	without base	sterile	30	114	300 (6 x 50)	1148 21
50	with base	non-sterile	30	116	250 (5 x 50)	1148 22
50	with base	sterile	30	116	250 (5 x 50)	1148 23





Centrifuge tubes

Cylindrical, with rim

PP. Without stopper. Withstands RCF up to 4500. Autoclavable (121 °C).

Capacity ml	Ø mm	Height mm	Pack of	Cat. No. (without stopper)
10	16	100	3750 (250 per bag)	1153 42
20	20	100	500 (50 per bag)	1153 48
26	24	90	500 (50 per bag)	1153 46
48	30	100	400 (25 per bag)	1153 50
75 *	35	100	300 (20 per bag)	1153 52
110	40	120	300 (20 per bag)	1153 54
125	45	120	100 (10 per bag)	1153 56

* Stopper reduces max. volume

PE-Stopper

for centrifuge tubes

PP. Packed in bags of 100.



Suitable for tube No.	Pack of	Cat. No.
1153 42	1000	1153 60
1153 48	500	1153 66
1153 46	500	1153 68
1153 50	500	1153 70
1153 52	500	1153 72
1153 54	100	1153 74
1153 56	100	1153 76

Centrifuge tubes

Rimless, round bottom.

PP. Translucent. Withstands RCF up to 5000. Autoclavable (121 °C). Pack of 10.



Capacity ml	Ø mm	Height mm	Cat. No.
3.5	13	50	7812 05
10	16	76	7812 08
12	17	99	7812 12
25	25	76	7812 20
30	25	88	7812 26
75	35	105	7812 28
80	38	101	7812 36
100	41	115	7812 38
100	45	97	7812 39
250	57	147	7812 48

Sample tubes

PS, transparent.

Type of tube	RCF max.	Ø mm	Height mm	Pack of	Cat. No.
Universal	2000	16	100	2000	1147 15
Universal	4000	12	75	4000	1147 60
Coagulometer	2000	12	55	5000	1147 50



Grip stopper

for sample tubes

PE-LD, neutral. Packed in bags of 1000.

Stoppers for tubes	Pack of	Cat. No.
1147 15	10000	1147 20
1147 50, 1147 60	20000	1147 30



Sedimentation tube

PS, transparent. Conical bottom. Pack of 2000 = 2 bags of 1000.

RCF max.	Ø mm	Height mm	Cat. No.
1000	16	105	1147 40





Test tube rack

available in 6 sizes and four colors

PP. Sturdy construction, stackable. Versatile and inexpensive racks for common diameter test tubes. Filled PP, density 1.2 g/cm³. Will not float in waterbath. Alphanumeric positions for clear sample identification. Wide spaces between positions. Operating temperature -20 to 90 °C. Autoclavable (121 °C). Racks are supplied in three-pieces for convenient and permanent assembly. Pack of 5.



for Ø up to mm	Positions	Length mm	Width mm	Height mm	white Cat. No.	blau Cat. No.	red Cat. No.	yellow Cat. No.
13	6 x 14	265	126	75	43400 00	43400 01	43400 02	43400 03
18	5 x 11	265	126	75	43400 10	43400 11	43400 12	43400 13
20	4 x 10	265	126	75	43400 20	43400 21	43400 22	43400 23
25	4 x 8	265	126	88	43400 30	43400 31	43400 32	43400 33
30	3 x 7	265	126	88	43400 40	43400 41	43400 42	43400 43
16	5 x 11	265	126	75	43400 60	43400 61	43400 62	43400 63



Test tube rack

PTFE. Excellent chemical resistance. Operating temperature -200 to 250 °C. Pack of 1.

for Ø up to mm	Positions	Length mm	Width mm	Height mm	Cat. No.
13	21	180	60	60	1155 10
19	10	180	60	70	1155 15
30	4	180	60	80	1155 20

Microcentrifuge tube rack

Filled PP, sturdy construction. Stackable racks with alphanumeric positions. Operating temperature -20 to 90 °C. Autoclavable (121 °C). Density 1.2 g/cm³. Will not float in waterbath. Racks are supplied in two-pieces (Ø 11 mm, for microcentrifuge tubes) or three-pieces (Ø 13 mm, for cryogenic tubes). The racks can be assembled securely and permanently with minimum handling. Generous spacing between positions, so that tubes with screw cap and snap lids can be positioned easily. Pack of 5.



for Ø up to mm	Positions	Length mm	Width mm	Height mm	white Cat. No.	blue Cat. No.	red Cat. No.	yellow Cat. No.
13	6 x 14	265	126	38	43410 00	43410 01	43410 02	43410 03
11	8 x 16	265	126	38	43410 50	43410 51	43410 52	43410 53

PARAFILM® M Sealing film

Practical features

Elastic PARAFILM® M sealing film always fits, whether for beakers or Erlenmeyer flasks, weighing bottles or graduated cylinders. It protects your samples from contamination or evaporation, and prevents leakage from overturned containers. PARAFILM® M can be stretched by up to 200%, and be sealed to irregular shapes and surfaces.

Material

PARAFILM® M is free of plasticizers, and consists largely of polyolefins and paraffin waxes. If PARAFILM® M should come into contact with food, the guidelines of the locally valid food handling laws should be followed. PARAFILM® M complies with the general requirements of the FDA (Food and Drug Administration) for use under 55 °C, as well as satisfying GMP (Good Manufacturing Practice).

Physical properties

Toxicity: non-toxic
 Melting point: 60 °C
 Flash point: 301 °C
 Temperature range (continuous use):
 -45 °C to +50 °C
 Stretching ability: 200%
 Elongation at tear: 300%
 Gas permeability in 24 hours at 23 °C with 50% relative humidity:
 O₂ (oxygen): ≤ 350 cm³/m²
 N₂ (nitrogen): ≤ 105 cm³/m²
 CO₂ (carbon dioxide): ≤ 1100 cm³/m²
 Water vapor permeability in 24 hours at 37 °C and 90% relative humidity: 0.8 g/m²

Effects of 48 hours of exposure at 23 °C

Acids:	
Hydrochloric acid 36.5%	resistant
Sulphuric acid 98%	resistant
Nitric acid 95%	resistant*
Alkaline solutions:	
Sodium hydroxide 22%	resistant
Ammonia 28%	resistant
Saline solutions:	
Sodium chloride 20%	resistant
Potass. permanganate 5%	resistant*
Iodine solution 0.1 mol/l	resistant*
Organic solvents:	
Methanol	resistant
Ethanol	resistant
Isopropanol	resistant
Diethylether	not resistant
Chloroform	not resistant
Carbon tetrachloride	not resistant
Benzene	not resistant
Toluene	not resistant

* Brown coloration

Chemical resistance

PARAFILM® M is resistant up to 48 hours against many polar substances, e.g., saline solutions, inorganic acids and alkaline solutions. After this period embrittlement may occur.

Storability

PARAFILM® M can be stored for at least 3 years without loss of quality under storage condition between 7 °C and 32 °C and a relative humidity of 50%.

PARAFILM® M Sealing film

Width mm	Length m	Pack of	Cat. No.
50	75	24	7016 11
100	38	12	7016 05
100	75	12	7016 06
500	15	6	7015 01

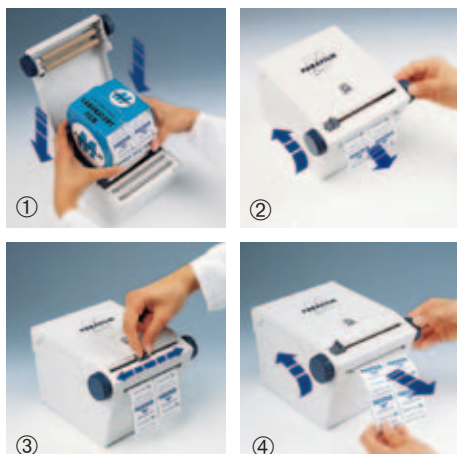
PARAFILM® M Cutter

The handy PARAFILM® M Cutter is convenient for clean storage and cutting of PARAFILM® M sealing film. Suitable for 50 mm and 100 mm wide rolls. Pack of 1.

Cat. No.	7016 50
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Clinical Laboratory





Pasteur pipettes

disposable

PE-LD. Very good reproducibility of the number of drops per milliliter. Ideal for aliquots. Pasteur pipettes can be filled and deep-frozen, or changed into a closed vessel by heat-sealing the tip. The integrated pipetting bulb depresses easily, minimizing fatigue from frequent pipetting. Resistant to gas or gamma radiation sterilization.

Graduation/ Subdivision ml	Withdraw volume ml	Outer-Ø tip mm	Length mm	Drop quantity of ml	Pack of*	Cat. No.
–	3.0	2.8	152	25-27	5000	7477 50
1 / 0.25	3.5	3.4	151	25-30	5000	7477 55
3 / 0.5	3.5	3.2	152	21-28	5000	7477 60
2 / 0.5	2.0	3.3	152	22-26	5000	7477 65
–	4.0	1.0	148	60-75	5000	7477 70
–	1.0	1.0	105	50	3200	7477 75

* Pack quantities: 5000 = 10 cartons of 500, 3200 = 8 cartons of 400.



Dropping pipettes

with integrated bellows

PE-LD. For sampling and decanting infectious or toxic liquids. Graduated. Pack of 100.

Capacity ml	Length mm	Cat. No.
1.5	133	1254 10
5	194	1254 20



Dropping pipette

with integrated pipetting bulb

PE-LD. Pack of 250.

Capacity ml	Length mm	Cat. No.
1.8	98	1254 00

Pasteur pipettes

Soda-lime glass. ISO 7712. Long drawn-out capillary tip. Suction end with constriction for a cotton plug. Pack of 1000 = 4 boxes of 250.

Capacity ml	Inner-Ø tip mm	Outer-Ø mm	Length suction tube, mm	Length tip mm	Total length mm	Cat. No.
2	1.0	7	25	45	145	7477 15
2	1.0	7	25	120	225	7477 20



Rubber cap

Natural rubber (NR). Pipetting aid for glass pasteur pipettes. Pack of 100.

Cat. No.	1247 00
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All products can also be found in our online catalog at: www.brand.de





Disposable micro-pipettes, intraMARK

BLAUBRAND®, conformity certified, with ring mark

DIN ISO 7550. Conformity certified for volumes greater than 5 µl.

Calibrated to contain (TC, In). Color code to ISO for clear identification.

CE-marked according to IVD-Directive 98/79 EC.

Pack quantity 1000 = 4 boxes of 250. 200 µl: Pack of 800 = 4 boxes of 200.

Mark(s) at µl	Color Code	Length mm	Accuracy ≤ ± %	Reproducibility ≤ %	Cat. No.
1/2/3/4/5*	white	125	0.30	0.6	7087 07
10	orange	125	0.25	0.5	7087 09
20	black	125	0.25	0.5	7087 18
25	2 x white	125	0.25	0.5	7087 22
20 + 40	2 x red	125	0.25	0.5	7087 28
40	2 x red	125	0.25	0.5	7087 27
50	green	125	0.25	0.5	7087 33
50 + 100	blue	125	0.25	0.5	7087 45
100	blue	125	0.25	0.5	7087 44
200	red	125	0.25	0.5	7087 57

* conformity certified for 5 µl mark

Disposable micro-pipettes, intraEND

BLAUBRAND®, conformity certified, without ring mark

DIN ISO 7550. Conformity certified for volumes greater than 5 µl. Volume defined by end-to-end filling. Calibrated to contain (TC, In). CE-marked according to IVD-Directive 98/79 EC. Pack quantity 1000 = 4 boxes of 250. One pipetting aid, cat. no. 7091 10, included in each pack (> 1 µl).



Capacity µl	Length mm	Accuracy ≤ ± %	Reproducibility ≤ %	Cat. No.
1*	29	0.5	1.5	7091 01
2*	29	0.5	1.0	7091 03
3*	29	0.5	1.0	7091 05
5	29	0.5	1.0	7091 07
10	29	0.5	1.0	7091 09
20	29	0.5	1.0	7091 18
25	29	0.5	1.0	7091 22
50	29	0.5	1.0	7091 33
100	60	0.5	2.0	7091 44

* not conformity certified

Disposable Delbrück micropipettes, intraEND

BLAUBRAND®, conformity certified, to Prof. Delbrück

DIN ISO 7550. Volume defined by end-to-end filling. Calibrated to contain (TC, In).

Sodium-heparinized. Ideal for capillary blood sampling. With a length of only 30 mm, the pipette can be placed directly into a microcentrifuge tube, where it will release the sample during centrifugation. CE-marked according to IVD-Directive 98/79 EC.

Pack quantity 1000 = 10 boxes of 100.



Capacity µl	Length mm	Accuracy ≤ ± %	Reproducibility ≤ %	Cat. No.
20	30	0.5	1.0	7086 60
50	30	0.5	1.0	7086 64

Pipetting aid

For BLAUBRAND® intraEND micropipettes (> 1 µl). Consisting of the PET plastic tube, silicone adapter, and TPE suction bellows with venting hole. Pack of 10.

Cat. No.	7091 10
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Mouth pipetting is prohibited according to the Regulations for Accident Prevention in Germany.



Pipette holder

For intraEND and Delbrück micropipettes and test tubes (EASYCAL™). Pack of 10.

Cat. No.	7086 05
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Micro haematocrit capillaries

without calibration mark, heparinized or non-heparinized

DIN ISO 12772 and BS 4316-68. With color code. For use in haematocrit centrifuges. Heparinized: heparinized with sodium heparinate over internal surface, red color code, for capillary blood. Non-heparinized: Blue color code, for use with heparinized venous blood. CE-marked according to IVD-Directive 98/79 EC. Pack quantity 1000 = 10 glass boxes of 100.

Description	Color-Code	Length mm	Wall thickness mm	Inner-Ø mm	Outer-Ø mm	Cat. No.
heparinized	red	75 ± 1	0.2	1.1 - 1.2	1.5 - 1.6	7493 11
non-heparinized	blue	75 ± 1	0.2	1.1 - 1.2	1.5 - 1.6	7493 21



Haematocrit sealing compound

Non-drying cement on a plastic plate. For quick sealing of micro-haematocrit capillaries. Up to 24 capillaries can be placed vertically in numbered positions along the sides of the tray. CE-marked according to IVD-Directive 98/79 EC. Pack of 10.

Cat. No.	7495 10
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Note: Hold the capillaries (~ 2/3 full) near the empty end, and stick the empty end into the cement with a slight twist to seal it.



Counting Chambers

Counting chambers serve to determine the number of particles per volume unit of a liquid. The particles (e.g., leucocytes, erythrocytes, thrombocytes, bacteria, fungus spores, pollen) are visually counted under a microscope.

Counting chamber with spring clips



Counting chamber without spring clips



BLAUBRAND®-counting chambers

BLAUBRAND® counting chambers are precision measuring instruments. They conform to DIN 12847.

Description of functional characteristics

The microscope-slide-sized base plate is made of special optical glass. Milled grooves divide the surface into two large fields (outside) and three narrow ridges (inside). The two outer fields are for inscriptions, whereas the ridges are ground and polished. The central ridge (= chamber bottom) has two engraved sets of rulings for counting, separated by a groove. Generally the chamber

bottom on the central ridge is 0.1 mm lower (= chamber depth) than the two outer ridges. Hence, when a cover glass is placed on top, there is a gap of 0.1 mm between the glass and the central ridge. The lateral boundaries of the volume to be counted are formed by the imaginary planes projected vertically onto the boundary lines of the ruling.

Equation for particle determination (for general use)

$$\text{Particles per } \mu\text{l volume} = \frac{\text{Counted particles}}{\text{Counted surface (mm}^2\text{)} \cdot \text{Chamber depth (mm)} \cdot \text{Dilution}}$$

Example: Erythrocytes

- Chamber: Improved Neubauer
1. Counted particles: 528 erythrocytes
 2. Counted surface: 5 group squares, equivalent to 0.2 mm²
 3. Chamber depth: 0.1 mm
 4. Dilution: 1:200

$$\begin{aligned} & \frac{528 \cdot 200}{0.2 \cdot 0.1 \cdot 1} \\ &= 5.28 \cdot 10^6 \text{ ery}/\mu\text{l blood} \\ &= \underline{5.28 \text{ Mio ery}/\mu\text{l blood}} \end{aligned}$$

Pack quantities for all counting chambers:

- 1 Counting chamber, complete with
- 2 haemocytometer cover glasses, in transparent plastic box.

Special chamber depth
0.02 and 0.05 mm
available on request!



BLAUBRAND counting chamber and haemocytometer cover glasses are CE-marked according to IVD-Directive 98/79 EC.

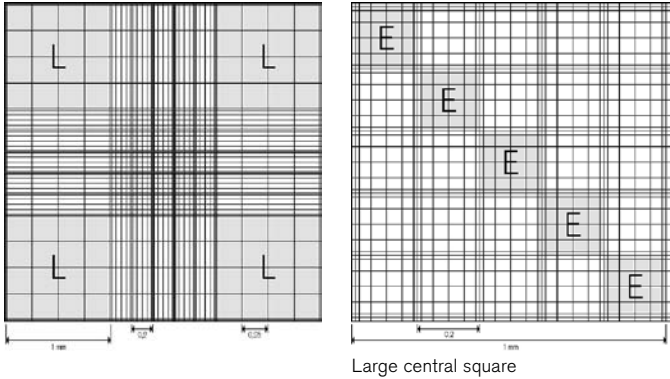
Cleaning

For cleaning, we recommend the disinfectant cleaner Mucocit®-T (page 263).

Improved Neubauer

double ruling, with or without spring clips

The ruling shows 9 large squares of 1 mm² each. The four large squares in the corners marked "L" for counting leucocytes are each subdivided into 16 squares with 0.25 mm sides. The large square in the center is subdivided into 25 group squares of 0.2 mm sides. Each group square consists of 16 mini squares with 0.05 mm sides, each having an area of 0.0025 mm². The 5 group squares marked "E" are used for counting thrombocytes and erythrocytes. All group squares have triple boundary lines on each side. The central line is the limiting line and determines whether cells in the marginal area shall be included in the count or not. CE-marked according to IVD-Directive 98/79 EC.

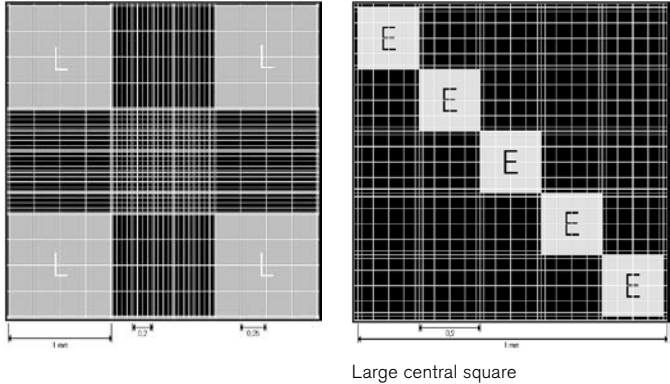


Description	Chamber depth	Cat. No.
without spring clips	0.1 mm	7178 05
with spring clips	0.1 mm	7178 20

Improved Neubauer, bright-line

double ruling, without spring clips

Same ruling as Improved Neubauer, but with rhodium-coated chamber bottom. Rulings are engraved into the rhodium layer and appear bright under normal microscope settings. By altering the contrast, the microscope image can be reversed, so that the rulings appear brighter or darker, as required. CE-marked according to IVD-Directive 98/79 EC.

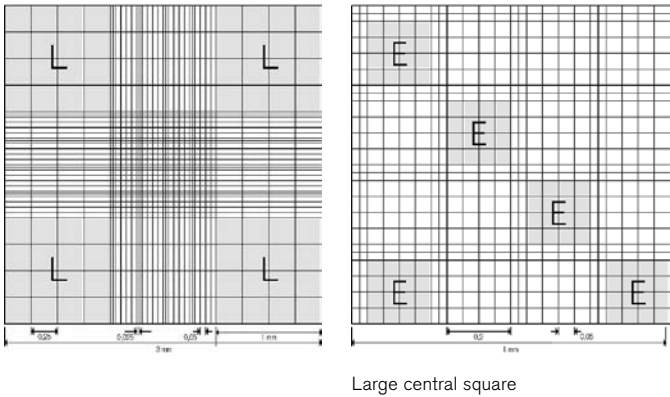


Description	Chamber depth	Cat. No.
without spring clips	0.1 mm	7178 10

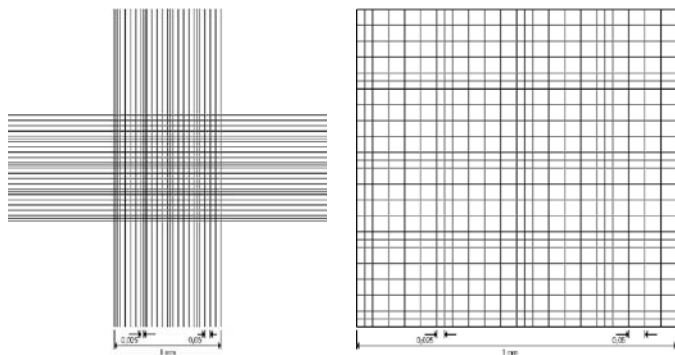
Neubauer

double ruling, with or without spring clips

The ruling shows 9 large squares of 1 mm² each. The four large squares in the corners marked "L" for counting leucocytes are each subdivided into 16 squares with 0.25 mm sides. The large square in the center is subdivided into 16 group squares of 0.2 mm sides. Each group square consists of 16 mini squares with 0.05 mm sides, each having an area of 0.0025 mm². The 5 group squares marked "E" are used for counting thrombocytes and erythrocytes. Contrary to the more advanced Improved Neubauer counting chambers, the counting area of each group square is limited by the outer one of the triple boundary lines. CE-marked according to IVD-Directive 98/79 EC.



Description	Chamber depth	Cat. No.
without spring clips	0.1 mm	7186 05
without spring clips	0.1 mm	7186 20



Large central square

Description	Chamber depth	Cat. No.
without spring clips	0.1 mm	7180 05
with spring clips	0.1 mm	7180 20

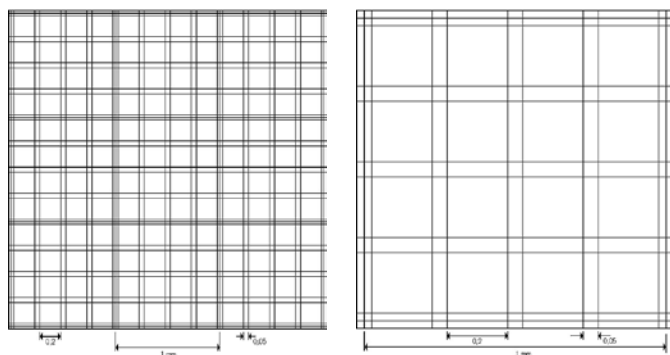
Thoma

double ruling, with or without spring clips

Rulings correspond to the central large square of the Neubauer chamber. The mini squares have an area of 0.0025 mm^2 each. Since the outer large squares are not completed, the Thoma chamber is only used for counting thrombocytes and erythrocytes. CE-marked according to IVD-Directive 98/79 EC.

Haemocytometer cover glasses for counting chambers see page 208.

We recommend in mm: 20 x 26 x 0.4 Haemocytometer cover glasses for all counting chambers in our range (except Fuchs-Rosenthal: size in mm: 24 x 24 x 0.4, Nageotte: size in mm: 22 x 30 x 0.4).



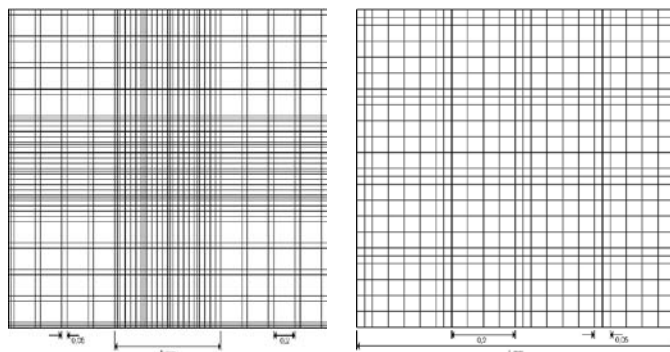
Large central square

Description	Chamber depth	Cat. No.
without spring clips	0.1 mm	7189 05
with spring clips	0.1 mm	7189 20

Bürker

double ruling, with or without spring clips

The ruling shows 9 large squares of 1 mm^2 each. These are used for counting leucocytes. Each large square is subdivided by double lines (0.05 mm apart) into 16 group squares with 0.2 mm sides. The group squares correspond in size to the Neubauer counting chamber, but have no further subdivisions. They are used for counting thrombocytes and erythrocytes. The double lines form mini squares with an area of 0.0025 mm^2 . CE-marked according to IVD-Directive 98/79 EC.



Large central square

Description	Chamber depth	Cat. No.
without spring clips	0.1 mm	7195 05
with spring clips	0.1 mm	7195 20

Bürker-Türk

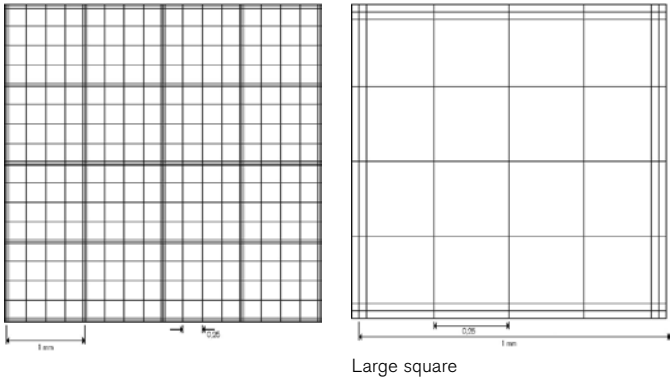
double ruling, with or without spring clips

Combination of the Bürker and Thoma systems. The chamber depth is 0.1 mm. The ruling shows 9 large squares of 1 mm^2 each. The large squares are subdivided into 16 group squares with 0.2 mm sides. In the central large square, each group square is subdivided into 16 mini squares with 0.05 mm sides ($= 0.0025 \text{ mm}^2$). CE-marked according to IVD-Directive 98/79 EC.

Fuchs-Rosenthal

double ruling, with or without spring clips

The ruling differs from the customary systems for blood cell counts by its large area of 16 mm². The ruling shows 16 large squares of 1 mm². Each large square is subdivided into 16 mini squares with 0.25 mm sides and an area of 0.0625 mm². This chamber is frequently used for counting cells in the cerebrospinal fluid. CE-marked according to IVD-Directive 98/79 EC.

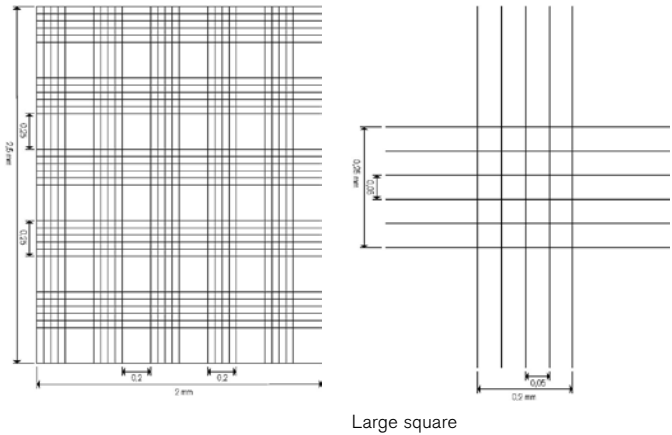


Description	Chamber depth	Cat. No.
without spring clips	0.2 mm	7198 05
with spring clips	0.2 mm	7198 20

Malassez

double ruling, without spring clips

The ruling is rectangular, covering an area of 5 mm². The large rectangles measure 0.25 x 0.20 = 0.05 mm². They are each subdivided into 20 mini squares with an area of 0.0025 mm². This chamber is commonly used for counting cells in the cerebrospinal fluid, or for counting nematodes. CE-marked according to IVD-Directive 98/79 EC.

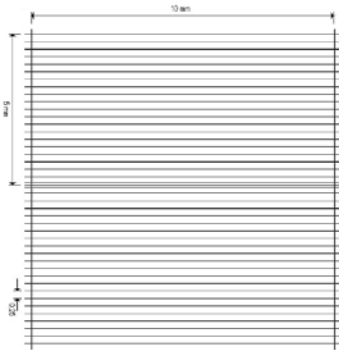


Description	Chamber depth	Cat. No.
without spring clips	0.2 mm	7190 05

Nageotte

double ruling, without spring clips

The chamber depth is 0.5 mm. The square area of 100 mm² is subdivided into 40 rectangles with an area of 0.25 x 10 = 2.5 mm² each. This chamber is commonly used for counting cells in the cerebrospinal fluid, or for counting nematodes. CE-marked according to IVD-Directive 98/79 EC.



Description	Chamber depth	Cat. No.
without spring clips	0.5 mm	7213 05

Haemacytometer cover glasses

for counting chambers

Borosilicate glass, DIN ISO 8255. Refractive index $n_D = 1.52 \pm 0.01$; Abbe number $v_D = 56.5 \pm 0.5$. Flatness tolerance $\pm 3 \mu\text{m}$. They differ from ordinary cover glasses by their plain ground and polished surface. CE-marked according to IVD-Directive 98/79 EC. Packing: 2 cover glasses in a plastic bag, separated by tissue paper. Pack quantity: 10 boxes at 10 cover glasses = 100 cover glasses per carton.



Length mm	Width mm	Thickness mm	Cat. No.
24	24	0.4	7230 14
20	26	0.4	7230 15
22	30	0.4	7230 16

Cover glasses for microscope slides

Pure white (clear) borosilicate glass, hydrolytic class 1, with excellent chemical resistance. Thickness No. 1 (0.13 to 0.17 mm). Refractive index $n_D = 1.52 \pm 0.01$, Abbe number $v_D = 56.5 \pm 0.5$. Full automat production guarantees "ready-for-use" quality – clean, dust and grease free, distortion-free, flatness within $\pm 3 \mu\text{m}$.

Pack quantities: Square shape: 2000 = 10 boxes of 200.

Rectangular shape: 1000 = 10 boxes of 100.



Description	Size mm	Cat. No.
square shape	18 x 18	4700 45
	20 x 20	4700 50
	22 x 22	4700 55
	24 x 24	4700 60
rectangular shape	24 x 40	4708 16
	24 x 50	4708 19
	24 x 60	4708 20

Microscope slides

Half white. Optical glass, hydrolytic class 3. Thickness approx. 1 mm, size approx. 76 x 26 mm (DIN ISO 8037-1). **We recommend using slides with ground edges to reduce the risk of injury.** To protect against penetrating humidity the entire packing unit is also optionally available sealed in an aluminium bag. Pack quantity 2500 = 50 boxes of 50.



Description	Cat. No. Standard pack
ground edges	4747 43
ground edges, twin frosted end	4747 44
cut edges	4747 01
cut edges, twin frosted end	4747 02

Note: Not suitable for storage or transport at high humidity!

Cavity slides

White (clear). Optical glass, hydrolytic class 3. Rectangular ground edges. Thickness 1.2 - 1.5 mm, size in mm: 76 x 26. Concavities of 15-18 mm Ø, depth 0.6 - 0.8 mm. Pack of 50.

Description	Cat. No.
1 concavity	4755 05
2 concavities	4755 35
3 concavities	4755 65



Staining trough with tray

Soda-lime glass. For 10 slides, size in mm: 76 x 26. With lid. Please order staining trough, tray, and wire handle separately. Pack of 10.

Description	Length mm	Width mm	Height mm	Cat. No.
Staining trough with lid	105	85	70	4722 00
Tray for 10 slides	91	70	48	4720 00
Wire handle to move tray (stainless steel)				4731 00



Staining trough, Hellendahl

Soda-lime glass. For 16 slides, size in mm: 76 x 26. Pack of 10.

Description	Length mm	Width mm	Height mm	Cat. No.
with lid	100	50	95	4726 00



Staining trough, Hellendahl extended

Soda-lime glass. For 16 slides, size in mm: 76 x 26. Pack of 10.

Description	Length mm	Width mm	Height mm	Cat. No.
with lid	60	55	105	4727 00





Staining trough, Schiefferdecker

Soda-lime glass. For 10 slides, size in mm: 76 x 26. Pack of 10.

Description	Length mm	Width mm	Height mm	Cat. No.
with lid	85	70	45	4725 00



Staining trough, Coplin

Soda-lime glass. For 10 slides, size in mm: 76 x 26. Pack of 10.

Description	Ø mm	Height mm	Cat. No.
with lid	80	115	4728 00



Staining trough, Hellendahl extended

PMP, transparent. For 16 slides, size in mm: 76 x 26 (8 pairs back-to-back). Pack of 4.

Description	Length mm	Width mm	Height mm	Cat. No.
with lid	57	57	90	4744 00



Staining trough, Schiefferdecker

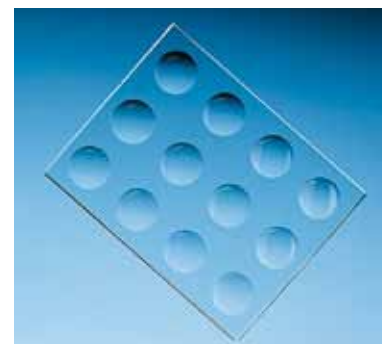
PMP, transparent. For 20 slides, size in mm: 76 x 26 (10 pairs back-to-back). Pack of 4.

Description	Length mm	Width mm	Height mm	Cat. No.
with lid	86	70	51	4744 10

Spotting tile

Soda-lime glass. 12 polished cavities 20-22 mm Ø, depth 2 mm, capacity approx. 0.2 ml. Ground rectangular edges. Pack of 1.

Description	Length mm	Width mm	Height mm	Cat. No.
Capacity approx. 0.2 ml	130	100	6	4735 00



Staining trough with tray

PMP. Transparent. With two lids: one to help protect against evaporation when not in use; one with a handle slot facilitating the staining process. Tray of polypropylene.

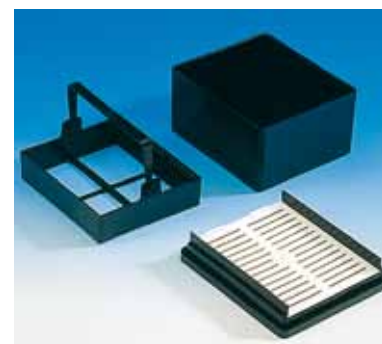
Description	Length mm	Width mm	Height mm	Pack of	Cat. No.
Staining trough, without tray	101	83	70	4	4743 00
Tray (PP) for 20 slides				2	4743 05

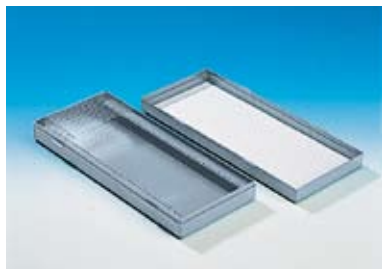


Staining trough with tray

POM. For 25 slides, size (in mm) 76 x 26. The close-fitting lid helps protect against evaporation. Staining tray with fold down handle.

Description	Length mm	Width mm	Height mm	Pack of	Cat. No.
staining trough complete	98	88	52	5	4718 00
tray with handle	91	79	38	5	4714 00
trough	98	88	52	5	4715 00





Slide boxes

PS. For slides, size (in mm) 76 x 26. Numbered slots in base. Lid with index card. Pack of 1.

For ... slides	Length mm	Width mm	Height mm	Cat. No.
25	120	96	35	4758 00
50	230	97	35	4759 00
100	230	187	35	4760 00



Slide box

PP, sturdy design. Screw lid with sealing wire lug. Ideal for storing or shipping 5 thick or 10 thin slides. Slides protrude 10 mm above the box, to facilitate removal. Pack of 10.

Description	Cat. No.
Maximum internal dimensions Ø x H in mm: 45 x 90	4769 00

General Laboratory Supplies

Sample preparation and storage impose a wide variety of requirements on laboratory instruments. Depending on the requirements, we offer materials ranging from glass to specialty plastics, like PFA for trace analysis.

The quality you need.





PARAFILM® M Sealing film

PARAFILM® M stretches up to 200% and clings even around irregular shapes and surfaces. The sealing film is free of plasticizers and consists primarily of polyolefins and paraffin waxes. If PARAFILM® M comes in contact with foods, the relevant regulations should be observed. PARAFILM® M conforms to the provisions of the US FDA Food and Drug Administration when used below 55 °C and observance of GMP (Good Manufacturing Practice).

Chemical resistance

PARAFILM® M is resistant up to 48 hours against many polar substances, e.g., saline solutions, inorganic acids and alkaline solutions. After this period, embrittlement may occur.

Physical properties

Toxicity: non-toxic
 Melting point: 60 °C
 Flash point: 301 °C
 Temperature range (continuous use): -45 °C to +50 °C
 Stretching ability: 200%
 Elongation at tear: 300%
 Gas permeability in 24 hours at 23 °C with 50% relative humidity:
 O₂ (oxygen): ≤ 350 cm³/m²
 N₂ (nitrogen): ≤ 105 cm³/m²
 CO₂ (carbon dioxide): ≤ 1100 cm³/m²
 Water vapor permeability in 24 hours at 37 °C and 90% relative humidity: 0.8 g/m²

Effects of 48 hours of exposure at 23 °C

Acids:

Hydrochloric acid 36.5%	resistant
Sulphuric acid 98%	resistant
Nitric acid 95%	resistant*

Alkaline solutions:

Sodium hydroxide 22%	resistant
Ammonia 28%	resistant

Saline solutions:

Sodium chloride 20%	resistant
Potass. permanganate 5%	resistant*
Iodine solution 0.1 mol/l	resistant*

Organic solvents:

Methanol	resistant
Ethanol	resistant
Isopropanol	resistant
Diethylether	not resistant
Chloroform	not resistant
Carbon tetrachloride	not resistant
Benzene	not resistant
Toluene	not resistant

* brown discoloration



PARAFILM® M Sealing film

Width mm	Length m	Pack of	Cat. No.
50	75	24	7016 11
100	38	12	7016 05
100	75	12	7016 06
500	15	6	7015 01



PARAFILM® M Cutter

The handy PARAFILM® M Cutter is convenient for clean storage and cutting of PARAFILM® M sealing film. Suitable for 50 mm and 100 mm wide rolls. Pack of 1.

Cat. No.	7016 50
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Flat bottom flasks, narrow neck

DURAN®. DIN ISO 1773. With beaded rim. Pack of 10 (3000 ml: pack of 1).

Capacity ml	Neck outer-Ø mm	Flask outer-Ø mm max.	Height mm	Cat. No.
50	26	51	90	917 17
100	26	64	110	917 24
250	34	85	140	917 36
500	34	105	170	917 44
1000	42	131	200	917 54
3000	50	185	250	917 68

Erlenmeyer flasks

Narrow neck

DURAN®. DIN ISO 1773. With beaded rim and graduation.
Pack of 10 (3000 ml: Pack of 2; 5000 ml: Pack of 1).

Capacity ml	Neck outer-Ø mm	Flask outer-Ø mm max.	Height mm	Cat. No.
25	22	42	70	927 14
50	22	51	85	927 17
100	22	64	105	927 24
200*	34	79	131	927 32
250	34	85	140	927 36
300*	34	87	156	927 39
500	34	105	177	927 44
1000	42	131	220	927 54
2000	50	166	280	927 63
3000	50	187	310	927 68
5000	50	220	365	927 73

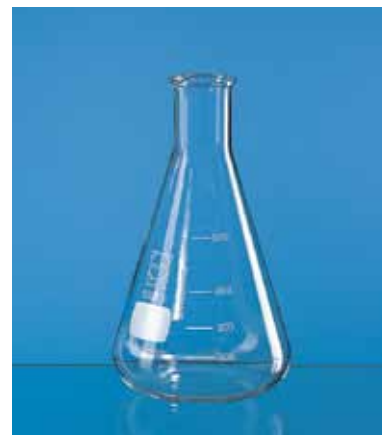
* in addition to the DIN range

Wide neck

DURAN®. DIN EN ISO 24450. With beaded rim and graduation. Pack of 10.

Capacity ml	Neck outer-Ø mm	Flask outer-Ø mm max.	Height mm	Cat. No.
25*	31	43	70	928 14
50	34	51	85	928 17
100	34	64	105	928 24
200*	50	79	131	928 32
250	50	85	140	928 36
300*	50	87	156	928 39
500	50	105	175	928 44
1000	50	131	220	928 54
2000*	72	153	275	928 63

* in addition to the DIN range



Beakers

Low form

DURAN®. DIN 12331/ISO 3819.
With graduation and spout.
Pack of 10
(3000 ml: Pack of 4; 5000 ml: Pack of 1).

Capacity ml	Ø x Height mm	Cat. No.
5*	22 x 30	912 10
10*	26 x 35	912 12
25	34 x 50	912 14
50	42 x 60	912 17
100	50 x 70	912 24
150	60 x 80	912 29
250	70 x 95	912 36
400	80 x 110	912 41
600	90 x 125	912 48
800	100 x 135	912 53
1000	105 x 145	912 54
2000	132 x 185	912 63
3000	152 x 210	912 68
5000	170 x 270	912 73

* without graduation

Tall form

DURAN®. DIN 12331/ISO 3819.
With graduation and spout.
Pack of 10
(3000 ml: Pack of 2).

Capacity ml	Ø x Height mm	Cat. No.
50	38 x 70	906 17
100	48 x 80	906 24
150	54 x 95	906 29
250	60 x 120	906 36
400	70 x 130	906 41
600	80 x 150	906 48
800	90 x 175	906 53
1000	95 x 180	906 54
2000	120 x 240	906 63
3000	135 x 280	906 68



Beakers, low form

PLASTIBRAND®,
with blue printed scale or embossed

ISO 7056. With graduation, beaded rim and spout. Space-saving stacking design. Cleaning at temperatures below 60 °C is recommended to preserve marks and inscriptions. For autoclaving (121 °C), beakers with an embossed scale should be selected.



PP, high clarity

Pack of 5.

Capacity ml	Subdivision ml	Height mm	max. Ø mm	Blue scale Cat. No.	Embossed scale Cat. No.
25	5	49	41	894 20	896 20
50	10	60	50	894 28	896 28
100	20	70	59	894 38	896 38
250	50	95	80	894 48	896 48
400*	50	110	92	894 52	896 52
500	50	120	102	894 54	896 54
600*	50	125	103	894 56	896 56
1000	100	147	120	894 62	896 62
2000	200	187	150	894 64	896 64
3000*	200	212	172	894 66	896 66
5000	500	250	204	894 70	896 70

* in addition to ISO 7056

PMP, transparent

Pack of 5 (2000 ml to 5000 ml: Pack of 1).



Capacity ml	Subdivision ml	Height mm	max. Ø mm	Blue scale Cat. No.	Embossed scale Cat. No.
25	5	49	41	893 20	895 20
50	10	60	50	893 28	895 28
100	20	70	59	893 38	895 38
250	50	95	80	893 48	895 48
400*	50	110	92	893 52	895 52
500	50	120	102	893 54	895 54
600*	50	125	103	893 56	895 56
1000	100	147	120	893 62	895 62
2000	200	187	150	893 64	895 64
3000*	200	212	172	893 66	895 66
5000	500	250	204	893 70	895 70

* in addition to ISO 7056

Graduated beakers with handle

PLASTIBRAND®,
with blue printed scale or embossed

PP, high clarity. Ergonomic handle for secure grip. Functional spout to minimize spills. Cleaning at temperatures below 60 °C is recommended to preserve marks and inscriptions. For autoclaving (121 °C), beakers with an embossed scale should be selected.

Capacity ml	Subdivision ml	Height mm	max. Ø mm	Pack of	Blue scale Cat. No.	Embossed scale Cat. No.
50	2	61	50	10	404 28	406 28
100	5	72	60	10	404 38	406 38
250	10	97	80	6	404 48	406 48
500	10	121	102	6	404 54	406 54
1000	20	149	123	6	404 62	406 62
2000	50	189	152	2	404 64	406 64
3000	50	215	172	2	404 66	406 66
5000	100	253	200	2	404 70	406 70



Beakers, low form

PLASTIBRAND®

ETFE, translucent. Excellent chemical resistance. With graduation, beaded rim and spout. Pack of 1.

Capacity ml	Subdivision ml	Height mm	Ø mm	Cat. No.
25	5	50	32	902 24
50	10	59	39	902 28
100	20	72	50	902 38
250	50	96	67	902 48
400	50	109	77	902 52
500	100	122	88	902 54
600	100	125	91	902 56
1000	100	143	105	902 62



Beakers, low form

PLASTIBRAND®

PFA. ISO 7056. Easy to read embossed scale, wear-resistant when used frequently. Space-saving stackable design. Autoclavable, easy to clean, withstands temperatures from -200 °C to 260 °C. Pack of 1.

Capacity ml	Subdivision ml	Height mm	Ø mm	Cat. No.
25	5	50	32	901 20
50	10	59	39	901 28
100	20	72	50	901 38
250	50	96	67	901 48
500	100	122	88	901 54
1000	100	141	109	901 62





Beakers, low form

PTFE. Excellent thermal and chemical resistance. With reinforced rim and spout. Without graduation. Pack of 1.

Capacity ml	Ø mm	Height mm	Cat. No.
5	20	26	903 05
10	24	33	903 08
25	32	47	903 20
50	43	55	903 28
100	54	68	903 38
150	59	75	903 44
250	66	97	903 48
400	80	125	903 52
500	90	125	903 54
1000	100	155	903 62
2000	125	205	903 64



Sampling dippers

PTFE. With reinforced rim and spout. PTFE handle with steel core. Optional extension rod for increased handle length. Pack of 1. (Extension rod, length 600 mm. Pack of 1. Cat. No. 904 70)

Capacity ml	Ø mm	Height mm	Cat. No.
100	55	65	904 38
250	70	95	904 48
500	80	125	904 54
1000	105	155	904 62



Erlenmeyer flasks, wide neck

with screw cap

PP, high clarity. With graduation. Neck with standard ground socket. Pack of 6 (1000 ml: Pack of 4).

(Conical joint stopper, PE-LD: STJ 34/35 Cat. No. 1444 40, STJ 45/40 Cat. No. 1444 45. Pack of 1.)

Capacity ml	Thread	Flask outer-Ø mm max.	Height mm	Neck size	Cat. No.
50	GL 40	52	90	34/35	931 70
100	GL 40	64	110	34/35	931 72
250	GL 52	85	140	45/40	931 75
500	GL 52	108	180	45/40	931 80
1000	GL 52	135	220	45/40	931 85

Watch glasses

Soda-lime glass. DIN 12341.
Ground edges. Stress-reduced
to minimize risk of shattering.
Pack of 10 (size 250 mm: Pack of 1).

Ø mm	Cat. No.
40	1500 10
50	1500 15
60	1500 20
70	1500 30
80	1500 40
90	1500 45
100	1500 50
120	1500 60
125	1500 65
150	1500 70
200	1500 80
250	1500 85



Watch glasses

PTFE. Ideal for covering PTFE beakers.
Excellent chemical resistance.
Pack of 1.

Ø mm	for PTFE beakers size ml	Cat. No.
20	1	1509 00
30	5 - 10	1509 02
40	25	1509 04
50	50	1509 05
65	100	1509 07
75	150	1509 10
80	250	1509 12
100	400 - 500	1509 15
125	600 - 1000	1509 20
150	2000	1509 22



Evaporating dishes

PP. Shallow form without spout.
Pack of 1.

Capacity ml	Height mm	max. Ø mm	Cat. No.
50	25	70	455 05
170	35	105	455 10



Evaporating dishes

PFA, snap-on lid PE. Evaporating
dishes are autoclavable, easy to clean
and withstand temperatures from
-200 °C to +260 °C (The snap-on lid
is not autoclavable). Pack of 1.

Capacity ml	Cat. No.
25	458 00
50	458 02





Capacity ml	max. Ø mm	Height mm	Cat. No.
5	25	20	455 40
25	45	30	455 45
75	60	40	455 50

Evaporating dishes

PTFE. Crucible form without spout.
Excellent chemical resistance.
Pack of 1.



Capacity ml	max. Ø mm	Height mm	Cat. No.
25	40	35	456 15
50	50	40	456 17
100	65	55	456 20
150	80	40	456 21
180	80	50	456 22
250	95	45	456 23
350	100	60	456 25

Evaporating dishes

PTFE. Conical with spout.
Pack of 1.



Capacity ml	max. Ø mm	Height mm	Cat. No.
25	40	25	457 03
50	65	25	457 05
100	80	30	457 10
180	80	45	457 18
350	100	55	457 22

Crystallizing dishes

PTFE. Cylindrical without spout.
Pack of 1.



max. Ø mm	Height mm	Cat. No.
125	80	1107 05
150	90	1107 10

Mortars with pestle

Melamine formaldehyde (MF), white.
Resistant to boiling and autoclavable
(121 °C). With foot and spout.
Pack of 1.

Centrifuge tubes, ungraduated

AR-Glas® or DURAN®. Capacity approx. 15 ml. Wall thickness approx. 1.0 mm. Withstands RCF up to 3500.

Description	Glass	Ø mm	Height mm	Pack of	Cat. No.
Conical bottom , beaded rim	AR-Glas®	17	113	100	7780 12
Conical bottom , beaded rim	DURAN®	17	113	100	7780 13
Cone-pointed bottom , rimless	AR-Glas®	17	98	100	7790 12
Round bottom , rimless	AR-Glas®	17	98	200	7790 22



Centrifuge tubes, graduated

conical bottom

AR-Glas® or DURAN®. Capacity 15 ml. Graduations and inscriptions in high contrast white enamel. Pack of 10.

Graduation from - to ml approx.	Glass	Subdivision ml	Ø mm	Height mm	Wall thickness mm	RCF max.	Cat. No.
0 - 10	AR-Glas®	0.1	17	113	ca. 1.0	3500	7783 12
0 - 10	DURAN®	0.1	17	113	ca. 1.0	3500	7783 13
0 - 15	AR-Glas®	0.1	17	113	ca. 1.0	3500	7787 12
0 - 15	DURAN®	0.1	17	113	ca. 1.0	3500	7787 13



Test tubes, graduated

with spout and without stopper, or with standard ground joint neck and PP stopper

DURAN®. Graduation and inscriptions in high contrast white enamel. Wall thickness approx. 1.2 mm. Pack of 10.

Description	Capacity ml approx.	Subdivision ml	Neck size	Ø mm	Height mm	Cat. No.
With spout, without stopper	10	0.1	–	15	150	1143 08
With spout, without stopper	20	0.2	–	17	180	1143 16
With spout, without stopper	25	0.2	–	17	200	1143 21
With spout, without stopper	30	0.5	–	19	200	1143 24
Standard ground joint neck with PP stopper	10	0.1	12/21	15	165	1145 08
Standard ground joint neck with PP stopper	20	0.2	14/23	17	200	1145 16
Standard ground joint neck with PP stopper	25	0.2	14/23	17	220	1145 21
Standard ground joint neck with PP stopper	30	0.5	14/23	19	220	1145 24



Sample tubes

with screw cap

PFA-screw cap with integrated seal lip. Individually calibrated ring mark at 10 ml. Autoclavable, easy to clean, withstands temperatures from -200 °C to +260 °C. Pack of 1. (Replacement screw-cap, PFA. Pack of 1. Cat. No. 1292 52)

Capacity ml	Ø mm	Height mm	Thread GL	Cat. No.
15	22	110	25	7794 20





Funnels

plain interior

Borosilicate glass 3.3 or DURAN®. Angled at 60°, ground and fire-polished upper rim. Short stem. Pack of 1.

Funnel outer-Ø mm	Stem outer-Ø mm	Stem length mm	Description	Cat. No.
35	6	35	Borosilicate glass 3.3	1455 05
40	6	40	Borosilicate glass 3.3	1455 07
50	7	50	Borosilicate glass 3.3	1455 15
55	8	55	Borosilicate glass 3.3	1455 20
60	8	60	Borosilicate glass 3.3	1455 25
70	8	70	Borosilicate glass 3.3	1455 30
80	9	80	Borosilicate glass 3.3	1455 35
100	10	100	Borosilicate glass 3.3	1455 40
120	16	120	DURAN®	1455 45
150	16	150	DURAN®	1455 50
200	26	175	DURAN®	1455 60



Funnels

fluted interior

DURAN®. For rapid filtration. Angled at 60°, ground and fire-polished upper rim. Short stem. Pack of 10 (Cat. No. 1456 38; Pack of 1).

Funnel outer-Ø mm	Stem outer-Ø mm	Stem length mm	Cat. No.
70	8	70	1456 11
80	10	80	1456 16
100	10	100	1456 19
150	16	150	1456 31
200	26	170	1456 38



Funnels

plain interior

PP.

Funnel outer-Ø mm	Stem outer-Ø mm	Stem length mm	Pack of	Cat. No.
30	2	25	24	1470 00
30	5	25	24	1470 05
40	5	35	24	1470 10
50	9	43	24	1470 15
75	10	55	12	1470 20
100	13	77	12	1470 25
120	14	90	12	1470 30
150	17	95	12	1470 35

Funnels

fluted interior

PP. For rapid filtration. Angled at 60°.

External flutings allow air to escape during filtration.

Funnel outer-Ø mm	Stem outer-Ø mm	Stem length mm	Pack of	Cat. No.
25	4	39	20	1482 05
35	5	38	20	1482 10
45	5	44	20	1482 15
65	9	63	20	1482 20
80	10	69	20	1482 25
100	11	82	1	1482 35
120	11	85	1	1482 37
150	14	115	1	1482 40
180	14	143	1	1482 45



Powder funnels

Borosilicate glass 3.3 or DURAN®. Ground and fire-polished upper rim. With short, wide stem. Pack of 1.

Upper Ø mm	Lower Ø mm	Description	Cat. No.
50	18	Borosilicate glass 3.3	1465 06
60	18	Borosilicate glass 3.3	1465 08
70	20	Borosilicate glass 3.3	1465 11
80	22	Borosilicate glass 3.3	1465 16
90	25	Borosilicate glass 3.3	1465 17
100	25	Borosilicate glass 3.3	1465 19
120	30	DURAN®	1465 23



Powder funnels

PP. With short, wide stem.

Funnel outer-Ø mm	Stem outer-Ø mm	Stem length mm	Pack of	Cat. No.
60	15	19	20	1480 20
80	15	23	20	1480 25
100	25	23	20	1480 30
120	30	28	1	1480 35
150	35	42	1	1480 40
180	40	48	1	1480 45



Carboy funnels

PP. Pack of 1.

Funnel outer-Ø mm	Stem outer-Ø mm	Stem length mm	Cat. No.
210	25	90	1470 40
260	30	100	1470 45
350	32	170	1470 50
400	40	150	1470 55
440 (PE-HD)	35	140	1470 60





Standard ground joint funnels

PP. Half-round body. Stem fits standard ground sockets. Ideal for filling liquids or powders into multi-neck flasks. Pack of 10 (Cat. No. 949 15; Pack of 5).

Distance to flat side mm	Stem fits socket size	Cat. No.
40	14/23	949 05
50	19/26	949 10
80	29/32	949 15

Buchner funnels

PP. Two detachable pieces facilitate cleaning. Use with suggested filter paper. Pack of 1.



Nominal size mm	Filter disk Ø mm	for filter paper Ø mm	Cat. No.
45	45	45	1485 05
55	55	55	1485 10
70	72	70	1485 15
80	82	70	1485 20
90	93	90	1485 25
110	120	110	1485 30
160	160	150	1485 35
240	240	240	1485 40

Filter disks for Buchner funnels

PE-HD 1 mm mesh. Insert between the perforated support plate of the Buchner funnel, and the filter paper. Prevents filter paper sticking. Pack of 10.



Ø mm	Cat. No.
45	1486 05
55	1486 10
70	1486 15
80	1486 20
90	1486 25
110	1486 30
160	1486 35
240	1486 40

Separating funnels

PP, high clarity for observation of contents.
With PP screw cap and special conical
PTFE stopcock with retention device.
Autoclavable (121 °C). Pack of 1.

Capacity ml	Cat. No.
125	1400 04
250	1400 05
500	1400 06
1000	1400 07



Holder for separating funnels

PP. For conical separating funnels up to
1000 ml. Easily mounted on support rods
with an outer-Ø 8-14 mm with a locking
nut. Pack of 1.



Cat. No.	1403 00
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Funnel holders

PP. To support 1 or 2 funnels with top
outer-Ø of 50 to 120 mm. Easily mounted
on support rods with an outer-Ø 8-14 mm
with a locking nut.
Pack of 5.

Description	Cat. No.
for 1 funnel	1485 00
for 2 funnels	1485 02



Filter funnel supports

PP plates with aluminum support rod. Ø x length in mm: 12.7 x 595.
To support 2 or 4 funnels with top outer Ø of 50 to 120 mm.
Adjustable funnel height. Pack of 1.

Description	Length base plate mm	Width base plate mm	Cat. No.
for 2 funnels	250	140	745 06
for 4 funnels	450	140	745 11





Filter funnels

DURAN®. Pack of 1.

Identification Code	Porosity	Capacity ml	Ø Filter disk mm	Stem outer-Ø mm	Cat. No.
3 D	3	50	35	10	4640 03
3 D	4	50	35	10	4640 04
11 D	3	75	45	10	4647 13
11 D	4	75	45	10	4647 14
17 D	3	125	60	10	4654 23
17 D	4	125	60	10	4654 24
25 D	3	500	95	22	4661 33
25 D	4	500	95	22	4661 34



Filter crucibles

DURAN®. Pack of 10.

Identification Code	Porosity	Capacity ml	Ø Filter disk mm	Cat. No.
1 D	1	30	30	4580 21
1 D	2	30	30	4580 22
1 D	3	30	30	4580 23
1 D	4	30	30	4580 24
2 D	1	50	40	4587 31
2 D	2	50	40	4587 32
2 D	3	50	40	4587 33
2 D	4	50	40	4587 34



Filter adapters

DURAN®. Suitable for filter crucibles, according to Identification Code above.
Pack of 10.

Identification Code	Upper Ø mm	Overall length mm	Cat. No.
1 D	41	125	4636 16
2 D	50	132	4637 32



Rubber sleeves

Rubber (EPDM). Suitable for filter crucibles, according to Identification Code.
Pack of 10.

Identification Code	Outer Ø mm	Cat. No.
1 D	41	4620 26
2 D	49	4622 31

Filter flasks with socket

(Buchner filter flasks)

DURAN®. DIN 12476, ISO 6556. Lateral socket for vacuum tubing with outer diameter 15-18 mm. Pack of 1.

Capacity ml	max. outer-Ø mm	Height mm	Neck inner-Ø mm	Cat. No.
250	85	155	34.5	737 14
500	105	185	34.5	737 19
1000	135	230	45	737 24
2000	166	265	60	737 29

Filtration flasks with lateral socket for vacuum tubing do satisfy the requirements of German Equipment Safety Law!



Filter flasks

PP, translucent. With lateral nozzle (outer diameter: 10 mm). Pack of 1.

Capacity ml	max. outer-Ø mm	Height mm	Neck size	Cat. No.
250	84	140	29/32	740 14
500	107	158	34/35	740 19
1000	130	198	34/35	740 24



Rubber gaskets

Rubber (EPDM). Conical gaskets to place between filter funnel and filter flask. Pack of 10.

Upper outer-Ø mm	Lower outer-Ø mm	Lower inner-Ø mm	Cat. No.
22	11	6	4625 12
28	16	9	4626 17
35	20	14	4627 23
42	25	18	4628 27
50	32	22	4629 32
63	43	33	4630 36
71	52	42	4631 39
84	61	50	4632 43
Rubber gasket set. Pack of 1.			4625 00





Desiccators

with knob lid

DURAN®. DIN 12 491. Precisely ground flat flanges. Base ring surface studded to improve stability and help prevent cracks. Interchangeable lid. Pack of 1.

Nominal size mm	Ø mm	Height mm	Cat. No.
150	215	233	650 31
200	270	298	650 38
250	320	355	650 43



Desiccators

with socket in the lid

DURAN®. DIN 12 491. Precisely ground flat flanges. Base ring surface studded to improve stability and help prevent cracks. Interchangeable lid. Socket, ground joint neck size 24/29, with interchangeable stopcock. Pack of 1.

Nominal size mm	Ø mm	Height mm	Cat. No.
150	215	303	652 31
200	270	368	652 38
250	320	425	652 43



Spare parts for desiccators of DURAN®

Needle-valve stopcock for desiccators

DURAN®. Cone size 24/29. Suitable for desiccators with lid socket. PTFE spindle, aperture 0-4 mm. Lateral venting hole helps to reduce turbulence. Nozzle with outer diameter 10 mm. Pack of 1.

Cat. No.	824 15
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Lid with knob

DURAN®. Pack of 1.

Nominal size mm	Ø mm	Height mm	Cat. No.
150	215	78	656 31
200	270	93	656 38
250	320	115	656 43



Lid with socket

DURAN®. Pack of 1.

Nominal size mm	Ø mm	Height mm	Cat. No.
150	215	78	657 31
200	270	93	657 38
250	320	115	657 43

Desiccators

PC lid. PP base and desiccant tray. Venting stopper with non-return valve in lid. Seal between lid and base: polychlorobutadiene rubber (CR) O-ring, compressed by vacuum. Light-weight and easy to handle. Pack of 1.

Nominal size mm	Ø mm	Height mm	Cat. No.
150	170	195	658 05
200	235	240	658 10
250	285	300	658 15



Spare parts for desiccators of PC/PP

Sealing rings

CR. Pack of 1.

Nominal size mm	Cat. No.
150	658 20
200	658 22
250	658 24



Venting stopper

PC. Pack of 1.

Cat. No.	658 04
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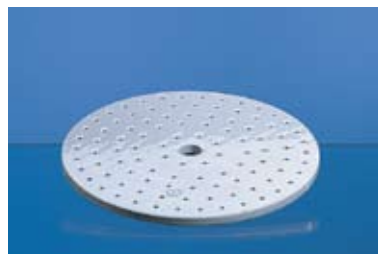


Accessories for desiccators of DURAN® or PC/PP

Desiccator plates

Porcelain or PP. For glass and plastic desiccators. Central hole approx. 20 mm diameter, small perforations approx. 5 mm diameter. Pack of 1.

Nominal size mm	Ø mm	Porcelain Cat. No.	PP Cat. No.
150	140	659 65	660 15
200	190	659 75	660 25
250	235	659 80	660 30



Porcelain



PP



Gas wash bottles, Drechsel pattern

BISTABIL. With P1 filter disc.

DURAN® glass bottle and head. DIN 12 596. With filter disc of porosity P1. Drechsel pattern heads provide optimal stability. Overall height 275 mm, standard ground joint neck size 29/32, hose nozzles with outer diameter 11 mm. Pack of 1.

Capacity ml	Cat. No.
100	782 38
250	782 48
500	782 54
1000	782 62



Gas wash bottles, Drechsel pattern

BISTABIL. Without filter disc.

DURAN® glass bottle and head. DIN 12 596. Without filter disc. Drechsel-pattern heads provide optimal stability. Overall height 275 mm, standard ground joint neck size 29/32, hose nozzles with outer diameter 11 mm. Pack of 1.

Capacity ml	Cat. No.
100	781 38
250	781 48
500	781 54
1000	781 62



Wash bottles, without head

DURAN®. Standard ground joint neck size 29/32, to DIN 12 463. Pack of 1.

Capacity ml	Neck size	Ø mm	Height mm	Description	Cat. No.
100	29/32	40	200	with base Ø 55 mm	1269 38
250	29/32	55	200	with base Ø 75 mm	1269 48
500	29/32	75	200	without base	1269 54
1000	29/32	107	200	without base	1269 62

Wash bottle head with P1 filter disk

for gas wash bottles, Drechsel pattern

DURAN®. DIN 12 596. Size 29/32. Length below top of cone 185 mm. Accommodates all bottle sizes to DIN 12 463. Filter disk outer diameter 25 mm, porosity P1. Pack of 1.

Cat. No.	782 00
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Wash bottle head without filter disk

for gas wash bottles, Drechsel pattern

DURAN®. DIN 12 596. Size 29/32. Length below top of cone 185 mm. Accommodates all bottle sizes to DIN 12 463. Tube outer diameter 8 mm. Pack of 1.

Cat. No.	781 00
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Gas wash bottles

PFA. Head with S40 thread. Frit, PTFE, with approx. 100 µm pore size for optimum gas pearling in the liquid. High-quality fluoroplastics make a wide range of applications possible. Pack of 1.

(For wash bottles, PFA, S40 thread see page 253).



Capacity ml	Ø mm	Height mm	Tubing connection Inner-Ø/outer-Ø mm	Heads Cat. No.	Gas wash bottle, cpl. Cat. No.
250	55	180	4/6	783 00	783 48
500	75	210	4/6	783 01	783 54
1000	107	249	5/8	783 02	783 62

Gas sampling tubes

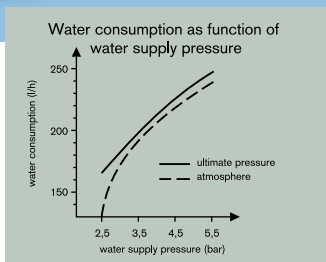
BISTABIL
(Gas collecting tubes)

DURAN®. DIN 12 473-1. With straight bore stopcocks size 3 NS/14 with retention device. One end with capillary tube (inner-diameter 2.7 mm, outer diameter 8 mm), other end with hose nozzle (outer diameter 9 mm). With marking area. Pack of 1.

Capacity ml	Cat. No.
100*	2350 10
250*	2350 20
500	2350 30

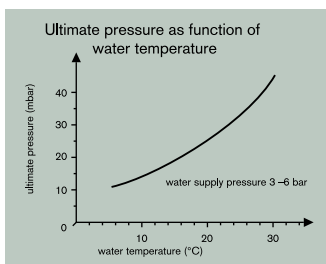
* in addition to the DIN range





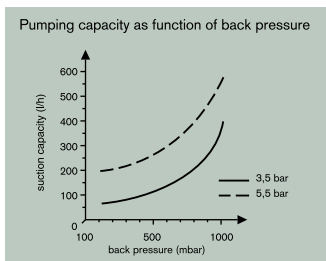
Very low water consumption

The flow configuration has been optimized, resulting in a 33 % reduction of water consumption (190 litres/h at 3.5 bar water supply pressure).



Constant ultimate pressure

The ultimate pressure of 16 mbar (water temperature: 12 °C) is reached across a wide range of water supply pressures (from 3 to 6 bar).



High suction capacity

Flow rate of approx. 400 litres/h of air (against atmospheric pressure, at a water supply pressure of 3.5 bar at 12°C water temperature).

Water jet filter pump

PLASTIBRAND®

Pump fluid: water
Overall length: approx. 210 mm
(R 3/4" connector fitted)
Weight: approx. 33 g
(R 3/4" connector fitted)

- High chemical resistance, fluid path consists of PP, FKM and PTFE
- Operating temperature up to max. 80 °C
- Integrated non-return valve increases safety
- Simple operation and easy to clean
- Detachable vacuum connection
- Variety of supplied adapters simplify connections to most water sources. Optional reducing adapters are available.

Ordering data

Water jet filter pump includes:
sleeve nut R 3/4", reducing adapter R 1/2", and tubing connector (hose nozzle) of 10-12 mm outer diameter

Suction line connection:
Detachable hose nozzle of 6-9 mm outer diameter, with screw cap GL 14.
Pack of 1.

Cat. No.	1596 00
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Accessories

Reducing adapter R 3/8".
Pack of 1.

Cat. No.	1596 65
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Reducing adapter M 22 x 1
(thread forscreen tap). Pack of 1.

Cat. No.	1596 70
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Water jet filter pump

BISTABIL

DURAN®. Rugged design. Water faucet connection via outer thread GL 18. Suction line connection through hose nozzle diameter 11 mm. Performance characteristics at a water supply pressure of 4.5 bar (absolute) at 12 °C:
Water consumption:
approx. 340 litres/h.
Ultimate pressure: 16 mbar.
Flow rate against atmospheric pressure:
950 litres/h of air.
Pack of 1.

Cat. No.	1588 10
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Water mains connection for water jet filter pump BISTABIL

Thread adapter GL 18 with polypropylene sleeve nut R 3/4" and seals (O-rings 15 x 3 mm and 10 x 3 mm) of nitrile rubber (NBR).
Pack of 1.

Cat. No.	1583 15
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Tubing

Silicone (SI). Translucent. Autoclavable (121 °C).

Note: limited chemical resistance when used with concentrated acids.

Packing unit 25 meters.

inner-Ø mm	Outer-Ø mm	Wall thickness mm	Cat. No.
2	4	1	1433 52
3	5	1	1433 55
4	6	1	1433 56
4	7	1.5	1433 57
5	8	1.5	1433 58
6	9	1.5	1433 59
6	10	2	1433 60
7	10	1.5	1433 61
8	12	2	1433 62
10	15	2.5	1433 64



General Laboratory

Spring clips

Spring steel, coated with zinc and polyethylene. Non-scratching, good chemical resistance.

For wall mounting of cylindrical apparatus components, e.g., pipes, tubing, etc.

Pack of 1.

Grip Ø mm	Bore mm	Cat. No.
6.5	2.5	760 05
9.5	2.5	760 10
13	3.0	760 15
16	3.0	760 20
19	3.5	760 25
25	3.5	760 35
29	4.0	760 40
32	4.0	760 45
42	4.0	760 50
51	4.0 *	760 55

* 2 bores



Flow indicator

Styrene-acrylonitrile (SAN), transparent. Optimizes cooling water flow during distillation.

This helps to decrease operating costs by reducing water consumption. Operating pressure

max. 2 bar, operating temperature for SAN max. 30 °C. L x W x H in mm: 88 x 17 x 40.

For tubing of inner diameter 6-11 mm.

Pack of 5.

Cat. No.	1340 80
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Tubing Connectors and Tubing Adapters



straight

PP, translucent. Connects tubing of different diameters. Pack of 10.

for tubing inner-Ø mm	Length mm	Cat. No.
5 - 17	110	1524 00



straight

PP, translucent. Pack of 10.

for tubing inner-Ø mm	Length mm	Cat. No.
3 - 5	47	152705
6 - 10	55	152710
9 - 13	57	152715



straight

PE-HD. Pack of 10.

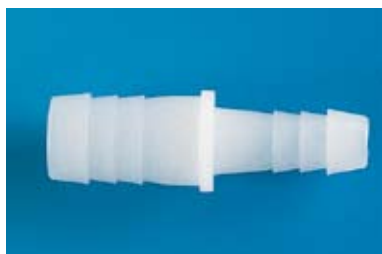
for tubing inner-Ø mm	Length mm	Cat. No.
10 - 11	45	152755
12 - 14	74	152760
19 - 21	74	152765
24 - 26	84	152770



straight

PP, grey. Pack of 20 (Cat. No. 1522 70 and 1522 75: Pack of 10).

for tubing inner-Ø mm	Length mm	Cat. No.
4 - 5	39	1522 50
5 - 7	52	1522 55
7 - 9	59	1522 60
9 - 11	59	1522 65
11 - 13	66	1522 70
13 - 15	66	1522 75



straight (tubing adapter)

PE-HD. Pack of 10.

for tubing inner-Ø mm	Length mm	Cat. No.
8 - 10 / 11 - 14	66	1525 05
12 - 14 / 18 - 20.5	73	1525 10

Tubing Connectors and Tubing Adapters

straight (tubing adapter)

PP, translucent.
Pack of 10.

for tubing inner-Ø mm	Length mm	Cat. No.
3 - 5 / 6 - 10	55	1526 05
3 - 5 / 9 - 13	55	1526 10
6 - 10 / 9 - 13	59	1526 15



L-shape

PP, translucent.
Pack of 20 (Cat. No. 1532 30 and 1532 35 pack of 10).

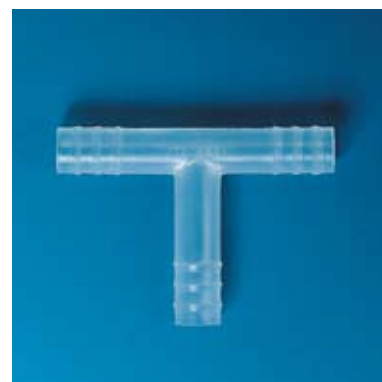
for tubing inner-Ø mm	Length mm	Cat. No.
3 - 4	15	1532 05
5	21	1532 10
6 - 7	25	1532 15
8 - 9	30	1532 20
10 - 11	36	1532 25
12 - 13	42	1532 30
14 - 15	48	1532 35



T-shape

PP, translucent. Length 1 = Length of straight-through tube, Length 2 = Length of side arm including Ø of straight-through tube.
Pack of 20 (Cat. No. 1528 20 and 1528 25: Pack of 10).

for tubing inner-Ø mm	Length 1 mm	Length 2 mm	Cat. No.
3 - 4	20	15	1528 00
4 - 5	30	23	1528 03
6 - 7	40	31	1528 05
8 - 9	55	39	1528 10
10 - 11	69	47	1528 15
12 - 13	79	53	1528 20
14 - 15	89	60	1528 25



Y-shape

PP, transparent. Length1 = overall length, length 2 = distance between the two arms from one outer edge to the other.
Pack of 20 (Cat. No. 1529 15 and 1529 20: Pack of 10).

for tubing inner-Ø mm	Length 1 mm	Length 2 mm	Cat. No.
3	24	14	1529 00
4 - 5	35	21	1529 03
6 - 7	54	34	1529 05
8 - 9	64	40	1529 07
10 - 11	74	47	1529 10
12 - 13	87	53	1529 15
14 - 15	98	60	1529 20



Tubing Connectors



X-shape

PP, translucent.

Pack of 20 (Cat. No. 1531 30 and 1531 35: Pack of 10).

for tubing inner-Ø mm	Length mm	Cat. No.
2 - 3	26	1531 05
5	35	1531 10
6 - 7	42	1531 15
9	50	1531 20
10 - 11	62	1531 25
12 - 13	74	1531 30
14 - 15	84	1531 35



Y-shape (120°)

PP, grey. Three arms at equal angles of 120°.

Pack of 20 (Cat. No. 1530 25 and 1530 30: Pack of 10).

for tubing inner-Ø mm	Length mm	Cat. No.
4 - 5	26	1530 05
6 - 7	35	1530 10
8 - 9	42	1530 15
10 - 11	50	1530 20
12 - 13	62	1530 25
13 - 15	74	1530 30



Plug-in coupling

PP. The two parts fit together with a cone-and-socket joint. Not suitable for pressure applications.

Pack of 25.

for tubing inner-Ø mm	Length mm	Cat. No.
6 - 9	68	1523 00



Non-return valve

PE-HD. For tubing of inner diameter 6-9 mm. Length 80 mm. FKM valve disk not suitable for pressure applications. Pack of 10.

Cat. No.	1340 02
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Straight-bore stopcocks

with nozzles

PTFE, valve lever PP.
Outstanding chemical resistance.
Two integrated hose nozzles.
Pack of 1.

for tubing inner-Ø mm	Bore mm	Cat. No.
3	2	886 10
4	2	886 15
5	3	886 20
6	3	886 25
7	4	886 30
8	4	886 35
9	5	886 40



T-bore stopcocks

with nozzles

PTFE, valve lever PP.
Outstanding chemical resistance.
Three integrated hose nozzles.
Pack of 1.

for tubing inner-Ø mm	T-bore mm	Cat. No.
3	2	886 50
4	2	886 55
5	3	886 60
6	3	886 65
7	4	886 70
8	4	886 75
9	5	886 80



Straight-bore stopcocks

with nozzles

PE-HD. For operation under ambient pressure only. Two integrated hose nozzles.
Pack of 1.

for tubing inner-Ø mm	Bore mm	Length mm	Cat. No.
12.5	9	97	885 05
9.5	7	80	885 10





Conical joint clips

POM. Will not scratch glass surfaces. Excellent resilience and stability. Outstanding chemical resistance. Operating temperature up to 150 °C. Pack of 1.

For size	Color	Cat. No.
10/19	turquoise	556 38
12/21	violet	556 39
14/23	yellow	556 40
19/26	blue	556 42
24/29	green	556 44
29/32	red	556 46
34/35	orange	556 47
45/40	brown	556 49



Conical joint clips

Coated steel spring

PTFE. Will not scratch glass surfaces. Outstanding chemical resistance. Excellent resilience and stability. Operating temperature up to 200 °C. Pack of 1.

For size	Cat. No.
10/19	555 60
12/21	555 62
14/23	555 64
19/26	555 69
24/29	555 74
29/32	555 79
34/35	555 84
45/40	555 95



Stopcock grease, silicone-free

Ideal for lubricating burette stopcocks. Easy to remove, e.g., with Mucasol®. Good acid- and base-resistance. Operating temperature range -40 to +320 °C. Tube of 60 g. Pack of 1.

Cat. No.	616 10
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Silicone paste

Low viscosity. Operating temperature from -40 to +160 °C. For greasing ground joints. Tube of 50 g. Pack of 1.

Cat. No.	616 05
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Ground joint sleeves

PTFE. Greaseless seal will not contaminate sample. Outstanding chemical resistance at operating temperatures from -200 to +260 °C. Thin walled sleeves (0.05 mm thick) fit snugly without adding bulk. Joints fit perfectly, without a protruding rim simplifying use of joint clips. Wide range of applications, including vacuum to 0.1 mbar, e.g., for rotary evaporators. Pack of 10.

For size	Cat. No.
7/16	514 16
10/19	514 17
12/21	514 18
14/23	514 19
19/26	514 20
24/29	514 21
29/32	514 22
34/35	514 23
45/40	514 24
50/42	514 25
55/44	514 26
60/46	514 27
40/38	514 30

Sockets

with grip collar

PTFE. Greaseless seal will not contaminate sample. Outstanding chemical resistance at operating temperatures from -200 to +260 °C. Sturdy design for permanent use. With grip collar and sealing rings for excellent tightness. Low leakage rate:

$$Q < 1 \cdot 10^{-4} \text{ mbar} \cdot \text{l} \cdot \text{s}^{-1}.$$

Pack of 1.

Size	Cat. No.
10/19	514 63
14/23	514 64
19/26	514 65
24/29	514 66
29/32	514 67
34/35	514 68
45/40	514 69
60/46	514 70



Rubber stoppers

Natural rubber (NR), red.

upper-Ø mm	lower-Ø mm	Height mm	Pack of	Cat. No.
9	5	20	25	1443 80
12	8	20	25	1443 82
14	11	20	25	1443 84
16	12	20	25	1443 85
18	14	20	25	1443 86
22	17	25	25	1443 88
24	18	30	25	1443 89
27	21	30	25	1443 90
32	26	30	25	1443 91
35	29	30	5	1443 93
38	31	35	5	1443 94
44	36	40	5	1443 95
49	41	40	5	1443 96
55	47	40	1	1443 97
60	50	45	1	1443 98
65	56	45	1	1443 99



Silicone stoppers

SI, natural-colored.

upper-Ø mm	lower-Ø mm	Height mm	Pack of	Cat. No.
9	5	20	10	144305
12	8	20	10	144310
14	11	20	10	144315
16	12	20	10	144320
18	14	20	10	144325
22	17	25	10	144330
24	18	30	10	144335
27	21	30	10	144340
32	26	30	10	144345
35	29	30	10	144350
38	31	35	5	144355
44	36	40	5	144360
49	41	40	5	144365
55	47	40	5	144370
75	64	55	5	144375





Conical ground joint stoppers

PP. Hollow, with sealing ribs and square grip. Autoclavable (121 °C).
Pack of 1.

Size	Cat. No.
7/16	1444 05
10/19	1444 10
12/21	1444 15
14/23	1444 20
19/26	1444 25
24/29	1444 30
29/32	1444 35
34/35*	1444 40
45/40*	1444 45
60/46*	1444 46

* PE-LD, with octagonal grip



Conical ground joint stoppers

PTFE. Solid, with sealing ribs and ergonomically designed grip. Resistant to temperatures up to 270 °C.
Pack of 1.

Size	Cat. No.
10/19	1444 48
14/23	1444 50
19/26	1444 53
24/29	1444 55
29/32	1444 58
34/35	1444 59



Conical ground joint stoppers

BISTABIL

DURAN®. DIN 12 252.
Hollow, with drip tip and hexagonal grip.
Pack of 1.

Size	Cat. No.
7/16	1446 05
10/19	1446 10
12/21	1446 15
14/23	1446 20
19/26	1446 25
24/29	1446 30
29/32	1446 35
34/35	1446 40
45/40	1446 45



Conical ground joint stoppers

Borosilicate glass. DIN 12 252.
Solid or semi-hollow, with octagonal grip.
Pack of 1.

Size	Description	Cat. No.
12/21	solid	1445 15
14/23	solid	1445 20
19/26	solid	1445 25
24/29	solid	1445 30
29/32	semi-hollow	1445 35
34/35	semi-hollow	1445 40
45/40	semi-hollow	1445 45

Stirrers

Good operating characteristics due to steel-core shafts. Resistant to breakage.
PP propeller greatly reduces scratching if stirrer inadvertently hits vessel wall.
Pack of 1.

Propeller, PP. Shaft PE-coated.

Stirrer shaft Ø mm	Stirrer shaft length mm	Rotor Ø mm	Cat. No
6	380	45	1356 00



Propeller, PTFE

Stirrer shaft Ø mm	Stirrer shaft length mm	Rotor Ø mm	Cat. No
6	400	40	1342 90
6	500	40	1342 91
9.5	550	60	1342 92
9.5	650	60	1342 93



2 moveable paddles, PTFE

Stirrer shaft Ø mm	Stirrer shaft length mm	Rotor Ø mm	Cat. No
6	400	50	1342 86
6	500	50	1342 87
9.5	550	70	1342 88
9.5	650	70	1342 89



Anchor, PTFE

Stirrer shaft Ø mm	Stirrer shaft length mm	Rotor Ø mm	Cat. No
6	500	75	1342 96
9.5	550	100	1342 97
9.5	650	140	1343 00



with interchangeable blades
(Please order shafts and blades separately!)

Description	Ø mm	Length mm	Height mm	Cat. No
Shaft	6	400	–	1341 26
Shaft	9.5	550	–	1341 28
Shaft	9.5	650	–	1341 29
Blade with cut ends	3	52	14	1342 75
Blade with cut ends	3	76	19	1342 76
Blades with pointed ends	3	65	25	1342 80
Blades with pointed ends	3	75	25	1342 81
Blades with pointed ends	3	105	25	1342 82



Magnetic Stirring Bars, PTFE

PTFE. High magnetic strength and long life due to Alnico V magnetic cores, fully encapsulated with high-grade PTFE. Strict quality control ensures the magnetic strength, position of the magnetic core, surface quality, crack resistance, and uniform thickness of the PTFE coating. Maximum operating temperature 270 °C.

PLASTIBRAND® provides the right magnetic stirring bar for virtually any application. Rough vessel surfaces or abrasive sediments can quickly deteriorate the PTFE coating and thus shorten the life of stirring bars. This can be prevented by using reduced contact surface (e.g., with pivot ring) stirring bars.

Storing conditions:

To prevent demagnetization stirring bars using Alnico V magnetic cores should not be stored in a random mass but should be kept "paired" and should not be dropped on hard or steel surfaces.



Cylindrical

PTFE. Round, smooth surface, for universal applications. Pack of 10.

Length mm	Bar Ø mm	Cat. No.
2.5	2.5	1371 00
3.5	3.5	1371 01
5	2	1371 02
6	3	1371 03
8	3	1371 04
12	4.5	1371 05
7	2	1371 06
8	1.7	1371 07
10	3	1371 08
13	3	1371 09
15	4.5	1371 10
15	1.7	1371 11
10	6	1371 13
15	6	1371 14
20	6	1371 15
25	6	1371 20
30	6	1371 25
35	6	1371 27
40	8	1371 30
45	8	1371 32
50	8	1371 35
57*	27	1371 37
60	9	1371 40
70	9	1371 45
80	9	1371 50
108*	27	1371 55
159*	27	1371 60

* flattened sides, pack of 1.



Cylindrical, with pivot ring

PTFE. For vessels with slightly uneven bottoms. The pivot ring reduces the contact surface and enables the stirrer to adopt the optimum stirring position. Pack of 10.

Length mm	Bar Ø mm	Ring Ø mm	Cat. No.
8	3	4	1374 04
12	4.5	6	1374 05
15	4.5	6	1374 10
20	6	8	1374 15
25	6	7	1374 20
30	6	7.5	1374 25
35	6	8	1374 27
40	8	8.5	1374 30
45	8	10	1374 32
50	8.5	11	1374 35
60	8.5	11	1374 37
70	8.5	10	1374 45

Cylindrical, conical

PTFE. Round, smooth surface. Diameter increases toward the center to reduce the contact surface. Pack of 10.

Length mm	Bar Ø mm	Cat. No.
10	4	1371 68
15	5	1371 70
20	7	1371 75
25	8	1371 78
30	8	1371 80
40	8	1371 85
50	8	1371 90
60	8	1371 95
70	10	1371 97
80	10	1371 99

**Triangular**

PTFE. Wedge-shaped. Ideal for dissolving solids and mixing of sediments due to scraping action. Angular surface creates high turbulence even at low speeds. Pack of 10.

Length mm	Bar Ø mm	Cat. No.
12	6	1378 05
20	8	1378 07
25	8	1378 10
25	14	1378 12
35	10	1378 15
40	14	1378 17
50	12	1378 20
55	14	1378 22
80	14	1378 26

**Triangular, with pivot rim**

PTFE. Angular surface creates high turbulence even at low speeds. For vessels with slightly uneven bottoms. The pivot rim reduces the contact surface and enables the stirrer to adopt the optimum position. Pack of 10.

Length mm	Height mm	Cat. No.
12	6	1378 40
25	8	1378 42
35	10	1378 44
50	12	1378 46
80	18	1378 48

**Octagonal, with pivot ring**

PTFE. Angular surface creates high turbulence even at low speeds. For vessels with slightly uneven bottoms. The pivot ring reduces the contact surface and enables the stirrer to adopt the optimum position. Pack of 10.

Length mm	Bar Ø mm	Ring Ø mm	Cat. No.
13	8	10	1376 07
15	8	9.5	1376 08
25	8	9.5	1376 10
25	10	11	1376 12
38	8	9.5	1376 15
38	13	14.5	1376 16
38	10	11	1376 17
51	8	9.5	1376 18
51	10	11	1376 20
64	10	11	1376 22
75	12	14.5	1376 25



Magnetic Stirring Bars, PTFE

Double-ended

PTFE. Excellent centering, small contact surface and high turbulence even at low speeds. Pack of 10.

Length mm	Bar Ø mm	Ends Ø mm	Cat. No.
37	8	20	1379 30
54	8	20	1379 35

Oval

PTFE. Ideal for vessels with round bottom, e.g., round-bottom flasks. Pack of 10.

Length mm	max. Ø mm	Cat. No.
10	5	1373 00
15	6	1373 01
20	10	1373 02
25	12	1373 05
32	15	1373 07
34	15	1373 10
40	20	1373 12
50	20	1373 15
65	20	1373 20
70	20	1373 25

Crosshead

PTFE. Steady spinning position. Excellent stirring action. Pack of 10.

Ø mm	Height mm	Cat. No.
10	5	1376 30
20	9	1376 32
25	10	1376 34
30	12	1376 36
38	15	1376 38

Disc

PTFE. Convex shape for good centering. Particularly effective stirring action. Pack of 10.

Ø mm	Height mm	Cat. No.
9	6*	1379 26
10	6	1379 27
20	10	1379 28
30	12	1379 29

* Also suitable for cuvettes size 10 x 10 mm.



Magnetic Stirring Bars, PTFE

Round, with crosshead

PTFE. Specialshape for small vessels.
Particularly effective stirring action.
Pack of 10.

Ø mm	Height mm	Cat. No.
10	8	1379 05
14	10	1379 10
17	13	1379 15
22	15	1379 17
30	12	1379 19



Spherical

PTFE. Ideal for test tubes or for
eccentric stirring motion. Pack of 1.

Ø mm	Cat. No.
12	1379 50



Magnetic stirring bar retrievers

PP. Magnetic core fully sealed.
Pack of 1.

Length mm	Ø mm	Cat. No.
300	10	1377 50
450	10	1377 55



Magnetic stirring bar retrievers

PTFE. Magnetic core fully sealed.
Pack of 1.

Length mm	Ø mm	Cat. No.
150	8	1377 00
250	8	1377 10
350	8	1377 20



Stirring rods

AR-Glas®. Glass tube, fused and sealed at both ends. Pack of 50.



Length mm	Ø mm	Cat. No.
200	5	1358 05
200	6	1358 10
250	6	1358 15
250	8	1358 20
300	8	1358 25

Stirring rods

PTFE. With spatulate ends. Pack of 1.



Length mm	Bar Ø mm	Cat. No.
150	8	1362 10
200	8	1362 15
250	8	1362 20
300	8	1362 25

Stirring rods with steel core

PTFE coated steel core. Can be bent as required; the shape is permanently retained. Round ends. Pack of 1.



Length mm	Bar Ø mm	Cat. No.
100	6	1363 05
150	6	1363 10
200	6	1363 15
250	6	1363 20
300	6	1363 25
350	6	1363 30
400	6	1363 35

Spatulas

Impact-resistant PS. Available with double spatulate ends or a spatulate and spoon combination. Pack of 10.



Length mm	Description	Cat. No.
150	Double spatula	1398 10
180	Double spatula	1398 15
180	Spatula / spoon	1398 17
210	Spatula / spoon	1398 20

Spatula with steel core

PE-HD coated steel core. Two differently shaped spatulate ends (approx. 16 mm wide). Pack of 5.



Length mm	Ø mm	Cat. No.
260	7	1361 00

Spatula

PP. Two differently shaped spatulate ends (approx. 15 mm wide). Pack of 10.



Length mm	Ø mm	Cat. No.
245	6	1361 10

Forceps

PMP. Pointed ends. Autoclavable (121 °C).
Pack of 10.

Length mm	Cat. No.
115	1128 05
145	1128 10



Forceps

POM, glass-fiber reinforced. Round ends.
Pack of 5.

Length mm	Cat. No.
250	1130 20



Forceps

PTFE. Pointed ends. Outstanding chemical
and thermal resistance. Pack of 1.

Length mm	Cat. No.
100	1131 05
150	1131 10
200	1131 15



Forceps

PTFE. Rectangular ends. Outstanding
chemical and thermal resistance.
Pack of 1.

Length mm	Cat. No.
100	1131 25
150	1131 30
200	1131 35



Scoops

PP, white. 2 to 100 ml: Pack of 12;
250 to 1000 ml: Pack of 6.

Capacity ml	Length mm	Cat. No.
2	60	1391 02
5	80	1391 03
10	100	1391 05
25	135	1391 10
50	160	1391 15
100	200	1391 20
250	260	1391 25
500	315	1391 30
1000	385	1391 35



Scoops

PE, natural-colored. Pack of 6.

Capacity ml	Length mm	Cat. No.
500	350	1390 35
1000	400	1390 40





Weighing dishes, square shape

Impact-resistant PS, antistatic. Light and flat design. Ideal for weighing.
Wall thickness approx. 0.2 mm. Pack of 500.

Capacity ml	Length mm	Width mm	Height mm	Cat. No.
7	45	45	7	1555 40
100	84	84	24	1555 42
250	140	140	21	1555 44



Weighing dishes, diamond shape

Impact-resistant PS, antistatic. Light and flat design. Ideal for weighing.
Wall thickness approx. 0.2 mm. Pack of 500.

Capacity ml	Length mm	Width mm	Height mm	Cat. No.
25	70	45	12	1555 46
30	80	56	14	1555 48
100	120	90	17	1555 50



Jars with screw cap

PE-LD. Thick-walled, slightly conical. Screw cap with sealing cone. Pack of 10.

Capacity ml	max. Ø mm	Height mm	Cat. No.
5	23	34	619 50
10	23	52	619 55
30	37	53	619 60
60	37	92	619 65
90	57	62	619 70
180	57	108	619 75



Sample jars with screw cap

PFA. For sampling, transport and storage. PFA screw cap with integrated seal lip.
Autoclavable, easy to clean, withstands temperatures from -200 °C to +260 °C.
Pack of 1.

Capacity ml	Height mm	Ø mm	Thread	Cat. No.
30	54	38	GL 40	620 05
60	90	38	GL 40	620 10
90	62	54	GL 56	620 15
180	112	54	GL 56	620 20

Thread	Cat. No.
GL 40	1292 54
GL 56	1292 56

Replacement screw caps for PFA sample jars

PFA. Pack of 1.

Laboratory bottles

DURAN®. Threaded to DIN ISO 4796. Studded base for stability and abrasion resistance. Graduated, with marking area. Screw cap and pouring ring PP. Autoclavable (121 °C). Pack of 10 (5000 ml to 20000 ml: Pack of 1).

Capacity ml	Thread	Ø mm	Height mm	Cat. No.
25*	GL 25	36	70	1225 20
50	GL 32	46	87	1225 28
100	GL 45	56	100	1225 38
250	GL 45	70	138	1225 48
500	GL 45	86	176	1225 54
1000	GL 45	101	225	1225 62
2000	GL 45	136	262	1225 64
5000	GL 45	186	335	1225 70
10000	GL 45	234	410	1225 74
20000	GL 45	300	505	1225 78

* integral glass ring, therefore without additional pouring ring

Thread	Screw Cap Cat. No.	Pouring ring Cat. No.
GL 25	1226 20	-
GL 32	1226 28	1226 62
GL 45	1226 38	1226 64

Spare parts for laboratory bottles

PP. Pack of 10.



General Laboratory

Threaded bottles

Soda-lime glass (amber). Screw cap PP, pouring ring PE-LD. Space-saving square base. The bottles are available ethylene-acrylate coated or uncoated. Pack of 1.

Synthetic-coating for better protection

The ethylene-acrylate coating envelops the glass bottle like a protective skin. Should the bottle break, the splintering hazards are reduced considerably. The maximum operating temperature for coated bottles is 80 °C.

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

Capacity ml	Width mm	Height mm	Thread	coated Cat. No.	uncoated Cat. No.
100	50	125	GL 32	7040 02	7040 12
250	65	160	GL 32	7040 04	7040 14
500	80	195	GL 32	7040 06	7040 16
1000	95	230	GL 45	7040 08	7040 18
2500*	140	300	GL 45	7040 10	7040 20

* cylindrical shape





Conical-shoulder bottles, narrow-mouth

PP. Standard ground joint and interchangeable stoppers (PP, square). 5000 ml size with additional carrying handle. 10000 ml size with two carrying handles.

Capacity ml	Neck size	Ø mm	Height mm	Pack of	Cat. No.
100	14/23	52	106	10	1298 38
250	19/26	70	136	10	1298 48
500	24/29	76	172	10	1298 54
1000	29/32	106	209	10	1298 62
2000	29/32	131	255	6	1298 64
5000*	GL 45	175	325	1	1298 70
10000*	GL 63	222	394	1	1298 74

* with screw cap



Conical-shoulder bottles, wide-mouth

PP. Standard ground joint and interchangeable stoppers (PE, octagonal).

Capacity ml	Neck size	Ø mm	Height mm	Pack of	Cat. No.
100	29/32	52	106	10	1299 38
250	34/35	70	136	10	1299 48
500	45/40	76	172	10	1299 54
1000	60/46	106	209	10	1299 62
2000	60/46	131	255	6	1299 64



Narrow-mouth bottles

PP, translucent. Sturdy, high-quality bottle with sealing cone in the screw cap. Autoclavable (121 °C).

Pack of 10 (1000 ml and 2000 ml: Pack of 5).

Capacity ml	Ø mm	Height mm	Neck inner-Ø mm	Cat. No.
30	32	67	16	1285 20
60	40	79	16	1285 28
125	50	103	21	1285 38
150	50	117	21	1285 42
250	60	140	21	1285 48
500	75	160	21	1285 54
1000	90	200	21	1285 62
2000	120	237	34	1285 64

Wide-mouth bottles

PP, translucent. Sturdy, high-quality bottle with sealing cone in the screw cap.
Autoclavable (121 °C).

Pack of 10 (1000 ml and 2000 ml: Pack of 5).

Capacity ml	Ø mm	Height mm	Neck inner-Ø mm	Cat. No.
60	40	82	26	1286 28
150	50	105	26	1286 42
250	60	141	34	1286 48
500	75	161	44	1286 54
1000	90	207	53	1286 62
2000	120	243	53	1286 64



Narrow-mouth bottles

PE-LD, flexible, translucent. Economical multipurpose bottle.
With or without screw cap.

Capacity ml	Ø mm	Height mm	Thread	Pack of	with cap Cat. No.	without cap Cat. No.
10	26	50	GL 14	100	1294 08	1290 08
20	31	58	GL 14	100	1294 16	1290 16
30	34	66	GL 14	100	1294 24	1290 24
50	39	85	GL 18	100	1294 28	1290 28
100	45	106	GL 18	50	1294 38	1290 38
250	59	140	GL 25	50	1294 48	1290 48
500	75	180	GL 25	50	1294 54	1290 54
1000	94	212	GL 28	25	1294 62	1290 62
2000	117	264	GL 28	25	1294 64	1290 64

Thread	Pack of	Cat. No.
GL 14	100	1292 00
GL 18	50	1292 02
GL 25	50	1292 04
GL 28	25	1292 06

Screw caps for narrow-mouth bottle, PE-LD



Narrow-mouth bottles, amber

PE-LD, opaque. For storage of light-sensitive substances.
With screw cap. Pack of 1.

Capacity ml	Ø mm	Height mm	Thread	Cat. No.
50	39	85	GL 18	1302 28
100	45	106	GL 18	1302 38
250	59	140	GL 25	1302 48
500	75	180	GL 25	1302 54
1000	94	212	GL 28	1302 62
2000	117	264	GL 28	1302 64





Wide-mouth bottles

PE-LD, flexible, translucent. With or without screw cap.

Capacity ml	Ø mm	Height mm	Thread	Pack of	with cap Cat. No.	without cap Cat. No.
50	38	80	GL 32	100	1296 28	1293 28
100	48	94	GL 32	50	1296 38	1293 38
250	62	126	GL 40	50	1296 48	1293 48
500	76	155	GL 50	50	1296 54	1293 54
1000	93	208	GL 65	25	1296 62	1293 62
2000	120	246	GL 65	25	1296 64	1293 64

Thread	Pack of	Cat. No.
GL 32	25	1292 08
GL 40	25	1292 10
GL 50	25	1292 12
GL 65	25	1292 14

Screw caps for wide-mouth bottle, PE-LD



Wide-mouth square bottles

PE-HD, translucent. Screw cap with sealing cone, PP, blue, with cadmium-free pigments. Tamper-proof closure with press-off retaining ring. Space-saving square base. Pack of 1.

Capacity ml	Length mm	Width mm	Height mm	Thread	Cat. No.
100	45	45	101	GL 32	1304 12
250	60	60	127	GL 45	1304 14
500	75	75	161	GL 54	1304 18
1000	85	85	210	GL 54	1304 22
1500	111	111	209	GL 80	1304 24
2500	122	122	258	GL 80	1304 26
4000	142	142	294	GL 80	1304 28

Thread	Cat. No.
GL 32	1303 20
GL 45	1303 22
GL 54	1303 24
GL 80	1303 26

Replacement screw caps for wide-mouth bottles

PP. Pack of 1.

Wide-mouth bottles

PTFE. Outstanding chemical and thermal resistance. Sturdy, strong-walled design. With screw cap. Pack of 1.



Capacity ml	Ø mm	Height mm	Neck inner-Ø mm	Cat. No.
5	22	35	10	1305 05
10	26	50	12	1305 08
25	33	61	19	1305 20
50	43	76	25	1305 28
100	52	88	35	1305 38
150	60	90	35	1305 44
250	67	120	42	1305 48
500	80	150	52	1305 54
1000	100	185	57	1305 62
2000	120	240	60	1305 64

Wide-mouth bottles

PFA. High-quality bottles, specially designed for long-term storage of solvents and standards (trace analysis). PFA screw cap with integrated seal lip and buttress thread. Autoclavable, easy to clean, temperature resistant from -200 °C to +260 °C. Pack of 1.

Capacity ml	Ø mm	Height mm	Thread	Cat. No.
250	61	150	S 40	1287 48
500	76	179	S 40	1287 54
1000	96	217	S 40	1287 62
2000	130	245	S 40	1287 64
5000	175	320	S 40	1287 70

Thread	Cat. No.
S 40	1292 62

Replacement screw cap for wide-mouth PFA bottles

PFA. Pack of 1.



Narrow-mouth bottles

PFA. High-quality bottles, specially designed for long-term storage of solvents and standards (trace analysis). PFA screw cap with integrated seal lip and buttress thread. Autoclavable, easy to clean, temperature resistant from -200 °C to +260 °C. Pack of 1.

Capacity ml	Ø mm	Height mm	Thread	Cat. No.
50	37	86	S 28	1289 28
100	45	120	S 28	1289 38
250	61	160	S 28	1289 48
500	76	190	S 28	1289 54
1000	96	240	S 28	1289 62

Thread	Cat. No.
S 28	1292 60

Replacement screw cap for narrow-mouth PFA bottles

PFA. Pack of 1.



Narrow-mouth bottles

Technical quality PFA, ETFE screw caps. These bottles include components made of reprocessed PFA material from our production process. Physical properties and chemical resistance equivalent to highly-pure PFA. Pack of 1.

Capacity ml	Ø mm	Height mm	Thread	Cat. No.
50	37	90	GL 18	1304 80
100	45	114	GL 18	1304 82
250	61	157	GL 25	1304 84
500	76	189	GL 25	1304 86
1000	96	233	GL 32	1304 88

Thread	Cat. No.
GL 18	1292 70
GL 25	1292 72
GL 32	1292 74

Replacement screw caps for narrow-mouth bottles, technical quality PFA

ETFE. Pack of 1.





Wash bottles

without venting valve

PE-LD, flexible. Wide-mouth. Capacity 250 ml and 500 ml. High-quality wash bottles with integrated wash stream and sealing cone closure. Large opening for convenient filling. Label with designation of contents and general safety statements in English (with CAS numbers and NFPA codes) and German (with CAS numbers). Pack of 5.

With venting valve (metal ball)

for distilled water and organic solvents only; to avoid dripping caused by overpressure

Name of solvent	Color stopper	without venting valve		with venting valve	
		250 ml Cat. No.	500 ml Cat. No.	250 ml Cat. No.	500 ml Cat. No.
Dist. water	white	1440 78	1440 84	1440 18	1440 24
Acetone	red	1440 79	1440 85	1440 19	1440 25
Methanol	green	1440 80	1440 86	1440 20	1440 26
Isopropanol	blue	1440 81	1440 87	1440 21	1440 27
Ethanol	orange	1440 82	1440 88	1440 22	1440 28
- none -	yellow	1440 83	1440 89	-	-



Wash bottles

with interchangeable wash head

PE-LD, flexible. Detachable threaded wash head. Adjustable height delivery tube.

Pack of 50 (1000 ml: Pack of 25).

Wash heads

Thread	Pack of	Cat. No.
GL 18	50	1292 20
GL 25	50	1292 22
GL 28	25	1292 24

Capacity ml	Ø mm	Total height mm	Thread	Cat. No.
100	45	196	GL 18	1441 38
250	59	240	GL 25	1441 48
500	75	279	GL 25	1441 54
1000	94	322	GL 28	1441 62



Narrow-mouth wash bottles

Technical quality PFA, ETFE screw caps, FEP wash elements. These bottles include components made of reprocessed PFA material from our production process. The tip opening can be enlarged by cutting. High temperature and chemical resistance.

Pack of 1.

Capacity ml	Ø mm	Height mm	Thread	Cat. No.
250	61	157	GL 25	1438 48
500	76	189	GL 25	1438 54
1000	96	233	GL 32	1438 62

Thread	Cat. No.
GL 25 - with FEP delivery tube	1292 73
GL 32 - with FEP delivery tube	1292 75

Replacement Wash Heads

ETFE. Pack of 1.

Dropping bottles with pipette

Soda-lime glass. The interchangeable ground joint stopper has an integrated dropping pipette with rubber cap. Pack of 1.

Capacity ml	Ø mm	Total height mm	Description	Cat. No.
50	45	130	Clear glass	1246 33
100	55	150	Clear glass	1246 39
50	45	130	Amber glass	1245 29
100	55	150	Amber glass	1245 39

Rubber caps

Natural rubber (NR). Fitting all sizes.
Pack of 100.

Cat. No.	1247 00
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Dropping bottles

PE-LD, flexible. Detachable threaded cap with dropper nozzle and attached spout cap.

Capacity ml	Ø mm	Total height mm	Thread	Pack of	Cat. No.
20	31	88	GL 14	100	1252 16
30	34	96	GL 14	100	1252 24
50	39	115	GL 18	100	1252 28
100	45	136	GL 18	50	1252 38
250	59	170	GL 25	50	1252 48
500	75	209	GL 25	50	1252 54
1000	94	240	GL 28	25	1252 62

Caps with dropper nozzle, PE-LD

Thread	Pack of	Cat. No.
GL 14	100	1292 30
GL 18	50	1292 32
GL 25	50	1292 34
GL 28	25	1292 36

Dropping bottles

PTFE, flexible. Outstanding chemical resistance. Dropper nozzle with screw cap.
Pack of 1.

Capacity ml	Ø mm	Height mm	Cat. No.
25	33	93	1253 16
50	43	100	1253 28





Atomizers

PE-HD. By turning the nozzle, delivery can be varied from a fine spray to a solid stream. Pack of 5.

Capacity ml	Cat. No.
400	1441 80
850	1441 90



Aspirator bottles, with stopcock

PE-HD. With screw cap and plastic carrying handle (25 and 50 l sizes with two handles). With PP stopcock, 3/4" connection. Pack of 1.

Capacity l	Ø mm	Height mm	Neck inner-Ø mm	Cat. No.
5	165	335	45	1311 70
10	210	420	54	1311 74
25	275	540	54	1311 84
50	365	600	54	1311 90

Spare stopcock

Fits all sizes. With PP adapter and 2 FKM seals. Pack of 1

Cat. No.	1311 00
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Storage bottles

Narrow mouth

PE-HD. Narrow mouth. With screw cap and carrying handle (25 and 50 l sizes with two handles). Pack of 1.

Capacity l	Ø mm	Height mm	Neck inner-Ø mm	Cat. No.
5	165	335	45	1308 70
10	210	420	54	1308 74
25	275	540	54	1309 84
50	365	600	54	1309 90

Storage bottles

Wide mouth

PE-HD. With screw cap and carrying handle. Pack of 1.

Capacity l	Ø mm	Height mm	Neck inner-Ø mm	Cat. No.
5	165	320	85	1309 70
10	210	395	120	1309 74



Jerry cans

PE-HD. With screw cap and threaded pourer.
Pack of 1.

Capacity l	Length mm	Width mm	Height mm	Cat. No.
5	260	130	260	1316 60
10	260	140	415	1316 62
20	330	165	470	1316 64



Buckets

PE-HD. With or without push-on lid. With graduation and handle. Without spout.
Pack of 1.
(Please order push-on lid separately!)

Capacity l	Height mm	Cat. No.
5	240	71772
10	300	71774

Push-on lids for buckets PE-LD

PE-LD. Pack of 1.

For bucket l	Cat. No.
5	717 71
10	717 76



Buckets

PP. With spout, reinforced rim and handle.
Pack of 1.

Capacity l	Height mm	Cat. No.
12	300	723 76
15	340	723 78





Trays (photographic trays)

PP, white. Ribbed bottom improves stability, reinforced rim, slightly sloping walls. Stackable. Pack of 1.

Length mm	Width mm	Height mm	Cat. No.
225	180	45	1566 40
300	240	70	1566 42
370	310	75	1566 44
510	410	120	1566 46
625	530	140	1566 48
840	645	160	1566 50



Tidy tray

PVC. Designed for use as utility trays or drawer organizers. Ideal for storing magnetic stirring bars, etc. Pack of 1.

Compartments	Length mm	Width mm	Height mm	Cat. No.
5	402	302	60	7685 05
12	402	302	60	7685 10



Ice bucket

Durable, rigid polyurethane foam. For bench-top cold storage. Excellent insulating properties. Sturdy, octagonal design for improved stability. Tapered side with molded handles and flat lid for easy handling and storage. Suitable for chemical disinfection. Operating temperature -196 °C to +95 °C. Pack of 1.

Capacity l	Length mm	Width mm	Height mm	Cat. No.
4.5	330	280	180	1561 00

Pipette rinsing systems

Trouble-free and gentle cleaning of pipettes with repetitive siphon rinsing. Water supply connection via hose nozzle, outer-Ø 12 mm. The complete cleaning system consists of a rinsing apparatus, soaking jar and pipette basket. Please order each component separately.

Rinsing apparatuses

PE-HD. Adjust the water flow to approx. 2 l/min. Pack of 1.

for pipette length mm	Capacity l	inner-Ø mm	Base Ø mm	Height mm	Cat. No.
460	13	150	315	740	291 20
600	17	150	315	1000	291 25



Soaking jars

PE-HD. Pack of 1.

for pipette length mm	Capacity l	inner-Ø mm	Base Ø mm	Height mm	Cat. No.
460	10	150	240	510	292 10
600	12.5	150	240	660	292 15



Pipette baskets

PE-HD. Pack of 1.

for pipette length mm	Basket height incl. handle mm	Base Ø mm	Basket height mm	Cat. No.
360	495	145	280	290 05
460	645	145	280	290 10
600	870	145	280	290 15



Pipette jar

with lid

PP, lid PE-HD. The jar is suitable for dust-proof storage of pipettes up to 400 mm long. Pack of 1.

Base Ø mm	Height mm	inner-Ø mm	Cat. No.
130	430	83	288 00





Draining rack

PS. Integrated wide draining trough. Pegs can be inserted as required. Peg holes are closed at the back – preventing leakage toward the wall. Suitable for glass graduated cylinders of up to 250 ml and beakers up to 1000 ml. Supplied complete with drain tubing and accessories for wall mounting. Width 450 mm, height 630 mm, 72 pegs (Ø 16 mm, length 120 mm). Pack of 1.

Cat. No.	951 05
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Special pegs

for draining rack

PS. Special pegs for narrow-mouthed or small vessels, e.g., test tubes, small volumetric flasks and graduated cylinders. Outer diameter 6 mm, length 120 mm. Pack of 11.

Cat. No.	951 11
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Pipette tray

PVC. Practical tray for pipettes of any size. Length 280 mm, width 220 mm, height 29 mm. Pack of 1.

Cat. No.	283 00
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Pipette tray

PVC. Drawer organizer. Four compartments for approx. 30 graduated pipettes (1 - 20 ml). Length 420 mm, width 300 mm, height 30 mm. Pack of 1.

Cat. No.	283 05
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Pipette tray

PVC. Nine oblong dividers, open on one side. For small-volume pipettes. Length 355 mm, width 300 mm, height 45 mm. Pack of 1.

Cat. No.	7685 15
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Pipette stand

PP. Holds up to 94 pipettes of different sizes. Rotary model, with additional rotary tip rest to protect the pipette tips. Suitable for all graduated and one-mark pipettes. Slightly-curved stand base rim helps retain dripping liquids. Diameter 230 mm, height 450 mm. Pack of 1.



Cat. No.	309 00
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Cleaning

Manual Detergents for Cleaning and Disinfection

Gentle to materials

The special formulation of active ingredients achieves optimum cleaning results even at low temperatures, brief soaking times and low alkalinity. Glass surfaces and graduations will last longer.

Safe on tests

Detergents and disinfecting detergents can be removed without residue. Thus, even sensitive tests in hematology, serology, microbiology and enzymatic analytical chemistry are not affected. Simply observe the recommended concentrations and rinse thoroughly with water.

Environmentally friendly

All BRAND detergents and disinfecting detergents conform to current legislation and regulations. They are free from formaldehyde, and contain biodegradable surfactants and other ingredients that are not harmful to the environment. Phosphate content is considerably reduced.

User-friendly

Our cleaners and disinfecting cleaners have a very broad spectrum of activity. Therefore, only a small number of products are needed for a great variety of procedures. These cleaners and disinfecting cleaners do not contain caustic alkali. This is why they are particularly gentle to material, and are fully effective even in hard water.

Cost efficient

Normally soiled instruments will become clean when using the recommended concentration of detergent. For heavy soiling, it is recommended to heat the solution within the indicated limits. However, an excessively high concentration will not increase the cleaning performance. In this connection, please note the technical information on page 298-299.



Abbreviations:

Association for Applied Hygiene (VAH)
Robert Koch-Institute (RKI)
German Society for Hygiene and Microbiology (DGHM)
German Veterinary Medical Society (DVG)

General cleaning basics can be found on page 298-299.





Mucasil®

Universal detergent

Liquid, alkaline high-performance concentrate for immersion and ultrasonic baths. Universal cleaner for laboratory equipment and instruments made of glass, porcelain, plastic, rubber and metal. Items are cleaned in ~ 10 – 30 minutes, without mechanical help. Mucasil® replaces chromosulfuric acid, is free from chlorine and caustic alkalis, is non-toxic, non-aggressive and biodegradable. Prolonged exposure of zinc and non-anodized aluminium surfaces should be avoided.

Ingredients:

> 30% phosphates,
< 5% anionic surfactants, amphoteric surfactants, complexing agents, corrosion inhibitors, auxiliary agents

Concentration for use:

Ultrasonic bath:

0.2 - 2% (1.4 - 14 ml/l)

Immersion bath:

0.7 - 3% (5 - 22 ml/l)

Chemical and physical specifications:

Light green, clear liquid

Density: approx. 1.4 g/ml

pH value (0.7%): approx. 11.5

pH value (3%): approx. 11.7

Description	Pack of	Cat. No.
2 liter bottle (2.8 kg)	6	440 03
5 liter can (7 kg)	1	440 05



Edisonite® CLASSIC

Universal detergent

Alkaline detergent. Powder compound for immersion and ultrasonic bath. Ideal for removal of natural fats and oils, proteins and blood. Durable protection against corrosion damage.

Ingredients:

> 30% phosphates,
< 5% anionic surfactants, non-ionic surfactants, corrosion inhibitors, auxiliary agents

Concentration for use:

0.5 - 1% (5 - 10 g/l)

Chemical and physical specifications:

Light green powder

Bulk density: approx. 850 kg/m³

pH value (0.5%): approx. 11.5

pH value (1%): approx. 11.5

Use on zinc and non-anodized aluminium is restricted.

Description	Pack of	Cat. No.
1 kg jar	6	443 01
5 kg bucket	1	442 05



Edisonite® SUPER

Universal detergent

Neutral detergent. Powder compound for immersion and ultrasonic bath. Ideal for removal of natural fats and oils, proteins and blood.

Edisonite® SUPER is recommended for optical glass, for plastics sensitive to alkalis and rubbers.

Ingredients:

> 30% phosphates,
5 - 15% anionic surfactants,
corrosion inhibitors, auxiliary agents

Concentration for use:

0.5 - 1% (5 - 10 g/l)

Chemical and physical specifications:

Light green powder

Bulk density: approx. 800 kg/m³

pH value (0.5%ig): approx. 7.5

pH value (1%ig): approx. 7.5

Description	Pack of	Cat. No.
1 kg jar	6	443 61
5 kg bucket	1	443 65

Mucocit®-T

Instrument disinfecting detergent

Particularly suited for sensitive instruments. Free of phosphates, aldehydes, phenols and chlorine derivatives. Fresh scent.

Ingredients:

100 g Mucocit®-T contain:
7 g didecyltrimethylammoniumchloride,
4.5 g alkylpropylenediamino-
1,5-bisguanidiniumacetate,
2 g bis(-aminopropyl)-laurylamine,
2.8 g laurylpropylenediamine,
5 - 15% non-ionic surfactants,
auxiliary agents

Chemical and physical specifications:

Clear, blue liquid, fresh smell
Density: approx. 1 g/ml
pH value (1%): approx. 10

Microbiological efficiency/ concentration for use:

Disinfection of instruments: Bacteria (incl. Tuberculosis and mycobacteria) and fungi with high organic burden according to DGHM/VAH directives:
1% (10 g/l)/1 hour
2% (20 g/l)/30 minutes
3% (30 g/l)/15 minutes
Limited virucidal efficacy* (incl. HIV, HBV, HCV) 1% (10 g/l)/5 minutes
Inactivation of human rotaviruses:
2% (20 g/l)/5 minutes

* As recommended by the RKI,
Bundesgesundheitsblatt 01/2004

Description	Pack of	Cat. No.
2 liter bottle	6	448 22
5 liter can	3	448 25



Mucocit®-P

Instrument disinfecting detergent

Powerful and gentle to labware. Free of phosphates, aldehydes and phenols. Fresh scent.

Ingredients:

100 g Mucocit®-P contain:
5 g bis(-aminopropyl)-laurylamine,
5 g didecyl-dimethyl-ammonium chloride,
5 - 15% NTA, < 5% non-ionic surfactants,
phosphonates, auxiliary agents

Chemical and physical specifications:

Light-blue powder, fresh smell
Bulk density: approx. 620 kg/m³
pH value (4%): approx. 11

Microbiological efficiency/ concentration for use:

Disinfection of instruments: Bacteria and fungi with high organic burden acc. to DGHM/VAH directives: 3% (30 g/l)/1 hour
Tuberculosis bacteria: 3% (30 g/l)/1 Std.
Limited virucidal efficacy* (incl. HIV, HBV, HCV): 1% (10 g/l)/5 minutes
Inactivation of human rotaviruses:
1% (10 g/l) / 5 minutes

* As recommended by the RKI,
Bundesgesundheitsblatt 01/2004

Description	Pack of	Cat. No.
2.5 kg bucket	3	449 20





- Effective in only 15 seconds!
- DGHM/VAH tested and RKI-compliant, with aerosol-free application (disinfectant wipes)
- Fresh scent!



- Effective in only 15 seconds!
- DGHM/VAH-tested and RKI-compliant!
- Fresh scent!



- DGHM/VAH-tested
- RKI-compliant!
- Aerosol-free disinfectant wipes!
- Fresh scent!

Pursept®-A Xpress disinfection spray

Surface disinfecting detergents

Refillable pump-atomizer without gas.

Ingredients:

100 g Pursept®-A Xpress contain:
55 g ethanol,
0.03 g n-alkyl-aminopropyl-glycine,
auxiliary agents

Chemical and physical specifications:

Clear, colorless liquid
Density: approx. 0.9 g/ml
pH value: approx. 7.5

Microbiological efficiency of the undiluted working solution:

Surface disinfection: Bacteria and fungi with little organic burden with mechanics acc. to DGHM/VAH directives: 15 seconds
Limited virucidal efficacy*
(incl. HIV, HBV, HCV): 15 seconds
Effectiveness against TbB: 30 seconds

* As recommended by the RKI, Bundesgesundheitsblatt 01/2004

Description	Pack of	Cat. No.
1 liter bottle	10**	448 30
5 liter can	3	448 35
Atomizer head	1	448 32

** 10 bottles + 1 atomizer head

Pursept®-A Xpress disinfection tissues

Surface disinfecting detergents

Simply wipe the surfaces with the tissue and leave to soak.

Ingredients:

1 Pursept®-A Xpress tissue contains approx.: 1027 mg ethanol,
0.56 mg n-alkyl-aminopropyl-glycine,
auxiliary agents

Chemical and physical specifications:

Active solution (Pursept®-A Xpress):
Clear, colorless liquid, fresh smell
Density: approx. 0.9 g/ml
pH value: approx. 7.5
Tissues: FCC-bleached (oxidation bleach), bio-degradable

Microbiological efficiency of the undiluted working solution:

Surface disinfection: Bacteria and fungi with little organic burden with mechanics to DGHM/VAH: 15 seconds
Limited virucidal efficacy*
(incl. HIV, HBV, HCV): 15 seconds
Effectiveness against TbB: 30 seconds

* As recommended by the RKI, Bundesgesundheitsblatt 01/2004

Description	Pack of	Cat. No.
Dispenser box (150 tissues)	6	448 40
Refill unit (150 tissues)	6	448 45

Pursept®-AF disinfection concentrate

Surface disinfecting detergents

Cleaning and disinfection of floors, walls and fittings in one operation. Appropriate for use in the foods sector.

Ingredients:

100 g Pursept®-AF contain:
12.5 g didecyl-dimethyl-ammoniumchloride,
1.5 g bis(aminopropyl)-laurylamine,
5 - 15% NTA, < 5% non-ionic surfactants,
auxiliary agents

Chemical and physical specifications:

Clear, green liquid, Density approx.: 1 g/ml
pH value (1%): approx. 9.5

Microbiological efficiency/concentration for use:

Surface disinfection: Bacteria and fungi with high organic burden according to DGHM/VAH directives: 0.25% (2.5 g/l)/4 hours
0.5% (5 g/l)/1 hour
1% (10 g/l)/30 minutes
2% (20 g/l)/15 minutes
Limited virucidal efficacy* (incl. HIV, HBV, HCV): 1% (10 g/l)/15 minutes
Inactivation of human rotaviruses:
0.25% (2.5 g/l)/2 minutes
Effectiveness against TbB:
2% (20 g/l)/1 hour

Description	Pack of	Cat. No.
2 liter bottle	6	448 50
5 liter can	3	448 55

* As recommended by the RKI, Bundesgesundheitsblatt 01/2004

Water Stills

MonoDest 3000 E and 3000 N

- Simple operation and easy to clean (without dismantling the apparatus)
- Compact design
- Stainless steel heaters
- Separate circuits for feed and cooling water
- Low water consumption
- Thermostatically controlled heating cut-off switch provides a high level of safety if the water supply is interrupted

MonoDest: items supplied

Basic unit including power cable, PVC tubing (7 m, inner diameter 10 mm), pinchcock for sump drain; operating manual. Pack of 1.

MonoDest 3000 E

Ideal for applications requiring small quantities of pure water. Particularly high water quality level (conductivity 0.7 $\mu\text{S}/\text{cm}$) is obtained by the special design of the condenser. The freshly obtained distillate is virtually free of dissolved gases, metals, salts, and pyrogens.

Cat. No.	562 20
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MonoDest 3000 N

The low-cost alternative to the MonoDest 3000 E. Recommended for applications where conductivity of 1.5 $\mu\text{S}/\text{cm}$ is sufficient.

Cat. No.	562 15
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Accessories and spare parts for MonoDest 3000 E and N. Pack of 1.

Description	Cat. No.
Glass part, DURAN®, for MonoDest 3000 N	563 30
Glass part, DURAN®, for MonoDest 3000 E	563 60
Base for MonoDest 3000 E and N	563 65

Technical data

		MonoDest 3000 E	MonoDest 3000 N
Power consumption	W	3000	3000
Rated current	A	14	14
Voltage	V/Hz	220-240/50-60	220-240/50-60
Tap water connection:			
Minimum pressure	bar	2	2
Distillate output			
with tap water	l/h	4.2	4.2
with deionized water	l/h	4.0	–
Conductivity of distillate			
referred to 25 °C	$\mu\text{S}/\text{cm}$	0.7	1.5
Distillate temperature	°C	96	96
Cooling water consumption			
with tap water	l/h	45	45
with deionized water	l/h	55	–
Cooling water temperature:			
Inlet	°C	16	16
Outlet			
with tap water	°C	64	64
with deionized water	°C	48	–
Heater	Material	Stainless steel	Stainless steel
		1.4529	1.4529
Glass parts	Material	DURAN®	DURAN®
Height	mm	750	600
Space required			
(without distillate bottle)	mm	220 x 220	220 x 220
Weight	kg	6	6



MonoDest 3000 E



MonoDest 3000 N

Scaffolding Components

System of components for individual scaffolding constructions. Broad range of versatile connectors, swivel holders and clamps fitting the rust-proof, high-tensile aluminum alloy support rods. Mounting elements subjected to particular strain are principally made of the high-tensile Castaloy® alloy.



L-shaped base

For space-saving support assemblies. Solid cast iron base with 3 threaded holes hold up to 3 rods (12.7 mm diameter). Supplied with one steel (copper and nickel plated) support rod. Pack of 1.

Distance between feet mm	Rod length mm	Rod Ø mm	Weight kg	Cat. No.
140	610	12.7	3.5	5668 00

Supplemental support rod

Steel, nickel-plated. Length 910 mm, Ø 12.7 mm.
Pack of 1.

Cat. No.	5668 50
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Tripod bases

Very stable solid cast-iron tripod base, black enamel.
Screwed-in steel support rod, copper and nickel plated.
Pack of 1.

Distance between feet mm	Rod length mm	Rod Ø mm	Weight kg	Cat. No.
155	460	7.9	0.7	5667 05
190	510	9.5	1.3	5667 10
235	610	11.0	2.0	5667 15
280	910	12.7	3.5	5667 20

► **Stand for burettes: see page 167**
Filter funnel supports: see page 225

Rectangular bases

Solid rectangular base plate, sturdy epoxy resin. Rubber feet prevent sliding.
Steel support rod, copper and nickel plated, secured with a locknut.
Pack of 1.



Base plate length mm	Base plate width mm	Rod length mm	Rod Ø mm	Weight kg	Cat. No.
150	100	460	7.9	0.7	5667 50
200	130	510	9.5	1.2	5667 55
230	150	610	11.0	1.7	5667 60
280	170	910	12.5	2.6	5667 65

Base plate

Castaloy® alloy. For permanent mounting of support rods 12.7 mm diameter. Supplied with 3 wood screws and one rod securing screw. Pack of 1.



Cat. No. 5666 25

Support rods

High-tensile polished aluminum alloy. Rounded ends. Pack of 1.



Length mm	Ø mm	Cat. No.
100	12.7	5666 58
300	12.7	5666 59
450	12.7	5666 60
600	12.7	5666 65
900	12.7	5666 70
1250	12.7	5666 75
1850	12.7	5666 80

Straight connector

High-tensile aluminum alloy. For straight connection of two rods 12.7 mm Ø. Two nickel-plated brass setscrews. Length 51 mm, outer diameter 22 mm. Pack of 1.

Cat. No. 5666 27



90° connector

Castaloy® alloy. For connection of two rods 12.7 mm diameter at a right angle. Two nickel-plated brass setscrews. Pack of 1.

Cat. No. 5666 20



Multiclutch connector

Castaloy® alloy. Very versatile element for connection of rods 12.7 mm diameter. Can be moved horizontally and vertically along rods. One enlarged hole (vertical in the picture) for one or two parallel rods. Four additional holes for right-angle connections. Pack of 1.

Cat. No. 5666 28





Swivel connector

Castaloy® alloy. For space-saving connection of two rods of 12.7 mm diameter at any desired angle. Can be installed without dismantling the frame.
Pack of 1.

Cat. No.	5666 26
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90° connector (hook connector)

Castaloy® alloy. For connection of two rods at a right angle or for connecting extensions. For rods of 11 to 12.7 mm diameter. Can be installed without dismantling the frame.
Pack of 1.

Cat. No.	5666 18
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90° regular holder

Castaloy® alloy. For connections of rods and extensions of up to 19 mm diameter at a right angle. Pack of 1.

Cat. No.	5754 19
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90° jumbo holder

High-tensile aluminum alloy. Extra-strong model for heavy loads. For rods of 7.9 to 22 mm diameter. Flat grip surfaces also allow mounting to plates or benchtops up to 19 mm thick. Pack of 1.

Cat. No.	5757 21
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Swivel holder

Castaloy® alloy. Consists of two screw clamps which can be freely rotated against each other. The swivel position is set by a wing screw. The holder will not separate when the wing screw is loosened. For rods and other elements up to 19 mm diameter. Pack of 1.



Double-swivel holder

Castaloy® alloy. Extra-sturdy model with strong grip. Connects rods and other elements up to 19 mm diameter at any angle, in any plane. Two large wing nuts securely lock the two swivel joints. Pack of 1.



Three-prong clamp with mounting rod

Castaloy® alloy. Two separately adjustable clamping arms allow precise positioning of the object. Anodized aluminum wing screws; stainless steel spring. Complete with both PVC and glass fiber sleeves. Pack of 1.

Grip width mm	Rod length mm	Rod Ø mm	Overall length mm	Cat. No.
0 - 25	110	7.9	170	5744 25
0 - 57	130	11.0	220	5744 57
0 - 89	150	12.7	270	5744 89



Jaw clamp with mounting rod

Castaloy® alloy. Two slightly angled jaws hold cylindrical objects like test tubes, flasks or condensers. Stainless-steel spring. Mounting rod diameter 11 mm. Complete with both PVC and glass fiber sleeves. Pack of 1.

Grip width mm	Rod length mm	Overall length mm	Cat. No.
38	110	200	5735 38
64	130	230	5735 63



Three-prong clamp with integral connector

Castaloy® alloy. Two separately adjustable clamping arms allow precise object positioning. Models: connecting angle alternatively 90° (rigid), or freely swivelling through 360° (screwthread, max. possible extension 5 mm) and lockable. Anodized aluminum wing screws; stainless steel spring. Complete with both PVC and glass fiber sleeves. Pack of 1.

Description	Grip width mm	Holding distance mm	Cat. No.
360° swivelling	0 - 57	115	5770 57
90° rigid	0 - 57	115	5778 57



Jaw clamp with integral connector

Castaloy® alloy. Two slightly angled jaws hold cylindrical objects like test tubes, flasks or condensers. Models: connecting angle alternatively 90° (rigid), or freely swivelling through 360° (screwthread, max. possible extension 5 mm) and lockable. Anodized aluminum wing screws; stainless steel spring. Complete with both PVC and glass fiber sleeves. Pack of 1.

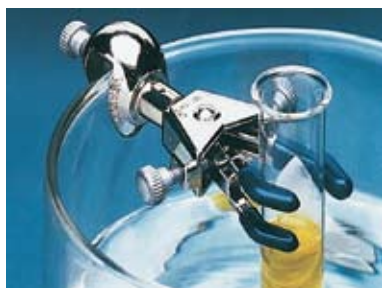
Description	Grip width mm	Holding distance mm	Cat. No.
360° swivelling	13 - 38	115	5770 38
90° rigid	13 - 38	115	5778 38



Large chain clamp with mounting rod

Castaloy® alloy. For beakers, reaction vessels and other round objects with 50 to 165 mm diameter. Chain loop of nickel-plated steel holds the object against the PVC-coated clamping jaw. Mounting rod length 132 mm, diameter 12.7 mm. Pack of 1.

Cat. No.	5745 76
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Three-prong water bath clamp

Castaloy® alloy. Mounts on the upper rim of the water bath (wall thickness 3-8 mm, min. inner diameter 80 mm). Useful for many items like test tubes, thermometers, etc. Clamping arms individually adjustable. Grip width 0-25 mm. Complete with both PVC and glass fiber sleeves. Pack of 1.

Cat. No.	5445 70
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Jaw water bath clamp

Castaloy® alloy. Mounts on the upper rim of the water bath (wall thickness 3-8 mm, min. inner diameter 80 mm). Holds thermometers, test tubes, etc. with outer diameter 6-13 mm. Spring-loaded jaws of nickel-plated phosphor-bronze with wing nut. Pack of 1.

Cat. No.	5445 75
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Thermometer clamp with mounting rod

Castaloy® alloy. Holds thermometers, glass tubes, etc. of 6-13 mm Ø at a distance of approx. 60-175 mm from the support. Nickel-plated phosphor-bronze spring-loaded jaws with wing nut. Mounting rod length 150 mm, diameter 11 mm. Pack of 1.

Cat. No.	5809 10
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Thermometer clamp with integral connector

Castaloy® alloy. Holds thermometers, glass tubes, etc. of 6-13 mm diameter at a distance of approx. 95 mm from the support. Adjustable angle with locking wing nut. Nickel-plated phosphor-bronze spring-loaded jaws with wing nut. Pack of 1.

Cat. No.	5809 15
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Ring supports, closed

Sturdy design of solid cast iron. Integrated connector. Distance between ring center and support rod: 110 mm (for all sizes). Pack of 1.

Ring inner-Ø mm	Cat. No.
60	5665 07
84	5665 10
109	5665 12





Ring support, open

Sturdy design of solid cast brass. Open ring design facilitates insertion and removal of heavy separating funnels, etc. PVC coating reduces the risk of glass breakage. Integrated connector. Ring inner diameter 58 mm. Distance between ring center and support rod: 70 mm. Pack of 1.

Cat. No.	5665 15
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Ring support, height-adjustable

Castaloy® alloy. For separating funnels, levelling bottles, etc. of min. 64 mm Ø. Slides easily along the support rod and locks itself tight when released by hand. Very sturdy design. PVC-coated ring reduces risk of glass breakage. For support rods of 12.5 to 12.7 mm diameter. Ring inner diameter 61 mm. Pack of 1.

Cat. No.	5753 63
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Hosecock clamp

Castaloy® alloy. Precise control of flow rate in normal tubing and vacuum tubing to outer diameter 18 mm. Opens sideways. Pack of 1.

Cat. No.	5847 19
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Hosecock clamp, heavy-duty

Castaloy® alloy. Very sturdy (weight 0.23 kg), with large knurled screw (diameter 38 mm). For heavy-walled tubing, e.g., vacuum tubing up to outer diameter 22 mm. Hinged top with snap-latch closure. With holes and wood screws for permanent installation. Pack of 1.

Cat. No.	5846 19
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OEM

Original Equipment Manufacturing

Dispensing equipment and systems

Sophisticated technology, high degree of flexibility.

The ideal dosing system for any requirement.

The precision performance of our liquid handling devices is trusted around the world. They contribute to an ideal dosing system when combined with our reliable and sophisticated installations, automation modules and control technology. These high-precision dosing systems handle even critical media, such as foaming, aggressive, thixotropic, or highly viscous materials.

The seripettor® dosing system

Reliable dispensing technology for sensitive applications. Suitable for aqueous media and many others.

Single-use seripettor® FD Technology dosing system

Developed especially for use in the highly sensitive pharma and consumer areas.

Dispensette® dosing system

For particularly difficult dispensing tasks, system components from the Dispensette® line of bottle-top dispensers can be used.

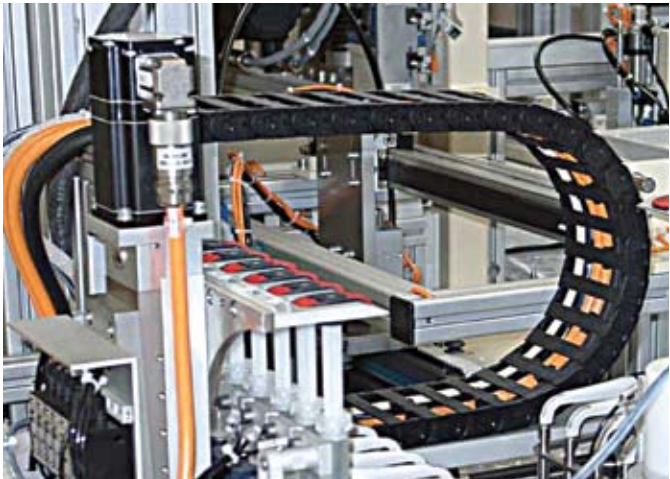


The seripettor® dispensing system

Reliable technology for your individual dispensing tasks

This innovative high-precision dispensing technology based on the seripettor® bottle-top dispenser can be custom-tailored to any requirements and integrated into your process, as needed.

By using plastic dispenser components in combination with an autoclavable stainless steel distributor, this system is versatile enough for many applications, including high throughput operations.



12-channel (2 x 6-channel) seripettor® dosing system:

Fully automated dosing system for production line sample filling, integrated with a packaging system.

Capacity: 250 µl samples, 360 samples/min



The centerpiece of the system:

Easily replaceable seripettor® dispensing cartridge.
Piston (PE), cylinder (PP).
Also available sterile.



Dispensing cartridges seripettor® 2, 10 and 25 ml

Advantages

High precision and long-lasting durability

Solid system construction and high quality standard

Maximum performance and reliable, long-lasting operation

Use of system components from BRAND liquid handling devices

Volumes ranging from 20 µl to 25 ml per dispenser stroke

Low dead-space design for media channels and distribution – the result is easily cleanable and minimum losses when changing media

Maximum availability with minimum system down-time

Simple replacement of dispensing cartridges and valve heads – no tools needed

No need to recalibrate the dispensing system after changing and/or cleaning valve blocks and dispensing cartridges.

Low maintenance costs

Essential system components are patent protected.



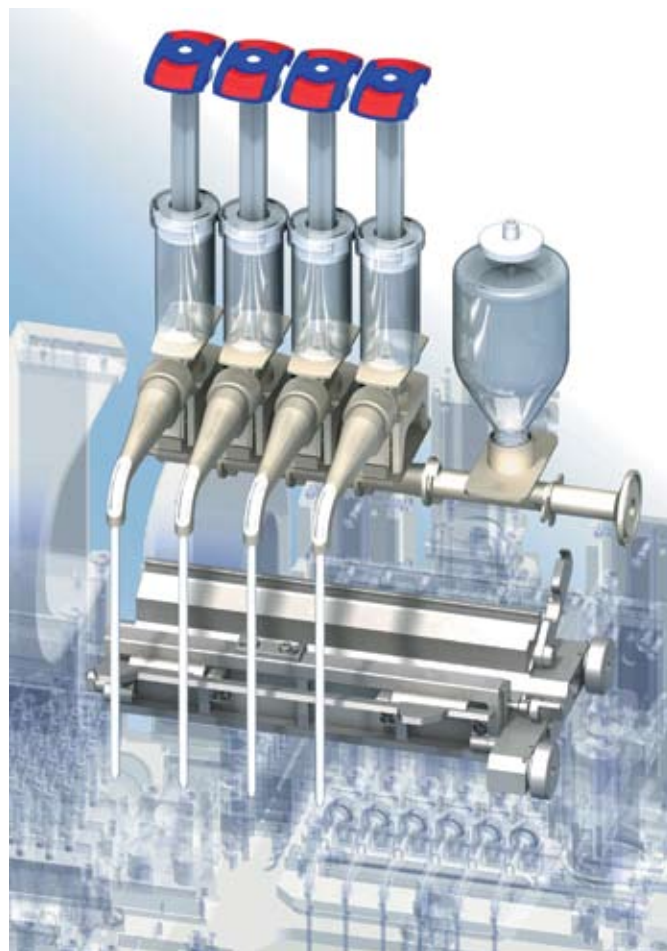
The seripettor® FD Technology dispensing system

Fully Disposable (FD) dispensing modules – also for sterile filling

The consistent single-use solution for high-precision dispensing and filling of liquids in the sensitive pharma and consumer areas.

Ongoing development of the seripettor® dispensing system has produced an entirely novel, completely replaceable single-use dispensing module made of exceptionally pure plastics, bringing a series of additional advantages:

- Significant savings in costs and maintenance overhead
- Reduction of process risks
- Volumetric seripettor® dispensing technology, trusted the world over
- Dispensing modules made completely of plastic – can also be used as sterile consumable items
- No cleaning of the dispensing module needed
- Modular structure permits custom adaptation to special requirements
- Patent pending



The seripettor® FD technology at a glance

CIP/SIP processes and the associated systems are no longer necessary. Now you can quickly replace the modular media- and /or product carrying components after every batch with a sterile, preassembled multichannel dispensing module that's ready to go.

- Cross-contamination is largely eliminated
- No residue due to cleaning errors
- Minimum maintenance overhead

The benefits to you:

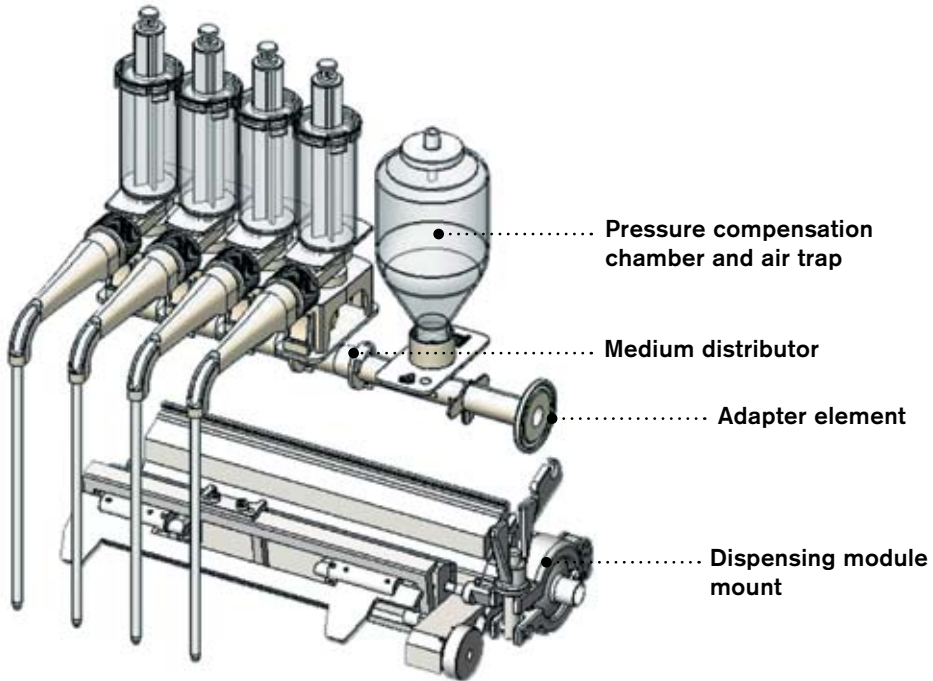
- Significant reduction in investment costs
- Cleaning media no longer necessary
- Cleaning and sterilization validation eliminated
- Enormous time savings
- High availability of the production facilities



Basic components

- Modular medium distributor connector made of individual PP segments. Manufactured by injection moulding.
- seripettor® dispensing cartridges and valve heads with integrated no-return-valve technology form a completely preassembled dispensing module together with the multiple media distributor.
- The dispensing module mount, made of V4A steel, is used for securing the replaceable dispensing modules.
- Dispensing and filling tubes can be mounted either flexibly, or rigidly to the dispensing module (not shown). A perpendicular or lengthwise orientation to the process is possible, depending on needs.

Example:
preassembled, single-use,
4-channel dispensing
module (sterile)



OEM

Original Equipment Manufacturing

BRAND plastic technology

Demanding products for sensitive applications

Our strength lies in our expertise in manufacturing technically demanding plastic products characterized by outstanding visual properties and defined surface consistency. Mainly thermoplastic materials are used, under cleanroom conditions if needed.

An interdisciplinary team of specialists develops custom solutions for specific requirements – from concept to development to the implementation of high-performance products.

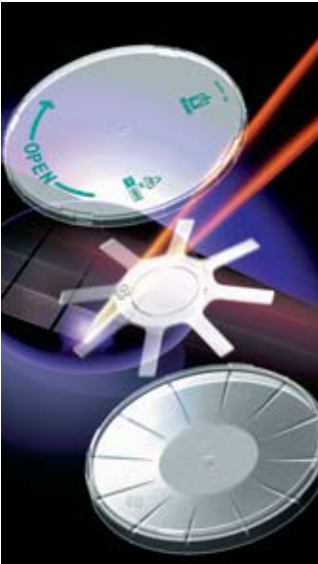




BRAND plastic technology

We develop the perfect solution –
tailored to your specifications.

Plastic technology · OEM



Competence through experience:

- Technical consulting
- Project management
- Development and construction of components
- Toolmaking
- Injection moulding and extrusion blow moulding of plastics
- Cleanroom production
- Welding using laser technology
- Plasma surface technology
- Marking and hot stamping
- Component assembly
- Quality assurance
- Packaging

Time/cost savings

Coordinated development and production methods, a high degree of production automation, integrated quality control, and modern logistics all ensure the shortest possible time between planning and product introduction. A choice between low-overhead short runs or automated mass production allows attractive unit prices for plastic products.

OEM concept

BRAND controls the entire development process, from the analysis, concept, design, manufacturer of functional prototypes, right up to the finished product. All of the production and logistics for plastic products is then carried out in our modern injection moulding plant.

Your contact

A personal contact follows the entire project at BRAND right from the start, and keeps you informed of the status of development work and production. The result is a collaboration that is transparent and always controllable.

From concept to final product

BRAND is an experienced partner, from start to finish

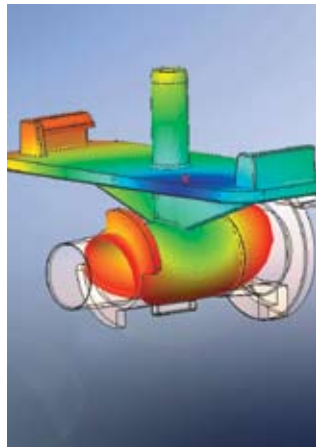
Technical consulting

We start by working together with our customers to create a comprehensive requirements profile. Then, we develop a solution concept with the goal of a cost-effective and, if possible, fully automated production process.

Project management

The work of our team is based on organized creative processes. We use systematic project organisation to coordinate the collaboration of individual team members from Development, Quality Planning, Plastics and Production Technology – always with the approval of our customer.

This allows us to determine the optimum product concept taking technical feasibility, functionality, and the design into consideration, from single products to complete assemblies.



Development and construction of components

During development, we use the latest state-of-the-art procedures, e.g., production-integrated R&D, 3D CAD, simultaneous engineering, mould flow analysis, FEM, FMEA (Failure Mode and Effects Analysis), rapid prototyping, and CIM (Computer Integrated Manufacturing).

Toolmaking

BRAND has decades of experience in the design, development, manufacture, and maintenance of high-end injection moulding tools. This ensures the highest possible fabrication quality.



Injection moulding and extrusion blow moulding of plastics

With our injection moulding machines, controlled by 30 microprocessors and with clamping forces of up to 2000 kN, we can fabricate plastic parts with weights from 0.1 to 600 g.

Examples of high-quality OEM products:

- Single- and multiuse plastic items, like special cuvettes
- Parts for pharmacological packaging
- Accessories for test kits
- Components for lab-on-a-chip systems
- Variety of pipette tips
- Sterile-packaged plastic items



No detours on the way to the goal

Technological diversity

Quality assurance

BRAND meets the highest internationally recognized standards for quality in the OEM product area. Modern robotic technology and consistently integrated quality testing (in-process control) ensure a reliably high standard of quality (see "Technical Information", page 282).



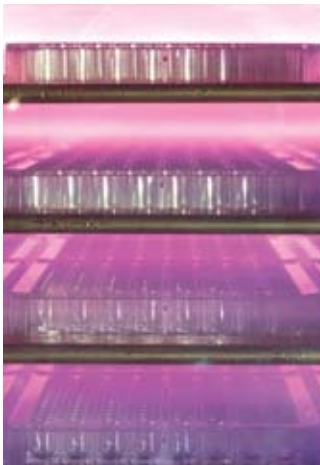
Clean room production

When needed, ISO 14644-1 class 5 to 8 clean rooms are available for the fabrication of endotoxin-free, DNA-free, ATP-free, and RNase-free materials. Upon request, all products can be delivered sterile in compliance with ISO 11137 and AAMI guidelines.



Laser welding

We use one of the most modern joining technologies - plastic laser welding, also with transmission techniques. Parts can be quickly, reliably joined without the use of adhesives. At BRAND, this process is used for the manufacture of products used in pharma development and biotechnology.



Plasma surface treatment

This treatment makes it possible to modify plastic surfaces on a microscopic scale to produce specific properties – for instance, to bind hydrophobic or hydrophilic molecules.

Marking and assembly

At BRAND, marking can be carried out using tampon, silk screening, or hot stamping processes after component surfaces have been prepared by flame impingement or plasma or corona treatment. During final assembly, complete component groups are mounted and combined to produce the final product.



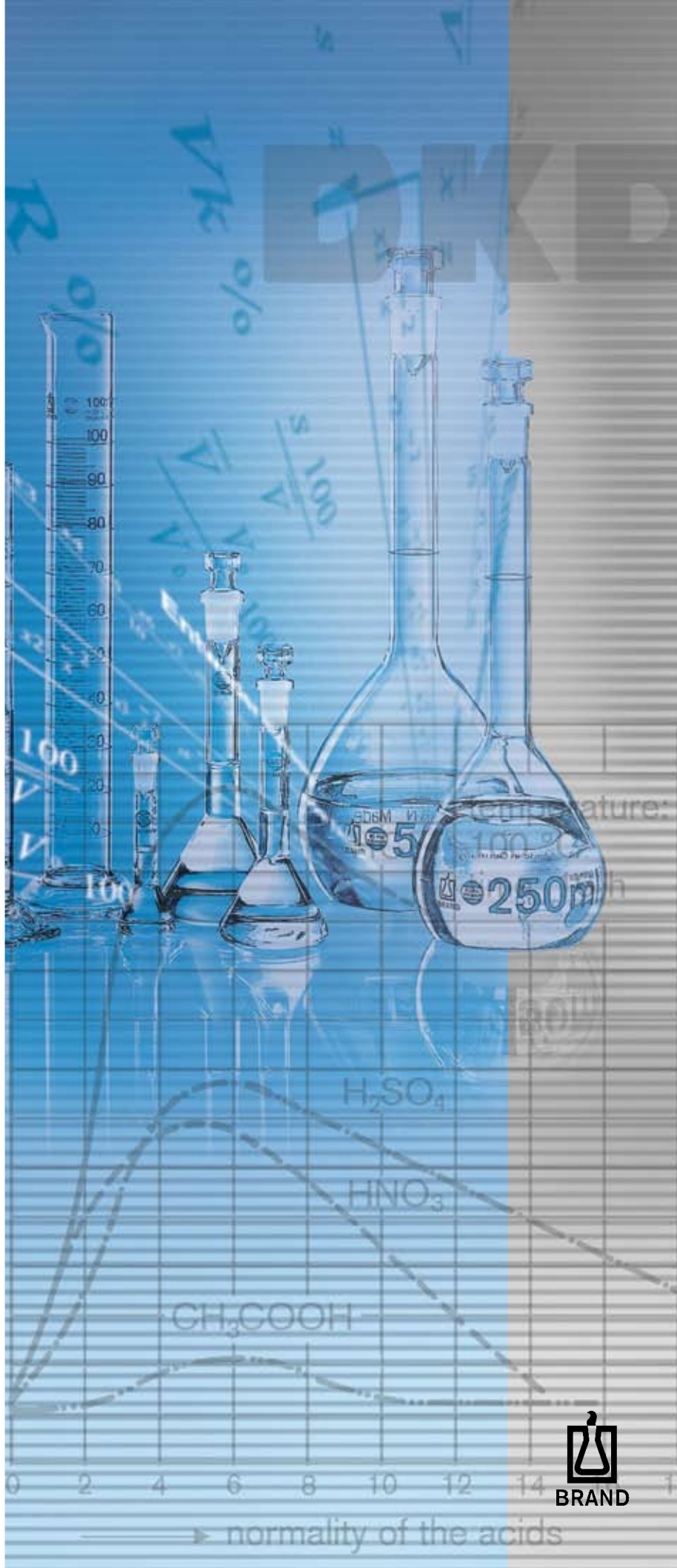
Packaging, logistics, and service

We carry out packaging and package assembly according to your specification. Item identification can be done with barcodes or any desired type of labeling. BRAND guarantees adherence to deadlines and lot quantities, as well as flexibility in package assembly and intermediate storage. For customers, the reliance on our powerful warehouse and shipping system ensures smooth handling.

Technical Information

- Quality Management
- Certificates
- Monitoring of Measuring Instruments
- Easy Calibration Technique
- DKD – Calibration Laboratory
- Calibration Service
- IVD Directive and BIO-CERT®
- Thermocycler Compatibility
- Laboratory Glass/Plastics
- Cleaning
- Safety Instructions

**Quality definitions, techniques
and certifications.**



Quality Management

Quality management is briefly described for liquid handling instruments and BLAUBRAND® volumetric instruments

Quality management at BRAND begins at product conception and continues through the design process and production. Routine checks throughout the entire manufacturing process result in volumetric instruments with the smallest possible deviation from the true volume (accuracy) and narrow scatter of individual values (coefficient of variation). The final step of this Statistical Process Control is random finished product sampling according to DIN ISO 3951.

The quality management system applied at BRAND and certified to DIN EN ISO 9001 is a combination of process monitoring and random checks. The accepted quality level (AQL) is at the very least 0.4., i.e., the limiting values are met with a statistical certainty of at least 99.6 %.

All measuring instruments used in quality control are regularly checked and are referenced to the national standards of PTB (The German Federal Institute of Physics and Metrology). Quality management according to DIN EN ISO 9001 is the basis for issuing of calibration certificates (e.g., our certificates of performance).



All test results are documented and filed for 7 years. If the batch or serial number is known, each specific test result on the date of production can be traced.

As BRAND manufactures conformity certified volumetric instruments, the quality of products is automatically supervised by the "Eichamt", the German State Office of Weights and Measures. The requirements for monitoring of measuring instruments, traceability to national standards, and staff qualification are fully met.

Conformity Certification

For volumetric instruments which are kept and used for commercial purposes (e.g., medical and pharmaceutical purposes) the German "Eichordnung" dated 12 August 1988 calls for conformity certification instead of official calibration. This also applies for volumetrically relevant accessories (e.g., pipette tips for piston-operated pipettes).

Conformity means: compliance of an instrument with the "Eichordnung", the German Federal Weights and Measures Regulations, Annex 12. The conformity certification procedure is described in DIN 12600.

The conformity symbol "H" and the manufacturer code designation (for BRAND it is "B") or, on request the "Eichamt" (the German State Office of Weights and Measures, with a separate conformity symbol) certifies the product as complying with the "Eichordnung" for Official Certification and corresponding standards. In general the product itself carries the symbol of conformity or, with disposables, the packaging.

Note:

The conformity certification applies only to volumetric instruments. Therefore, thermometers and density bottles continue to be officially certified.

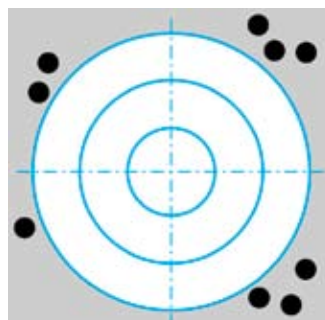


Precision

What do "Error Limit, Accuracy, Coefficient of Variation and Precision" mean in volumetric measuring?

An illustration of Precision and Accuracy

The dart board simulates the volume range around the centered specified value, the black dots simulate the different measured values of a specified volume.



Poor accuracy:

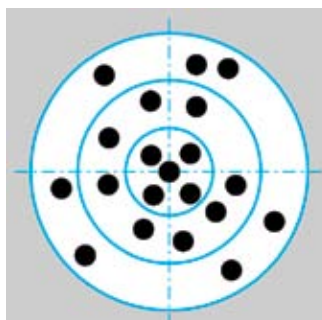
Hits far off center.

Poor reproducibility:

Hits widely scattered.

Result:

These volumetric instruments are of inferior quality.



Good accuracy:

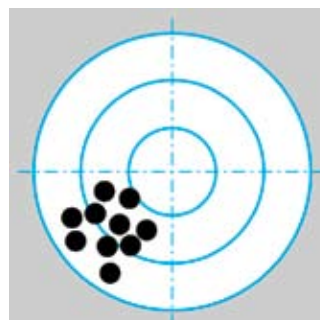
On average, hits are evenly distributed around center.

Poor reproducibility:

No gross errors, but hits widely scattered.

Result:

All deviations are "equally probable". Instruments exceeding the permissible limit should be removed from service.



Poor accuracy:

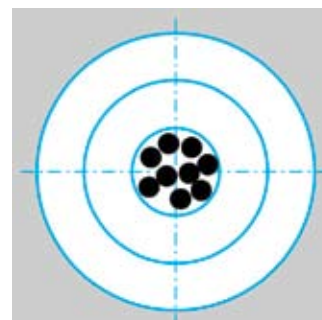
Although all hits are close together, the center (true volume) is still missed.

Good reproducibility:

All hits are close together.

Result:

Improperly controlled production, with systematic variation. Instruments exceeding the permissible limit should be removed from service.



Good accuracy:

All hits are near the center, i.e., the specified value.

Good reproducibility:

All hits are close together.

Result:

The volumetric instruments have minute systematic errors, narrow scatter; the permissible limit is not exhausted. These instruments should remain in service.

To describe accuracy, the term "Error limit" is used for glass volumetric devices, while for liquid handling devices the statistical terms "Accuracy [%]" and "Coefficient of Variation [%]" have become established.

■ Error limit

$$EL \geq |V_{\text{measured}} - V_{\text{spec.}}|$$

The term "Error limit" (EL) in the corresponding standards defines the maximum permissible deviation from the specified value.

■ Error limit of A and CV

$$EL \geq \frac{|A\%| + 2CV\%}{100\%} \cdot V_{\text{nominal}}$$

A good estimate for the error limit (EL) of the instrument, e.g., for the nominal volume (V_{nominal}), can be calculated using the values for accuracy and coefficient of variation.

■ Accuracy

$$A[\%] = \frac{\bar{V} - V_{\text{spec.}}}{V_{\text{spec.}}} \cdot 100$$

Accuracy (A) indicates the closeness of measured mean volume to the specified value, i.e., systematic measurement variation.

Accuracy is defined as the difference between the measured mean volume ($\bar{V}$) and the specified value ($V_{\text{spec.}}$), related to the specified value in percent.

■ Coefficient of Variation

$$CV[\%] = \frac{s \cdot 100}{\bar{V}}$$

Coefficient of variation (CV) indicates the closeness of values of repeated measurements, i.e., random measurement variation.

Coefficient of variation is defined as standard deviation in percent, related to the mean volume.

■ Precision (reproducibility)

It describes the closeness in volume units between the different values in a set of measurements.

■ Partial volumes

$$A_{\text{part.}}[\%] = \frac{V_{\text{nominal}}}{V_{\text{part.}}} \cdot A_{\text{nominal}}\%$$

(analog $CV_{\text{part.}}\%$)

Generally A and CV are related to the nominal volume (V_{nominal}). These values are in % and have to be converted for partial volumes ($V_{\text{part.}}$).

In contrast, there is no conversion for partial volumes, if A and CV are stated in volume units (e.g., ml).

Certificates

BLAUBRAND® Volumetric Instruments



One batch certificate per packing unit!

Reusable BLAUBRAND® volumetric instruments are supplied with one batch certificate per packing unit of the manufacturer. This facilitates not only your initial performance verification, but also the monitoring of measuring equipment, as the data can directly be transferred from the certificate. Batch certificates can also be called up at www.brand.de



Batch number and batch certificate

All reusable BLAUBRAND® volumetric instruments have an easy-to-read digital batch number since 1997. The works certificate records the batch number, the mean value, the standard deviation of the batch and date of issue.

09.02

(Batch number: Year of manufacture/batch)

Individual certificate

Both the instrument and the certificate show an individual serial number in addition to the batch number. The works certificate records the measured volume, the uncertainty of measurement and the date of issue.

09.02 0756

(Individual serial number: Year of manufacture/batch/consecutive Instrument Number)



Conformity certified

With the **H** sign, BRAND confirms that the instruments are manufactured according to "Eichordnung", the German Federal Weights and Measures Regulations. This sign of conformity is printed directly on the instruments, according to DIN 12 600. All BLAUBRAND® volumetric instruments are conformity certified.

Certificate of performance (Works certificate)

Batch and individual certificates are works certificates. Both are based on the regulations for test and calibration procedures of laboratory instruments according to DIN EN ISO 9001, DIN ISO 10012-1 and ISO 4787. All certificates document the traceability of measuring results to national standards (PTB) which recognize the SI units (International System of Units).

USP Individual certificate

BLAUBRAND® volumetric instruments can be delivered with volume error limits in compliance with United States Pharmacopoeia (USP). Each instrument is individually calibrated and checked. Both the instrument and the certificate show an individual serial number (showing the year of manufacture).

DKD Calibration certificate

This calibration certificate is issued by the DKD calibration laboratory at BRAND. Due to the extensive international cooperation of the DKD, German Calibration Service, (EA Agreement, ILAC-MRA) the DKD calibration certificate is internationally recognized. Both the instrument and the certificate show the individual serial number and the year and month of issue. More information can be found on page 290.

1001
DKD-K-
20701
09-02

Ordering information for
BLAUBRAND® volumetric instruments
can be found on page 129.

Monitoring of Measuring Instruments

GLP, ISO/IEC 17025, ISO 9001

Analytical laboratories have to verify and document the accuracy of all measuring instruments used in order to achieve reliable analysis. This especially applies to laboratories operating according to GLP guidelines, DIN EN ISO/IEC 17025, or certified to DIN EN ISO 9001. The monitoring of measuring instruments requires that the instrument's performance data be known and

documented before being admitted to use and confirmed at appropriate intervals. The frequency of checks depends on the results of previous calibrations. These tests are necessary to ensure continued accuracy of instruments which may have changed due to aggressive chemicals, or method and frequency of cleaning. The test cycle must be specified by the user. Typical monitoring intervals for liquid handling instruments are every 3-12 months;

for glass volumetric instruments, every 1-3 years. Performance certificates issued by BRAND show all instrument data required for monitoring so initial inspection may be eliminated. Also before disposing a measuring instrument, a final test is necessary (see DIN 32 937). Performance certificates are supplied as standard for liquid handling instruments and for BLAUBRAND® volumetric instruments (see pages 129, 284).

Testing

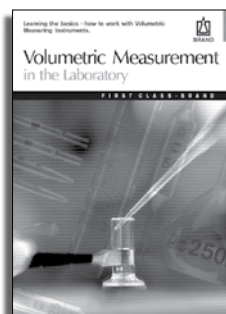
The gravimetric test for liquid handling instruments is performed according to ISO 8655; for glass volumetric instruments, ISO 4787 is applied. Traceability of measuring devices to national standards needs to be ensured. For instruments calibrated to contain (TC, In) the mass of water contained, and for instruments calibrated to deliver (TD, Ex), the mass of water delivered, will be weighed on a balance. The mass of water measured has to be adjusted to account for parameters like water density and air buoyancy on the balance. The thermal coefficient of expansion of glass volumetric instruments has to be taken into account.

Testing scope

While liquid handling instruments are tested individually, the use of statistical methods to monitor glass volumetric instruments is recommended. The following equation to determine the minimum random quantity (a) out of the total quantity (n) has proven effective in actual use:

$$a = \sqrt{n}$$

Note: Random samples have to be taken from each production batch in use.



Testing instructions (SOPs)

To simplify the monitoring of measuring instruments, BRAND offers specific testing instructions (SOPs) for every type of volumetric instrument at www.brand.de. The testing procedures are outlined step-by-step. At the end of each SOP (Standard Operating Procedure) there is a report to be used for documentation.

Information on volumetric measurement

BRAND provides a booklet on working with volumetric instruments outlining proper use and possible operating errors.

EASYCAL™ Software

BRAND has developed the EASYCAL™ software that operates under Windows®, to further simplify the monitoring of measuring instruments. Upon entry of instrument data and weighing values, the software performs all calculations automatically. In addition, EASYCAL™ generates electronic and printed test records which can be saved for subsequent use. (For more information on EASYCAL™ software, see page 77-80.)

Literature

Testing Instructions (SOPs), Information on Volumetric Measurement, and a demo-version of EASYCAL™ software can be requested directly from BRAND and are also available at www.brand.de.

Information for **BRAND Calibration Service** on page 291.





Calculations

Monitoring of measuring instruments

Measuring values obtained in the course of a monitoring procedure are to be evaluated as follows:

Example: Transferpette® Digital type, 20-200 µl

1. Calculation of the mean volume

The weighing parameters obtained using the gravimetric test are simply the mass values corresponding to the pipetted volume. In order to obtain the actual volume, a correction must be calculated. A mean volume ($\bar{V}$) of the weighing values is then calculated by dividing the sum of the weighings by the number of weighings made. This mean mass is then multiplied by a correction factor (Z, units of µl/mg) to give the mean volume ($\bar{V}$) delivered. The factor Z combines density of water, testing temperature and atmospheric pressure. For a typical temperature of 21.5 °C and air pressure of 1013 mbar (hPa), Z=1.0032 µl/mg.

Gravimetric testing values at 21.5 °C (Z = 1.0032)

Tested volume (µl):	200.0000
Specified value (mg):	199.3620
x ₁	200.2000
x ₂	199.6000
x ₃	199.4900
x ₄	199.7000
x ₅	199.7000
x ₆	199.2900
x ₇	199.3500
x ₈	199.4100
x ₉	199.2000
x ₁₀	199.1900

$$\bar{V} = \bar{x} \cdot Z$$

$$\bar{V} = \frac{200.2 + 199.6 + 199.49 + \dots + 199.19}{10} \cdot 1.0032$$

$$\bar{V} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n} \cdot Z$$

$$\bar{V} = 199.513 \cdot 1.0032$$

$$\bar{V} = 200.1514$$

2. Calculation of accuracy

$$A [\%] = \frac{\bar{V} - V_{\text{spec.}}}{V_{\text{spec.}}} \cdot 100$$

$$A [\%] = \frac{200.1514 - 200}{200} \cdot 100$$

$$A [\%] = 0.076$$

Extract from the table "Factor Z for Liquid Handling Instruments"

Temperature °C	Factor Z ml/g	Temperature °C	Factor Z ml/g
18	1.00245	22.5	1.00338
18.5	1.00255	23	1.00350
19	1.00264	23.5	1.00362
19.5	1.00274	24	1.00374
20	1.00284	24.5	1.00386
20.5	1.00294	25	1.00399
21	1.00305	25.5	1.00412
21.5	1.00316	26	1.00425
22	1.00327		



3. Calculation of the standard deviation, necessary for the determination of coefficient of variation

$$s = Z \cdot \sqrt{\frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + (x_3 - \bar{x})^2 + \dots + (x_n - \bar{x})^2}{n-1}}$$

$$s = 1.0032 \cdot \sqrt{\frac{(200.2 - 199.51)^2 + (199.6 - 199.51)^2 + (199.49 - 199.51)^2 + \dots + (199.19 - 199.51)^2}{9}}$$

$$s = 1.0032 \cdot \sqrt{\frac{0.8393}{9}}$$

$$s = 0.306$$

4. Calculation of the coefficient of variation

$$CV [\%] = \frac{s \cdot 100}{\bar{V}}$$

$$CV [\%] = \frac{0.306 \cdot 100}{200.1514}$$

$$CV [\%] = 0.153$$

The result for the calculated example is:

Results of the gravimetric testing:

Tested volume (μl):	200.0000
Mean volume (μl):	200.1514
A [%]	0.076
CV [%]	0.153
A [%] specified*	0.600
CV [%] specified*	0.200

* Error limits specified by the manufacturer of instrument. See your operating manual for specifications.

⇒ **This pipette meets specifications.**

If the calculated values for Accuracy (A [%]) and Coefficient of Variation (CV [%]) are less than or equal to the factory published specifications, the instrument is calibrated to operate within specifications.

Note:

For checking partial volumes, the values $A_{\text{nominal}} [\%]$ and $CV_{\text{nominal}} [\%]$ which are related to the nominal volume V_{nominal} must be converted.

For a partial volume of 20 μl this means:

$$A_{20 \mu\text{l}} [\%] = \frac{V_{\text{nominal}}}{V_{20 \mu\text{l}}} \cdot A_{\text{nominal}} [\%]$$

$$A_{20 \mu\text{l}} [\%] = \frac{200 \mu\text{l}}{20 \mu\text{l}} \cdot 0.5\%$$

$$A_{20 \mu\text{l}} [\%] = 5\%$$

The calculation of $CV_{20 \mu\text{l}}$ is analog.

What to do if the instrument is not within the factory-specified error limits?

1. Check whether all sections of the SOP are taken into account.
2. Follow the troubleshooting guide in the operating manual for assistance.
3. Adjust the calibration of the instrument in accordance with the operating manual.

If despite these steps the instrument still does not meet the specifications, remove from service and contact BRAND for support.

Easy Calibration Technique

ISO 9001 and GLP guidelines require routine calibration (approx. every 3-12 months) and readjustment of measuring instruments if necessary. This frequently time-consuming task can be finished in seconds with BRAND Liquid Handling instruments.

- No need to send the instruments out for calibration and adjustment.
- Accuracy can be adjusted to meet the needs of your special applications.
- No tools necessary for adjustment. Adjustments can be performed in seconds.

The following BRAND Liquid Handling instruments are equipped with this time-saving adjustment technology:



Easy Calibration of mechanical instruments

(e.g., bottle-top dispenser Dispensette®)

Example:

Gravimetric testing yields a delivered volume of 9.90 ml with a set volume of 10 ml (e.g., after a longer period of usage or for specific applications). Adjustment is quick and easy in five steps:



1. Open housing by sliding the latch and removing the front.



2. Lift gear lock lever to release.



3. Pull the red knob and set the display to actual delivered volume (e.g., 9.90 ml).



4. Reposition red knob and gear lock lever to the original position.



5. Replace housing – done! Alteration of factory setting is indicated by a red recalibration flag.



Easy Calibration of electronic instruments

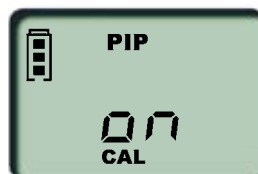
(e.g., Transferpette® electronic microliter pipette)

Example:

Gravimetric testing yields a delivered volume of 201.3 μl with a set volume of 200 μl (e.g., after a longer period of usage or for specific applications). Adjustment in just a few steps:



1. Initial display



2. Activate calibration mode by pressing the MENU key for 3 seconds, and using the arrow keys to switch calibration mode to "on".



3. When the CAL display is flashing, calibration mode shows the initial volume.



4. Use the arrow keys on the Transferpette® electronic microliter pipette to set the determined volume.



5. After confirming the volume, the values for the tested and corrected volume in the display change. The CAL symbol remains on to confirm that the adjustment was performed. The factory setting can be restored at any time.



EASYCAL™ 4.0

To further facilitate calibration, BRAND has developed EASYCAL™ calibration software. Instrument specific Standard Operating Procedures (SOPs) describe step-by-step testing procedures. All necessary calculations are carried out automatically by the user-friendly software (please see page 77 for more information).

A free demo version of EASYCAL™ and SOPs are available for download from www.brand.de.

BRAND also offers a factory calibration service. (Please see page 291 for more information).



DKD Calibration Laboratory at BRAND

German Calibration Service

The German Calibration Service (DKD) was founded in 1977 as a joint effort of government, industry and national standards authorities (PTB – German Institute of Physics and Metrology), to verify measuring equipment used in industrial and research laboratories and testing institutions. It supplements the existing consumer protection verification system.

DKD Calibration laboratory

The calibration laboratory for volumetric instruments opened by BRAND in 1998 has been accredited by the German Calibration Service (DKD) according to DIN EN ISO/IEC 17025. Our calibration laboratory is authorized to issue DKD calibration certificates (in several languages) for the volumetric instruments listed on the right.

DKD Calibration certificate (DKD-K-20701)



The DKD calibration certificate documents officially the traceability of measuring results to national and international standards as required by the standards DIN EN ISO 9001 and ISO/IEC 17025 for the monitoring of measuring instruments. A major difference between works calibration services and DKD laboratories is the accurate determination of the respective uncertainty of measurement guaranteed by the accredited laboratory and supervised by the DKD.

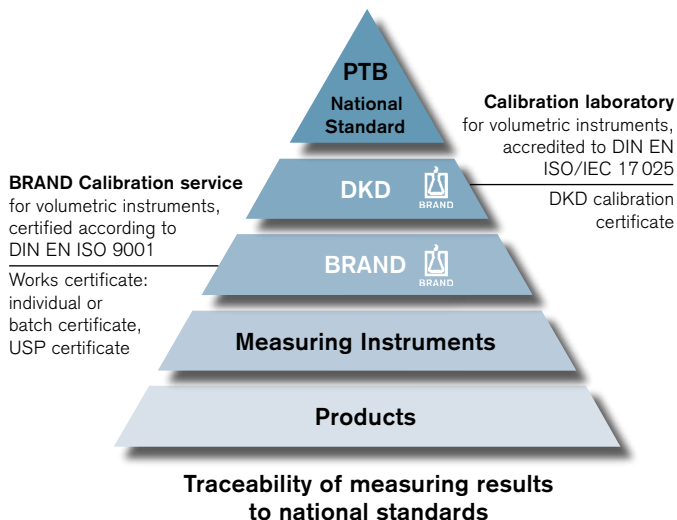
DKD calibration certificates are appropriate in uses in which calibrations of an accredited laboratory are requested, where high level calibrations are demanded and for calibration of reference standards and instruments for comparative measurements.

Volumetric instruments for which DKD certificates are available from BRAND

BRAND calibrates the following volumetric instruments (new or used regardless of manufacturer):

- **Piston-operated pipettes**, from 0.1 µl to 10 ml
- **Multichannel piston-operated pipettes**, from 0.1 µl to 300 µl
- **Piston-operated burettes**, from 5 µl to 200 ml
- **Dispensers, dilutors**, from 5 µl to 200 ml
- **Glass volumetric instruments**, adjusted to contain (TC, In) from 1 µl to 10 l
- **Glass volumetric instruments**, adjusted to deliver (TD, Ex) from 100 µl to 100 ml
- **Plastic volumetric instruments**, adjusted to contain (TC, In) from 1 ml to 2000 ml
- **Plastic volumetric instruments**, adjusted to deliver (TD, Ex) from 1 ml to 100 ml
- **Glass density bottles**, from 1 cm³ to 100 cm³

For ordering volumetric instruments with DKD calibration certificate, add "DKD" as a prefix to the catalog number. To obtain a DKD calibration certificate for volumetric instruments already in use (regardless of their make), send the instruments to BRAND marked with the note "DKD Calibration".



Internationally recognized

The DKD is a member of the European Cooperation for Accreditation (EA). A multilateral agreement assures obligatory recognition of the DKD calibration certificate in a variety of countries. In addition, since November 2000, over 50 accreditation bodies in over 40 countries – including the DKD – have signed the first international convention for reciprocal recognition, the "Mutual Recognition Arrangement" (MRA) of the International Laboratory Accreditation Corporation (ILAC). Under this convention, the subscribing bodies agree to reciprocal recognition and to promote acceptance of calibration certificates and test reports from the laboratories accredited by the signatories. (The complete text of this convention can be read on the Internet at www.ilac.org.)

Calibration Service from BRAND

Instruments used for control, inspection, measuring and testing require written protocols for routine testing and calibration. A testing schedule and inspection and testing procedure must be defined. Documentation is required of the Accuracy and Coefficient of Variation testing that is performed. Frequent confirmation can become time consuming and expensive. Measuring instruments must be taken out of service and may have to be adjusted or repaired. Maintaining an in-house calibration lab with specially trained personnel can be very costly.

BRAND offers full calibration service including instrument adjustment and repair. This reduces service downtime, saves money and provides an independent review organization for the calibration of the instruments.

BRAND calibration service is available for:

- Piston-operated pipettes (single and multichannel)
- Bottle-top dispensers
- Digital bottle-top burettes
- Repetitive pipettes (Stepper)



Testing according to DIN EN ISO 8655

At BRAND, a team of qualified personnel in temperature and humidity controlled rooms using the most modern balances and calibration software, calibrate liquid handling instruments, regardless of their make, according to DIN EN ISO 8655.

Instruments with adjustable volumes such as Transferpette® microliter pipette or the Dispensette® bottle-top dispenser are tested at nominal volume, 50 % and 10 % or 20 % of the nominal volume.

Results of the calibration are documented with a detailed calibration certificate, which meets the requirements of many different testing procedures.

BRAND Calibration Service

- Calibration and adjustment of liquid handling instruments regardless of their make (BRAND instruments can be maintained and repaired if necessary).
- Cost-efficient handling
- Detailed calibration certificate
- Upon request, we will issue an additional certificate that documents the metrological status of the instruments you send in for adjustment/maintenance/repair. Calibration order forms and declarations on the absence of health hazards are available for download from the Internet at www.brand.de.



IVD Directive

IVD Directive of EU

On December 7th, 1998, the EU directive for "In-vitro-Diagnostic Medical Devices" (IVD Directive) was published in the Official Journal of the European Communities and became effective since June 7th, 2000.

How to define In-Vitro-Diagnostic Medical Devices (IVD)?

An "In-Vitro-Diagnostic Medical Device" is any medical device used in-vitro for the examination of specimens, including blood- and tissue donations, derived from the human body.

IVD can be a reagent, calibrator, control material, kit, instrument, apparatus, equipment, system, or specimen receptacles, intended by the manufacturer to be specifically used for in-vitro diagnostic examination. IVD are mainly used to provide information

- concerning a physiological or pathological state
- concerning a congenital abnormality
- to monitor therapeutic measures.

What is a Medical Device?

The definition of a "Medical Device" includes any instrument, apparatus, appliance, material or other article, including the software necessary for its proper application, intended by the manufacturer to be used for human beings for the purpose of:

- diagnosis, prevention, monitoring, treatment or alleviation of disease, injury or handicap
- investigation, replacement or modification of the anatomy or of a physiological process
- control of conception.

Excluded are pharmacological or immunological means, which are regulated by appropriate drug laws.

CE Marking

The CE mark is the official marking required by the European Community. It shows the user, that this product fulfills all essential safety and environmental requirements as defined in the so-called European Directives. The manufacturer marks the instrument and produces a declaration of conformity describing the instruments' fulfillment with the guidelines and technical requirements.

BRAND medical products are all included in the class of in-vitro diagnostic (IVD) devices. This includes, for example:

- blood counting chambers
- haemocytometer cover glasses
- disposable capillary pipettes
- micro haematocrit capillaries
- haematocrit sealing compound
- sample cups for analyzers
- urine beaker
- feces container
- cryogenic tubes
- pipette tips
- PD-Tips
- Transferpette® microliter pipettes
- HandyStep® repetitive pipettes

BIO-CERT®

Sterile / Free of endotoxins, DNA, RNase, ATP

Sensitive applications like PCR*, DNA/RNA purification, or DNA sequencing require the highest quality disposable plastic labware. BIO-CERT® products are produced at the highest purity level to meet the most demanding requirements.

PLASTIBRAND® BIO-CERT® products are certified to be:

Sterile:

BIO-CERT® products are sterilized according to ISO 11137 and AAMI guidelines with β -radiation, using a minimum radiation dose of 12.1 kGy. This gives a SAL (sterility assurance level) of 10^{-6} . The sterility meets USP 29 and Ph. Eur. requirements for sterility.

Free of DNA and RNase:

BIO-CERT® products are DNA-free ($< 4 \times 10^{-12}$ g/item) to prevent false positive signals during PCR* applications. These products are free of RNases ($< 8.6 \times 10^{-15}$ g/item) to prevent degradation of RNA during purification processes.

Free of endotoxins:

The endotoxin concentration in BIO-CERT® products is tested by a gel-clotting Limulus Amoebocyte Lysate test. The detection limit is 0.01 EU/ml providing documented endotoxin level of less than 1×10^{-12} g/item.

Free of ATP:

All products are supplied with a Certificate of Analysis which guarantees an ATP concentration less than 1×10^{-15} g/item. Therefore, BIO-CERT® products are suitable for ATP detection using bioluminescence-systems.

Certificate of Analysis		
BIO-CERT®		
Product:	Filter Tips	Cat. No.:
Volume:	5-200µl	Lot No.:
Product corresponds to the following criteria:		Expiry Date:
PRE-STERILIZATION BIOBURDEN TEST		STERILITY
According to Ph. Eur.		
Parameter	Method	Limits
Endotoxins	accord. to DAB 1997 Limulus Amebocyte Lysate test with a detection limit of 0.01 IU/ml	$< 1.1 \times 10^{-12}$ g/unit
ATP	pre-sterilization bioburden test	$< 1 \times 10^{-15}$ g/unit
DNA	pre-sterilization bioburden test	$< 4 \times 10^{-14}$ g/unit
RNase	pre-sterilization bioburden test	$< 8.6 \times 10^{-15}$ g/unit
The lot does not exceed the concentration levels declared. The test results refer exclusively to the units tested.		
Date	Operator	
Feb-10-2009	21	
BIO-CERT® is a trademark of BRAND GmbH + CO KG, Germany.		
BRAND GmbH + CO KG · P.O.Box 1155 · 97861 Wertheim · Germany		
		ISO 9001:2008 CERTIFIED
		BRAND

- BIO-CERT® products are made from dye-free materials.
- All lots are tested for sterility and pyrogens (endotoxins) and monitored for DNA-, RNase- and ATP-concentration.
- All products are supplied with a Certificate of Analysis.

The following plastic disposables are available in BIO-CERT® quality:

- pipette tips (see page 87-89)
- filter tips (see page 87-89)
- PD-Tips (see page 91, 92)
- microcentrifuge tubes, 1.5 ml (see page 94-97)

* The Polymerase Chain Reaction („PCR“) is covered by patents owned by Hoffmann-La Roche

Thermal Cycler Compatibility

One glance at the table will tell you which BRAND PCR plates are compatible with your thermal cycler. We are continuously updating the table with information from manufacturers and feedback from our customers. Ask for a free sample of our PCR plates to check compatibility with your thermal cycler (www.brand.de), with no obligation. A brief message from you about your results will help us to complete the table.

	24-, 48-, 96-well, no skirt 7814 11+15, 7813 50+54	96-well, elevated skirt 7813 52	96-well, full skirt 7813 53	96-well, half skirt 7814 00, 7813 57	384-well, full skirt 7813 45	384-well, full skirt 7813 47	384-well, full skirt., rigid 7813 48
Applied Biosystems							
2700	●	●		●	●	●	●
3100	●	●				●	●
3130	–	–				●	●
3500		●	●				
3700	●	●			●	●	●
3730/3730x	●	●				●	●
qPCR 5700		●					
qPCR 7000	●	●					
qPCR 7300	●	●					
qPCR 7500	●	●					
qPCR 7700	●	●					
qPCR 7900 HT		●				●	
9600	●	●		●			
9700	●	●		●	●	●	●
Amersham Biosciences							
MegaBACE 500			●				
MegaBACE 1000			●				
MegaBACE 4000					●	●	●
Biometra							
Uno	●	●	●	●			
Uno II	●	●		●	●	●	●
T1 Thermal Cycler	●	●	●	●	●	●	●
T3 Thermal Cycler	–			–			
Tgradient	●	●	●	●			
Trobot	●		●	●	●	●	●
BioRad							
iCycler	●	●	●				
qPCR MyCycler	●						
qPCR MyiQ	●		●				
iQ5	●		●				
Corbett Research							
PalmCycler 96			●				
PalmCycler 384						●	●
Eppendorf							
Mastercycler Gradient	●	●	●	●			
Mastercycler ep	●	●	●				
Mastercycler M 384					●	●	●
qPCR Mastercycler ep Realplex			●				

●	= Real Time PCR compatible	●	= compatible
–	= not compatible		= no info
qPCR	= Devices that can carry out a quantitative real-time PCR		

	24-, 48-, 96-well, no skirt 7814 11+15, 7813 50+54	96-well, elevated skirt 7813 52	96-well, full skirt 7813 53	96-well, half skirt 7814 00, 7813 57	384-well, full skirt 7813 45	384-well, full skirt 7813 47	384-well, full skirt., rigid 7813 48
Ericomp							
Single Block	●	●					
Twin Block	●	●					
Delta Cycler	●	●					
Hybaid							
Multiblock System MBS	●		●		●	●	●
Omnigene	●		●		●	●	●
Omn-E	●	●	●	●			
PCR Express	●	●	●	●	●	●	●
PCR Sprint	–		●	–			
pxe	●		●		●	●	●
px2	●		●		●	●	●
Touchdown	●	●	●	●	●	●	●
MJ Research							
BaseStation			●				
qPCR Chromo 4			●				
Dyad/Disciple	●		●			●	●
qPCR Opticon			●				
qPCR Opticon 2			●				
PTC-100	●	●	●	●		●	●
PTC-200	●	●	●	●	●	●	●
PTC-225 Tetrad	●	●	●	●	●	●	●
MWG							
Primus 96	●	●	●	●			
Primus 384					●	●	●
Peqlab							
PeqStar 96	●	●	●	●			
Stratagene							
qPCR Mx4000	●	●					
qPCR Mx3000	●		●				
Robocycler	●	●	●	–	●	●	●
TaKaRa							
TP240			●				
TP3000	●		●				
Techne							
TC-412/Flexigene	●	–	●	●	●	●	●
Genius	●	–	●	●	●	●	●
TC-512/Touchgene Gradient	●	–	●	●	●	●	●
TC-3000X	●*	–	–	–	–	–	–
Transgenomic							
Wave System			●				

* compatible with 7814 11 and 7814 15

Status as of: 11/11

Laboratory Glass

There is no universal material to meet every single laboratory requirement. The decision to use glass or plastic depends on the application and design of the instrument, taking into account the specific properties of the materials, and cost considerations.

General Properties

Glass has very good chemical resistance against water, saline solutions, acids, alkalis and organic solvents and in this respect surpasses the majority of plastics. It is only attacked by hydrofluoric acid, and – at elevated temperatures – by strong alkalis and concentrated phosphoric acid. Further advantages of glass are its dimensional stability, even at elevated temperatures, and its high transparency.

Specific properties of individual glasses

For the laboratory, various glasses with different technical properties are available.

Soda-lime glass

Soda-lime glass (e.g., AR-Glas®) has good chemical and physical properties. It is suitable for products which are usually subjected to short-term chemical exposure, and to limited thermal stress (e.g., pipettes, culture tubes).

Borosilicate glass (BORO 3.3, BORO 5.4)

Borosilicate glass has very good chemical and physical properties. DURAN® is a borosilicate glass type 3.3 as specified in international standard DIN ISO 3585, for applications requiring very good chemical and thermal resistance (including resistance to thermal shock), and high mechanical stability. Typical applications are components for chemical apparatus, round-bottom flasks, and beakers.

Working with glass

When working with glass, it is essential to consider its limitations regarding resistance to thermal shock and to mechanical stress. Strict safety measures must be observed:

- Do not heat volumetric instruments, measuring cylinders and flasks on hot plates.
- Exothermic reactions such as diluting sulfuric acid or dissolving solid alkaline hydroxides must always be carried out while stirring and cooling the reagents, and in suitable vessels such as Erlenmeyer flasks – never in graduated cylinders or volumetric flasks!
- Glass instruments must never be exposed to sudden temperature changes. When taking them out of a drying cabinet while hot, never place on a cold or wet lab bench.
- For compressive loads, only glass instruments intended for this purpose may be used. For example, filtering flasks and desiccators may be evacuated only after confirming that they are in perfect condition. BRAND does not offer instruments for pressure applications.



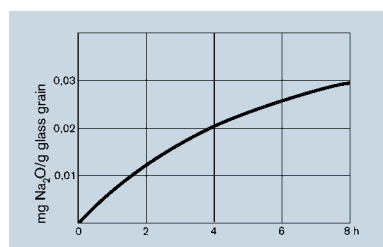
Chemical Resistance

Chemical interaction of glass with water and acids

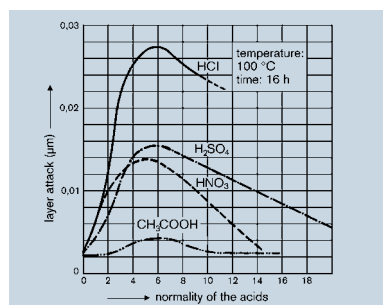
The chemical interaction of water and acids with glass surfaces is negligibly small; only very small amounts, primarily monovalent ions, are dissolved from the glass. This forms a very thin, almost non-porous layer of silica gel on the glass surface, inhibiting further attack. Exceptions are hydrofluoric acid and hot phosphoric acid which prevent the formation of the inert layer.

Chemical interaction of glass with alkalis

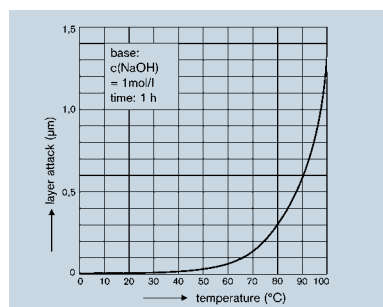
Alkalis attack glass surfaces as concentration and temperatures increase. Borosilicate glass 3.3 limits surface erosion to the μm range; however, after prolonged exposure, volume changes and/or graduation destruction may occur.



Hydrolytic attack on DURAN®
as a function of time



Acid attack on DURAN®
as a function of acid concentration



Alkali attack on DURAN®
as a function of temperature

Hydrolytic resistance of glass grains

DURAN® meets hydrolytic resistance class 1 of DIN ISO 719 (98 °C), which is divided into 5 hydrolytical resistance classes. This means that when glass grain with a granulation rate of 300-500 μm is exposed to water at 98 °C for 1 hour, less than 31 μg Na_2O per gram of glass grain will be removed.

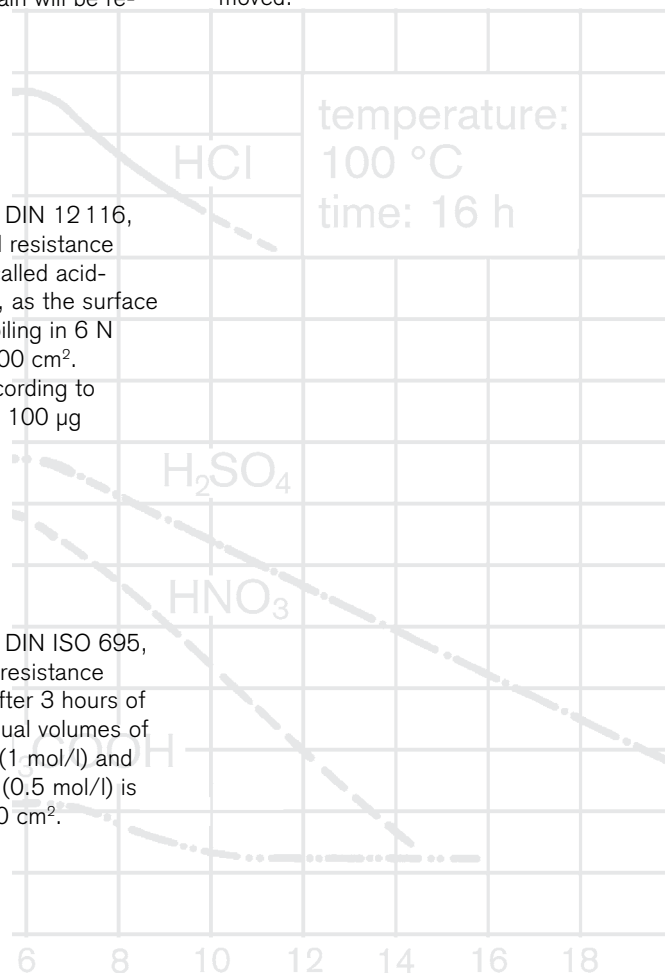
In addition, DURAN® also meets class 1 of DIN ISO 720 (121 °C), which is divided into 3 hydrolytical resistance classes. This means that when glass grain is exposed to water at 121 °C for 1 hour, less than 62 μg Na_2O per gram of glass grain will be removed.

Acid resistance

DURAN® meets class 1 of DIN 12 116, which is divided into 4 acid resistance classes. DURAN® is also called acid-resistant borosilicate glass, as the surface erosion after 6 hours of boiling in 6 N HCl is less than 0.7 $\text{mg}/100\text{ cm}^2$. Removal of alkali oxide according to DIN ISO 1776 is less than 100 μg $\text{Na}_2\text{O}/100\text{ cm}^2$.

Alkali resistance

DURAN® meets class 2 of DIN ISO 695, which is divided in 3 alkali resistance classes. Surface erosion after 3 hours of boiling in a mixture with equal volumes of sodium hydroxide solution (1 mol/l) and sodium carbonate solution (0.5 mol/l) is approximately 134 $\text{mg}/100\text{ cm}^2$.



Chemical resistance to	Water DIN ISO 719 (HGB Class 1-5)	Acids DIN 12 116 (Class 1-4)	Alkalis DIN ISO 695 (Class 1-3)
Soda-lime glass (AR-Glas®)	3	1	2
Borosilicate glass 3.3 (DURAN®)	1	1	2

Mechanical Resistance

Thermal stresses

During the production and processing of glass, hazardous thermal stresses may be introduced. During the cooling of molten glass, the transition from the plastic state to the brittle state takes place in the range between the upper and lower annealing points. At this stage, existing thermal stress must be eliminated through a carefully controlled annealing process. Once the lower annealing point is reached, the glass may be cooled more rapidly, without introducing any major new stress.

Glass responds in a similar way when heated, e.g., through direct exposure to a Bunsen flame, to a temperature higher than the lower annealing point. Uncontrolled cooling may result in the "freezing in" of thermal stress which would considerably reduce resistance to breakage and mechanical stability.

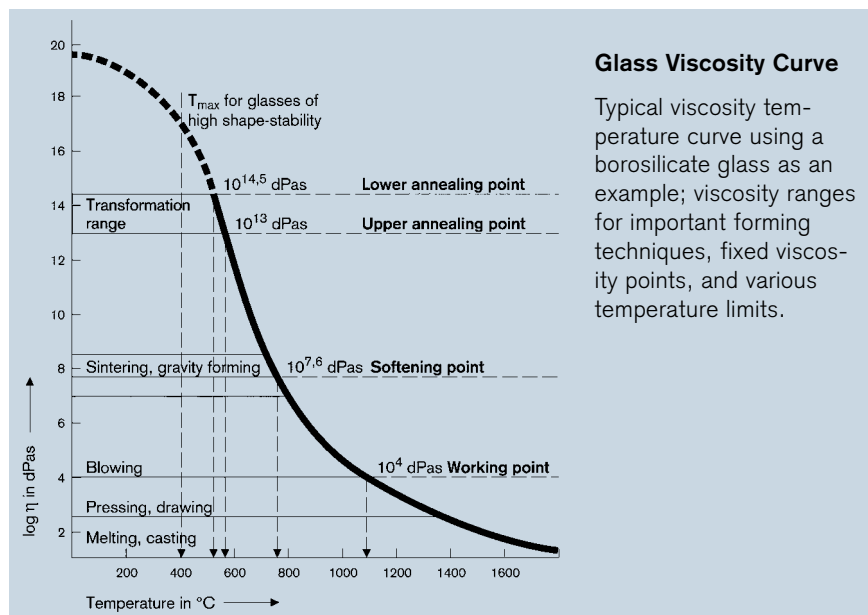
To eliminate inherent stress, glass must be heated up to a temperature between the upper and lower annealing point, be kept at this temperature for approx. 30 minutes and be cooled by observing the prescribed cooling rates.

Resistance to temperature changes

When glass is heated to a temperature below the lower annealing point, thermal expansion and the poor thermal conductivity result in tensile and compressive stress. If, due to improper heating or cooling rates, the permissible mechanical strength is exceeded, breakage occurs. Apart from the coefficient of expansion α , which varies with each kind of glass, the wall thickness, the geometry of the glass body, and any existing scratches must be taken into account. Therefore, it is difficult to state specific numerical values for thermal shock resistance. However, a comparison of the α values shows that DURAN® is much more resistant to thermal changes than, e.g., AR-Glas®.

Mechanical stresses

From a technical viewpoint, glasses behave in an ideally elastic way. This means that, after exceeding the limits of elasticity, tensile and compressive stress does not result in plastic deformation, but breakage occurs. The tensile strength is relatively low and may be further diminished by scratches or cracks. For safety reasons, the tensile strength of DURAN® in apparatus and plant design is calculated at 6 N/mm². The compressive strength, however, is approximately ten times as high.



	Upper annealing point (viscosity 10^{13} dPas)	Lower annealing point (viscosity $10^{14.5}$ dPas)	Linear expansion coefficient $\alpha_{20/300} \cdot 10^{-6} \text{ K}^{-1}$	Density g/cm^3
Soda-lime glass (AR®-Glas)	530	495	9.1	2.52
Borosilicate glass 3.3 (DURAN®)	560	510	3.3	2.23

Plastics

Besides glass, plastics play a very important role in laboratories. In general, plastics can be divided into the three groups:

■ Elastomers

Polymers with loosely cross-linked molecules, exhibiting rubber-like elasticity at room temperature. Heating causes irreversible curing (vulcanization). The most popular elastomers are natural rubber and silicone rubber.

■ Thermosets

Polymers with tightly cross-linked molecules are very hard and brittle at room temperature; heating causes irreversible curing. These plastics are rarely used for plastic labware. The best known thermosets are the melamine resins. Melamine resin is produced by polycondensation of melamine with formaldehyde.

■ Thermoplastics

Polymers with a linear molecular structure with or without side branches are transformed into objects during molding operations without changing their thermoplastic properties. Thermoplastics are the materials commonly used in plastic labware production. Hence we provide here a brief description of some individual plastics explaining their structural, mechanical, chemical and physical properties. The most popular thermoplastics are polyolefins like polyethylene and polypropylene.

PS Polystyrene

Polystyrene is glass-clear, hard, brittle, and dimensionally stable due to its amorphous structure. PS has good chemical resistance to aqueous solutions but limited resistance to solvents. Disadvantages include low thermal stability and its tendency to suffer from stress-cracks.

SAN Styrene-acrylonitrile copolymer

This is a glass-clear material with good resistance to stress-cracking. It has slightly better chemical resistance than PS.

PMMA Polymethyl methacrylate

Rigid, glass-clear ("organic glass"). Resistant to atmospheric agents. Replaces glass in many applications where temperatures are below 90 °C and low chemical resistance is required. PMMA has excellent UV radiation stability.

PC Polycarbonate

These are thermoplastic linear carboxylic acid polyesters combining many of the properties of metals, glass and plastics. The materials are transparent and have good thermal properties between -130 to +130 °C. Note: PC may be weakened by autoclaving or exposure to alkaline detergents.

PA Polyamide

Polyamides are linear polymers with repeating amide chain linkages. With their favorable strength characteristics and high durability, polyamides can often be used as structural materials and for surface coating metals. They have good chemical resistance against organic solvents, but are easily attacked by acids and oxidizing agents.



PVC Vinyl chloride polymers

The vinyl chloride polymers are mainly amorphous thermoplastics with very good chemical resistance.

Their combination with plasticizers opens up many useful applications, ranging from artificial leather to injection molding components. PVC has good chemical resistance, especially with oils.

POM Polyoxymethylene

POM has superior properties with regard to hardness, rigidity, strength, durability, chemical resistance and favorable slip and abrasion characteristics. It can replace metals in many applications. POM can withstand temperatures up to 130 °C.

PUR Polyurethane

Polyurethane is a very versatile plastic, and is therefore used in a wide variety of applications. The molecules are formed by a polyaddition reaction of dialcohols with polyisocyanate.

As a material for the coating of BLAUBRAND® graduated flasks, a high-quality, scratch-resistant, transparent PUR type with a high modulus of elasticity is used. The working temperature can range from -30 to +80 °C. Brief exposure to higher temperatures of up to 135 °C are permissible, but over time this will lead to a reduction in elasticity.

PE-LD Low Density Polyethylene

The polymerization of ethylene under high-pressure results in a certain number of branches in the chain. The result is a less compact molecular structure than PE-HD, with very good flexibility and good chemical resistance, but less chemical resistance to organic solvents than PE-HD. Use is limited to temperatures below 80 °C.

PE-HD High Density Polyethylene

If the polymerization of ethylene is controlled by a catalytic process, a very small number of branches in the chain are obtained. The result is a more rigid and compact structure with enhanced chemical resistance and usability up to 105 °C.

PP Polypropylene

PP has a similar structure to Polyethylene, but with methyl groups at every second carbon atom of the chain. The major advantage, compared with PE, is its higher temperature resistance. It can be repeatedly autoclaved at 121 °C. Like the above mentioned polyolefins, PP has good mechanical properties and good chemical resistance but is slightly more susceptible to be attacked by strong oxidizing agents than PE-HD.

PMP Polymethylpentene

PMP is similar to PP but has isobutyl groups instead of the methyl groups. Chemical resistance is comparable to PP but tends to suffer from tension cracks when exposed to ketones or chlorinated solvents. The most important qualities of PMP are its excellent transparency and good mechanical properties at temperatures up to 150 °C.

ETFE

Ethylene-Tetrafluoroethylene copolymer

ETFE is a copolymer of ethylene with chlorotrifluoroethylene and/or with tetrafluoroethylene. This plastic is remarkable for its excellent chemical resistance, but its temperature stability is lower in comparison with PTFE (at most 150 °C).

PTFE Polytetrafluoroethylene

PTFE is a fluorinated hydrocarbon with a macromolecular, partly crystalline structure. PTFE is resistant to virtually all chemicals. It offers the widest working temperature range, from -200 to +260 °C. Its surface is adhesion resistant. The slip properties and electrical insulation capacity of the material are better than those of FEP and PFA. The only disadvantage is that it can only be molded by sintering processes. PTFE is opaque. It is suitable for use in microwave ovens.

FEP

Tetrafluoroethylene-perfluoropropylene copolymer

A fluorinated hydrocarbon with a macromolecular, partly crystalline structure. The surface is non-adhesive. The mechanical and chemical properties are comparable with PTFE, but the working temperature is limited to the range from -100 to +200 °C. Water absorption is extremely low. FEP is translucent.

PFA Perfluoroalkoxy copolymer

Fluorinated hydrocarbon with a high-molecular, partly crystalline structure. Its surface is adhesion-resistant. Mechanical properties and chemical inertness are comparable with those of PTFE. The working temperature can range from -100 to +260 °C. The water absorption of PFA is extremely low. PFA is translucent.

PFA is manufactured without the addition of catalysts or plasticizers, and can be molded to produce an extremely smooth, readily cleanable surface, and is therefore particularly well suited for trace analysis.





General Properties

Resistance to breakage and low weight are important advantages of plastics. The application determines which plastic to select.

A variety of parameters should be considered: exposure time and concentration of chemicals, thermal stress (e.g., autoclaving), exertion of force, exposure to UV radiation, and aging, which may be caused by the action of detergents, or other environmental factors.

The recommendations listed below are based on technical literature and information provided by the manufacturers of raw materials. They were prepared carefully and are intended as general guidance. However, they cannot replace suitability testing performed by the user under actual working conditions.

Physical Properties

	Max. operating temperature (°C)	Brittle temperature (°C)	Micro wave suitability*	Density (g/cm³)	Elasticity	Transparency
PS	70	-20	no	1.05	rigid	transparent
SAN	70	-40	no	1.03	rigid	transparent
PMMA	65 to 95	-50	no	1.18	rigid	transparent
PC	125	-130	yes	1.20	rigid	transparent
PVC	80	-20	no	1.35	rigid	transparent
POM	130	-40	no	1.42	good	opaque
PE-LD	80 to 90	-50	yes	0.92	very good	translucent
PE-HD	105	-50	yes	0.95	good	translucent
PP	125	0	yes	0.90	moderate	translucent
PMP	150	0	yes	0.83	moderate	transparent
ETFE	150	-100	yes	1.70	moderate	translucent
PTFE	260	-200	yes	2.17	very good	opaque
FEP	205	-100	yes	2.15	moderate	translucent
PFA	250	-200	yes	2.17	moderate	translucent
PUR	80	-30	yes	1,20	very good	transparent
FKM	220	-30	–	–	very good	–
EPDM	130	-40	–	–	very good	–
NR	80	-40	no	1.20	very good	opaque
SI	180	-60	no	1.10	very good	translucent

* Observe chemical and temperature resistance

Sterilization

	Autoclaving* at 121 °C (2 bar), acc. DIN EN 285	β/γ-radiation 25 kGy	Gas (ethylene oxide)	Chemical (formalin, ethanol)
PS	no	yes	no	yes
SAN	no	no	yes	yes
PMMA	no	yes	no	yes
PC	yes ¹⁾	yes	yes	yes
PVC	no ²⁾	no	yes	yes
POM	yes ¹⁾	yes (restricted)	yes	yes
PE-LD	no	yes	yes	yes
PE-HD	no	yes	yes	yes
PP	yes	yes (restricted)	yes	yes
PMP	yes	yes	yes	yes
ETFE	yes	no	yes	yes
PTFE	yes	no	yes	yes
FEP/PFA	yes	no	yes	yes
PUR	yes ³⁾	–	yes	yes
FKM	yes	–	yes	yes
EPDM	yes	–	yes	yes
NR	no	no	yes	yes
SI	yes	no	yes	yes

* Before autoclaving, labware must be carefully cleaned and rinsed with distilled water. Always remove covers from containers!

¹⁾ Frequent autoclaving reduces mechanical stability.

²⁾ With the exception of PVC tubing, which is autoclavable up to 121 °C.

³⁾ Frequent autoclaving reduces elasticity.



Biological Properties

The following plastics are generally non-toxic to cell cultures:

PS, PC, PE-LD, PE-HD, PP, PMP, PTFE, FEP, PFA.

Chemical Properties

With regard to chemical resistance, plastics are classified as follows:

+ = Excellent chemical resistance

Continuous exposure to the substance does not cause damage within 30 days. The plastic may remain resistant for years.

o = Good to limited chemical resistance

Continuous exposure to the substance causes minor damage, some of which is reversible, within 7-30 days (e.g., swelling, softening, decrease of mechanical strength, discoloration).

– = Poor chemical resistance

Not suitable for continuous exposure to the substance. Immediate(!) damage may occur (loss of mechanical strength, deformation, discoloration, cracking, dissolution).

Chemical resistance of plastics to categories of substances

Classes of substances at 20 °C	PS	SAN	PMMA	PC	PVC	POM	PE-LD	PE-HD	PP	PMP	ETFE	PTFE FEP PFA	PUR	FKM	EPDM	NR	SI
Acids, weak or diluted	o	o	–	o	+	–	+	+	+	+	+	+	o	+	+	o	o
Acids, strong or concentrated	o	–	–	–	+	–	+	+	+	+	+	+	o	o	+	–	–
Oxidizing acids, oxidizing agents	–	–	–	–	–	–	–	–	–	–	+	+	o	o	o	–	–
Alkalies	+	+	+	–	+	+	+	+	+	+	+	+	–	o	+	+	o
Alcohols, aliphatic	+	+	–	+	+	+	+	+	+	+	+	+	o	–	+	+	+
Ketones	–	–	–	–	–	+	o	o	o	o	o	+	–	–	o	–	–
Aldehydes	–	–	o	o	–	o	o	+	+	o	+	+	o	+	+	o	o
Esters	–	–	o	–	–	–	o	o	o	o	+	+	–	–	o	o	o
Hydrocarbons, aliphatic	–	–	+	o	+	+	o	+	+	o	+	+	o	o	–	–	–
Hydrocarbons, aromatic	–	–	–	–	–	+	o	+	o	–	+	+	–	o	–	–	–
Hydrocarbons, halogenated	–	–	–	–	–	+	o	o	o	–	+	+	–	o	–	–	–
Ether	–	–	–	–	–	+	o	o	o	–	+	+	o	–	–	–	–

Abbreviations of the described plastics (to DIN 7728)

PS	Polystyrene	ETFE	Ethylene-tetrafluoroethylene copolymer
SAN	Styrene-acrylonitrile copolymer	PTFE	Polytetrafluoroethylene
PMMA	Polymethyl methacrylate	FEP	Perfluoroethylene-propylene copolymer
PC	Polycarbonate	PFA	Perfluoroalkoxy copolymer
PVC	Polyvinyl chloride	PUR	Polyurethane
POM	Polyoxymethylene	FKM	Fluoro elastomer
PE-LD	Low-density polyethylene	EPDM	Ethylene-propylene-diene-rubber
PE-HD	High-density polyethylene	NR	Natural rubber
PP	Polypropylene	SI	Silicone rubber
PMP	Polymethylpentene		

Chemical Resistance (Status as of: 0310)

	PS		SAN		PMMA		PC		PVC		POM		PE-LD		PE-HD	
	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C
Acetaldehyde	-	-	-	-	-	-	0	-	-	-	+	+	+	-	+	0
Acetic acid (glacial) 100%	-	-	-	-	-	-	-	-	-	-	-	-	+	0	+	+
Acetic acid 50%	0	0	+	0	-	-	+	0	+	0	0	-	+	+	+	+
Acetic anhydride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Acetone	-	-	-	-	-	-	-	-	-	-	+	+	+	0	+	+
Acetonitrile	-	-	-	-	-	-	-	-	-	-	+	+	+	0	+	0
Acetophenone	-	-	-	-	-	-	-	-	-	-	+	-	-	-	0	0
Acetyl chloride	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-
Acetylacetone	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-
Acrylic acid	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-
Acrylonitrile	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
Adipic acid	+	+	+	+	+	+	+	+	+	0	+	+	+	+	+	+
Allyl alcohol (2-Propene-1-ol)	0	0	0	-	-	-	0	0	0	0	-	+	+	+	+	+
Aluminium chloride	+	+	+	+	+	+	-	-	+	0	+	0	+	+	+	+
Aluminium hydroxide	0	0	0	0	0	0	0	0	+	+	+	+	+	+	+	+
Amino acids	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Ammonium chloride	+	+	+	+	0	0	0	0	+	0	+	+	+	+	+	+
Ammonium fluoride	+	+	+	+	0	0	0	0	+	0	+	+	+	+	+	+
Ammonium hydroxide 30% (Ammonia)	0	-	+	0	+	+	-	-	+	0	0	0	+	+	+	+
Ammonium sulfate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
n-Amyl acetate	-	-	-	-	+	+	-	-	-	-	+	+	0	-	+	0
n-Amyl alcohol (Pentanol)	0	0	+	+	-	-	+	+	0	0	+	+	+	+	+	+
Amyl chloride (Chloropentane)	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
Aniline	-	-	-	-	-	-	0	-	-	-	0	0	+	0	+	+
Aqua regia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium chloride	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Benzaldehyde	-	-	-	-	-	-	0	-	-	-	+	+	+	+	+	+
Benzene	-	-	-	-	-	-	-	-	-	-	+	0	0	-	+	+
Benzene (gasoline)	-	-	-	-	+	-	0	-	0	-	+	+	0	-	+	+
Benzoyl chloride	-	-	-	-	-	-	-	-	-	-	+	0	0	-	+	+
Benzyl alcohol	-	-	-	-	-	-	0	0	0	0	+	+	0	-	0	-
Benzylamine	-	-	-	-	-	-	-	-	-	-	+	-	0	-	0	-
Benzylchloride	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Boric acid, 10%	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Bromine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromonaphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butanediol	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+
1-Butanol (Butyl alcohol)	0	-	+	0	0	-	0	0	0	0	+	+	+	+	+	+
n-Butyl acetate	-	-	-	-	-	-	-	-	-	-	+	0	0	0	+	+
Butyl methyl ether	-	-	-	-	-	-	-	-	-	-	+	+	0	-	0	-
Butylamine	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
Butyric acid	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
Calcium carbonate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Calcium chloride	+	+	+	+	+	+	+	+	0	-	+	+	+	+	+	+
Calcium hydroxide	+	0	+	0	+	+	-	-	+	+	+	+	+	+	+	+
Calcium hypochlorite	+	+	+	+	0	0	0	-	0	-	+	+	+	+	+	+
Carbon disulfide	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
Carbon tetrachloride	-	-	-	-	0	-	-	-	-	-	0	0	0	-	0	-
Chloro naphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroacetaldehyd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroacetic acid	0	-	-	-	0	-	0	-	+	0	-	-	+	+	+	+
Chloroacetone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobutane	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	-
Chloroform	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	-
Chlorosulfonic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromic acid 10%	-	-	-	-	0	-	+	0	+	0	0	0	+	+	+	+
Chromic acid 50%	-	-	0	0	-	-	0	-	+	-	-	-	+	0	+	0
Chromosulfuric acid	0	0	0	0	-	-	-	-	+	0	-	-	-	-	-	-
Copper sulfate	+	+	+	0	+	+	+	+	+	0	+	+	+	+	+	+
Cresol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
Cumene (Isopropyl benzene)	-	-	-	-	-	-	-	-	-	-	+	-	0	-	+	0
Cyclohexane	-	-	-	-	-	-	-	-	-	-	+	+	0	-	0	-
Cyclohexanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
Cyclopentane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
Decane	-	-	-	-	-	-	0	-	0	-	+	-	-	-	0	-
Decanol	0	-	0	-	-	-	0	-	+	-	+	-	-	-	+	-
Dibenzyl ether	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-
Dibromoethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibutyl phthalate	-	-	-	-	-	-	-	-	-	-	+	+	0	-	0	-
Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	-
Dichloromethane (Methylene chloride)	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	-
Dichloroacetic acid	0	-	-	-	-	-	0	-	0	-	-	-	0	-	0	0
Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	-
Diesel oil (Heating oil)	-	-	-	-	0	-	-	-	0	-	+	+	0	-	+	0
Diethanolamine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
Diethyl ether	-	-	-	-	-	-	-	-	-	-	+	+	-	-	0	-
Diethylamine	0	0	-	-	-	-	-	-	-	-	-	-	-	-	0	-
Diethylbenzene	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
Diethylene glycol	0	-	+	+	-	-	0	0	-	-	+	0	+	+	+	+
Dimethyl sulfoxide (DMSO)	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
Dimethylaniline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dimethylformamide (DMF)	-	-	-	-	-	-	-	-	0	-	+	+	+	+	+	+
1.4 Dioxane	-	-	-	-	-	-	0	0	-	-	0	0	+	0	+	+
Diphenyl ether	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-
Ethanol (Ethyl alcohol)	0	-	0	-	-	-	+	0	+	0	+	+	+	+	+	+
Ethanolamine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+
Ethyl methyl ketone	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene chloride	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-

The data for the chemical resistance of salts also apply to their aqueous solutions.

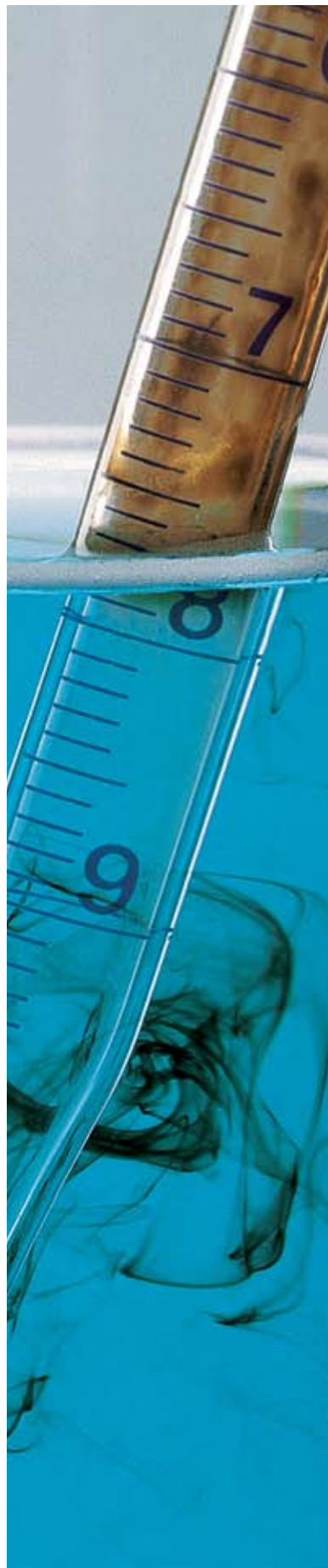
	PP		PMP		ETFE		PTFE		FEP/PFA		FKM	EPDM	NR	SI
	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	20°C	20°C	20°C
Acetaldehyde	+	-	0	-	+	0	+	+	+	+	-	0	-	-
Acetic acid (glacial) 100%	+	0	+	0	+	+	+	+	+	+	-	0	0	0
Acetic acid 50%	+	+	+	+	+	+	+	+	+	+	-	-	-	-
Acetic anhydride	0	0	+	0	+	+	+	+	+	+	-	0	0	0
Acetone	+	+	+	+	+	0	+	+	+	+	-	+	0	-
Acetonitrile	+	0	0	-	+	+	+	+	+	+	-	-	-	-
Acetophenone	0	0	0	-	+	+	+	+	+	+	-	+	-	-
Acetyl chloride	+	+	+	+	+	+	+	+	+	+	+	+	-	-
Acetylacetone	+	+	+	+	+	+	+	+	+	+	-	+	-	-
Acrylic acid	+	+	+	+	+	+	+	+	+	+	-	-	-	-
Acrylonitrile	0	-	-	-	+	+	+	+	+	+	-	-	-	-
Adipic acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Allyl alcohol (2-Propene-1-ol)	+	+	+	0	+	+	+	+	+	+	+	+	0	-
Aluminium chloride	+	+	+	+	+	+	+	+	+	+	+	+	0	0
Aluminium hydroxide	+	+	+	0	+	+	+	+	+	+	+	+	+	+
Amino acids	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Ammonium chloride	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Ammonium fluoride	+	+	+	+	+	+	+	+	+	+	0	+	-	+
Ammonium hydroxide 30% (Ammonia)	+	+	+	+	+	+	+	+	+	+	-	+	+	0
Ammonium sulfate	+	+	+	+	+	+	+	+	+	+	-	+	0	0
n-Amyl acetate	0	-	+	0	+	+	+	+	+	+	-	0	0	-
n-Amyl alcohol (Pentanol)	+	+	+	+	+	+	+	+	+	+	0	0	0	-
Amyl chloride (Chloropentane)	-	-	-	-	+	+	+	+	+	+	+	-	-	-
Aniline	+	+	+	0	+	0	+	+	+	+	-	-	-	-
Aqua regia	-	-	-	-	+	+	+	+	+	+	-	-	-	-
Barium chloride	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Benzaldehyde	+	+	+	+	+	0	+	+	+	0	-	0	-	-
Benzene	+	0	0	0	+	+	+	+	+	+	0	-	-	-
Benzine (gasoline)	0	0	0	0	+	+	+	+	+	+	+	-	-	-
Benzoyl chloride	+	0	0	0	+	+	+	+	+	+	+	-	-	-
Benzyl alcohol	0	-	0	-	+	+	+	+	+	+	+	0	-	0
Benzylamine	0	+	0	+	+	+	+	+	+	+	+	0	-	0
Benzylchloride	+	+	+	+	+	+	+	+	+	+	+	-	-	-
Boric acid, 10%	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Bromine	-	-	-	-	+	+	+	+	+	+	0	-	-	-
Bromobenzene	-	-	-	-	0	-	+	+	+	+	+	-	-	-
Bromoform	-	-	-	-	+	+	+	+	+	+	+	-	-	-
Bromonaphthalene	+	+	+	+	+	+	+	+	+	+	-	+	0	-
Butanediol	+	+	+	+	+	+	+	+	+	+	-	+	0	-
1-Butanol (Butyl alcohol)	+	+	+	0	+	+	+	+	+	+	+	0	+	0
n-Butyl acetate	0	0	+	0	+	+	+	+	+	+	-	0	-	-
Butyl methyl ether	+	0	+	-	+	0	+	+	+	+	-	-	-	-
Butylamine	+	+	+	+	+	+	+	+	+	+	-	-	-	0
Butyric acid	-	-	-	-	+	+	+	+	+	+	0	-	-	-
Calcium carbonate	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Calcium chloride	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Calcium hydroxide	+	+	+	+	+	+	+	+	+	+	+	+	+	0
Calcium hypochlorite	+	+	+	0	+	+	+	+	+	+	+	+	-	0
Carbon disulfide	-	-	-	-	+	0	+	+	+	+	+	-	-	-
Carbon tetrachloride	-	-	-	-	+	+	+	+	+	+	+	-	-	-
Chloro naphthalene	+	+	+	+	+	+	+	+	+	+	+	-	-	-
Chloroacetaldehyd	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Chloroacetic acid	+	0	+	0	+	+	+	+	+	+	0	0	-	-
Chloroacetone	+	+	+	+	+	+	+	+	+	+	-	+	0	-
Chlorobenzene	-	-	-	-	+	0	+	+	+	+	0	-	-	-
Chlorobutane	0	-	0	-	+	+	+	+	+	+	0	-	-	-
Chloroform	-	-	0	-	+	0	+	+	+	0	0	-	-	-
Chlorosulfonic acid	+	+	+	+	0	-	+	+	+	+	-	-	-	-
Chromic acid 10%	+	+	+	+	+	+	+	+	+	+	+	+	-	0
Chromic acid 50%	0	0	0	0	+	+	+	+	+	+	+	-	-	-
Chromosulfuric acid	-	-	0	-	+	+	+	+	+	+	+	-	-	-
Copper sulfate	+	+	+	+	+	+	+	+	+	+	+	+	0	+
Cresol	0	0	-	-	+	0	+	+	+	+	+	-	-	-
Cumene (Isopropyl benzene)	0	-	-	-	+	+	+	+	+	+	+	-	-	-
Cyclohexane	0	-	-	-	+	0	+	+	+	+	+	-	-	-
Cyclohexanone	0	-	0	0	+	+	+	+	+	+	+	-	-	-
Cyclopentane	0	-	0	-	+	+	+	+	+	+	+	-	-	-
Decane	0	+	0	+	+	+	+	+	+	+	+	-	-	0
Decanol	+	+	+	+	+	+	+	+	+	+	+	+	0	0
Dibenzyl ether	+	+	0	+	+	+	+	+	+	+	-	0	-	-
Dibromoethane	+	+	+	+	0	+	+	+	+	+	+	+	-	-
Dibutyl phthalate	+	0	+	0	+	+	+	+	+	+	0	0	-	0
Dichlorobenzene	0	-	-	-	+	0	+	+	+	+	+	-	-	-
Dichloromethane (Methylene chloride)	0	-	0	-	0	0	+	+	+	+	0	-	-	-
Dichloroacetic acid	0	-	+	+	+	0	+	+	+	+	-	-	-	-
Dichloroethane	0	-	0	-	+	+	+	+	+	+	0	-	-	-
Diesel oil (Heating oil)	+	0	0	-	+	+	+	+	+	+	+	-	-	-
Diethanolamine	0	+	+	+	+	+	+	+	+	+	+	0	-	-
Diethyl ether	0	-	-	-	+	+	+	+	+	+	-	-	-	-
Diethylamine	0	-	0	0	+	0	+	+	+	+	-	0	0	-
Diethylbenzene	-	-	-	-	+	0	+	+	+	+	+	-	-	-
Diethylene glycol	+	+	+	+	+	+	+	+	+	+	+	+	+	0
Dimethyl sulfoxide (DMSO)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Dimethylaniline	+	+	+	+	+	+	+	+	+	+	0	0	-	0
Dimethylformamide (DMF)	+	+	+	+	+	+	+	+	+	+	-	0	0	0
1,4 Dioxane	+	0	0	0	+	0	+	+	+	+	-	0	-	-
Diphenyl ether	+	+	+	+	+	+	+	+	+	+	0	-	-	-
Ethanol (Ethyl alcohol)	+	+	+	0	+	+	+	+	+	+	0	+	0	0
Ethanolamine	+	+	+	+	+	+	+	+	+	+	-	+	-	-
Ethyl acetate	+	0	0	-	+	+	+	+	+	+	-	0	-	-
Ethyl methyl ketone	+	0	-	-	0	0	+	+	+	+	-	0	-	-
Ethylbenzene	-	-	-	-	0	0	+	+	+	+	0	-	-	-
Ethylene chloride	0	-	-	-	+	+	+	+	+	+	0	-	-	-

Continued list of "Chemical Resistance"

	PS		SAN		PMMA		PC		PVC		POM		PE-LD		PE-HD	
	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C
Ethylene glycol (Glycol)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Ethylene oxide	-	-	0	-	-	-	0	-	0	-	+	+	0	0	0	0
Fluoroacetic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Formaldehyde 40%	-	-	+	+	-	-	+	0	0	-	+	+	+	+	+	+
Formamide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Formic acid 98-100 %	+	0	0	0	-	-	+	0	-	-	-	-	+	+	+	+
Glycerol	+	+	+	+	+	+	+	+	+	+	0	0	+	+	+	+
Glycolic acid 70 %	-	-	-	-	0	-	-	-	0	-	+	+	0	-	+	0
Heating oil (Diesel oil)	-	-	-	-	0	-	-	-	0	-	+	+	0	-	+	0
Heptane	-	-	-	-	0	-	+	0	-	-	-	-	0	-	0	0
Hexane	-	-	+	+	0	0	-	-	0	-	+	+	0	-	+	0
Hexanoic acid	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
Hexanol	-	-	-	-	+	-	-	-	-	-	-	-	+	+	+	+
Hydriodic acid	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
Hydrobromic acid	0	-	-	-	-	-	+	+	-	-	-	-	+	+	+	+
Hydrochloric acid 10%	+	+	0	-	0	-	-	-	+	-	-	-	+	+	+	+
Hydrochloric acid 20%	+	+	0	-	0	-	0	0	0	-	-	-	+	+	+	+
Hydrochloric acid 37 %	0	0	0	-	0	-	-	-	0	-	-	-	+	+	+	+
Hydrofluoric acid 40 %	+	+	+	0	-	-	-	-	0	-	-	-	+	+	+	+
Hydrofluoric acid 70 %	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	0
Hydrogen peroxide 35%	+	+	+	+	-	-	+	+	0	+	+	+	+	+	+	+
Iodine-potassium iodide solution	0	-	0	-	-	-	0	-	-	0	0	0	-	-	-	-
Isoamyl alcohol	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+
Isobutanol (Isobutyl alcohol)	0	0	0	-	0	-	+	+	+	0	+	+	+	+	+	+
Isooctane	0	-	0	-	-	-	0	-	-	-	-	-	-	-	-	-
Isopropanol (2-Propanol)	0	0	+	-	0	-	+	+	0	+	+	+	+	+	+	+
Isopropyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lactic acid	+	+	+	+	0	-	+	+	0	0	+	-	+	+	+	+
Mercury	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mercury chloride	+	0	+	+	+	+	+	+	-	-	0	0	+	+	+	+
Methanol	0	-	0	-	-	-	+	0	+	0	+	+	+	0	+	+
Methoxybenzene	-	-	-	-	-	-	-	-	-	-	0	0	-	-	-	-
Methyl butyl ether	-	-	-	-	-	-	-	-	-	-	0	0	-	-	0	-
Methyl formate (Methyl methanoate)	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
Methyl propyl ketone	-	-	-	-	-	-	-	-	-	-	+	+	+	0	+	+
Methylene chloride (Dichloro methane)	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	-
Mineral oil (Engine oil)	+	-	+	+	+	+	+	+	+	+	+	+	+	0	+	+
Nitric acid 10%	-	-	+	0	+	0	+	0	+	0	-	-	+	+	+	+
Nitric acid 30%	-	-	0	-	0	0	+	0	0	0	-	-	0	0	0	-
Nitric acid 70%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrobenzene	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-
Oleic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxalic acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Ozone	0	0	0	0	+	0	-	-	+	0	-	-	0	-	0	-
n-Pentane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peracetic acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perchloric acid	-	-	-	-	-	-	-	-	0	-	-	-	+	-	+	-
Perchloroethylene	-	-	0	0	0	-	-	-	-	-	+	0	-	-	-	-
Petroleum	-	-	-	-	+	-	0	0	+	-	+	+	0	-	0	-
Petroleum ether	-	-	-	-	+	-	-	-	0	-	+	+	0	-	-	-
Phenol	-	-	-	-	-	-	-	-	-	-	-	-	+	0	+	+
Phenylethanol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
Phenylhydrazine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
Phosphoric acid 85%	+	0	+	+	-	-	+	+	+	0	+	-	+	+	+	+
Piperidine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium chloride	0	0	0	0	+	+	+	+	+	0	+	+	+	+	+	+
Potassium dichromate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium hydroxide	0	0	0	0	+	+	-	-	0	0	+	+	+	+	+	+
Potassium permanganate	+	+	+	0	+	+	+	+	+	+	0	0	+	+	+	+
Propanediol (Propylene glycol)	+	+	-	-	0	0	+	0	0	-	+	+	+	+	+	+
Propanol	0	-	+	+	0	-	0	-	+	+	+	+	+	+	+	+
Propionic acid	0	-	-	-	-	-	-	-	0	-	-	-	0	-	+	0
Pyridine	-	-	-	-	-	-	-	-	0	-	+	0	+	0	+	0
Salicylaldehyde	-	-	-	-	-	-	0	0	-	-	-	-	+	+	+	+
Salicylic acid	+	+	+	+	-	-	-	-	0	-	-	-	+	+	+	+
Silver acetate	0	0	0	0	0	0	+	+	0	0	0	0	+	+	+	+
Silver nitrate	0	0	+	+	+	+	+	+	0	0	0	0	+	+	+	+
Sodium acetate	+	+	+	+	-	-	+	+	0	0	+	0	+	+	+	+
Sodium chloride	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sodium dichromate	+	0	+	0	+	0	+	-	+	+	+	+	+	+	+	+
Sodium fluoride	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sodium hydroxide	+	+	+	+	-	-	-	-	+	+	+	+	+	+	+	+
Sulfuric acid 60 %	-	-	+	0	-	-	0	0	0	-	-	-	+	+	+	+
Sulfuric acid 98%	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	-
Tartaric acid	+	+	+	+	0	0	+	+	+	+	+	+	+	+	+	+
Tetrachloroethylene	-	-	-	-	-	-	-	-	-	-	+	+	0	-	0	0
Tetrahydrofuran (THF)	-	-	-	-	-	-	-	-	-	-	0	0	0	-	0	-
Tetramethylammonium hydroxide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	+	+	0	-	0	0
Trichloroacetic acid	0	-	-	-	-	-	0	-	0	-	-	-	0	-	0	0
Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethane	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-
Trichloroethylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
Trichlorotrifluoro ethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethanolamine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene glycol	+	+	+	+	0	0	+	0	0	-	+	0	+	+	+	+
Trifluoro ethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trifluoroacetic acid (TFA)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tripropylene glycol	+	+	+	0	0	0	+	0	0	-	+	0	+	+	+	+
Turpentine	-	-	0	0	+	+	-	-	+	+	+	+	0	-	0	-
Urea	+	+	+	+	+	+	-	-	0	-	+	+	+	+	+	+
Xylene	-	-	-	-	-	-	-	-	-	-	+	+	0	-	0	-
Zinc chloride	+	+	+	+	-	-	+	+	+	0	+	0	+	+	+	+
Zinc sulfate	+	+	+	+	0	0	+	+	+	0	0	-	+	+	+	+

The data for the chemical resistance of salts also apply to their aqueous solutions.

	PP		PMP		ETFE		PTFE		FEP/PFA		FKM	EPDM	NR	SI
	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	50°C	20°C	20°C	20°C	20°C
Ethylene glycol (Glycol)	+	+	+	+	+	+	+	+	+	+	0	+	0	+
Ethylene oxide	0	-	0	-	+	+	+	+	+	+	-	-	-	-
Fluoroacetic acid											-	-	-	-
Formaldehyde 40 %	+	+	+	+	+	+	+	+	+	+	0	+	0	0
Formamide	+	+	+	+	+	+	+	+	+	+	0	0	+	+
Formic acid 98-100 %	+	+	+	0	+	+	+	+	+	+	-	0	0	-
Glycerol	+	+	+	+	+	+	+	+	+	+	0	+	0	+
Glycolic acid 70 %	+	+	+	+	+	+	+	+	+	+	0	+	+	+
Heating oil (Diesel oil)		0	0	-	+	+	+	+	+	+	+	-	-	-
Heptane	0	0	0	0	+	+	+	+	+	+	+	-	-	0
Hexane	+	0	0	-	+	+	+	+	+	+	+	-	-	0
Hexanoic acid														
Hexanol	+	+	+	+	+	+	+	+	+	+	+	-	0	0
Hydriodic acid	+	+	+	+	+	+	+	+	+	+	+	+	0	-
Hydrobromic acid	+	+	+	+	+	+	+	+	+	+	+	+	0	-
Hydrochloric acid 10 %	+	+	+	+	+	+	+	+	+	+	+	+	0	0
Hydrochloric acid 20 %	+	+	+	+	+	+	+	+	+	+	+	+	0	-
Hydrochloric acid 37 %	+	+	+	+	+	+	+	+	+	+	0	+	0	-
Hydrofluoric acid 40 %	+	+	+	+	+	+	+	+	+	+	0	0	-	-
Hydrofluoric acid 70 %	+	0	+	0	+	+	+	0	+	+	-	-	-	-
Hydrogen peroxide 35 %	+	+	+	+	+	+	+	+	+	+	+	0	-	0
Iodine-potassium iodide solution	+	+	+	0	+	+	+	+	+	+	+	+	+	-
Isoamyl alcohol	+	+	+	+	+	+	+	+	+	+	0	0	0	0
Isobutanol (Isobutyl alcohol)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Isooctane					+	+	+	+	+	+	+	-	-	-
Isopropanol (2-Propanol)	+	-	+	+	+	+	+	+	+	+	+	+	+	0
Isopropyl ether	-	-	-	-	+	0	+	+	+	+	-	-	-	-
Lactic acid	+	+	+	+	+	+	+	+	+	+	+	0	0	0
Mercury	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mercury chloride	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Methanol	+	+	+	+	+	+	+	+	+	+	-	+	0	+
Methoxybenzene					+	+	+	+	+	+	-	-	-	-
Methyl butyl ether	+	+	+	0	+	0	+	+	+	+	-	-	-	-
Methyl formate (Methyl methanoate)					+	+	+	+	+	+		0	-	0
Methyl propyl ketone	+	0	0	0	+	+	+	+	+	+	-	0	-	-
Methylene chloride (Dichloro methane)	0	-	-	-	+	+	+	+	+	+	0	-	-	-
Mineral oil (Engine oil)	+	+	+	+	+	+	+	+	+	+	+	-	-	0
Nitric acid 10 %	+	+	+	+	+	+	+	+	+	+	0	0	-	-
Nitric acid 30 %	0	-	0	-	+	+	+	+	+	+	0	-	-	-
Nitric acid 70 %	-	-	-	-	+	+	+	+	+	+	-	-	-	-
Nitrobenzene	-	-	-	-	+	+	+	+	+	+	-	-	-	-
Oleic acid					+	+	+	+	+	+	0	-	-	-
Oxalic acid	+	+	+	+	+	+	+	+	+	+	+	+	0	0
Ozone	0	-	+	+	+	+	+	+	+	+	+	+	+	+
n-Pentane					+	+	+	+	+	+	+	-	-	-
Peracetic acid					+	+	+	+	+	+	+	+	+	-
Perchloric acid	+	-	0	-	+	+	+	+	+	0	+	0	-	-
Perchloroethylene	-	-	-	-	+	+	+	+	+	+	0	-	-	-
Petroleum	0	-	0	0	+	+	+	+	+	+	+	-	-	0
Petroleum ether					+	+	+	+	+	+	+	-	-	-
Phenol	+	+	0	0	+	+	+	+	+	+	0	-	-	-
Phenylethanol	0				+	+	+	+	+	+				
Phenylhydrazine	0				+	+	+	+	+	+	0	-	0	-
Phosphoric acid 85 %	+	+	+	+	+	+	+	+	+	+	+	0	-	-
Piperidine	+				+	+	+	+	+	+	-	-	-	-
Potassium chloride	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Potassium dichromate							+	+			0	+	0	0
Potassium hydroxide	+	+	+	+	+	+	+	+	+	+	-	+	0	-
Potassium permanganate	+	+	+	+	+	+	+	+	+	+	+	+	0	-
Propanediol (Propylene glycol)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Propanol	+	+	+	+	+	+	+	+	+	+	+	+	+	0
Propionic acid	+	0	+	0	+	0	+	+	+	+	+	0	-	-
Pyridine	0	0	0	0	-	-	+	+	+	+	-	-	-	-
Salicylaldehyde	+	+	+	+	+	-	+	+	+	+				
Salicylic acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Silver acetate	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Silver nitrate	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sodium acetate	+	+	+	+	+	+	+	+	+	+	-	+	+	0
Sodium chloride	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sodium dichromate	+	+	+	+	+	+	+	+	+	+	+	+	+	0
Sodium fluoride	+	+	+	+	+	+	+	+	+	+	+	+	0	0
Sodium hydroxide	+	+	+	+	+	+	+	+	+	+	0	+	0	0
Sulfuric acid 60 %	+	+	+	+	+	+	+	+	+	+	+	-	-	-
Sulfuric acid 98 %	-	-	+	+	+	+	+	+	+	+	+	-	-	-
Tartaric acid	+	+	+	+	+	+	+	+	+	+	+	0	+	+
Tetrachloroethylene					0		+	+	+	+	0	-	-	-
Tetrahydrofuran (THF)	0	-	0	-	+	0	+	+	0	0	-	-	-	-
Tetramethylammonium hydroxide					+	+	+	+	+	+	-	+		
Toluene	0	-	0	-	+	+	+	+	+	+	0	-	-	-
Trichloroacetic acid	0	-	+	+	+	0	+	+	+	+	-	0	0	0
Trichlorobenzene	-	-	0	0	+	0	+	+	+	+				
Trichloroethane	-	-	-	-	+	+	+	+	+	+	+	-	-	-
Trichloroethylene	-	-	-	-	+	+	+	+	+	+	0	-	-	-
Trichlorotrifluoro ethane					0	-	+	+	+	+				
Triethanolamine							+	+	+	+	-	0	0	-
Triethylene glycol	+	+	+	+	+	+	+	+	+	+	+	+	0	+
Trifluoro ethane							+	+	+	0	+	-	-	-
Trifluoroacetic acid (TFA)							+	0	+	-	-			
Tripropylene glycol	+	+	+	+	+	+	+	+	+	+			+	+
Turpentine	-	-	0	0	+	+	+	+	+	+	+	-	-	-
Urea	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Xylene	-	-	0	-	+	+	+	+	+	+	0	-	-	-
Zinc chloride	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Zinc sulfate	+	+	+	+	+	+	+	+	+	+	+	+	0	+



Cleaning

Manual and Machine Cleaning

Glass and plastic labware can be cleaned manually, in an immersion bath, or in a laboratory washing machine. Labware should be cleaned immediately after use – at low temperatures, with brief soaking times, and low alkaline detergents. Labware which has come into contact with infectious substances should first be cleaned and afterwards, if necessary, autoclaved.

Wiping and scrubbing method

The generally accepted wiping and scrubbing method with a cloth or sponge soaked in cleaning solution is the most popular cleaning method. Labware must never be treated with abrasive scouring agents or pads which might damage the surface.

Immersion method

For the immersion method, labware is soaked in the cleaning solution for 20 to 30 minutes at room temperature, then rinsed with tap water, and finally with distilled water. Only for stubborn residues should the soaking time be extended and the temperature increased.

Ultrasonic bath

Both glass and plastic labware may be cleaned in an ultrasonic bath. However, direct contact with the sonic membranes must be avoided.

Machine cleaning

Machine cleaning with a laboratory washing machine is more gentle to labware than cleaning in an immersion bath. The labware is only exposed to the cleaning solution for the relatively short flushing periods when sprayed by the jet or ejector nozzles.

- Lightweight objects will not be tossed and damaged by the jet if they are secured in washing nets.
- Labware is protected against scratching when the wire baskets in the washing machine are plastic coated.

This is the only way to prevent baking-on the substance, and subsequent damage to the labware by any adhering chemical residues.

Note:

Carefully disinfect labware before cleaning when there is a risk of injury during cleaning procedure.

Glass labware

With glass labware, prolonged immersion times in alkaline media above 70 °C should be avoided. Such treatment, particularly with volumetric instruments, might cause volume changes through glass corrosion, and destruction of graduations.

Plastic labware

Plastic items generally have smooth, non-wetting surfaces and can usually be cleaned effortlessly under low alkalinity conditions. Polystyrene or polycarbonate labware, e.g., centrifuge tubes, must only be cleaned manually with neutral detergents. Prolonged exposure even to low alkaline detergents will impair their strength. The chemical resistance of these plastics should be verified in each case.

Cleaning in trace analysis

To minimize metallic traces, laboratory equipment is placed into 1N HCl or 1N HNO₃ at room temperature for not more than 6 hours. (Glass laboratory equipment is often boiled for 1 hour in 1N HNO₃.)

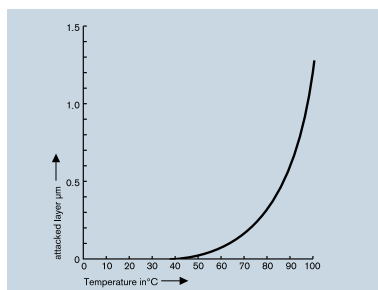
It is then rinsed with distilled water. To minimize organic contamination, laboratory equipment can first be cleaned with alkalis, or a solvent such as alcohol.

Gentle Cleaning

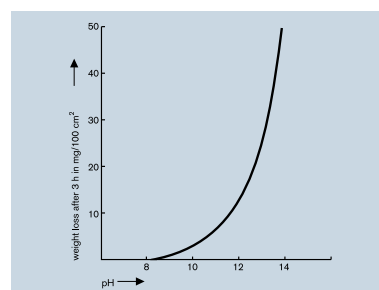
For gentle treatment of labware, clean immediately after use – at low temperatures, with brief soaking times, and at low alkalinity. Glass volumetric instruments should not be exposed to prolonged immersion times in alkaline media above 70 °C, as such treatment might cause volume changes through glass corrosion, and destruction of graduations.

Information

At 70 °C, a 1N sodium hydroxide solution will corrode a layer of approx. 0.14 µm off the surface of DURAN® (borosilicate glass 3.3) within 1 hour. However, at 100 °C, a layer of 1.4 µm, or tenfold more, will be removed. Therefore, cleaning temperatures above 70 °C should be avoided and low alkaline cleaning agents are preferable.



Alkali attack on DURAN® in relation to temperature, calculated from weight loss. c (NaOH) = 1 mol/l. Exposure time: 1 hour.



Alkali attack on DURAN® in relation to pH value, at 100 °C. Exposure time: 3 hours.

(Graphs are from the brochure "Technische Gläser" by SCHOTT Glaswerke, Mainz.)

Disinfection and Sterilization

Disinfection

Laboratory instruments that have come into contact with infectious material or genetically modified organisms must be disinfected prior to reuse/disposal; i.e., they must be brought to a condition in which they no longer pose a risk.

Therefor laboratory instruments can be treated with disinfecting detergents for example. If necessary and suitable, the items may subsequently be sterilized (autoclaved).

Steam sterilization

Steam sterilization (autoclaving) is defined as the destruction or irreversible inactivation of all reproducible microorganisms under exposure to saturated steam at 121 °C (2 bar), according to DIN EN 285. For correct sterilization procedure, including biological security, please contact your sterilization officer.

The following points must be observed:

- Efficient steam sterilization is assured only if the steam is saturated and has unrestricted access to all contaminated areas.
- To prevent pressure build-up, containers or vessels must always be open.
- Contaminated reusable labware must be cleaned thoroughly before steam sterilization. Otherwise, residue will bake on during sterilization and microorganisms may not be effectively destroyed if they are protected by the residue. Furthermore, any adhering chemical residues may damage the surfaces due to the high temperatures.
- Not all plastics are resistant to steam sterilization. Polycarbonate, e.g., will lose its strength. Polycarbonate centrifuge tubes cannot be steam sterilized.
- During sterilization (autoclaving), plastic labware in particular should not be mechanically stressed (e.g., do not stack). Thus, to avoid shape deformation, beakers, flasks, and graduated cylinders should be autoclaved in an upright position.

Thermal resistance

All reusable BLAUBRAND® and SILBERBRAND volumetric instruments can be heated up to 250 °C in a drying cabinet or a sterilizer, without any subsequent volume deviations. However, as with all glass instruments, irregular heating or sudden temperature changes produce thermal stresses which may result in breakage. Therefore:

- Always place glass instruments into a cold drying cabinet or sterilizer; then heat slowly.
- At the end of the drying or sterilizing period, allow instruments to cool off slowly inside the switched-off oven.
- Do not heat up volumetric instruments on a hot plate.
- Pay special attention to the maximum operating temperatures of plastic instruments.



Safety Information

Handling of Hazardous Substances

The handling of hazardous chemicals, infectious, toxic or radioactive substances and genetically modified organisms, calls for a high degree of responsibility on the part of everyone involved, to ensure personal and environmental protection. The relevant regulations must be scrupulously observed including laboratory, professional association, environmental, radiation, waste disposal and generally accepted technical standards and guidelines (e.g., DIN or ISO).

Important information on safety

- Before use, laboratory instruments must be examined by the user for suitability and functionality.
- In the course of repeated use, laboratory instruments should be examined for eventual damage, especially instruments subjected to pressure or vacuum (e.g., desiccators, filter flasks, etc.).
- The hazards of working with defective labware should never be under-estimated (e.g., cuts, burns, risk of infection). If a professional repair is not practical, properly dispose of such items.
- Always hold pipettes near the suction end, and carefully insert the pipette into the adapter of the pipette controller until it is securely and firmly seated. Do not use force. Broken glass can cause injury!
- Instruments to be repaired must be cleansed of all residues and be sterilized, as necessary. Radioactively contaminated items must be decontaminated as prescribed by the radiation protection authorities. Volumetric glass instruments (e.g., volumetric flasks, graduated cylinders, etc.) should not be repaired when damaged. Exposure to heat may result in residual stress within the glass (greatly increasing the probability of breakage), or an uncontrolled cooling process may lead to permanent volume alterations.
- Waste must be disposed of according to local laws and regulations. This applies also to disposable articles. It must not pose a hazard to human beings or the environment.
- Please properly dispose of laboratory glassware, being sure to remove any potential contaminants. Please note that laboratory glassware is not recyclable.

Cutting down damaged graduated cylinders shortens the distance between the upper graduation mark and the spout, as defined by DIN, resulting in an increased danger of chemicals being spilled.

Please see page 295 for other **safety information** that apply to glass instruments.

Alphabetical Index
Number Index
Sales Terms and
Conditions

BRAND General Catalog 800



- A**
- accu-jet® *pro* (Pipette controller) 70, 71
 - Accuracy, error limits and coefficient of variation (Information) 283
 - Adapter
 - Filter 226
 - for Dispensette®, seripettor®, QuikSip™, Titrette®, 18, 76
 - for PD-Tips (Dispenser-Tips) 92
 - Air displacement pipettes
 - Transferpette® *S* 37, 38
 - Transferpette® *S*-8/-12 39, 40
 - Transferpette® 43, 44
 - Transferpette®-8/-12 46, 47
 - Transferpette® electronic 51, 52
 - Transferpette®-8/-12 electronic 53 - 55
 - Alcoholometer
 - Gay-Lussac + Cartier pattern 179
 - Richter + Tralles pattern 179
 - Amber glass
 - Bottles 166, 249
 - Burettes 155, 156
 - Volumetric flasks 142
 - Anschütz thermometers 185
 - Aspirator (QuikSip™) 75, 76
 - Bottles 256
 - ASTM
 - Centrifuge tubes 172, 173
 - Thermometers 187
 - Atomizer 256
 - Automatic burettes
 - Compact 163, 164
 - Dr. Schilling pattern 159
 - Pellet pattern 160 - 162
 - Automatic pipettes (Bottle-top dispensers) 148
- B**
- Bags, Disposal 193
 - Bang micro burettes 152, 153
 - Batch certificate BLAUBRAND® (Information) 284
 - Baumé hydrometers 178
 - Beakers 215 - 218
 - BIO-CERT® (Information) 293
 - BLAUBRAND® Class A/AS (Information) 128, 129
 - Blood, counting chambers 204 - 207
 - Bottles 249 - 257
 - Amber glass 249
 - Aspirator 256
 - Burette 166
 - Dropping 255
 - Filter flasks (Buchner filter flasks) 227
 - Gas washbottles 230, 231
 - Glass 249, 255
 - Laboratory 249
 - Narrow-mouth 250, 251, 253, 254
 - Oxygen flasks, Winkler pattern 171
 - PFA 253, 254
 - Bottles
 - Plastic 250 - 257
 - Plastic coated 249
 - PTFE 252
 - Reservoir 148
 - Square 250, 252
 - Storage 256, 257
 - Threaded 249
 - Wash 230
 - Wash heads 254
 - Wide-mouth 250 - 253, 257
 - Bottle-top burette Titrette® 27 - 32
 - Bottle-top dispenser (Dispensette®, seripettor®, seripettor® *pro*) 11 - 20
 - BRANDplates®/Microplates 111 - 122
 - 96-well 106, 114 - 120
 - 348-well 114 - 120
 - 1536-well 114, 115, 118
 - Information 111 - 113
 - Lids 122
 - Brix hydrometers 179
 - Buchner funnels 224
 - Buckets 257
 - Bulb pipettes 130 - 132
 - Piston type 132
 - Plastic 132
 - Burettes and Automatic Burettes (Information) 151
 - Burettes
 - Amber glass 155, 156
 - Bottles 166
 - Clamps 166, 167
 - Clear glass 152 - 154
 - Compact 156 - 158
 - Covers 167
 - Dafert 154
 - Dr. Schilling pattern (Automatic burettes) 159
 - Micro burettes, Bang pattern 152, 153
 - Pellet pattern (Automatic burettes) 160 - 162
 - Spare parts 157, 158
 - Stopcocks 157, 158, 165, 168
 - Support 167
 - Tips 157, 158, 165
 - Tubes 157, 158, 165
 - Burette, Titrette® 27 - 32
 - Bürker counting chambers 206
- C**
- Calibration Service (Information) 290, 291
 - Calibration Software EASYCAL™ 4.0 77 - 80
 - Cap inserts for micro tubes and cryogenic tubes 97, 109
 - Capillary pipettes (disposable micro pipettes) 202
 - Caps for test and centrifuge tubes 196, 197
 - Carboy funnels 223
 - CE Marking (Information) 292
 - cell-culture™ (Aspirator) 76
 - Centrifuge tubes 195, 196, 221
 - Centrifuge tubes, ASTM 172, 173
 - Certificates for volumetric instruments (Information) 128, 129, 284
 - Chemical compatibility table, Plastics 301 - 305
 - Clamps
 - Burettes 166, 167
 - Chain 270
 - Hosecock 272
 - Jaw 269 - 271
 - Support 269, 270
 - Thermometer 271
 - Three-prong 269, 270
 - Water bath 270, 271
 - Cleaning, Disinfection and Sterilization (Information) 306, 307
 - Cloud point and setting point thermometers 186
 - Coagulometer sample tubes 197
 - Coefficient of variation, accuracy and error limits (Information) 283
 - Compact automatic burettes 163, 164
 - Compact burettes 156 - 158
 - Conformity Certification (Information) 282
 - Congealing point thermometer 186
 - Conical-shoulder bottles 250
 - Connectors, tubing 234 - 237
 - Containers (buckets) 257, 258
 - Coplin Staining trough 210
 - Cotton roving for pipettes 136
 - Cotton-plug pipettes, total delivery 134 - 138
 - Coulter Counter® vials 190
 - Counting chambers (Haemocytometer) 204 - 207
 - Cover glasses
 - for counting chambers 208
 - Microscope slides 208
 - Cryogenic tubes
 - Rack 110
 - Crystallizing dishes 220
 - Culture tubes 195
 - Cutter for PARAFILM® M 199, 214
 - Cuvette rack 125
 - Cuvettes, disposables 123 - 126
 - macro and semi-micro 124, 125
 - micro 124
 - UV 124
 - Cylinders
 - Graduated 145 - 147, 149, 150
 - Hydrometer 180
 - Mixing 148
- D**
- Dafert burette 154
 - Deep well plates 106
 - Cover mats 107
 - Sealing films 108
 - Delbrück capillary pipettes 202

Density Bottles	
BLAUBRAND®	170, 171
Desiccators and accessories	228, 229
Detergents and disinfecting detergents	261 - 264
Dishes	
Crystallizing	220
Evaporating	219, 220
Petri	194
Weighing	248
Disinfecting detergents	263
Disinfection of instruments (Information)	263
Dispenser	
Automatic pipettes	148
Bottletop	11 - 26
Hand-held	61 - 64
Dispenser-Tips (PD-Tips)	91, 92
Dispensette® (bottletop dispenser)	11 - 20
Chemical compatibility table	15
Remote Dispensing system	20
Disposables	
Bags and stand	193
Centrifuge tubes	195, 196
Coagulometer sample tubes	197
Cryogenic tubes	109
Culture tubes	195
Cuvettes	124, 125
Delbrück micropipettes, intraEND	202
Dropping pipettes	200
Faeces container	192
Filter tips	83, 85 - 89
Ground joint sleeves	238
Inoculation loops	194
Micro haematocrit capillaries	203
Micro tubes	93 - 97
Micropipettes, intraMARK and intraEND	202
Microplates	111 - 120
Pasteur pipettes	200
PCR plates	102
PCR tubes	99 - 101, 103
PD-Tips	91, 92
Petri dishes	194
Pipette tips (bulk packed, racked)	87 - 89
Sample cups for analyzers	190, 191
Sample tubes	197
Sedimentation tubes	197
Stirring spatulas	125
Stoppers	196, 197
Urine beaker	192
UV Cuvettes	124
Distillation	
Thermometers (ground joint)	188
Water stills (MonoDest 3000)	265
DKD Calibration Service (Information)	290, 291
Draining rack	260
Drechsel glass washbottles	230

Dropping Bottles	255
Pipettes, disposable	200
Dropping point thermometer	186
Drying tubes	19
E	
Easy Calibration Technique (Information)	288, 289
EASYCAL™ 4.0 Calibration software	77 - 80
Edisonite®	262
Edisonite®-Super	262
Electronic Pipettes	
Multichannel	53 - 55
Single channel	51, 52
Erlenmeyer flasks	215, 218
Error limits, accuracy and coefficient of variation (Information)	283
Evaporating dishes	219, 220
F	
Faeces container	192
Fastening clip for oxygen flask	171
Film	
PARAFILM® M sealing film	199, 214
Sealing-, for plates	108
Filter	
Adapters	226
Crucibles	226
Flasks (Buchner filter flasks)	227
Funnels	226
Funnel supports	225
Pumps, Water Jet Filter	232
Tips	83, 85 - 90
Flasks	
Erlenmeyer	215, 218
Flat Bottom	214
Volumetric	140 - 144
Glass	140 - 143
Kohlrausch	143
Plastic	144
Trapezoidal	140
Flat bottom flasks	214
Flow indicator	233
Forceps	247
Fuchs-Rosenthal Counting Chambers	207
Funnel holders	225
Funnels	222 - 225
Buchner	224
Carboy	223
Filter	226
Powder	223
Separating	225
Standard ground joint	224
G	
Gas	
Sampling tubes	231
Washbottles	230, 231

Gay-Lussac	
Alcoholometer	179
Density bottles	170
Glass (Information)	295 - 297
Glass beakers	215
Graduated	
Beakers	217
Beakers with handle	217
Cylinders, Glass	145 - 147
Cylinders, Plastic	149, 150
Pipettes, Glass	133 - 138
Pipettes, Plastic	138
Pipettes, Piston type	138
Grip stopper, for sample tubes	197
Ground joint	
Bottles	148, 166, 250
Clip for dispenser tilt measure	148
Clips	238
Funnels	224
Glassware	238, 240
Grease (silicone paste)	238
Sleeves, disposable	148, 166, 238
Socket with grip collar	239
Stopcocks, for Burettes	168
Stoppers	240
Thermometers	188
H	
Haemacytometer cover glasses	208
Haematocrit sealing compound	203
HandyStep®	61 - 64
HandyStep® electronic	65 - 68
Hellendahl Staining trough	209, 210
Holders	
for burettes	167
for funnels	225
for intraEND and Delbrück micropipettes	203
for separating funnels	225
for supports	268 - 270
Hosecock clamps for tubings	272
Hydrometer cylinders	180
Hydrometers	176 - 180
Alcoholometer	179
Baumé	178
Brix	179
General purpose	177, 178
Range finder	177
Special-purpose	180
Sugar hydrometers, Saccharimeters	179
I	
Ice bucket	258
Imhoff	
Cone rack	173, 174
Sedimentation cone	175
Individual certificates	
BLAUBRAND® (Information)	284
Inoculation loops, disposable	194
intraEND	
disposable micropipettes	202

intraMARK	
disposable micropipettes	202
IVD Directive (Information)	292
J	
Jars	248
Jaw clamps,	
Scaffolding clamps	269 - 271
Jerrycans	257
L	
Laboratory	
Bottles	249
Spatulas	246
Tubings	232
Ladles, sampling dippers	218
Life Science Products	
(Information)	81, 82
Low-temperature thermometers	185
M	
macro pipette controller	72
Magnetic stirring bar retriever	245
Magnetic stirring bars	242 - 245
spherical	245
Malassez, counting chambers	207
Mat cover for deep well plates	107
Materials, Glass	295 - 297
Materials, Plastics	298 - 305
Maximum thermometers	184
Membrane filters	
for pipette controllers	71, 72
Micro burettes, Bang pattern	152, 153
micro-classic pipette controller	73
Micro haematocrit capillaries	203
micro pipette controller	73
Microcentrifuge tubes,	
disposables	93 - 97
Cap inserts	97
Rack	98, 110, 198
Screw cap	97
Microliter pipettes	
Transferpette® S	37, 38
Transferpette® S-8/-12	39, 40
Transferpette®	43 - 45
Transferpette®-8/-12	46, 47
Transferpette® electronic	51, 52
Transferpette®-8/-12	
electronic	53 - 55
Transferpettor	57 - 60
Micropipettes	202
Microplates/	
BRANDplates®	106, 111 - 120
96-well	106, 114 - 120
384-well	114 - 120
1536-well	114, 115, 118
Micro-weighing container	80
Mini cooler	98, 110
for PCR	101
for tubes	98, 110
Minimum-maximum thermometers	188
Mixing cylinders	148

Monitoring of Measuring	
Instruments (Information)	285
MonoDest 3000 (Water Stills)	265
Mortars with pestle, Plastic	220
Mucosol®	262
Mucocit®-P	263
Mucocit®-T	263
Multichannel pipettes	
Transferpette® S-8/-12	39, 40
Transferpette®-8/-12	46, 47
Transferpette®-8/-12	
electronic	53 - 55
Multiclutch connector for	
connection of rods	267
N	
Nageotte, counting chamber	207
Narrow-mouth bottles	
	250, 251, 253, 254
Needle valve stopcock	
for desiccators	228
Neubauer, counting chamber	205
Non-return valve	236
O	
OEM, Dispensing Systems	
(Information)	273 - 280
Oxygen flasks, Winkler pattern	171
P	
PARAFILM® M	
Cutter	199, 214
Sealing Film	199, 214
Pasteur pipettes	200, 201
PCR	
Boxes and racks	101
Mat cover	104
Mini cooler	101
Plates	102, 103
Sealing film, self-adhesive	108
Sealing mats	104
Tubes	99 - 101, 103
PD-Tips (Dispenser-Tips)	91, 92
Adapter	92
BIO-CERT®	92
Pellet, automatic burettes	160 - 162
Petri Dishes	194
PFA	
Beakers	217
Bottles	253
Evaporating dishes	219
Gas wash bottles	231
Sample jars	248
Sample tubes	221
Volumetric flasks	144
Wash bottles	254
Photographic trays	258
Pipette jars	259
Pipette tips, disposable	83 - 90
with filter	83, 85 - 90
Pipettes	
Air displacement	33 - 56

Pipettes	
Baskets	259
Bulb	130 - 132
Capillary, disposable	202, 203
Cotton-plug	134 - 138
Delbrück capillary	202
Disposable, micro	202
Dropping	200
Enzymatic test	-
Graduated	133 - 138
Holder for micropipettes	203
Jars	259
Micropipettes, disposable	202
Multichannel	
	39, 40, 46, 47, 53 - 55
Pasteur	200, 201
Piston operated	35 - 60
Piston type	138
Plastic	132
Positive displacement	
(Transferpettor)	57 - 60
Rinsing apparatus	259
Soaking jars	259
Stands	259, 260
Tips, BIO-Cert® quality	86, 89
Trays	260
Pipetting aids	
accu-jet® pro	69 - 71
Disposable micropipettes	203
macro	72
micro	73
micro-classic	73
Pipette fillers	74
Piston type pipettes	138
Piston-operated burette,	
Titrette®	27 - 32
Piston-operated pipettes	
Transferpette® S	37, 38
Transferpette® S-8/-12	39, 40
Transferpette®	43, 44
Transferpette®-8/-12	46, 47
Transferpette® electronic	51, 52
Transferpette® -8/-12	
electronic	53 - 55
Transferpettor	57 - 60
Plastic	
Beakers	216 - 218
Bottles	250 - 257
Bulb Pipettes	132
Conical joint clips	238
Cuvettes	124, 125
Forceps	247
Funnels	222 - 224
Graduated beakers	216, 217
Graduated cylinders	149, 150
Graduated pipettes	138
Imhoff sedimentation cones	174
Jars	248
Material Plastic	
(Information)	298 - 305
Pipette Tips	83 - 90
Stopcocks	237
Stoppers	239, 240

www.brand.de

Technical Information	281 - 308
Test and	
centrifuge tubes	195, 196, 221
Test tube racks	198
Thermal Cycler Compatibility	294
Thermometer clamps	271
Thermometers	181 - 188
Anschütz	185
ASTM	187
Cloud point and setting point	186
Congealing point	186
Distillation (with standard	
ground joint)	188
Dropping point	186
Enclosed-scale	
pattern	182, 184, 188
High-temperature	185
Low-temperature	185
Maximum-	184
Maximum-minimum	188
Precision	184 - 188
Solid-stem	182 - 187
Stirring	182
with standard ground joint	188
without mercury	183
Thoma counting chambers	206
Thread adapters, Dispensette®,	
seripettor® and Titrette®	18, 76
Threaded bottles with coating	249
Three-prong clamp,	
Castaloy®	269, 270
Tip-Box/Tip-Box N	86, 88, 89
Tip-Rack	86, 88, 89
Tip-Rack S	86, 89
Tip-Set	86, 88, 89
Tip-Set S	86, 89
Tip-Stack™ (pipette tips)	86, 89
Tips	
BIO-CERT®	86, 89
bulk and rack packed	83 - 89
disposable pipette tips	83 - 90
PD-Tips	91, 92
with filter	85 - 89
with filter BIO-CERT®	86, 89
Titrette®	27 - 32
Transfer pipettes (Pasteur-)	200, 201
Transferpette® S	33 - 38
Transferpette® S-8/-12	39, 40
Transferpette®	41 - 45
Transferpette®-8/-12	46, 47
Transferpette® electronic	49 - 52
Transferpette®-8/-12	
electronic	53 - 55
Transferpette® PipSet	45
Transferpettor	57 - 60
Trays	
Photographic	258
Pipette	260
Tripod base stands	266
Tissue culture graduated pipettes	138
Tubes	
Capillary	202, 203
Centrifuge	195, 196

Tubes	
Coagulometer	197
Cryogenic	109
Culture	195
Racked packed	107
Sample	197, 221
Sedimentation	197
Test	221
Tubing adapters (Connectors)	234 - 236
Tubings	233
Türk counting chambers	206
U	
Universal detergents	262
Urine beaker	192
UV-Cuvettes	124
V	
Vacuum	
Desiccators	228, 229
Water jet filter pumps	232
Valves, non-return	236
Volumetric Flasks	
Glass	139 - 143
Plastic	144
PUR plastic coated	141
Trapezoidal	140
with 3 marks	142
Volumetric Instruments	
(Information)	127 - 129
W	
Wall mount for Transferpette®	45
Wall support	
for accu-jet® pro	71
for HandyStep®	64
Wash bottles	254
Wash bottles, Gas	230, 231
Wash heads	254
Watch glasses	219
Water bath clamps	270, 271
Water jet filter pumps	232
Water stills MonoDest 3000	265
Weighing dishes, disposable	248
Wide-mouth bottles	250 - 253, 257
Winkler oxygen flasks	171
Workstation storage/	
dispenser boxes	110, 193

Cat. No.	Page	Cat. No.	Page	Cat. No.	Page
62 08	26	297 01 - 297 38	131	623 10 - 623 15	191
66 36	32	300 02 - 300 18	132	650 31 - 657 43	228
66 37 - 66 96	19	305 02 - 305 18	131	658 04 - 660 30	229
66 97 - 66 98	19, 26	309 00	260	717 71 - 723 78	257
66 99	19	311 06 - 311 15	138	737 14 - 740 24	227
67 07	26	314 02 - 314 15	132	745 06 - 745 11	225
67 83	32	317 08 - 319 08	146	760 05 - 760 55	233
67 88	76	319 09	147	781 00	231
67 90	26	319 20	146	781 38 - 781 62	230
100 02 - 100 04	158	319 21	147	782 00	231
115 00 - 115 05	159	319 28	146	782 38 - 782 62	230
115 10 - 115 15	157, 165	319 29	147	783 00 - 783 62	231
115 25	165	319 38	146	810 53 - 812 48	168
116 00 - 118 00	158	319 39	147	812 56 - 812 65	162
118 05	157, 165	319 48	146	818 05 - 822 22	168
120 03 - 120 18	154	319 49	147	824 15	228
120 52 - 120 58	155	319 54	146	885 05 - 886 80	237
120 83 - 120 88	154	319 55	147	893 20 - 896 70	216
120 93 - 120 98	153	319 62	146	901 20 - 902 62	217
124 64 - 124 88	152	319 63	147	903 05 - 904 70	218
135 06 - 135 08	153	319 64 - 321 64	146	906 17 - 912 73	215
135 32 - 135 38	155	324 08 - 324 62	148	917 17 - 917 68	214
135 63 - 135 68	153	327 05 - 327 64	146	927 14 - 928 63	215
138 44 - 138 88	152	339 08 - 339 62	148	931 70 - 931 85	218
139 03 - 139 28	156	347 08 - 350 64	150	949 05 - 949 15	224
139 33 - 139 58	157	351 08 - 351 64	149	951 05 - 951 11	260
164 00 - 165 10	167	360 08 - 362 54	144	1107 05 - 1107 10	220
165 15 - 165 20	166	364 01 - 364 19	140	1128 05 - 1131 35	247
211 08 - 211 18	154	365 48 - 365 53	141	1139 31 - 1141 30	195
219 11 - 219 18	161	367 43 - 367 55	143	1143 08 - 1145 24	221
223 02 - 223 18	162	368 38 - 368 54	141	1147 15 - 1147 60	197
223 22 - 223 38	161	369 38 - 369 54	140	1148 17 - 1148 23	195
225 21 - 227 68	160	370 45 - 370 53	142	1148 30 - 1148 54	109
233 10 - 234 00	166	372 34 - 372 48	140	1148 60 - 1148 66	110
237 13 - 237 24	159	372 49	129, 140	1149 30 - 1149 40	98, 110
237 25 - 237 28	159, 165	372 50 - 372 94	140	1150 15 - 1150 20	190
237 45 - 237 68	159	374 01 - 382 10	142	1153 42 - 1153 76	196
238 09 - 238 30	164	404 28 - 406 70	217	1155 10 - 1155 20	198
238 33 - 238 68	165	415 20 - 416 62	150	1225 20 - 1226 64	249
238 75 - 238 76	166	420 08 - 420 64	147	1245 29 - 1246 39	255
238 82	167	430 05 - 430 88	148	1247 00 -	255, 201
239 09 - 239 30	163	432 05 - 433 38	170	1252 16 - 1253 28	255
242 55 - 242 69	153	434 08 - 434 38	171	1254 00 - 1254 20	200
245 45 - 245 99	152	440 03 - 443 65	262	1269 38 - 1269 62	230
253 00 - 254 00	74	448 22 - 448 25	263	1269 63	148
258 00 - 259 31	73	448 30 - 448 55	264	1269 65 - 1270 65	166
259 33 - 259 62	76	449 20	263	1285 20 - 1285 64	250
260 37 - 261 54	72	455 05 - 455 10	219	1286 28 - 1286 64	251
263 00 - 265 30	71	455 40 - 457 22	220	1287 48 - 1289 62	253
265 35	76	458 00 - 458 02	219	1290 08 - 1290 54	251
266 30	71	500 00	180	1290 55 - 1290 60	159, 165
270 69 - 271 15	137	514 16 - 514 30	238	1290 62 - 1292 06	251
271 60 - 276 14	138	514 63 - 514 70	239	1292 08 - 1292 14	252
277 02 - 277 04	137	555 60 - 555 95	238	1292 20 - 1292 24	254
277 05 - 277 16	136	556 18	148, 166	1292 30 - 1292 36	255
277 21 - 277 58	135	556 38 - 556 49	238	1292 50 - 1292 52	144
278 16 - 278 48	134	562 15 - 563 65	265	1292 54 - 1292 56	248
282 05	136	616 05 - 616 10	238	1292 60 - 1292 74	253
283 00 - 283 05	260	617 50	192	1292 73 - 1292 75	254
284 05 - 284 15	136	618 15 - 618 20	191	1293 28 - 1293 64	252
288 00 - 292 15	259	619 50 - 620 20	248	1294 08 - 1296 64	251
295 01 - 295 19	132	623 05	192	1298 38 - 1298 62	250

Cat. No.	Page	Cat. No.	Page	Cat. No.	Page
1298 63	148	3876 62	173	7041 01 - 7041 82	44
1298 64 - 1299 64	250	3880 00	174	7041 90	45
1302 28 - 1302 54	251	3880 50 - 3880 60	175	7042 01 - 7042 03	19, 26
1302 60	159, 165	4020 38 - 4020 46	143	7042 04 - 7042 05	19, 26, 32
1302 62 - 1302 64	251	4520 00 - 4557 51	194	7042 08	19, 26
1303 20 - 1304 28	252	4580 21 - 4622 31	226	7042 09 - 7042 82	20
1304 80 - 1304 88	253	4625 00 - 4632 43	227	7043 25 - 7043 28	18, 76
1305 05 - 1305 64	252	4636 16 - 4661 34	226	7043 30	18
1308 70 - 1308 74	256	4700 45 - 4708 20	208	7043 43 - 7043 45	18, 76
1309 70 - 1309 74	257	4714 00 - 4718 00	211	7043 75 - 7043 95	18
1309 84 - 1311 90	256	4720 00 - 4722 00	209	7043 96 - 7043 97	18, 76
1316 60 - 1316 64	257	4725 00	210	7043 98 - 7044 31	18
1319 00 - 1319 02	193	4726 00 - 4727 00	209	7044 86 - 7044 95	19
1340 02	236	4728 00	210	7045 00 - 7045 02	25
1340 80	233	4731 00	209	7045 04	25, 76
1341 26 - 1356 00	241	4735 00 - 4743 05	211	7045 06 - 7045 08	25
1358 05 - 1363 35	246	4744 00 - 4744 10	210	7045 18 - 7045 20	26
1371 00 - 1371 60	242	4747 01 - 4747 44	208	7045 22 - 7045 23	25
1371 68 - 1371 99	243	4755 05 - 4755 65	209	7045 26	76
1373 00 - 1373 25	244	4758 00 - 4769 00	212	7045 32 - 7045 51	26
1374 04 - 1374 45	242	5445 70	270	7045 54 - 7045 80	76
1376 07 - 1376 25	243	5445 75 - 5665 12	271	7046 52	40, 45
1376 30 - 1376 38	244	5665 15	272	7046 53	40
1377 00 - 1377 55	245	5666 18	268	7047 08 - 7047 93	38
1378 05 - 1378 48	243	5666 20 - 5666 25	267	7048 10 - 7048 05	40
1379 05 - 1379 19	245	5666 26	268	7050 00 - 7050 53	68
1379 26 - 1379 35	244	5666 27 - 5666 80	267	7051 00 - 7051 20	64
1379 50	245	5667 05 - 5668 50	266	7052 99 - 7053 85	52
1390 35 - 1391 35	247	5735 38 - 5744 89	269	7053 86	45, 52
1398 10 - 1398 20	246	5745 76	270	7053 90 - 7053 93	52
1400 04 - 1403 00	225	5753 63	272	7053 99 - 7054 36	54
1433 52 - 1433 64	233	5754 19 - 5757 21	268	7054 49 - 7054 86	55
1438 48 - 1441 62	254	5762 19 - 5764 19	269	7060 80 - 7060 90	18
1441 80 - 1441 90	256	5770 38 - 5778 57	270	7075 26 - 7075 36	32
1443 05 - 1443 99	239	5779 00	167	7079 15 - 7079 16	18, 26
1444 05 - 1446 45	240	5809 10 - 5809 15	271	7079 17	18
1455 05 - 1456 38	222	5846 19 - 5847 19	272	7079 18	18, 26
1465 06 - 1465 23	223	7013 30 - 7013 55	106	7079 19	18
1470 00 - 1470 35	222	7013 57 - 7013 62	107	7079 25 - 7079 26	19
1470 40 - 1482 45	223	7013 64 - 7013 80	108	7079 28	18
1485 00 - 1485 02	225	7015 01 - 7016 50	214, 199	7079 30	19
1485 05 - 1486 40	224	7018 07 - 7018 78	59	7079 35 - 7079 38	18
1500 10 - 1509 22	219	7019 00 - 7019 68	60	7084 40 - 7084 45	79
1522 50 - 1522 75	234	7021 00 - 7021 11	87	7084 62 - 7084 72	80
1523 00	236	7021 19 - 7022 00	89	7086 05	80, 203
1524 00 - 1525 10	234	7022 02 - 7023 65	88	7086 60 - 7091 09	202
1526 05 - 1526 15	235	7023 68 - 7024 04	92	7091 10	203
1527 05 - 1527 70	234	7024 05 - 7024 18	88	7091 18 - 7091 44	202
1528 00 - 1529 20	235	7024 19 - 7024 50	89	7178 05 - 7178 20	205
1530 05 - 1531 35	236	7025 04 - 7026 04	87	7180 05 - 7180 20	206
1532 05 - 1532 35	235	7026 05 - 7026 08	88	7186 05 - 7186 20	205
1555 40 - 1555 50	248	7026 83 - 7026 96	92	7189 05 - 7189 20	206
1561 00 - 1566 50	258	7028 04 - 7028 12	59	7190 05	207
1583 15 - 1596 70	232	7028 52 - 7028 90	60	7195 05 - 7195 20	206
2350 10 - 2350 30	231	7032 03 - 7032 10	45	7198 05 - 7213 05	207
3620 38	172	7034 09 - 7034 11	55	7220 55 - 7220 60	190
3621 38	173	7034 40	47	7230 14 - 7230 16	208
3623 38	172	7034 59	55	7477 15 - 7477 20	201
3655 38	143	7036 00 - 7036 32	47	7477 50 - 7477 75	200
3860 38 - 3861 48	171	7037 00 - 7037 32	40	7493 11 - 7495 10	203
3873 62	173	7040 02 - 7040 20	249	7589 01 - 7589 10	192
3874 62	174	7040 70 - 7040 75	45	7590 05 - 7591 15	125

Cat. No.	Page
7591 50 - 7592 43	124
7595 00	125
7597 00 - 7597 10	193
7598 00	125
7685 05 - 7685 10	258
7685 15	260
7780 12 - 7794 20	221
7804 00 - 7805 50	94
7806 05 - 7806 08	98
7807 00 - 7807 14	96
7807 20 - 7807 24	97
7807 30 - 7807 34	96
7807 40 - 7807 44	97
7807 50 - 7807 54	96
7807 55 - 7807 75	97
7810 29 - 7810 40	195
7812 05 - 7812 48	196
7812 60 - 7812 80	101
7812 81	10
7812 82 - 7812 94	101
7813 00 - 7813 14	100
7813 20 - 7813 24	101
7813 25	103
7813 30 - 7813 44	101
7813 45 - 7813 53	102
7813 54 - 7813 58	103
7813 60 - 7813 62	101
7813 80 - 7813 91	108
7814 00	102
7814 02 - 7814 08	104
7814 11	102
7814 12	103
7814 15	102
7814 16	103
7815 00 - 7815 83	107
7816 00 - 7816 11	114, 121
7816 14	114
7816 20 - 7816 42	114, 121
7816 60 - 7817 02	115, 121
7817 20 - 7817 89	116, 121
7818 00 - 7818 67	117, 121
7819 00 - 7819 27	120, 121
7819 60 - 7820 02	118, 121
7820 22 - 7820 91	119, 121
7821 00 - 7821 07	120, 121
7821 50 - 7821 53	122
8000 01 - 8001 04	182
8002 00 - 8002 08	183
8004 01 - 8006 48	182
8040 02 - 8045 33	184
8050 01 - 8120 10	185
8130 49 - 8205 00	188
8206 00	184
8385 01 - 8385 03	183
8668 01 - 8711 01	186
8800 01 - 8800 90	187
9660 30 - 9685 23	177
9695 10 - 9696 16	178
9700 10 - 9705 10	177
9715 28 - 9715 42	178
9803 10 - 9847 15	179
9874 00 - 9929 10	180

Cat. No.	Page
43400 00 - 43400 63	198
43410 00 - 43410 03	98, 110, 198
43410 50 - 43410 53	98, 198
47000 40 - 47000 41	17
47001 00 - 47003 61	16
47201 20 - 47204 50	25
47231 50	76
47301 30 - 47303 61	17
47601 51 - 47604 51	31

General Terms and Conditions of BRAND GMBH + CO KG

1 General

- 1.1 (Conflicting business conditions, written form, additional agreements and contract language) These General Terms and Conditions shall apply to all contracts, including all future contracts with the Customer. Other conditions shall not become a part of the contract even if we do not expressly object to such conditions. The Customer may only claim validity of additional agreements before or upon the conclusion of the contract only if they provide immediate written confirmation. Renunciation of the written form is only possible in writing. The language of the contract shall be German or English.
- 1.2 (Offers, right to make changes) Our offers are subject to confirmation. We reserve the right to make technical improvements to our products.
- 1.3 (Recording of data) We may store and process relevant contract data in our EDP systems.
- 1.4 (Setting off and retention) The setting off or the retention by the Customer is not permitted except in cases of undisputed or indefeasible counter claims.
- 1.5 (Rush orders/small orders) Orders with a value of the goods of less than 100 euros are subject to a low quantity surcharge of 20 euros. Delivery is normally in packing units according to the valid price list. For deliveries within five working days or for order values up to 500 euros, we reserve the right to ship and invoice immediately without separate order confirmation.
- 1.6 (Place of jurisdiction) The place of jurisdiction shall be the court responsible for our domicile in Wertheim/Mosbach, Germany. We are also entitled to call upon the court responsible for our customer's domicile. Furthermore, we as Plaintiffs have the right to call the arbitral tribunal at the Chamber of Industry and Commerce in Frankfurt am Main. In this case, the arbitral tribunal conclusively decides the legal dispute in accordance with the ICC Rules of Arbitration excluding the due legal process. The institution of legal dunning proceedings does not imply the exercise of our right to choose the plan of jurisdiction. It is in no way admissible.
- 1.7 German law is applicable, to the exclusion of the 'UN Convention on Contracts for the International Sale of Goods', CISG.

2 Delivery

- 2.1 Place of performance shall be our factory in Wertheim, Germany. The risk shall be transferred to the Customer when the delivery leaves the ramp in our factory. This shall apply also to partial deliveries and where we have undertaken additional services such as freight forwarding; costs of transporting, packing or insurance; exportation; and installation. This also applies in the case of delivery to a consignment warehouse.
- 2.2 Where we have accepted Orders on Call, Standing or Blanket Orders, the Customer must call up the entire order quantity within 6 months.
- 2.3 If there be any delay in the Customer's acceptance of a shipment, we may, at our own discretion, have the products stored at the Customer's expense or, after providing a warning and setting a deadline, sell the products for account of the customer.

3 Delivery period, Delay

- 3.1 Indicated delivery periods are ex works. Delivery deadline shall commence upon the Customer's receipt of our order confirmation; however, only after settlement of the technical questions that are still open at the conclusion of the contract and after we have received from the customer all documents, such as diagrams, permits or releases required from the Customer and definitely not before any advance payments that have been agreed upon. The delivery deadline is considered to have been observed if the readiness for shipment has been declared prior to the expiration of this period. Correct and punctual delivery remains a requirement.
- 3.2 Force Majeure, strikes, lockouts, operating breakdowns, shortages of raw materials or means of production for which we are not responsible, including delayed deliveries or failure to deliver by upstream suppliers, shall extend the delivery deadline accordingly and shall release us from our obligation to deliver if delivery becomes impossible as a result. We are considered not to be responsible for the aforementioned circumstances, even where they occur during an existing delay. The same applies in the case of additional or amended services requested by the customer.
- 3.3 Our default in delivery shall not exist unless the Customer has provided us with a warning and an indicated reasonable additional period of time has lapsed.
- 3.4 In the case of delay damages, we shall limit our liability for damage compensation to 10% of the value of our delayed delivery/service. The limitation does not apply in the case of wilful intent, gross negligence and/or damage to life, body or health. The Customer shall be obligated to promptly notify us in writing of any consequences of delay.

4 Prices, Terms of Payment

- 4.1 Prices quoted shall be ex works and do not include VAT, if applicable. Charges for packaging, freight and insurance shall be at the Customer's expense. The prices are understood to be exclusive of costs for the return and recycling/disposal of old equipment.
- 4.2 Invoices shall be paid in full, without deductions, and must be credited to our account in EURO (€) immediately or by the due date indicated on the invoice. Receipt of payment is applicable. We shall accept bills of exchange or checks only with a view to performance and at the Customer's expense.
- 4.3 In the case of customers, with whom we are working for the first time or with whom we do not regularly work, after delays in payment or in the case of reasonable doubt of the creditworthiness of the client, we retain the right to make any individual shipment dependent on payment in advance or a security deposit to the value of the invoice amount.
- 4.4 If the period between conclusion of the contract and the agreed delivery is longer than four months, we reserve the right to demand an extra charge, which corresponds to our cost increase until delivery, at our own discretion. For deliveries on call our then valid price shall apply.
- 4.5 In the case of an agreed return of faultless products, the customer will be charged a checking and processing fee to the value of 15% of the invoice amount (10 euros minimum).
- 4.6 If the Customer is in default of payment, then all of our debt claims against him shall be due immediately and we shall not be obligated to make any further deliveries based on current delivery contracts.
- 4.7 If default of payment occurs, we shall charge, notwithstanding further damage compensation claims, default interest to the amount legally allowed.
- 4.8 We may offset amounts payable to the Customer, such as a credit notes, against our claims against the Customer, if necessary.

5 Retention of Title and Assignment of Future Claims

- 5.1 Goods delivered shall remain our property until the complete and unlimited payment of all of our debt claims against the Customer. If we still have further claims against the customer, we reserve our property rights until the payment of this.
- 5.2 The Customer may neither use conditional goods nor merge nor combine them with other objects, to which a third party may have rights. If, however, conditional goods become a component of a new object, then we shall be a direct proportional co-owner of this object even if it constitutes a new legal entity. Our proportion of co-ownership shall be based on the relation of the invoice value of the conditional goods to the value of the new object at the time of the connection.
- 5.3 The Customer may resell the conditional goods in his normal course of business as long as his claims from the resale have not been assigned, pledged or otherwise encumbered.
- 5.4 The Customer shall assign to us in advance as collateral any claims against his customers from the resale of the conditional goods (see clause 5.3) and/or newly formed objects (see clause 5.2) to the value of our invoice for the conditional goods. If the Customer is not in default of payment for the conditional goods, he may collect the assigned claims in his normal course of business. However, he may only use the proportional proceeds for the payment to us for the conditional goods.
- 5.5 Upon the customer's request, we shall release collateral at our discretion, if and to the degree that the nominal value of the collateral exceeds 120% of the nominal value of our open debt claims against the Customer.
- 5.6 The Customer is required to immediately inform us of any attachments, confiscation or any other right to disposal of a third party with regard to the conditional goods or the goods co-owned by us.

- 5.7 In the case of failure to pay in exchanges or checks, or if debit requests or direct debit authorizations are not carried out or are retroactively cancelled, or if the Customer or the end user become insolvent or suspend payments, the Customer shall lose all rights as per clause 5.3. The Customer must immediately notify any subsequent purchaser of our extended retention of property rights. He may only use the proportional proceeds, which are based on the assignment, for the payment of the goods delivered.
- 5.8 If default of payment occurs or in those cases covered in clause 5.7, we shall be authorized to withdraw from the contract, and/or to demand the return of any conditional goods, even without withdrawal, in the possession of the Customer and/or to collect the assigned debt claims directly. In order to determine our rights, we shall have the right to have the Customer's documents and books concerning our reserved rights examined by a person who is subject to the professional duty of confidentiality.

6 Defects and claims for damages

- 6.1 We shall be liable for insuring that our products, including any agreed installation, are free of defects at the time of the transfer of risk (clause 2.1). The required composition, shelf life and use of our products are based solely on the written agreed specification, product description and/or operating instructions. Any information beyond this and in particular in preliminary discussions, advertisement and/or referenced industrial standards shall only become a part of the contract if they are expressly referenced in writing.
- 6.2 If the Customer requires the delivered goods for purposes other than those agreed, he must check before use if the products are specially suitable for such purposes – including all aspects pertaining to product safety – and Customer is required to ensure that products comply with all relevant technical, legal and official regulations and requirements. We shall not be responsible for the fulfillment of any application not expressly confirmed by us in writing. We are not liable for material or design guidelines of the Customer, concerning the suitability or permissibility of the desired materials or designs and thus have no particular testing obligation.
The observation of safety-related and occupational health regulations depends on the place and conditions of the use, of which we have no knowledge. Measures of the observation of these regulations are, therefore, the responsibility of the user.
- 6.3 We shall not be liable for the consequences of improper handling, use, servicing or operation of the products or the consequences of normal wear and tear of wearing parts such as pistons, seals, valves and the breakage of glass, plastic or ceramic parts, for the consequences of chemical, electrochemical or electrical influences or the failure to follow the instructions in the operating instructions.
- 6.4 In the case of justified deficiency claims we shall only initially be required to provide subsequent performance (i.e. free replacement or repair at our sole discretion). Any additional warranty claims shall only exist due to rejection, impossibility or failure of said subsequent performance. Additional expenses, resulting from the fact that the goods have been relocated from the initial place of delivery, shall be borne by the Customer.
- 6.5 The Customer shall be obliged to promptly and carefully check incoming products – also for product safety – and to notify us of any apparent deficiencies in writing, any hidden defects as soon as they are found. The Customer must notify the carrier immediately of any transport damage. Non-observation of the obligation to check and give notice of defects will void any and all warranty claims for those deficiencies.
- 6.6 Our liability for slight negligence is limited to claims owing to injury to life, the body or the health, to claims from product liability as well as claims from the culpable breach of essential contractual duties, through which the contract is endangered. Incidentally, our liability for slightly negligent breach of essential contractual duties is limited to the typically incurring damages which we could have foreseen when the contract was concluded.
- 6.7 If the customer uses the delivered goods with materials that are harmful to the environment, poisonous, radioactive or dangerous in any other way, he shall be obliged to clean them prior to any return shipment. We can put any necessary costs of decontamination/cleaning and disposal in the client's invoice.

7 Limitation of actions

Claims for defects against us shall be limited to one year from delivery of the goods to the customer. The same shall apply to claims for damages no matter for what legal grounds. The period of limitations of § 438, paragraph 1, no. 1 and 2 of the German Civil Code, and § 479, paragraph 1 and 634a, paragraph 1, no. 2 remain unaffected.

The restriction of the statute of limitations shall not apply to claims owing to malicious non-disclosure of a defect, for claims according to product liability and for damages from injury to life, the body or the health and for other damages, which are due to wilful intent or gross negligence.

8 Software use

- 8.1 Insofar as software is contained in the delivery, the Customer will be granted the non-exclusive right to use the software delivered including its paperwork. It shall also be available for use on the specific delivery item. Use of the software on more than one system is prohibited.
- 8.2 The Customer may only copy, transfer or translate the software in a legally acceptable scope (§§ 69 a ff of Copyright Law (UrhG)) or convert from the object code into the source code. The Customer is obliged to not remove manufacturer's instructions, especially copyright entries, or to change them without prior permission from the Supplier.
- 8.3 All remaining rights to the software and the documentation thereof, including copies, remain with the Supplier and/or Software Supplier. The allocation of sublicenses is not permissible.

9 Installation

- 9.1 Installation costs can be invoiced monthly. Fixed installation prices shall only apply to the work, which has been agreed upon. In other cases, our price list for installation and service costs shall apply.
- 9.2 The Customer shall be responsible for providing the following if required at his own expense: lighting, motive power: compressed air, water, electrical power for welding, heating including any required connections, electrical installations for the connection of the products delivered by us, the required devices (e.g., hoisting equipment), a room, which can be closed, for storing material, tools and clothing during the installation.

10 Spare Parts, Maintenance/Repair and Calibration

- 10.1 For spare parts, maintenance, repair and calibration services the valid repair and replacement price list shall apply.
- 10.2 If we have an obligation to maintain/deliver spare parts, then this shall be limited to a period of five years from the date of delivery of the original product. If the spare parts are not manufactured by us or are no longer available on the market, e.g. electrical components, or if the raw materials required for their production are no longer available, then our obligation to supply spare parts shall lapse.
- 10.3 For calibration and servicing, normally disposables from our production lines shall be used.
- 10.4 Any servicing and/or calibration service may only be performed after the Customer has declared the absence of health hazards with regard to the devices sent.
- 10.5 For service values of up to 50 euros, we reserve the right to service / repair without providing a separate cost estimate.

11 Legal reservation, industrial proprietary rights, secrecy

- 11.1 We reserve ownership in any of the moulds, tools or other appliances, samples, diagrams, commercial or technical documents produced or provided by us as well as all copyrights, proprietary and intellectual property rights in any such item. This applies also if the Customer has wholly or partly borne the costs of this. The use of any such item by the Customer is subject to our prior written approval. The Customer is neither entitled to manufacture the subjects of this agreement nor to have them manufactured on his behalf, without our approval in writing.
- 11.2 If we deliver goods according to designs or other requirements specified by the customer (models, samples etc.), he is liable by default for ensuring that through the production and delivery of these products industrial property rights or other rights of third parties are not infringed. He shall be obligated by default to provide compensation for all damages resulting from such legal infringements.
- 11.3 All information acquired through the business relationship with us which is not deemed to be public knowledge shall be deemed proprietary and may not be disclosed by the customer to any third party.

Status as of: November 2011

