Lab Tools for Chemistry and Life Sciences

BRANDTECH® SCIENTIFIC, INC.

Pipettes

Dispensers

PCR/Microplates

Volumetric Glassware

Cuvettes

Plastic Labware

Stainless Supports

Vacuum Pumps

Burettes

Dispensette® S

BRAND

BVC professional

500ml

VITLAB

Transferpette® *S*

The Transferpette®*S* pipettes have been benchmarked against leading pipettes for premium performance, light weight, comfort, and easy service.

- **Thumb-tip volume selection:** Set and secure the volume without even shifting your hand position!

- **Short pipetting stroke:** Shortest range of pipetting motion among premium pipettes reduces risk of repetitive strain injury.

- **Fully autoclavable at 121°C:** Repeatedly autoclavable without disassembly or recalibration.

- **Light weight and rugged:** Made with precision advanced materials for chemical resistance, dimensional stability and light weight.

- **Full pipetting range:** Adjustable and fixed-volume single channel pipettes from 0.1µL to 10mL; multichannels from 0.5µL to 300µL.

- **Economical:** Fast, in-house cleaning, repair and calibration (without tools) for long, economical service. Accepts most manufacturers' tips.

The Transferpette®*S* – the performance standard in pipetting

Comfortable

Broad, curved ejection button for ergonomic tip ejection

Secure

A volume brake helps protect against accidental volume changes

Clearly accurate

4-digit display for precise volume settings;
always remains visible during pipetting

Reduced static strain

Pipette suspends from
relaxed hand

Calibration adjustment without tools

Easy Calibration™ makes it quick.
Calibration flag indicates adjustment
from factory settings

Smooth operation

Specially selected sealing material
provides uniformly smooth pipetting stroke

Low strain

Resilient V-rings and the stepped design of the tip ejector
reduce tip mounting and ejection forces. V-rings support broad
tip compatibility. Two O-ring design on 0.5-10µL model
provides directional accuracy and improved fit

Convenient

Manifold rotates 360° in both directions
to allow you to pipette from any angle

BRAND

Transferpette® *S* Single & Multichannel Pipettes

The Transferpette® *S* family of pipettes provides unparalleled comfort and ease-of-use in a central-button pipette.

- **Innovative materials** reduce weight, improve corrosion resistance and protect accuracy, even after repeated autoclaving.
- **Short pipetting stroke** reduces the risk of RSI (repetitive strain injury), and enhances comfort for operators with smaller hands. Curved finger rest supports pipette for a relaxed grip.
- **True one-handed operation—**volume can be set and secured with the tip of the thumb - even while wearing gloves.
- **Large separate tip ejector** for reduced tip ejection forces.
- **Pistons are light,** dimensionally stable and corrosion resistant.
- **Easy Calibration™** technology ensures fast, easy, in-lab calibration adjustments without tools for ISO/GLP compliance. (See description of Easy Calibration™, page 53).
- **CE-IVD compliant**

Color coded

Easy selection of the right tip

Items supplied

The Transferpette® *S* is supplied with the following items:

- Performance certificate
- Operating manual
- Shelf mount

Maximum compatibility

Tip cone design offers excellent fit with BRAND tips and broadest compatibility with tips from other manufacturers

Easy thumb-tip volume setting

Covered nameplate—identifies pipettes without messy tape!

Red recalibration flag indicates adjustment from factory specifications.

Shelf mount included with Transferpette® *S* single and multichannel pipettes.

Carousel stand for handy storage of up to six Transferpette® *S* single or multichannel pipettes.

Transferpette® *S* Single & Multichannel Pipettes

Capacity, µL**	Model	A* < ± %	CV* ≤ %	Subdivision, µL	Cat. No.	2016 List Price
Transferpette® *S* Adjustable Volume Single Channel Pipettes						
0.1-1	D-1	2	1.2	0.001	704768	$342.00
0.1-2.5	D-2.5	1.4	0.7	0.002	704769	311.00
0.5-10	D-10	1	0.5	0.01	704770	311.00
2-20	D-20	0.8	0.4	0.02	704772	311.00
5-50	D-50	0.8	0.3	0.05	704773	311.00
10-100	D-100	0.6	0.2	0.1	704774	311.00
20-200	D-200	0.6	0.2	0.2	704778	311.00
100-1000	D-1000	0.6	0.2	1	704780	311.00
500-5000 (0.5-5mL)	D-5000	0.6	0.2	5	704782	311.00
1000-10000 (1-10mL)	D-10000	0.6	0.2	10	704784	311.00
Transferpette® *S* Fixed Volume Single Channel Pipettes						
10	F-10	1	0.5	—	704708	169.00
20	F-20	0.8	0.4	—	704716	169.00
25	F-25	0.8	0.4	—	704720	169.00
50	F-50	0.8	0.4	—	704728	169.00
100	F-100	0.6	0.2	—	704738	169.00
200	F-200	0.6	0.2	—	704744	169.00
500	F-500	0.6	0.2	—	704754	169.00
1000	F-1000	0.6	0.2	—	704762	169.00

NEW!

Transferpette® *S* Single channel pipettes are supplied with performance certificate, operating manual, shelf mount and three year warranty

Starter Set	Models	Cat. No.	2016 List Price
Transferpette® *S* Single Channel Starter Sets			
Micro	D-1, D-10, D-100	704790	$745.00
Mid-Size	D-20, D-200, D-1000	704791	745.00
Macro	D-1000, D-5000, D-10000	704792	745.00
Standard	D-10, D-100, D-1000	704793	745.00

Starter Sets include three pipettes with performance certificates, operating manual, three shelf mounts, and three filled Tip-Boxes with appropriate sized tips.

Capacity, µL**	A* < ± %	CV* ≤ %	Subdivision, µL	Transferpette® *S* -8 Channel	2016 List Price	Transferpette® *S* -12 Channel	2016 List Price
Transferpette® *S* -8/-12 Multichannel Pipettes							
0.5-10	1.6	1.0	0.01	703700	$760.00	703720	$938.00
5-50	0.8	0.4	0.05	703706	760.00	703726	938.00
10-100	0.8	0.3	0.1	703708	760.00	703728	938.00
20-200	0.8	0.3	0.2	703710	760.00	703730	938.00
30-300	0.6	0.3	0.5	703712	760.00	703732	938.00

Transferpette® *S* -8/-12 pipettes supplied with performance certificate, operating manual, shelf mount, two tip boxes, reagent reservoir, pack of replacement V-rings. One-year warranty.

A*=Accuracy, CV*=Coefficient of Variation * The value of accuracy and coefficient of variation are final test values referring to the delivered nominal volume, instrument and distilled water at equilibrium with ambient temperature (20°C/68°F) and with smooth operation. ** Tip selection chart see page 22

	Cat. No.	2016 List Price
Accessories		
Carousel Stand - for up to six Transferpette® *S* single or multichannel pipettes, pack of 1	704805	$183.10
Individual Multichannel Stand - for all Transferpette® multichannel pipettes, pack of 1	703440	51.75
Shelf Mount - for all Transferpette® *S* single or multichannel pipettes, pack of 1	704810	38.48
Autoclavable Reagent Reservoirs – PP, with translucent lids, pack of 10	703459	34.65
Autoclavable Reagent Reservoirs – PP, sterile, individually wrapped, 100 pieces total	703411	287.36
Autoclavable Reagent Reservoirs – PP, sterile, 40 packs of five, 200 pieces total	703409	262.90

60mL Reagent Reservoir

Transferpette® electronic

The BRAND *Transferpette® electronic* single- and multichannel pipettes combine the innovation of the Transferpette® with the convenience and automation of motorized, electronic pipettes. The result is an accurate, ergonomic instrument for use in most laboratory applications. Both single- and multichannel models are available in five volume ranges, and feature an autoclavable pipette shaft or manifold, respectively.

- **Delivers precise, accurate volumes**
- **Increases sample throughput**
- **Reduces maintenance downtime:** All models, both single- and multichannel, can be disassembled for cleaning. The multichannel models also feature BRAND's innovative user-removable, individual tip cones for easy in-lab maintenance or replacement.
- **Maximizes pipetting comfort**

Transferpette® electronic pipettes from BRAND – performance, value, and unbelievable comfort

Single channel stand

Charging stand
for up to three single channel pipettes (excluding 5mL)

BRAND

Clear, legible LCD screen

Soft touch pipetting key

Rechargeable battery

Over 4000 pipetting cycles between charges means well over a full day of uninterrupted pipetting

Multichannel V-rings

V-rings on tip cones of multichannel models improve tip fit and reduce mounting and ejection forces

Intuitive interface

User-friendly design allows easy operation, even for new lab techs

Adjustable finger rest

The adjustable finger rest adapts the instrument to your most comfortable hand position

Easy maintenance

All multichannel manifolds disassemble easily for cleaning or service. They also feature patented individually removable tip cones for easy cleaning and seal replacement. This is especially handy if faults are discovered during calibration, as only the individual channel needs service

Transferpette® electronic Single & Multichannel Pipettes

Innovative Ergonomics

The *Transferpette® electronic* pipettes are the first single and multichannel pipettes respectively, to be independently certified "Ergonomics Approved" by a Nationally Recognized Testing Laboratory (NRTL), TÜV Rheinland. The combination of ergonomic features and intuitive design resulted in outstanding user acceptance ratings of 1.54 and 1.55.

Reduce pipetting strain!

From the very beginning, the development of the *Transferpette® electronic* was driven by the goal of reducing the strain of pipetting without sacrificing performance. It was that focus that led to such innovations as the adjustable finger rest.

Five Operating Modes

Quickly and easily scroll to one of five convenient operating modes that support all of the most common pipetting applications.

Pipetting (PIP Mode) Previously set volume is aspirated into the pipette tip and then discharged.

Mixing of samples (PIPmix Mode) Program for mixing liquids. The sample is repeatedly aspirated and discharged and the number of cycles is displayed.

**Reverse pipetting (revPIP mode)** Program especially designed for greater accuracy when pipetting liquids with a high viscosity, high vapor pressure or low surface tension.

Pipetting for electrophoresis (GEL mode) Program for loading of electrophoresis gels. (Not available on 1000µL and 5mL instruments).

Dispensing (DISP mode) A single aspirated volume is dispensed in a selected number of smaller, equal aliquots.
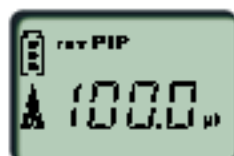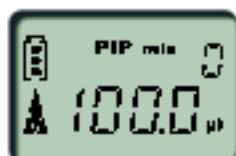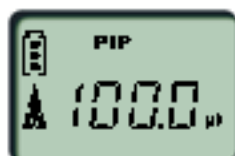
Transferpette® electronic Single & Multichannel Pipettes

Items supplied

The *Transferpette® electronic* is supplied with the following items:

- Battery
- AC adapter with US plug (except instruments 705339, 705340, 705343, 705346, and 705347)
- One pipette tip sample pack (single channels only)
- Silicone oil
- Operating manual
- One-year warranty

Additional items supplied

Multichannel models also include:

- Pipette stand
- One TipBox
- One TipRefill
- Reagent reservoir
- Tip cone tool
- Set of replacement V- rings

Capacity, µL**	A* < ± %	A* < ± µL	CV* ≤ %	CV* ≤ µL	Subdivision, µL	Cat. No.	2016 List Price
Transferpette® *electronic* single channel pipettes							
0.5-10 with AC charger	1.0	0.1	0.4	0.04	0.01	705319	$510.00
2-20 with AC charger	1.0	0.2	0.4	0.08	0.02	705320	510.00
20-200 with AC charger	0.8	1.6	0.2	0.4	0.2	705323	510.00
100-1000 with AC charger	0.6	6	0.2	2	1.0	705326	510.00
500-5000 (0.5-5mL) with charger	0.6	30	0.2	10	5.0	705327	510.00
0.5-10 without charger	1.0	0.1	0.4	0.04	0.01	705339	479.00
2-20 without charger	1.0	0.2	0.4	0.08	0.02	705340	479.00
20-200 without charger	0.8	1.6	0.2	0.4	0.2	705343	479.00
100-1000 without charger	0.6	6	0.2	2	1.0	705346	479.00
500-5000 (0.5-5mL) without charger	0.6	30	0.2	10	5.0	705347	479.00
Transferpette®-8 *electronic* eight channel pipette							
0.5-10	1.2	0.12	0.8	0.08	0.01	705419	917.00
1-20	1.0	0.2	0.5	0.1	0.02	705420	917.00
5-100	0.8	0.8	0.25	0.25	0.1	705423	917.00
10-200	0.8	1.6	0.25	0.5	0.2	705424	917.00
15-300	0.6	1.8	0.25	0.75	0.5	705426	917.00
Transferpette®-12 *electronic* twelve channel pipette							
0.5-10	1.2	0.12	0.8	0.08	0.01	705469	1,097.00
1-20	1.0	0.2	0.5	0.1	0.02	705470	1,097.00
5-100	0.8	0.8	0.25	0.25	0.1	705473	1,097.00
10-200	0.8	1.6	0.25	0.5	0.2	705474	1,097.00
15-300	0.6	1.8	0.25	0.75	0.5	705476	1,097.00

A*=Accuracy, CV*=Coefficient of Variation

* The value of accuracy and coefficient of variation are final test values referring to the delivered nominal volume, instrument and distilled water at equilibrium with ambient temperature (20°C/68°F) and with smooth operation.

** Tip selection chart see page 22

Accessories

Spare NiMH battery	705500	78.28
Single Channel Charging Stand - for up to three pipettes (excluding 5mL), pack of 1	705392	402.03
Single Channel Stand - for 5mL & 10mL, pack of 1	705386	119.41
Stand for Transferpette®-8/-12 multichannel pipettes - holds one pipette, pack of 1	703440	51.75
AC adapter with US plug for *Transferpette® electronic*	705352	74.30

Pipette Tips & Filter Tips

BRAND Pipette tips and filter tips are manufactured in a cleanroom under state-of-the-art production conditions. They are automatically rack packed and packaged to ensure consistently high quality.

- High-purity polypropylene, free from DiHEMDA and oleamide.
- Manufactured without lubricants.
- Cadmium-free pigments.
- Graduation for a quick volume check.
- All rack-packed tips and filter tips up to 1000µL are free of DNA (<40fg), RNase (<8.6fg), endotoxins (<1pg) and ATP (<1fg).
- Autoclavable at 121°C (2bar), acc. DIN EN 285.
- Environmentally friendly packaging systems.
- CE-marked according to IVD-Directive 98/79 EC.
- BIO-CERT® tips are sterile according to ISO 11137 and the AAMI guidelines; a SAL of 10^{-6} is obtained.

Superior quality tips – priced for value

High Quality Tips

Pipette tips are the most frequently used disposables in the laboratory. As laboratory tests have become increasingly sensitive, tip requirements have become more stringent over time. From the raw materials, to the molding machines, and quality control procedures, many parameters need to be considered to meet the highest standards for research and standardized applications.

For the manufacturing of pipette tips and filter tips, BRAND exclusively uses raw materials that are free from the additives di(2-hydroxyethyl) methyldodecylammonium (DiHEMDA) and 9-octadecenamide (oleamide). These additives are often found in raw polypropylene, and can interfere with biological tests, leading to false results. Only highly polished molds are used, so that no parting agents or demolding aids are needed.

One of the world's largest cleanroom facilities

BRAND disposable items for the life sciences are produced using the most advanced cleanroom techniques in one of the world's largest cleanrooms for laboratory disposable items. The ongoing cleanroom monitoring includes continuous measurements of air particulates, positive air pressure, air exchange rate, room temperature, and the relative humidity, among other things. This ensures that the actual parameters can immediately be checked against the nominal values. Deviations are detected immediately and suitable countermeasures can be taken before the limit values are exceeded. The high-precision control of environmental conditions provides a very high degree of stability in the corresponding parameters, especially the room temperature. This uniformity, together with quality testing of the final product by batch, guarantees the consistently high quality in the life science products from BRAND. For the production of disposable items, Class 8, 7, and 5 cleanrooms are available, all validated according to ISO 14644-1. Compliance with ISO 14644-1 is certified by external, independent auditors.

BRAND®

Pipette Tip Packaging Options

TipBox/TipRefill System

Dual function hinged and push-on lid

Simply rotate 180° to change closure method

Transparent window

For easy visual inspection

Usable with a partially loaded multichannel pipette

The rimless tip-tray border enables problem-free loading of individual pipette tips with multichannel instruments

No deflection during tip loading

The tip-tray is fabricated from especially rigid polypropylene

Colored tip-trays with side panel labeling

The contents of the box are always clearly visible

Opening and closing with one hand

The clamping mechanism holds the tip-tray securely in the box

Sterile reloading

Press the long sides of the transfer aid together and continue pressing them together while withdrawing the tip-tray. Ensure that the holding straps for the transfer aid are correctly positioned.

Insert the filled tip-tray perpendicularly from above into the previously sterilized TipBox until it locks into place.

Remove the transfer aid from the mounting plate. Finished – all without tip contact!

Dual function lid

TipBox features a unique dual function lid design. To change closure method from hinged to push-on, simply remove lid and rotate 180°.

TipRefill

Compared to the filled TipBoxes, the amount of waste with the new refill units is reduced by over 20%. All pipette tips and filter tips up to 1000µL are free of DNA, RNases, endotoxins and ATP (for detailed information see page 129). TipRefills in BIO-CERT® quality are sterile according to ISO 11137 and the AAMI guidelines, a SAL of 10^{-6} is obtained. These racks are supplied with a transfer aid that enables simple, contamination-free transfer into a previously sterilized TipBox. Product information is printed on one side of all tip-trays.

TipStack™

A tip tower containing 5 filled tip-trays and a TipBox constitute the new, space-saving refill system for 20µL, 200µL and 1000µL tips. Tightly sealing spacers prevent the tips from getting stuck together, and ensure them to be free from DNA, RNases, endotoxins and ATP. The sterile TipStacks (BIO-CERT® quality) are supplied with a transfer aid for contamination-free use in a previously sterilized TipBox

- All components are recyclable.
- Reduced amount of waste.
- Sterilizable and reusable TipBox.
- High purity of the pipette tips and filter tips.
- Space-saving design.

TipRefills

Bulk

TipBox

TipBox 5/10mL

TipStack™
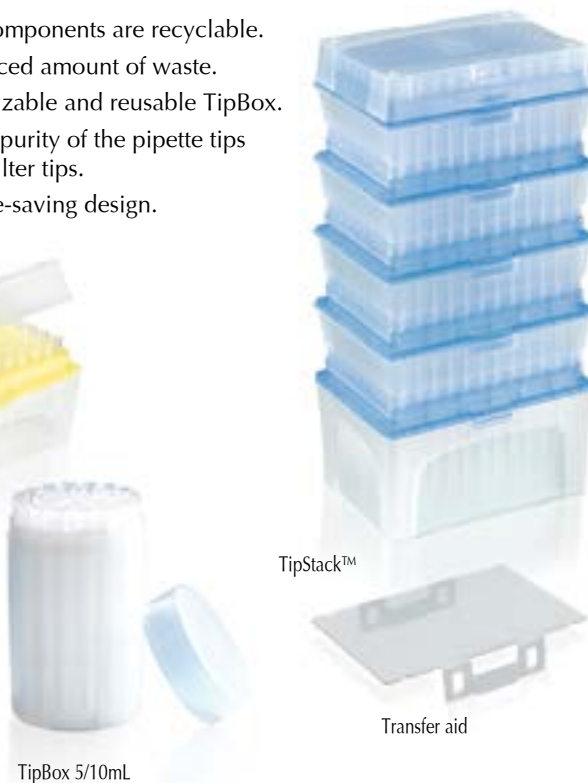
Transfer aid

TipRefills
sterile and non-sterile

For TipBox. Refill unit, protected in an environmentally compatible packaging of recyclable PET. Sterile TipRefills are supplied with a transfer aid for sterile handling when inserting into a previously autoclaved box.

Bulk packed in bags
non-sterile

All tips are produced under supervised state-of-the-art clean-room conditions and automatically shrink-wrapped in reclosable bags and packaged in cardboard boxes. The batch number is printed on every bag.

TipBox
sterile and non-sterile

Polypropylene with hinged lid/push-on lid. Stackable and repeatedly autoclavable at 121°C (2bar), acc. DIN 285. (Empty tip box, ordering information see page 16)

TipBox 5/10mL
non-sterile

The 5mL and 10mL tips are only available non-sterile in the TipBox configuration.

TipStack™
sterile and non-sterile

Space-saving, environmentally compatible refill system for TipBox. 5 racks, of 96 tips and 1 TipBox. Sterile TipStacks are supplied with a transfer aid for sterile handling when inserting into a previously autoclaved box.

Pipette Tip Size & Descriptions

0.1 - 20µL

0.1 - 1µL (Filter)

0.5 - 20µL

0.5 - 10µL (Filter)

1 - 50µL

1 - 20µL (Filter)

2 - 200µL

2 - 20µL (Filter)

0.1 - 20µL
0.1 - 1µL (Filter)

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

0.5 - 20µL
0.5 - 10µL (Filter)

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

1 - 50µL NEW!
1 - 20µL (Filter)

With a length of 50mm, the tip is ideal for working down to the bottom of narrow containers. Graduation at 2.5, 10, 25 and 50µL for quick volume check. The racked tips are colorless and placed into a grey-colored tip tray.

2 - 200µL
2 - 20µL (Filter)

A tested and proven thin-walled tip. Lighter in weight, 50mm long and can be used for virtually all pipettes with yellow color code. Graduation at 20µL and 100µL for quick volume check. Bulk tips are yellow colored. The racked tips are colorless and placed into a yellow-colored tip tray.

0.5 - 5mL

Particularly slender shape, at 160 mm length and approx. 9.6mm diameter. This allows pipetting even from narrow volume measuring equipment such as volumetric flasks with NS 12/21. Suitable for Transferpette® and Thermo Fisher Scientific FINNPIPETTE® microliter pipettes.

5 - 300µL

5 - 100µL (Filter)

200µL (Filter)

50 - 1000µL

50 - 1000µL (Filter)

0.5 - 5mL

1 - 10mL

5 - 300µL
5 - 100/200µL (Filter)

The thin-walled tip is suitable for reverse pipetting and plate washing. It is 53mm long and can also be used for pipettes with yellow color code. It is particularly suited for working with multichannel pipettes. Graduation at 50 and 100µL for quick volume check. The racked tips are colorless and placed into a green-colored tip tray.

50 - 1000µL
50 - 1000µL (Filter)

Proven thin-walled tip for routine laboratory and research pipetting. Its length is 70mm. Graduation at 250, 500 and 1000µL for a quick volume check. Bulk tips are blue colored. The racked tips are colorless and placed into a blue-colored tip tray.

1 - 10mL

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

0.1 - 20µL

Pipette tips, 0.1-20µL, nano-cap™

	Quantity	Pack of	Non-Sterile Cat. No.	2016 List Price	Sterile Cat. No.	2016 List Price
bulk	2000	2 bags, 1000 each	732002	$91.00	—	—
bulk, xxl	10000	10 bags, 1000 each	732022	384.00	—	—
TipRefill	960	10 TipRefills, 96 each	732102	104.00	732122	$158.00
TipBox	480	5 boxes, 96 each	732202	77.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732222	158.00

0.5 - 20µL

Pipette tips, 0.5-20µL, ultra-micro tips

	Quantity	Pack of	Non-Sterile		Sterile	
bulk	2000	2 bags, 1000 each	732004	70.00	—	—
bulk, xxl	10000	10 bags, 1000 each	732024	297.00	—	—
TipRefill	960	10 TipRefills, 96 each	732104	51.00	732124	139.00
TipBox	480	5 boxes, 96 each	732204	30.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732224	139.00
TipStack™	960	2x5 refills, 96 each	732244	88.00	732264	139.00

1 - 50µL

Pipette tips, 1 -50µL

	Quantity	Pack of	Non-Sterile		Sterile	
bulk	2000	2 bags, 1000 each	732006	70.00	—	—
bulk, xxl	10000	10 bags, 1000 each	732026	297.00	—	—
TipRefill	960	10 TipRefills, 96 each	732106	51.00	732126	139.00
TipBox	480	5 boxes, 96 each	732206	30.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732226	139.00

2 - 200µL
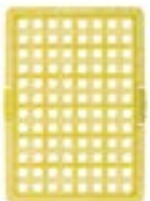
Pipette tips, 2-200µL (bulk tips are yellow colored)

	Quantity	Pack of	Non-Sterile		Sterile	
bulk	1000	1 bag, 1000 each	732008	19.00	—	—
bulk, xxl	10000	10 bags, 1000 each	732028	142.00	—	—
TipRefill	960	10 TipRefills, 96 each	732108	35.00	732128	105.00
TipBox	480	5 boxes, 96 each	732208	24.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732228	105.00
TipStack™	960	2x5 refills, 96 each	732248	39.00	732268	105.00

Pipette Tips

5 - 300µL

50 - 1000µL
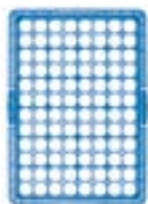
0.5 - 5mL   **1 - 10mL**

	Quantity	Pack of	Non-Sterile Cat. No.	2016 List Price	Sterile Cat. No.	2016 List Price
Pipette tips, 5 – 300µL						
bulk	1000	1 bag, 1000 each	732010	$28.00	—	—
bulk, xxl	10000	10 bags, 1000 each	732030	250.00	—	—
TipRefill	960	10 TipRefills, 96 each	732110	82.00	732130	$106.00
TipBox	480	5 boxes, 96 each	732210	50.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732230	106.00

	Quantity	Pack of	Non-Sterile		Sterile	
Pipette tips, 50 – 1000µL (bulk tips are blue colored)						
bulk	1000	2 bags, 500 each	732012	21.00	—	—
bulk, xxl	5000	10 bags, 500 each	732032	78.00	—	—
TipRefill	960	10 TipRefills, 96 each	732112	49.00	732132	179.00
TipBox	480	5 boxes, 96 each	732212	37.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732232	184.00
TipStack™	960	2x5 refills, 96 each	732252	100.00	732272	184.00

	Quantity	Pack of	Non-Sterile		Sterile	
Pipette tips, 0.5 – 5mL						
bulk	200	1 bag, 200 each	702595	41.00	—	—
bulk, xxl	1000	5 bags, 200 each	702600	193.00	—	—
TipBox 5mL	28	1 box, 28 each	702605	43.00	—	—

	Quantity	Pack of	Non-Sterile		Sterile	
Pipette tips, 1 – 10mL						
bulk	200	2 bags, 100 each	702603	81.00	—	—
bulk, xxl	1000	10 bags, 100 each	702604	364.00	—	—
TipBox 10mL	18	1 box, 18 each	702608	85.00	—	—

TipBox, with tip-tray, empty

	Cat. No.	2016 List Price
TipBox, with tip-tray PP, stackable, empty, pack of 1		
up to 20µL	732990	$6.93
for 200µL	732992	6.93
for 300µL	732994	6.93
for 1000µL	732996	6.93

Non-self-sealing filter tips from BRAND have a PE filter that is free from chemical additives. Permeability is controlled by the combination of pore size and filter length, so that no aerosols can reach the pipette shaft. These filters function with consistent reliability. On the other hand, liquids can pass very slowly should they accidentally contact the filter. Since the filter does not swell as in the case of self-sealing filter tips, the sample can be recovered from the filter by simply actuating the 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 contamination.

0.1 - 1µL (Filter)

	Quantity	Pack of	Non-Sterile Cat. No.	2016 List Price	Sterile Cat. No.	2016 List Price
Filter tips, 0.1 – 1µL						
TipRefill	960	10 Tip Refills, 96 each	732602	$162.00	732622	$215.00
TipBox	480	5 boxes, 96 each	732702	123.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732722	328.00

0.5 - 10µL (Filter)

Filter tips, 0.5 – 10µL			Non-Sterile		Sterile	
TipRefill	960	10 Tip Refills, 96 each	732604	145.00	732624	193.00
TipBox	480	5 boxes, 96 each	732704	90.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732724	239.00

1 - 20µL (Filter)

Filter Tips, 1 – 20µL			Non-Sterile		Sterile	
TipRefill	960	10 Tip Refills, 96 each	732606	145.00	732626	193.00
TipBox	480	5 boxes, 96 each	732706	90.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732726	239.00

Filter Tips

2 – 20µL (Filter)

	Quantity	Pack of	Non-Sterile Cat. No.	2016 List Price	Sterile Cat. No.	2016 List Price
Filter Tips, 2 – 20µL						
TipRefill	960	10 Tip Refills, 96 each	732608	$121.00	732628	$162.00
TipBox	480	5 boxes, 96 each	732708	90.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732728	239.00

5 - 100µL (Filter)

			Non-Sterile		Sterile	
Filter Tips, 5 – 100µL						
TipRefill	960	10 Tip Refills, 96 each	732610	121.00	732630	162.00
TipBox	480	5 boxes, 96 each	732710	90.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732730	239.00

5 - 200µL (Filter)

			Non-Sterile		Sterile	
Filter Tips, 5 – 200µL						
TipRefill	960	10 Tip Refills, 96 each	732612	121.00	732632	162.00
TipBox	480	5 boxes, 96 each	732712	90.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732732	239.00

50 - 1000µL (Filter)

			Non-Sterile		Sterile	
Filter Tips, 50 – 1000µL						
TipRefill	960	10 Tip Refills, 96 each	732614	224.00	732634	299.00
TipBox	480	5 boxes, 96 each	732714	152.00	—	—
TipBox Sterile	960	10 boxes, 96 each	—	—	732734	305.00

BRAND Pipette tips, quality fit for reliable results

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

Pipette and filter tips from BRAND are tested for BRAND pipettes and most of the pipette types of GILSON®, Thermo Fisher Scientific FINNPIPETTE®, Eppendorf® and BIOHIT®/sartorius®. The 5mL tip is exclusively tested for BRAND pipettes and Thermo Fisher Scientific FINNPIPETTE®. The 10mL tip is suitable for BRAND and Eppendorf®pipettes.

Ultra-Low Retention Pipette Tips

The surfaces of the Ultra Low Retention tips are produced through a special, patented physicochemical process. The homogeneous, defect-free surface thus produced has extremely low surface tension – over 50% less than PTFE (see table, page 20). This significantly reduces sample loss and provides substantially higher reproducibility when working with critical media.

- **Ideal for biological samples** that contain detergents such as TRITON™ X-100, SDS, Tween, etc.
- **No additives** that can be leached out! No siliconization of the surface!

- **High chemical resistance.** Ideal for working with solvents.
- **The tips can be autoclaved** at 121°C (2bar) without damaging the material properties.

Standard pipette tip

Ultra Low Retention pipette tip

0.1 - 20µL

	Quantity	Pack of	Non-Sterile Cat. No.	2016 List Price	Sterile Cat. No.	2016 List Price
Ultra-Low Retention Pipette tips, 0.1 – 20µL						
TipBox, ULR	480	5 boxes, 96 each	732302	$90.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732322	$163.00

0.5 - 20µL

	Quantity	Pack of	Non-Sterile		Sterile	
Ultra-Low Retention Pipette tips, 0.5-20µL						
TipBox, ULR	480	5 boxes, 96 each	732304	71.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732324	107.00
TipStack™, ULR	960	2x5 refills, 96 each	732344	60.00	732364	114.00

1 - 50µL

	Quantity	Pack of	Non-Sterile		Sterile	
Ultra-Low Retention Pipette tips, 1 -50µL						
TipBox, ULR	480	5 boxes, 96 each	732306	71.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732326	107.00

2 - 200µL

	Quantity	Pack of	Non-Sterile		Sterile	
Ultra-Low Retention Pipette tips, 2-200µL						
TipBox, ULR	480	5 boxes, 96 each	732308	71.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732328	101.00
TipStack™, ULR	960	2x5 refills, 96 each	732348	51.00	732368	102.00
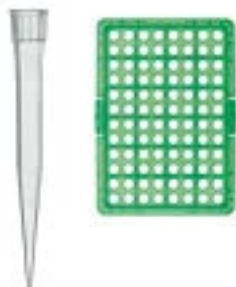
BrandTech® Scientific, Inc.   888-522-2726   www.brandtech.com

Ultra-Low Retention Pipette Tips

5 - 300µL

	Quantity	Pack of	Non-Sterile Cat. No.	2016 List Price	Sterile Cat. No.	2016 List Price
Ultra-Low Retention Pipette tips, 5 – 300µL						
TipBox, ULR	480	5 boxes, 96 each	732310	$69.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732330	$101.00

50 - 1000µL

Ultra-Low Retention Pipette tips, 50 – 1000µL			Non-Sterile		Sterile	
TipBox, ULR	480	5 boxes, 96 each	732312	69.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732332	122.00
TipStack™, ULR	960	2x5 refills, 96 each	732352	84.00	732372	168.00

Ultra Low Retention tips vs standard tips

Post pipetting media retention levels of 200µL Standard and Ultra Low Retention pipette tips from BRAND. Measurements performed by rinsing and subsequent photometric analysis. For a demonstration of the process visit www.brandtech.com/ULRvideo.
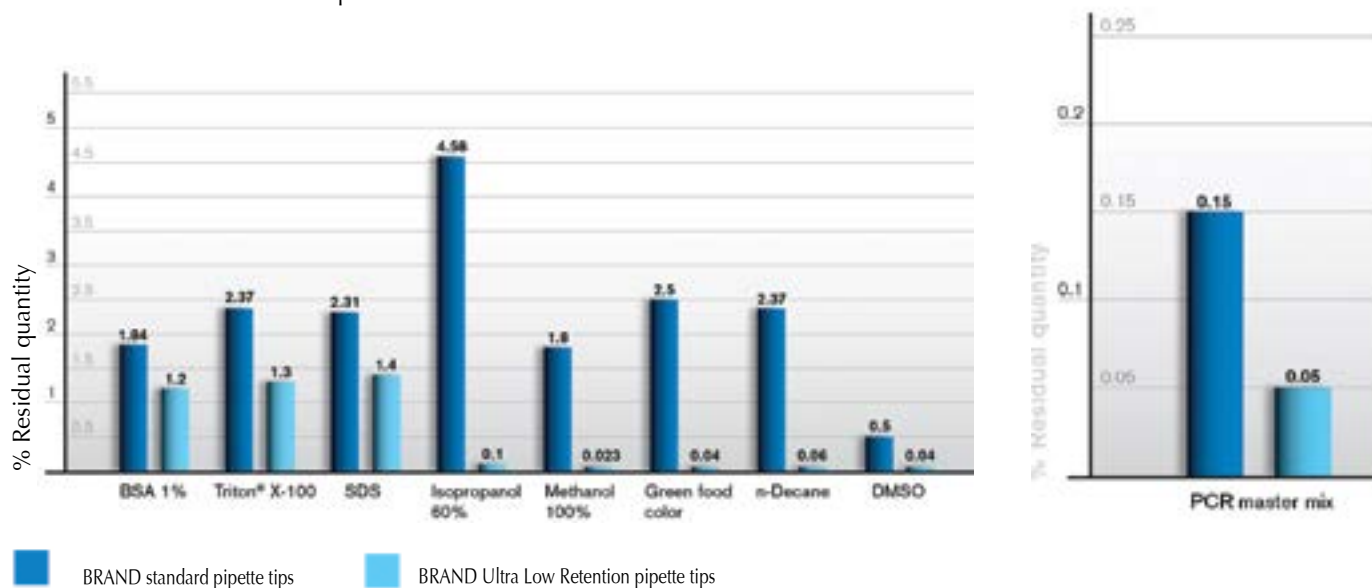
BRAND standard pipette tips   BRAND Ultra Low Retention pipette tips

0.1 - 1µL (Filter)

	Quantity	Pack of	Non-Sterile Cat. No.	2016 List Price	Sterile Cat. No.	2016 List Price
Ultra-Low Retention Filter tips, 0.1 – 1µL						
TipBox, ULR	480	5 boxes, 96 each	732802	$90.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732822	$240.00

0.5 - 10µL (Filter)

	Quantity	Pack of	Non-Sterile		Sterile	
Ultra-Low Retention Filter tips, 0.5 – 10µL						
TipBox, ULR	480	5 boxes, 96 each	732804	71.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732824	187.00

1 - 20µL (Filter)

	Quantity	Pack of	Non-Sterile		Sterile	
Ultra-Low Retention Filter Tips, 1 – 20µL						
TipBox, ULR	480	5 boxes, 96 each	732806	71.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732826	187.00

2 - 20µL (Filter)

	Quantity	Pack of	Non-Sterile		Sterile	
Ultra-Low Retention Filter Tips, 2 – 20µL						
TipBox, ULR	480	5 boxes, 96 each	732808	71.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732828	187.00

5 - 100µL (Filter)

	Quantity	Pack of	Non-Sterile		Sterile	
Ultra-Low Retention Filter Tips, 5 – 100µL						
TipBox, ULR	480	5 boxes, 96 each	732810	69.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732830	182.00

Ultra-Low Retention Filter Tips

5 - 200µL (Filter)

	Quantity	Pack of	Non-Sterile Cat. No.	2016 List Price	Sterile Cat. No.	2016 List Price
Ultra-Low Retention Filter Tips, 5 – 200µL						
TipBox, ULR	480	5 boxes, 96 each	732812	$69.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732832	$182.00

50 - 1000µL (Filter)

Ultra-Low Retention Filter Tips, 50 – 1000µL			Non-Sterile		Sterile	
TipBox, ULR	480	5 boxes, 96 each	732814	88.00	—	—
TipBox Sterile, ULR	960	10 boxes, 96 each	—	—	732834	235.00

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

Pipette tips Filter tips Volume range	Transferpette® single channel** Nominal volume												Transferpette® multichannel** Nominal volume				
	1µl	2.5µL	10µL	20µL	25µL	50µL	100µL	200µL	500µL	1000µL	5mL	10mL	10µL	50µL	100µL	200µL	300µL
0.1 - 20µL	✔	✔	✔										✔				
0.5 - 20µL		✔	✔										✔				
1 - 50µL		✔	✔										✔				
2 - 200µL*				✔	✔	✔	✔	✔						✔	✔	✔	✔
5 - 300µL				✔	✔	✔	✔	✔						✔	✔	✔	✔
50 - 1000µL*									✔	✔							
0.5 - 5mL											✔						
1 - 10mL												✔					
0.1 - 1µL	✔		✔										✔				
0.5 - 10µL		✔	✔										✔				
1 - 20µL		✔	✔										✔				
2 - 20µL				✔	✔	✔	✔	✔						✔	✔	✔	
5 - 100µL				✔	✔	✔	✔	✔						✔	✔	✔	✔
5 - 200µL								✔						✔	✔	✔	✔
50 - 1000µL									✔	✔							

✔ = Tip volume less than pipettes nominal volume
* = Bulk tips are yellow or blue colored. racked tips are colorless in a yellow-colored or blue-colored tip tray
** = Electronic pipettes are not available in all specified volumes

PLT™ Pipette Leak Testing Unit

BRAND®

Improve process reliability with functional validation of air-displacement pipettes

The most frequent cause of inaccuracy in piston-operated pipettes is leakage. This arises from damage either to the seals, pistons, or tip cones. Often not detectable by the naked eye, leaks lead to significant volume errors. The BRAND PLT™ Pipette Leak Tester (patent pending) detects even the smallest leaks in air displacement pipettes within seconds.

- Limit values for all common sizes of single and multichannel pipettes in the volume range 1µL to 10mL are pre-programmed
- Test with or without tips
- Results in seconds

To ensure accurate results, air-displacement pipettes must be checked at regular intervals and the results must be compared with the ISO 8655-2 error limits. However, a calibration certificate only reflects the results at the time of testing. The time between calibrations is crucial, since leaks can occur at any time. Well over 80% of pipettes sent in for repair have leaks and are outside their volume tolerances, even if they do not drip.

While the PLT unit cannot replace regular gravimetric testing, daily pipette checks can provide a safeguard during the periods between calibrations. Even the smallest leaks are detected and quantified! Process reliability for the pipettes is thus significantly improved.

Testing with and without the tip

To check the overall pipette system, the test is conducted with a tip mounted. When a leak has been identified, the test can be repeated without a tip to determine whether the leak arises from the tip cone/tip coupling region.

Dynamic or static test?

Dynamic test the pipette button must be pushed down numerous times during the measurement period.

In the **static test,** the pipette button is not pressed during the test procedure, i.e. the piston does not move.

Single-channel adapter

Display

"Start/Execute" button

"Back" button

LED display

Select knob
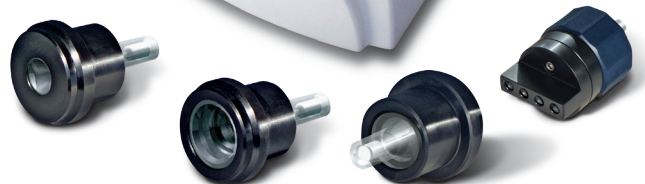
Single-channel	Single-channel	PE filter	Multichannel
adapter for pipettes with tip mounted	adapter for pipettes without tip	in single and multichannel adapters	adapter for pipettes with and without tip

NEW PLT Connect Software allows tracking of instruments and printing of reports
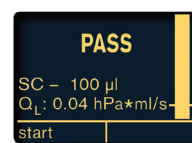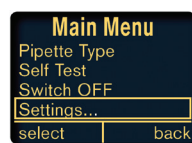
Quantifiable results are generated, with pass/fail criteria for each pipette size, based on over 35 years of experience.

Items supplied:

The PLT unit is supplied with universal power supply (100-240V, 50/60Hz), single-channel adapters for testing with and without tips and carrying/storage case.

Description	Cat. No.	2016 List Price
PLT Pipette Leak Testing Unit	703970	$1,499.00
Multichannel Pipette Adapter, Pack of 1	703977	215.01
Filters, PE, for Pipette Adapter, Pack of 10	703978	11.21
NEW! PLT Connect Software	703980	225.00

Transferpettor™

The Transferpettor™ positive displacement pipette is the ideal tool for use with liquids that render traditional air-displacement pipettes ineffective. Unlike air displacement pipettes, the piston of the Transferpettor™ directly expels the media from the tip, wiping the tip walls completely clean. This results in negligible residual wetting and highly accurate, reproducible results, especially with viscous, foaming, high-vapor-pressure, and other "problematic" liquids.

- **Works in a broad range of applications:** The Transferpettor™ is an excellent tool for applications in wastewater treatment plants, biochemical, genetics and molecular biology laboratories, wineries, breweries, refineries, and more.

- **Dispenses glycerin:** For use with viscous solutions up to 40,000cSt (mm²/s) and high density media (up to 13.6g/cm³) such as concentrated protein solutions, oils, fats, resins, and glycerin.

- **Dispenses surfactants:** Use the Transferpettor™ to accurately pipette surfactants such as Tween® 20, Mucasol®, and more.

- **Dispenses acetone:** The Transferpettor™ is designed for use with high-vapor-pressure media (up to 500mbar), including alcohols, acetone, and hydrocarbons that would otherwise vaporize into an air displacement tip.

- **Reduces sample prep costs:** Because residual wetting is negligible, the Transferpettor™ reduces lab costs by eliminating the need to discard tips after each use.

Transferpettor™ Station

The ideal tool for pipetting problematic media

Technical Data

Operating limits and exclusions

Liquids unsuitable for use with the Transferpett_or_™ include, but are not limited to those with:

– A density exceeding 13.6g/cm³.

– A viscosity exceeding 40,000cSt (mm²/s), depending on instrument capacity.

– A vapor pressure exceeding 500mbar.

– Chemicals that attack either PP or PE. See page 128.

– Temperature of instrument and reagents must be between 15° and 40°C (59° and 104°F).

– Instrument, tips and seals are not autoclavable.

Items supplied

The Transferpett_or_™ pipette includes:

• One tip and seal

• Seal mounting/removal tool

• Performance certificate

• Operating manual

• One-year warranty

Capacity, µL	A* < ± %	µL	CV* ≤ %	µL	Max Viscosity mm²/sec	Subdivision, µL	Color	Cat. No.	2016 List Price
Transferpettor™									
100-500µL	0.5	2.5	0.2	1.0	40,000	1.0	Green	702804	$346.00
200-1000µL	0.5	5.0	0.2	2.0	20,000	1.0	Yellow	702806	346.00
1-5mL	0.5	25.0	0.2	10.0	6,000	10	Red	702810	346.00
2-10mL	0.5	50.0	0.2	20.0	2,000	10	Orange	702812	346.00
Reusable Transferpett_or_™ Tips - Polypropylene, pack of 10									
For Transferpett_or_™, 100-500µL							Green	702852	21.40
For Transferpett_or_™, 200-1000µL							Yellow	702854	21.40
For Transferpett_or_™, 1-5mL							Red	702858	21.40
For Transferpett_or_™, 2-10mL							Orange	702860	21.40
Reusable Transferpett_or_™ Piston Seals - Polyethylene, pack of 10									
For Transferpett_or_™, 100-500µL							Green	702864	34.65
For Transferpett_or_™, 200-1000µL							Yellow	702866	34.65
For Transferpett_or_™, 1-5mL							Red	702870	34.65
For Transferpett_or_™, 2-10mL							Orange	702872	34.65
Transferpett_or_™ Station Keeps 2 instruments, tips, and seals conveniently at hand in the workplace								702890	122.28

A*=Accuracy, CV*=Coefficient of Variation

* The value of accuracy and coefficient of variation are final test values referring to the delivered nominal volume, instrument and distilled water at equilibrium with ambient temperature (20°C/68°F) and with smooth operation.

Tip

Piston Seal

HandyStep® *S*

The BRAND HandyStep® *S* repeating pipette provides unprecedented versatility in a purely mechanical repeating pipette. In conjunction with BRAND PD-Tip™ Precision Dispenser Tips, the HandyStep® *S* offers nearly sixty different volume settings with accuracy, precision and dependability.

- **Comfortable:** The slim design of the HandyStep® *S* is lightweight, well-balanced, and provides a convenient control layout for smooth dispensing and one-handed volume selection.
- **Reliable:** Robust construction, inspired design and innovative polymers deliver a dependable instrument.
- **Ready-to-go:** A purely mechanical design with no batteries to charge or replace means the HandyStep® *S* is ready when you are. A convenient integrated volume table provides a quick reference for dispensed volumes.
- **Flexible:** Ten sizes of PD-Tip™ Precision Dispenser Tips allow the HandyStep® *S* to dispense 59 different volumes. Open design allows use of third party tips—no more being locked into a sole source!
- **Contact-free:** A tip ejection system allows the user to remove tips without handling.

More than just precise – slim, light and dependable

Technical Data

Operating limits and exclusions

Liquids unsuitable for use with the HandyStep® *S* include, but are not limited to, those with:

– Vapor pressure exceeding 500mbar.
– Viscosity: 20mPa S with 50mL PD-Tips™; 260mPa S with 5mL PD-Tips™; 977mPa S with 1mL PD-Tips™.
– Reagents that attack PP (PD-Tip™ cylinder), HDPE (PD Tip™ piston), LCP (PD-Tip™ piston 0.1mL) or PC/PBT and polycarbonate.
– Temperature of instrument and reagent must be between 15° and 40°C (59° and 104°F).
– Instrument and tips must not be autoclaved.

Items supplied

The HandyStep® *S* is supplied with the following items:

- Performance certificate
- Shelf/rack mount
- One each: 0.1mL, 1mL and 10mL PD-Tip™ Precision Dispenser Tips
- Operating manual
- Two-year warranty

Setting at a glance

Large, legible volume setting indicator

Perfectly aligned

Optimally positioned dispensing lever for easy thumb movement

Simple

Unified piston locking/filling lever makes aspiration easy

Hands-free disposal

Ergonomic eject button, for contact-free, safe ejection of contaminated dispenser tips

Chart topper

Two-sided tip/volume chart assists in setting and tip selection

Big wheel

Volume adjustments are easily made with a simple thumb movement

Comfortable

Finger rest is optimally located for both balance and convenient control access. Relaxed even when performing long pipetting tasks

Shelf/rack mount

Shelf/rack mount to keep your HandyStep® *S* close at hand. Also retrofits to Transferpette® *S* carousel stand

Flexible

The HandyStep® *S* is compatible with PD-Tip™ Precision Dispenser Tips, as well as third-party, and dealer private label tips

HandyStep® *S* with BRAND PD-Tip™ Precision Dispenser Tips

Accuracy Table

Nominal Volume PD-Tip™, mL	Volume Range, µL	Stroke setting ^ % of nominal volume (A* ≤ ± %)			Stroke setting ^ % of nominal volume (CV* ≤ %)		
		1 ^ 2%	3 ^ 6%	5 ^ 10%	1 ^ 2%	3 ^ 6%	5 ^ 10%
0.1	2-10	4.0	2.4	1.6	6.0	3.0	2.0
0.5	10-50	2.5	1.5	1.0	2.5	1.5	1.0
1	20-100	2.5	1.5	1.0	2.0	1.2	0.8
1.25	25-125	2.5	1.4	0.9	2.0	1.1	0.7
2.5	50-250	1.8	1.1	0.7	1.5	0.9	0.6
5	100-500	1.8	1.1	0.7	1.5	0.9	0.7
10	200-1000	1.8	1.1	0.7	2.0	1.2	0.8
12.5	250-1250	1.8	1.1	0.8	3.2	2.0	1.4
25	500-2500	1.5	0.9	0.6	3.04	1.5	1.0
50	1000-5000	1.5	0.8	0.5	5.0	1.8	1.2

A*=Accuracy, CV*=Coefficient of Variation

*Error limits refer to the partial volume set relative to the PD-Tip™, obtained when instrument, PD-Tip™ and distilled water are equilibrated at ambient temperature (20°C/68°F) and with smooth operation. The testing is according to DIN EN ISO 8655-5.

Note: the nominal volume is the maximum adjustable partial volume for each PD-Tip™ size.

Volume table

Setting	1	1.5	2	2.5	3	3.5	4	4.5	5
PD- Tip™, mL					**Volume, µL**				
0.1	2	3	4	5	6	7	8	9	10
0.5	10	15	20	25	30	35	40	45	50
1	20	30	40	50	60	70	80	90	100
1.25	25	37.5	50	62.5	75	87.5	100	112.5	125
2.5	50	75	100	125	150	175	200	225	250
5	100	150	200	250	300	350	400	450	500
10	200	300	400	500	600	700	800	900	1000
12.5	250	375	500	625	750	875	1000	1125	1250
25	500	750	1000	1250	1500	1750	2000	2250	2500
50	1000	1500	2000	2500	3000	3500	4000	4500	5000
Steps	49	32	24	19	15	13	11	10	9

Ordering information

Description	Cat. No.	2016 List Price
HandyStep® *S* repeating pipette	705110	$378.00
HandyStep® *S* shelf/rack mount	705130	30.57

HandyStep® electronic

The BRAND *HandyStep® electronic* is a microprocessor-controlled, motorized repeating pipette that combines broad tip compatibility and user comfort with the convenience and efficiency of an electronic pipette.

- **Works with all standard tips:** The *HandyStep® electronic* is compatible with BRAND PD-Tip™ Precision Dispenser Tips, Eppendorf® Combitips advanced®, and more.

- **Recognizes tips automatically:** The pipette automatically recognizes the size of encoded BRAND PD-Tip™ Precision Dispenser Tips upon tip insertion and displays the tip's volume, default dispensing volume, and default number of dispensing steps.

- **Reduces repetitive motion by up to 97%:** The instrument features a unique Auto-Dispense operating mode in which the pipette "learns" the operator's dispensing rhythm and dispenses at that rhythm as long as the control button is depressed – no programming needed.

Battery compartment

The battery compartment opens easily to allow users to swap batteries in seconds for virtually continuous pipetting

Control button

Just a subtle squeeze of the index finger on this button controls aspiration and dispensing for effortless pipetting

Tip recognition mechanism

The rugged tip recognition mechanism enables the instrument to automatically display the tip volume and default dispensing volume, when a BRAND PD-Tip™ Precision Dispenser Tips is inserted

Rapid, relaxed, and reliable repetitive pipetting from BRAND

BRAND

Technical Data

Operating limits and exclusions

Liquids unsuitable for use with the *HandyStep® electronic* and PD-Tip™ Precision Dispenser Tips include, but are not limited to, those with:

– Vapor pressure exceeding 500mbar.

– Viscosity: 20mPa S with 50mL PD-Tips™; 260mPa S with 5mL PD-Tips™; 977mPa S with 1mL PD-Tips™.

– Chemicals incompatible with tips used. See page 30 for PD-Tip™ materials of construction.

– Temperature of instrument and reagents must be between 15° and 40°C (59° and 104°F).

– The *HandyStep® electronic* cannot be autoclaved.

Items supplied

Each *HandyStep® electronic* includes:

• NiMH battery

• Charging stand with 110V power supply

• Five assorted volume PD-Tip™ Precision Dispenser Tips

• Performance certificate

• Operating manual

• One-year warranty

Use the tips you want

The only electronic repetitive pipette compatible with all standard Precision Dispenser Tips, the *HandyStep® electronic* accepts:

• BRAND PD-Tip™ Precision Dispenser Tips

• Rainin® Encode™ Precision Dispenser Tips

• Eppendorf® Combitips advanced®

• Fisherbrand® Dispenser Tips

• VWR® Combi-Syringes

• Gilson® Repet-Tips

Accuracy and precision for the *HandyStep® electronic*

PD-Tip™	Volume Range	Volumes Between	Increment	A* < ±				CV* ≤			
				100%	50%	10%	1%	100%	50%	10%	1%
0.1mL	1µL-100µL	1µL-100µL	0.1µL	1.0	1.0	1.6	8.0	0.5	1.0	2.0	12
0.5mL	5µL-500µL	5µL-100µL 100µL-500µL	0.1µL 1µL	0.9	0.9	1	5.0	0.3	0.6	1.0	5.0
1.0mL	10µL-1000µL	10µL-1000µL	1µL	0.6	0.9	1.0	5.0	0.3	0.5	0.8	4.0
1.25mL	12.5µL-1250µL	12.5µL-100µL 100µL-1000µL 1mL-1.25mL	0.5µL 1µL 10µL	0.6	0.6	0.9	5.0	0.2	0.5	0.7	4.0
2.5mL	25µL-2500µL	25µL-1000µL 1mL-2.5mL	1µL 10µL	0.5	0.6	0.7	3.5	0.15	0.3	0.6	3.0
5.0mL	50µL-5000µL	50µL-1000µL 1mL-5mL	1µL 10µL	0.5	0.5	0.7	3.5	0.15	0.4	0.7	3.0
10.0mL	100µL-10mL	100µL-10mL	10µL	0.4	0.5	0.7	3.5	0.15	0.5	0.8	4.0
12.5mL	125µL-12.5mL	125µL-1000µL 1mL-10mL 10mL-12.5mL	5µL 10µL 100µL	0.5	0.5	0.8	3.5	0.15	0.6	1.4	6.5
25.0mL	250µL-25mL	250µL-10mL 10mL-25mL	10µL 100µL	0.5	0.5	0.6	3.0	0.15	0.3	1.0	6.0
50.0mL	500µL-50mL	500µL-10mL 10mL-50mL	10µL 100µL	0.5	0.5	0.5	3.0	0.15	0.4	1.2	9.0

A* = Accuracy, CV* = Coefficient of variation

*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.

The nominal volume is the maximum volume which is printed on the PD-Tip™.

Ordering information

Description	Cat. No.	2016 List Price
HandyStep® electronic with charging stand & NiMH battery, 110V, 50-60Hz	705002	$1,019.00
Spare parts & accessories		
Spare NiMH battery	705025	61.14
Charging stand	705020	202.78
AC adapter, 110V	705052	78.46

PD-Tip™ Precision Dispenser Tips

The perfect tips for your repeating pipette

BRAND encoded PD-Tip™ Precision Dispenser Tips are manufactured from high-quality virgin plastics for use with all standard repeating pipettes in a wide variety of applications.

- **Compatible with most pipettes:** PD-Tip™ Precision Dispenser Tips are an excellent choice for the BRAND HandyStep® **S** and *HandyStep® electronic* repeating pipettes; the black-handled Eppendorf® Repeater®*; the FisherBrand repeating pipette; the Rainin® AutoRep™ E and AutoRep™ M; the Gilson® Repetman®; and all other repeating pipettes using standard tips. PD-Tip™ Precision Dispenser Tips are encoded for automatic recognition by the BRAND HandyStep® electronic repeating pipette, the Rainin® AutoRep™ E, Rainin® AutoRep S pipette, and the Gilson® Repetman®.

- **Reliable:** A precision seal between the piston and cylinder ensure smooth operation, increased accuracy, and increased precision. Extended piston design minimizes dead volume and maximizes fluid utilization.

- **Manufactured from high quality materials:** PD-Tip™ Precision Dispenser Tips are made entirely from high-quality virgin polyethylene and polypropylene. (Piston of 0.1mL tip is liquid crystal polymer-LCP).

BRAND

Preserve Sample Integrity with BIO-CERT® quality sterile tips

BIO-CERT® PD-Tip™ Precision Dispenser Tips are sterile, individually wrapped and certified free of DNA, RNase, endotoxins, and ATP to meet the most stringent sample integrity requirements. For more information on the sterility and purity levels, see page 129.

Calibration support

BRAND PD-Tip™ Precision Dispenser Tips are supplied with a batch Certificate of Performance which documents tip accuracy and precision testing.

Capacity, mL	Pack of	Cat. No.	2016 List Price
PD-Tip™ Precision Dispenser Tips, non-sterile			
0.1mL	100	702402	$125.00
0.5mL	100	702370	117.00
1mL	100	702406	117.00
1.25mL	100	702372	117.00
2.5mL	100	702374	117.00
5mL	100	702376	117.00
10mL	100	702407	117.00
12.5mL	100	702378	117.00
25mL, (one adapter included)	50	702380	73.00
50mL, (one adapter included)	25	702382	42.00
PD-Tip™ Precision Dispenser Tips, non-sterile, assorted pk. 0.5, 1, 1.25, 2.5, 5, 10 and 12.5mL sizes	20/size	702368	158.00
Adapter for 25mL and 50mL PD-Tip™ Precision Dispenser Tips non-sterile, PP, autoclavable	10	702398	94.00

Capacity, mL	Pack of	Cat. No.	2016 List Price
PD-Tip™ Precision Dispenser Tips, BIO-CERT® sterile			
Individually wrapped			
0.1mL	100	702683	$167.00
0.5mL	100	702684	160.00
1mL	100	702685	160.00
1.25mL	100	702686	160.00
2.5mL	100	702688	160.00
5mL	100	702690	160.00
10mL	100	702691	160.00
12.5mL	100	702692	160.00
25mL, (one adapter included)	25	702694	47.00
50mL, (one adapter included)	25	702696	48.00
Adapter for 25mL and 50mL PD-Tip™ BIO-CERT® sterile, PP, autoclavable	5	702699	74.00

*The Eppendorf Repeater Plus, Repeater® M4, Repeater Pro, Stream, and XStream are designed to preclude their operation with any tips other than Eppendorf Combitips advanced®.

Dispensette®*S* Bottletop Dispenser

NEW!

Dispensette® *S* bottletop dispensers build on the fifty year history of BRAND dispensing expertise. Continual upgrades makes this the safest and most convenient bottletop dispenser ever, all while retaining the features that make the Dispensette® the world's favorite bottletop dispenser. They mount directly on most solvent and reagent bottles for faster, more convenient dispensing. Instruments are autoclavable at 121°C (250°F) for use with sterile reagents.

- **Dispense most lab reagents:** Choose the Dispensette® *S* for acids, bases, saline solutions, as well as many organic solvents; the Dispensette® *S* Organic for organic solvents, including combinatorial chemistry solvents, concentrated acids such as HCl and HNO_3, trifluoroacetic acid (TFA), tetrahydrofuran (THF), and peroxides. See Selection Chart on page 36 for help choosing the best dispenser.

- **Deliver accurate, precise volumes:** Dispensers are accurate to 0.5% (0.6% for 1mL models), with coefficients of variation of 0.1% (0.2% for 1mL). Digital models feature accurate and reproducible volume settings via a mechanical digital display.

- **Increase laboratory safety:** Dispensers mount on reagent bottles to reduce poured reagent transfers. They include a number of safety features to reduce the risk of injury from inadvertent dispensing and splashes. Recirculation valve system enhances reagent conservation and safety. Many accessories are available for remote, serial and drum dispensing.

- **Resist wear and damage:** Unique design ensures smooth operation and eliminates wearing parts. Dispensers disassemble easily to simplify cleaning and maintenance. The new system eliminates seals for a lifetime of reliable dispensing.

- **HF and trace analysis dispensing:** For dispensing of high purity acids and solvents, or hydrofluoric acid, choose the Dispensette® *S* Trace Analysis. For details, see page 35.

The standard in bottletop dispensing for a half century

BRAND®

Dispensette® *S* Bottletop Dispensers

Easy calibration technique

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

Calibration mechanism

NEW!

Discharge valve with safety ball

Closes when discharge tube is not mounted

NEW!

Discharge tube

Without recirculation valve

NEW!

Large viewing window

Easy priming verification

NEW!

Volume selection

Using interior scalloped track

NEW!

Discharge tube

With recirculation valve

360° rotating valve block

With GL 45 thread

NEW!

Hinged screw cap

Swings out of the way when dispensing

NEW!

Olive-shaped filling valve

For firmer attachment of the filling tube

Recirculation tube

For discharge tubes with recirculation valve

Telescoping filling tube

Easy height adjustment without cutting

1-10 ml
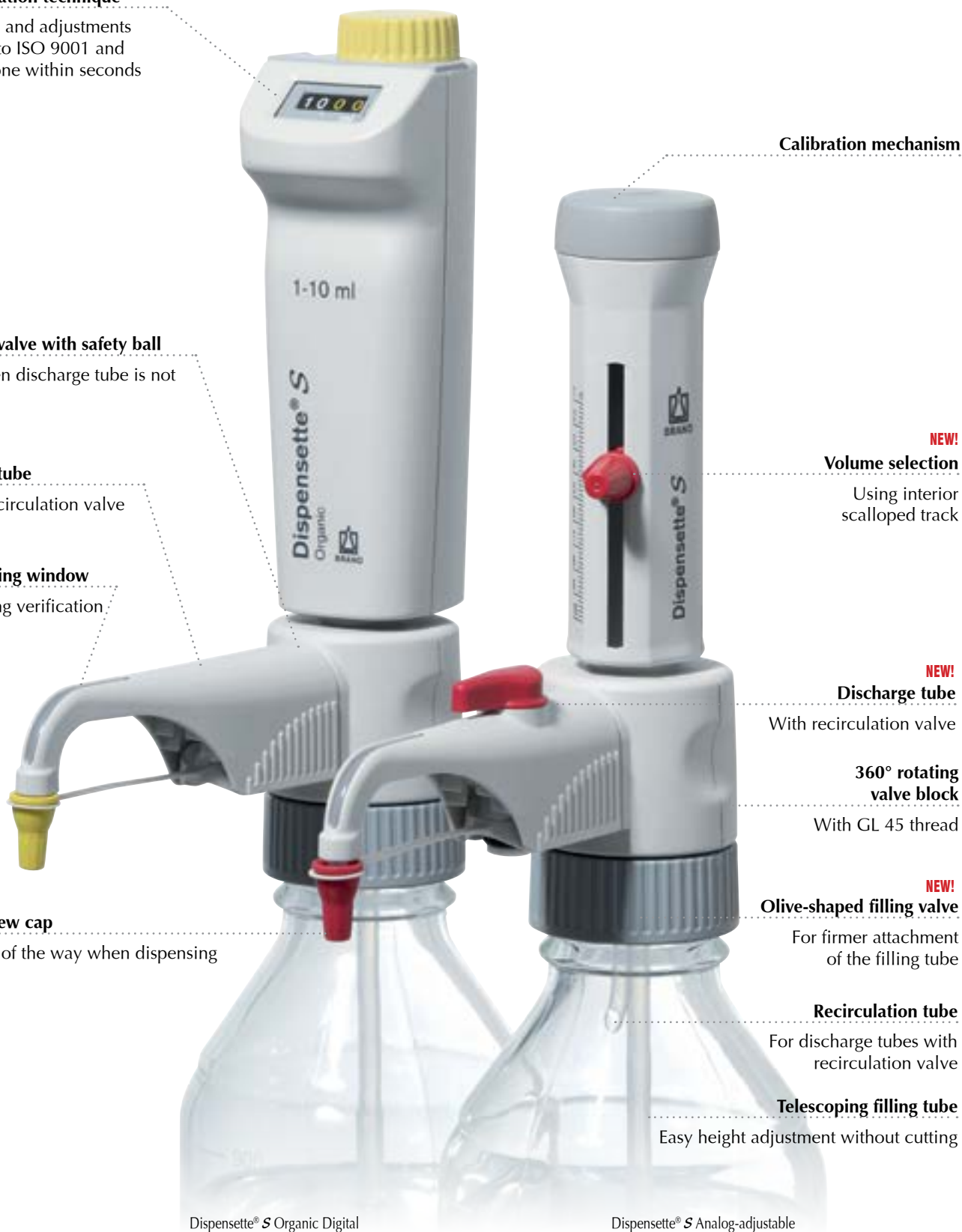
Dispensette® *S* Organic Digital

Dispensette® *S* Analog-adjustable

Dispensette® *S* Volume Adjustment

Analog-adjustable models

- Analog slide enables rapid volume adjustments
- Internal scalloped track helps secure setting
- Calibration adjustments are simple with included tool

Digital models

- Digital models enable accurate and reproducible volume setting with an easy-to-read display and a convenient adjustment knob. Simply turn the knob. The mechanical adjustment mechanism displays the volume in digits
- Features unique calibration technology (see page 54) for calibration adjustment in seconds without tools
- Excellent for labs with multiple users, requiring frequent volume changes to specific volumes

Fixed-volume models

- Fixed-volume for standardized applications
- Calibration adjustments are simple with included tool

Product Features:

Both the Dispensette® *S* and Dispensette® *S* Organic are constructed using the "floating piston" principle.

Each piston is matched with precise tolerances to the cylinder of the instrument. A thin film of the dispensed liquid of just a few μm thick acts as a non-wearing seal that reduces friction, so dispensing is easy and convenient.

- The GL45mm standard thread, plus included adapters, fit most common lab bottles.
- The valve block can be rotated 360° so that the bottle label always faces the user for safety.
- A telescoping filling tube adjusts to different bottle sizes.
- The instrument is easy to disassemble for cleaning.
- Valves are replaceable for simple, economical service.
- New valve design eliminates seals for trouble-free operation.

- Dispensette® *S* and Dispensette® *S* Organic are autoclavable at 121°C.
- Easy to calibrate and adjust in order to comply with ISO 9001 and GLP guidelines. A positive indicator automatically indicates adjustment from factory settings.
- An extensive line of accessories facilitates specialized dispensing tasks like sterile applications or dispensing from large containers.

Dispensette® *S* Bottletop Dispensers

Applications

One-handed operation

"Floating piston" design eliminates the seals that often wear and fail on other dispensers. This allows the Dispensette® *S* piston to move very smoothly, permitting safe, simple, one-handed dispensing, even with a nearly-empty reagent bottle.

Dispensing sterile fluids

Dispensette® *S* and Dispensette® *S* Organic bottletop dispensers are autoclavable at 121ºC (250ºF) and can be fitted with an optional microfilter to prevent contamination of bottle contents. Sterile technique must be followed.

Serial dispensing

The optional flexible discharge tube with safety handle speeds serial dispensing tasks, and permits fast and precise dispensing even into narrow test tubes. Integrated recirculation valve helps purge bubbles before use.

Dispensing sensitive reagents

Optional drying tube screws into the accessory port of the Dispensette® *S* to protect sensitive reagents from humidity or CO_2 (Absorbing agent not included).

Dispensing from bulk containers minimizes risk of contaminating high-purity reagents

Simply connect the Dispensette® *S* or Dispensette® *S* Organic to the optional Remote Dispensing System for accurate dispensing from drums and other bulk containers up to 10 meters away. Maximum delivery height is 1.2 meters. A quick-release connector with integrated valves simplifies changing the bulk container. The drum adapter air inlet filter minimizes risk of contaminating high-purity reagents.

NOTE: *Not for use with recirculation valve, pressurized vessels, peroxides (which will react with the platinum-iridium spring), HF or other liquids which attack borosilicate glass, alumina ceramic, PFA, ETFE, FEP or PTFE. Observe all safety instructions, operating exclusions, and limitations of your specific operating manual of the Dispensette® S bottletop dispenser model.*

Remote Dispensing System

Dispensette® 𝘚 Trace Analysis
Bottletop Dispensers

NEW!

For dispensing high-purity chemicals

The Dispensette® 𝘚 Trace Analysis provides outstanding performance for precise-volume dispensing of high-purity media for trace analysis. The Dispensette® 𝘚 Trace Analysis is also suitable for dispensing HF (Pt-Ir model).

The components of the fluid path have been selected to only contain the highest purity materials, such as fluoroplastics and sapphire. Depending on application, either platinum-iridium (Pt-Ir) or tantalum (Ta) valve springs can be chosen. The volume range is from 1 to 10mL.

- Especially well-suited for dispensing acids, bases and hydrogen peroxide (Tantalum (Ta) models only).
- Trace metal content of dispensed liquid is generally in the low ppb range or, depending on application, even in the low ppt range.

Dispensing of high-purity chemicals in trace analysis

- Plastics in contact with media consist of high-purity materials such as PTFE, ETFE, PCTFE, FEP and PFA. The purest sapphire is used for replaceable valves. Depending on the application, platinum-iridium or tantalum are available as spring materials.
- A field-tested cleaning process before use in trace analysis is described in the operating manual.
- Easy to disassemble for replacement of the dispensing cartridge.

Volume adjustment

Recirculation valve

Discharge tube

Screw cap

Recirculation tube

Replaceable dispensing cartridge
Serialized with certificate

Safety ring

Valve block

Telescoping filling tube

BRAND®

Recommended application range

Dispensing medium	Valve spring: Pt-Ir	Valve spring: Ta
Acetic acid	+	+
Ammonia solution	+	+
Bromine	+	+
Hydrochloric acid	+	+
Hydrofluoric acid*	+	-
Hydrogen peroxide	-	+
Nitric acid	+	+
Perchloric acid	+	+
Phosphoric acid	+	+
Sodium hydroxide, 30%	+	-
Sulfuric acid	+	+
Water	+	+

+ suitable – not suitable

* Hydrofluoric acid reacts slightly with sapphire resulting in mildly elevated aluminum values. To reduce these values we recommend discarding 3-5 dispensings of 2 ml each before performing the analysis.

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 BrandTech®.
Status as of: 0815/2

The high-purity materials release virtually no metal ions after appropriate cleaning. This makes the Dispensette® 𝘚 Trace Analysis bottletop dispenser a superior choice for trace analysis.

Replaceable dispensing cartridge

If the piston seal is worn after a long period of use, the entire dispensing cartridge can easily be replaced without tools by the user.

The cartridge is fully adjusted at the factory and delivered with a performance certificate. No calibration is required after replacement.

Serial dispensing

For easy serial dispensing, an optional flexible discharge tube with textured safety handle (not approved for HF) permits fast and precise dispensing, even into narrow test tubes. Integrated recirculation valve helps purge bubbles before dispensing.

Performing trace analysis?
See the VITLAB® PFA trace analysis labware on page 112

Areas of Application / Suggested Dispenser

■ **Dispensette® S (Disp. S)** ■ **Dispensette® S Organic (Disp. S Organic)**

Reagent	Disp. S	Disp. S Organic
Acetaldehyde	+	+
Acetic acid (glacial), 100%	+	+
Acetic acid, ≤ 96%	+	+
Acetic anhydride		+
Acetone	+	+
Acetonitrile	+	+
Acetophenone		+
Acetyl chloride		+
Acetylacetone	+	+
Acrylic acid	+	+
Acrylonitrile	+	+
Adipic acid	+	
Allyl alcohol	+	+
Aluminium chloride	+	
Amino acids	+	
Ammonia, ≤ 20%	+	+
Ammonia, 20-30%		+
Ammonium chloride	+	
Ammonium fluoride	+	
Ammonium sulfate	+	
n-Amyl acetate	+	+
Amyl alcohol (Pentanol)	+	+
Amyl chloride (Chloropentane)		+
Aniline	+	+
Barium chloride	+	
Benzaldehyde	+	+
Benzene (Benzol)	+	+
Benzine (Petroleum benzin), bp 70-180 °C		+
Benzoyl chloride	+	+
Benzyl alcohol	+	+
Benzylamine	+	+
Benzylchloride	+	+
Boric acid, ≤ 10%	+	+
Bromobenzene	+	+
Bromonaphthalene	+	+
Butanediol	+	+
1-Butanol	+	+
n-Butyl acetate	+	+
Butyl methyl ether	+	+
Butylamine	+	+
Butyric acid	+	+
Calcium carbonate	+	
Calcium chloride	+	
Calcium hydroxide	+	
Calcium hypochlorite	+	
Carbon tetrachloride		+
Chloro naphthalene	+	+
Chloroacetaldehyde, ≤ 45%	+	+
Chloroacetic acid	+	+
Chloroacetone	+	+
Chlorobenzene	+	+
Chlorobutane	+	+
Chloroform		+
Chlorosulfonic acid		+
Chromic acid, ≤ 50%	+	+
Chromosulfuric acid	+	
Copper sulfate	+	
Cresol		+
Cumene (Isopropyl benzene)	+	+

Reagent	Disp. S	Disp. S Organic
Cyclohexane		+
Cyclohexanone	+	+
Cyclopentane		+
Decane	+	+
1-Decanol	+	+
Dibenzyl ether	+	+
Dichloroacetic acid		+
Dichlorobenzene	+	+
Dichloroethane		+
Dichloroethylene		+
Dichloromethane		+
Diesel oil (Heating oil), bp 250-350 °C		+
Diethanolamine	+	+
Diethyl ether		+
Diethylamine	+	+
1.2 Diethylbenzene	+	+
Diethylene glycol	+	+
Dimethyl sulfoxide (DMSO)	+	+
Dimethylaniline	+	
Dimethylformamide (DMF)	+	+
1.4 Dioxane		+
Diphenyl ether	+	+
Essential oil		+
Ethanol	+	+
Ethanolamine	+	+
Ethyl acetate	+	+
Ethylbenzene		+
Ethylene chloride		+
Fluoroacetic acid		+
Formaldehyde, ≤ 40%	+	
Formamide	+	+
Formic acid, ≤ 100%		+
Glycerol	+	+
Glycol (Ethylene glycol)	+	+
Glycolic acid, ≤ 50%	+	
Heating oil (Diesel oil), bp 250-350 °C		+
Heptane		+
Hexane		+
Hexanoic acid	+	+
Hexanol	+	+
Hydriodic acid, ≤ 57% **	+	+
Hydrobromic acid	+	+
Hydrochloric acid, ≤ 20%	+	+
Hydrochloric acid, 20-37% **		+
Hydrogen peroxide, ≤ 35%		+
Isoamyl alcohol	+	+
Isobutanol	+	+
Isooctane		+
Isopropanol (2-Propanol)	+	+
Isopropyl ether	+	+
Lactic acid	+	
Methanol	+	+
Methoxybenzene	+	+
Methyl benzoate	+	+
Methyl butyl ether	+	+
Methyl ethyl ketone	+	+
Methyl formate	+	+
Methyl propyl ketone	+	+

Reagent	Disp. S	Disp. S Organic
Methylene chloride		+
Mineral oil (Engine oil)	+	+
Monochloroacetic acid	+	+
Nitric acid, ≤ 30%	+	+
Nitric acid, 30-70% */ **		+
Nitrobenzene	+	+
Oleic acid	+	+
Oxalic acid	+	
n-Pentane		+
Peracetic acid		+
Perchloric acid	+	+
Perchloroethylene		+
Petroleum, bp 180-220 °C		+
Petroleum ether, bp 40-70 °C		+
Phenol	+	+
Phenylethanol	+	+
Phenylhydrazine	+	+
Phosphoric acid, ≤ 85%	+	+
Phosphoric acid, 85% + Sulfuric acid, 98%, 1:1	+	
Piperidine	+	+
Potassium chloride	+	
Potassium dichromate	+	
Potassium hydroxide	+	
Potassium permanganate	+	
Propionic acid	+	+
Propylene glycol (Propanediol)	+	+
Pyridine	+	+
Pyruvic acid	+	+
Salicylaldehyde	+	+
Scintilation fluid	+	+
Silver acetate	+	
Silver nitrate	+	
Sodium acetate	+	
Sodium chloride	+	
Sodium dichromate	+	
Sodium fluoride	+	
Sodium hydroxide, ≤ 30%	+	
Sodium hypochlorite	+	
Sulfuric acid, ≤ 98%	+	+
Tartaric acid	+	
Tetrachloroethylene		+
Tetrahydrofuran (THF) * / **		+
Tetramethylammonium hydroxide	+	
Toluene		+
Trichloroacetic acid		+
Trichlorobenzene		+
Trichloroethane		+
Trichloroethylene		+
Trichlorotrifluoro ethane		+
Triethanolamine	+	+
Triethylene glycol	+	+
Trifluoro ethane		+
Trifluoroacetic acid (TFA)		+
Turpentine		+
Urea	+	
Xylene		+
Zinc chloride, ≤ 10%	+	
Zinc sulfate, ≤ 10%	+	

* Choose ETFE/PTFE adapters, if required, ** use PTFE seal for valve block

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 BrandTech Scientific. Status as of: 0605/13

Note:

For dispensing HF, we recommend the use of the Dispensette® S Trace Analysis bottletop dispenser with platinum-iridium valve spring (See page 35).

Dispensette® *S* Bottletop Dispenser Technical Data

Operating limitations (all instruments)

Liquids which form deposits may make the piston difficult to move or may cause jamming (e.g., crystallizing solutions or concentrated alkaline solutions).

When dispensing inflammable media, make sure to avoid the buildup of static charge, (e.g., do not dispense into plastic vessels; do not wipe instruments with a dry cloth).

The Dispensette® is designed for general laboratory applications and complies with the relevant standards, e.g., DIN EN ISO 8655. Compatibility of the instrument for a specific application (e.g., trace material analysis, food sector, etc.) must be checked by the user. Approvals for specific applications, (e.g., for production and administration of food, pharmaceuticals and cosmetics) are not available.

Items supplied

Each Dispensette® *S*,
Dispensette® *S* Organic,
Dispensette® *S* Trace Analysis includes:

- Certificate of performance
- Discharge tube
- Valve mounting/calibration tool
- Adapters and filling tube
- Operating manual
- One-year warranty

Supplied adapters & filling tubes

Nominal Volume, mL	Adapter for bottle thread, mm	Filling tube length, mm
For Dispensette® *S* & Dispensette® *S* Organic (PP)		
1, 2, 5, 10	24, 28, 33, 38, S40	125-240
25, 50, 100	33, 38, S40	170-330
For Dispensette® *S* Trace Analysis (ETFE, PTFE*)		
10	28, 33, S40*	125-240

Limitations of use (all instruments)

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

- Use between +15°C and +40°C (59°F and 104°F) of instrument and reagent.
- Vapor pressure up to max. 600mbar. Aspirate slowly above 300mbar, in order to prevent the liquid from boiling.
- Kinematic viscosity up to 500mm^2/s (dynamic viscosity [mPas] = kinematic viscosity [mm^2/s] x density [g/cm^3]).
- Density: Dispensette® *S*/Dispensette® *S* Organic: up to 2.2g/cm^3 and Dispensette® *S* Trace Analysis up to 3.8g/cm^3.

Operating exclusions – Dispensette® *S*

Never use the Dispensette® *S* with:

- Liquids attacking Al$_2$O$_3$-ceramic, ETFE, FEP, PFA and PTFE (e.g., dissolved sodium azide*).
- Liquids attacking borosilicate glass (e.g., hydrofluoric acid).
- Liquids which are decomposed catalytically by platinum-iridium (e.g., H$_2$O$_2$).
- Hydrochloric acid > 20% and nitric acid > 30%.
- Tetrahydrofuran.
- Trifluoroacetic acid.
- Explosive liquids (e.g., carbon disulfide).
- Suspensions (e.g., of charcoal) as solid particles may clog or damage the instrument.
- Liquids attacking PP (screw cap).

Operating exclusions – Dispensette® *S* Organic

Never use the Dispensette® *S* Organic with:

- Liquids attacking Al$_2$O$_3$-ceramic, tantalum, ETFE, FEP, PFA and PTFE (e.g., dissolved sodium azide*).
- Liquids attacking borosilicate glass (e.g.,hydrofluoric acid).
- Bases and saline solutions.
- Explosive liquids (e.g., carbon disulfide).
- Suspensions (e.g., of charcoal) as solid particles may clog or damage the instrument.
- Liquids attacking PP (screw cap).

Operating exclusions – Dispensette® *S* Trace Analysis

Never use the Dispensette® *S* Trace Analysis with:

- Liquids attacking Al$_2$O$_3$ sapphire or fluoroplastics like ETFE, FEP, PFA, PCTFE, PTFA and PTFE (e.g., dissolved sodium azide*).
- Liquids which are decomposed catalytically by platinum-iridium (e.g., H$_2$O$_2$) or tantalum, depending on the construction of the instrument.
- Organic solvents.
- Trifluoroacetic acid.
- Explosive liquids (e.g., carbon disulfide).
- Suspensions (e.g., of charcoal) as solid particles may clog or damage the instrument.
- The Dispensette® *S* Trace Analysis must not be autoclaved.

*Dissolved sodium azide permitted up to a concentration of max 0.1%

Dispensette® *S* Bottletop Dispensers

Dispensette® *S*

Volume, mL	Increments, mL	A* < ± %	A* < ± µL	CV* ≤ %	CV* ≤ µL	Without recirculation valve Cat. No.	Without recirculation valve 2016 List Price	With recirculation valve Cat. No.	With recirculation valve 2016 List Price
Dispensette® *S*, Digital									
0.1-1	0.005	0.6	6	0.2	2	4600310	$485.00	4600311	$515.00
0.2-2	0.01	0.5	10	0.1	2	4600320	485.00	4600321	515.00
0.5-5	0.02	0.5	25	0.1	5	4600330	485.00	4600331	515.00
1-10	0.05	0.5	50	0.1	10	4600340	485.00	4600341	515.00
2.5-25	0.1	0.5	125	0.1	25	4600350	655.00	4600351	685.00
5-50	0.2	0.5	250	0.1	50	4600360	665.00	4600361	695.00
Dispensette® *S*, Analog-adjustable									
0.1-1	0.02	0.6	6	0.2	2	4600100	425.00	4600101	445.00
0.2-2	0.05	0.5	10	0.1	2	4600120	425.00	4600121	445.00
0.5-5	0.1	0.5	25	0.1	5	4600130	425.00	4600131	445.00
1-10	0.2	0.5	50	0.1	10	4600140	425.00	4600141	445.00
2.5-25	0.5	0.5	125	0.1	25	4600150	595.00	4600151	615.00
5-50	1.0	0.5	250	0.1	50	4600160	610.00	4600161	630.00
10-100	1.0	0.5	500	0.1	100	4600170	950.00	4600171	970.00
Dispensette® *S*, Fixed-volume									
1		0.6	6	0.2	2	4600210	425.00	4600211	445.00
2		0.5	10	0.1	2	4600220	425.00	4600221	445.00
5		0.5	25	0.1	5	4600230	425.00	4600231	445.00
10		0.5	50	0.1	10	4600240	425.00	4600241	445.00

**Dispensette® *S*

Dispensette® *S* Organic

Volume, mL	Increments, mL	A* < ± %	A* < ± µL	CV* ≤ %	CV* ≤ µL	Without recirculation valve Cat. No.	Without recirculation valve 2016 List Price	With recirculation valve Cat. No.	With recirculation valve 2016 List Price
Dispensette® *S* Organic, Digital									
0.5-5	0.02	0.5	25	0.1	5	4630330	$535.00	4630331	$565.00
1-10	0.05	0.5	50	0.1	10	4630340	535.00	4630341	565.00
2.5-25	0.1	0.5	125	0.1	25	4630350	720.00	4630351	750.00
5-50	0.2	0.5	250	0.1	50	4630360	735.00	4630361	765.00
Dispensette® *S* Organic, Analog-adjustable									
0.5-5	0.1	0.5	25	0.1	5	4630130	460.00	4630131	490.00
1-10	0.2	0.5	50	0.1	10	4630140	460.00	4630141	490.00
2.5-25	0.5	0.5	125	0.1	25	4630150	645.00	4630151	675.00
5-50	1.0	0.5	250	0.1	50	4630160	660.00	4630161	690.00
10-100	1.0	0.5	500	0.1	100	4630170	1,035.00	4630171	1,065.00
Dispensette® *S* Organic, Fixed-volume									
5		0.5	25	0.1	5	4630230	460.00	4630231	490.00
10		0.5	50	0.1	10	4630240	460.00	4630241	490.00

Dispensette® *S* Organic

Dispensette® *S* Trace Analysis

Volume, mL	Valve Spring	A* < ± %	A* < ± µL	CV* ≤ %	CV* ≤ µL	Without recirculation valve Cat. No.	Without recirculation valve 2016 List Price	With recirculation valve Cat. No.	With recirculation valve 2016 List Price
Dispensette® *S* Trace Analysis, Analog-adjustable									
1-10	Platinum-iridium	0.5	50	0.1	10	4640040	$1,060.00	4640041	$1,090.00
1-10	Tantalum	0.5	50	0.1	10	4640240	1,060.00	4640241	1,090.00

A*=Accuracy, CV*=Coefficient of Variation

* The value of accuracy and coefficient of variation are final test values referring to the delivered nominal volume, instrument and distilled water at equilibrium with ambient temperature (20°C/68°F) and with smooth operation.

Dispensette® *S* Trace Analysis

Dispensette® Accessories

For Dispensette® *S* ♦ cap

Discharge tube	Shape	Length, mm	Without recirculation valve		With recirculation valve	
			Cat. No.	2016 List Price	Cat. No.	2016 List Price
For Nominal Volume, mL						
1, 2, 5, 10	fine tip	105	708002	$28.00	708102	$141.00
5, 10	standard	105	708005	26.00	708104	139.00
25, 50, 100	standard	135	708006	33.00	708106	147.00
25, 50, 100	fine tip	135	708008	29.00	708109	143.00

For Dispensette® *S* Organic ♦ cap

Discharge tube	Shape	Length, mm	Cat. No.	2016 List Price	Cat. No.	2016 List Price
For Nominal Volume, mL						
5, 10	standard	105	708014	$26.00	708114	$147.00
5, 10	fine tip	105	708012	33.00	708112	154.00
25, 50, 100	standard	135	708019	29.00	708119	150.00
25, 50, 100	fine tip	135	708016	32.00	708116	154.00

Dispensette® *S* Trace Analysis ♦ cap

Discharge tube	Shape	Length, mm	Cat. No. Pt - Ir	2016 List Price	Cat. No. Ta	2016 List Price
With Recirculation Valve	fine tip	105	708122	$174.00	708124	$174.00
Without Recirculation Valve	fine tip	105	708022	28.00	708024	28.00

	Cat. No.	2016 List Price
Flexible discharge tube (for Dispensette® *S*, Dispensette® *S* Organic)		
PTFE, coiled, length 800mm (= 31.5″) with safety handle		
2, 5, 10	708132	$180.00
25, 50, 100	708134	193.00
Not suitable for use with hydrofluoric acid. For nominal volume, mL		
Flexible discharge tubes for Dispensette® *S* Trace Analysis—NOT FOR USE WITH HF		
10	708132	180.00

Flexible discharge tube

Dispensette®*S* Bottletop Accessories

Dispensing cartridge

Recirculation tube   Telescoping filling tubes

Filling valve

Drying tube

Dispensette® *S* Trace Analysis ◆ cap

	Cat. No.	2016 List Price
Replacement parts Dispensette *S* Trace Analysis		
Dosing element		
Nominal volume 1-10mL, calibrated, includes quality certificate	708035	$755.00

For nominal volume, mL	Length, mm (inches)	Cat. No.	2016 List Price
Telescoping filling tubes FEP			
0.5, 1, 2, 5, 10	70 - 140 (2.6″ - 5.5″)	708210	$23.00
0.5, 1, 2, 5, 10 - standard	125 - 240 (4.9″ - 9.5″)	708212	32.00
0.5, 1, 2, 5, 10	195-350 (7.7"-13.8")	708214	45.00
0.5, 1, 2, 5, 10	250 - 480 (9.8″ - 18.9″)	708216	36.00
25, 50, 100 - standard	170 - 330 (6.7″ - 13.0″)	708218	46.00
25, 50, 100	250 - 480 (9.8″ - 18.9″)	708220	48.00
Recirculation tube			
Recirculation tube only		6747	5.00

	Cat. No.	2016 List Price
Filling valve for Dispensette® *S* and Dispensette® *S* Organic, nominal volume, mL		
1, 2, 5, 10, each	6734	$53.50
25, 50, 100, each	6735	59.00
For Dispensette® *S* Trace Analysis, each	6739	105.00
Discharge valve for Dispensette® *S* nominal volume, mL		
1, 2 each	6749	63.00
5, 10 each	6727	67.00
25, 50, 100, each	6728	79.00
Discharge valve for Dispensette® *S* Organic, nominal volume, mL		
1, 2, 5, 10 each	6729	67.00
25, 50, 100, each	6730	79.00
Discharge valve for Dispensette® *S* Trace Analysis, nominal volume, Pt-Ir, Ta		
Platinum-Iridium	6732	111.00
Tantalum	6733	111.00
Drying tube		
Without drying agent, each	707930	50.95
Micro filter connector assembly with Luer-slip connection		
To fit 0.2µm filter for sterile dispensing. Autoclavable (photo page 34).	704495	21.91

Amber bottle

	Cat. No.	2016 List Price
Amber bottle - ethylene-acrylate coated		
Threaded Bottle, PP screw cap, LDPE pouring ring, 250mL, 33mm	704004	$25.48
Threaded Bottle, PP screw cap, LDPE pouring ring, 500mL, 33mm	704006	34.39
Threaded Bottle, PP screw cap, LDPE pouring ring, 1000mL, 45mm	704008	44.58
Bottle Stand, PP, 220mm x 160mm x 325mm	704275	287.87

Size	PP Cat. No.	2016 List Price	ETFE Cat. No.	2016 List Price
Bottle thread adapters				
33/24mm	704325	$9.17	704375	$23.69
33/28mm/S28mm	704328	9.17	704378	28.02
45/33mm	704396	9.17	704398	31.84
45/35mm	704431	17.83	—	—
45/38mm	704397	9.17	704399	31.84
45/S40mm (PP/PTFE)	704343	9.17	704391	49.68
Fits STJ19/32	704419	30.57	—	—
Fits STJ24/40	704424	30.57	—	—
Fits STJ29/32	704429	35.67	—	—

	Cat. No.	2016 List Price
Remote Dispensing (for Dispensette® *S*, Dispensette® *S* Organic)		
Remote Dispensing System (dispenser not included)	704261	$ 520.96
Dispensing System for NOWPak® containers only (includes wall mount, dispenser not included)	704284	328.63
Accessories		
Filling tube, FEP, 10m, outer diameter 7.6mm	704267	292.96
Thread adapter, Steel, outer thread 2″, inner thread 3/4″	704270	132.47
Thread adapter, PTFE, inner thread 3/4″ (33mm), to connect remote dispensing system with drums with GL outer thread	704282	84.07
Support rod connector, for wall mounting unit	704268	78.97
Table/shelf clamp, for wall mounting unit	704272	36.94
Thread adapter, PTFE, 3/4″, 33mm for direct mounting of Dispensette® on drum	704281	71.00

seripettor®

The seripettor® bottletop dispenser is an economical wiping seal dispenser suitable for many commonly used reagents in biological, and chemical laboratories. It precisely dispenses a wide variety of liquids. Optional accessories, such as the flexible discharge tube, are available to increase productivity and convenience.

- **Dispenses most non-aggressive liquids:** The seripettor® is a low-cost, reliable tool for dispensing measured volumes of weak acids, alkaline solutions, polar solvents, isotonic solutions, and agar culture media at up to a max. temperature of 60 °C (140 °F). See selection guide on page 45.
- **Simplifies dispensing:** Notched volume selector allows for quick and exact volume adjustment. Spring-driven refill function enables one-handed operation.
- **Convenient cleaning and maintenance:** Innovative design permits simple disassembly and rapid replacement of wearing parts, extending instrument life.
- **Fits most reagent containers:** The 45mm standard thread plus the included adapters with 33mm and 40mm thread fits most common lab bottles.
- **Dispenses sterile media:** Accessories are available for sterile dispensing.

A rugged, economical tool for routine dispensing

Technical data

Operating limits and exclusions

Never use this instrument with:

– Liquids attacking FEP, PP, PE or EPDM.
– Non-polar solvents like hydrocarbons and
  halogenated hydrocarbons.
– Concentrated or oxidizing acids.
– Explosive liquids (e.g., carbon disulfide).

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

– Vapor pressure up to 500mbar.
– Density up to 2.2g/cm³.
– Temperature of use between 15° and 40°C (59° and
  104°F) of instrument and reagent (agar culture media
  up to 60°C).
– Viscosity
  2mL instrument: 300mm²/s
  10mL instrument: 150mm²/s
  25mL instrument: 75mm²/s
  (dynamic viscosity [mPas] =
  kinematic viscosity [mm²/s] x density [g/cm³]).

Sterile dispensing

Optional accessories are
available to make dispensing
of agar and other sterile liquids
quick and easy with the
seripettor®. These include:

• Sterile dispensing cartridges
• Valve block cap
• Special filling tube
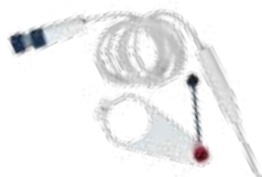 for autoclaving
• 0.2µm membrane filter

Sterile dispensing cartridge installation

Items supplied

Each seripettor® bottletop dispenser includes:

• Spare dispensing cartridge
• Discharge tube
• 250mm filling tube
• Operating manual
• Two PP adapters, 45/S40mm
  and 45/33mm. See page 41
  for other adapters
• One-year warranty

Volume, mL	Subdivision, mL	A* < ± %	CV* ≤ %	Cat. No.	2016 List Price
seripettor®					
0.2-2	0.04	1.2	0.2	4720120	$132.00
1-10	0.2	1.2	0.2	4720140	132.00
2.5-25	0.5	1.2	0.2	4720150	167.00

A*=Accuracy, CV*=Coefficient of Variation

* The value of accuracy and coefficient of variation are final test values referring to the delivered nominal volume, instrument and distilled water at equilibrium with ambient temperature (20°C/68°F) and with smooth operation.

Description	Photo	Pack of	Cat. No.	2016 List Price
Replacement parts				
Dispensing cartridge, for 2mL seripettor®, non-sterile	1	3	704500	$58.59
Dispensing cartridge, for 10mL seripettor®, non-sterile	1	3	704502	58.59
Dispensing cartridge, for 25mL seripettor®, non-sterile	1	3	704504	82.79
Dispensing cartridge, for 2mL seripettor®, sterile	2	7	704507	103.01
Dispensing cartridge, for 10mL seripettor®, sterile	2	7	704506	103.01
Dispensing cartridge, for 25mL seripettor®, sterile	2	5	704508	109.12
Flexible discharge tubing for 25mL seripettor® PTFE, 800mm	3	1	704523	203.80
Flexible discharge tubing for 2mL & 10mL seripettor® PTFE, 800mm	3	1	704522	121.01
Discharge tube for 2mL seripettor®	6	1	704518	36.94
Discharge tube for 10mL and 25mL seripettor®	6	1	704520	36.94
Valve block cap for 2mL & 10mL seripettor®, PP	4	1	704552	33.12
Valve block cap for 25mL seripettor®, PP	4	1	704554	33.12
Filling tube, 250mm	–	2	704532	10.44
Filling tube, 500mm	–	2	704534	14.78
Filling tube for sterile applications, 250mm	–	1	704536	10.44
Filling tube for sterile applications, 500mm	–	1	704538	14.78
Membrane filter, 0.2µm, non-sterile	5	10	26535	114.11

Bottles & adapters

See detailed listing on page 41

[1] Dispensing cartridge, non-sterile

[2] Dispensing cartridge, sterile

[3] Flexible discharge tube

[4] Valve block cap

[5] 0.2µm membrane filter

[6] Discharge tube

seripettor® *pro*

The seripettor® *pro* is a bottletop dispenser designed to handle a wider range of liquids than the regular seripettor® for customers who do not require all of the features of the Dispensette®. Like the regular seripettor®, it features an easily-replaceable wiping seal dispensing cartridge, making it especially suitable for liquids that tend to form crystals.

- **Wide chemical range:** Valves and seals on the seripettor® *pro* allow a broader range of liquids to be dispensed than the regular seripettor®.

- **Protects light-sensitive reagents:** Pump assembly with Hastalloy stainless steel spring. An opaque upper sleeve helps protect liquid from UV-light during dispensing operations, while permitting observation of cylinder to confirm purging of bubbles.

- **Replaceable dispensing cartridge:** Quick-change cartridge makes service a breeze and keeps life-time service costs low. If wiping seals wear out, or are damaged by crystallizing reagents, just change the inexpensive cartridge, and you're back in business!

- **Telescoping filling tube:** Adjusts to fit many bottles without cutting.

- **Discharge tube with a threaded safety screw cap:** Attaches and removes with a quick twist

- **Spring-loaded piston:** Permits one-handed, semi-automatic operation.

- **Threaded safety cap:** Attaches and removes with a quick twist.

An economical, versatile wiping-seal dispenser

Volume, mL	Subdivision, mL	A* < ± %	CV* ≤ %	Cat. No.	2016 List Price
seripettor® *pro*					
0.2-2	0.04	1.2	0.2	4720420	$332.00
1-10	0.2	1.2	0.2	4720440	332.00
2.5-25	0.5	1.2	0.2	4720450	474.00

A*=Accuracy, CV*=Coefficient of Variation

* The value of accuracy and coefficient of variation are final test values referring to the delivered nominal volume, instrument and distilled water at equilibrium with ambient temperature (20°C/68°F) and with smooth operation.

[1] Dispensing cartridge, non-sterile

[2] Flexible discharge tube

[3] Telescoping filling tubes, FEP

Description	Photo	Pack of	Cat. No.	2016 List Price
Dispensing cartridges				
Dispensing cartridge, for 2mL seripettor® *pro*, non-sterile	1	3	704500	$58.59
Dispensing cartridge, for 10mL seripettor® *pro*, non-sterile	1	3	704502	58.59
Dispensing cartridge, for 25mL seripettor® *pro*, non-sterile	1	3	704504	82.79
Flexible discharge tube for 2mL & 10mL seripettor® *pro*	2	1	704522	121.01
Flexible discharge tube for 25mL seripettor® *pro*	2	1	704523	203.80
Discharge tube for 2mL seripettor® *pro*		1	707915	76.43
Discharge tube for 10mL seripettor® *pro*		1	707916	71.33
Discharge tube for 25mL seripettor® *pro*		1	707918	71.33

Bottle thread adapters see detailed thread adapter listing on page 41

For Nominal Volume, mL	Length, mm (inches)	Photo	Pack of	Cat. No	2016 List Price
Telescoping filling tubes					
2, 10	70 - 140 (2.6" - 5.5")	3	1	708210	$23.00
2, 10	125 - 240 (4.9" - 9.5")	3	1	708212	32.00
2, 10	195-350 (7.7"-13.8")	3	1	708214	45.00
2, 10	250 - 480 (9.8" - 18.9")	3	1	708216	36.00
25	170 - 330 (6.7" - 13.0")	3	1	708218	46.00
25	250 - 480 (9.8" - 18.9")	3	1	708220	48.00

Items supplied

Each seripettor® *pro* bottletop dispenser includes:

- Spare dispensing cartridge
- Discharge tube
- Two PP adapters, 45/S40mm and 45/33mm.
- Telescoping filling tube
- Operating manual
- One-year warranty

seripettor® *pro* Bottletop Dispenser

Operating limits and exclusions

Never use this instrument with:

– Liquids attacking PP, PE, Al_2O_3 - ceramic, ETFE, FEP, PFA and PTFE (e.g., dissolved sodium azide*).

– Liquids attacking borosilicate glass (e.g., hydrofluoric acid).

– Liquids which are decomposed catalytically by platinum-iridium (e.g., H_2O_2).

– Non-polar solvents like hydrocarbons and halogenated hydrocarbons.

– Concentrated or oxidizing acids (excluding HCl).

– Explosive liquids (e.g., carbon disulfide).

– Suspensions (e.g., of charcoal) as solid particles may clog or damage the instrument.

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

– Vapor pressure up to 500mbar.

– Density up to 2.2g/cm³.

– Temperature 15° to 40°C (59° to 104°F).

– Viscosity

2mL instrument: 300mm²/s
10mL instrument: 150mm²/s
25mL instrument: 75mm²/s
(dynamic viscosity [mPas] = kinematic viscosity [mm²/s] x density [g/cm³]).

*Dissolved sodium azide permitted up to a max. of 0.1%

Areas of application / Chemical selection list

■ seripettor® dispenser   ■ seripettor® *pro* dispenser

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

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 BrandTech. Status as of: 0114/9.

For the most current version of this chart, visit our website www.brandtech.com.

NOTE: The seripettor® & seripettor® *pro* bottletop dispensers cannot be used with hydrofluoric acid (HF). See page 35 for a description of the Dispensette® **S** Trace Analysis Pt-Ir dispenser which is the only BRAND dispenser designed for use with HF.

BRAND®

VITLAB® piccolo™ Bottletop Dispenser

The piccolo™ is a compact wiping seal dispenser for dispensing small measured quantities of liquids in all areas of biochemical and medical research.

Made from high quality materials, its small size and semi-automatic operation make it a natural for standardized procedures and kits where small volumes of reagents need to be dispensed. The spring loaded piston design enables one-handed operation.

The piccolo™ comes in two versions: The piccolo™ 1 is a fixed volume instrument, while piccolo™ 2 model has two preset volumes.

Never use the piccolo™ with aggressive media. The piccolo™ is especially designed for applications in connection with aqueous and highly diluted agents.

All piccolo™ instruments are supplied with a GL 28 thread, valve mounting tool, 150mm filling tube and operating manual.

Instrument type	Volume setting(s), µL	A* ≤±%	CV* ≤%	Cat. No.	2016 List Price
Piccolo™ bottletop dispenser					
piccolo™ 1	100	3.0	0.4	V1610501	$349.00
piccolo™ 1	200	2.5	0.4	V1610502	349.00
piccolo™ 1	250	2.0	0.4	V1610503	349.00
piccolo™ 1	500	1.5	0.3	V1610504	349.00
piccolo™ 1	1000	1.0	0.2	V1610506	349.00
piccolo™ 2	100 / 250	2.0	0.4	V1611503	393.00
piccolo™ 2	500 / 1000	1.0	0.2	V1611506	393.00
piccolo™ 2	1000 / 2000	1.0	0.2	V1611508	393.00

A*=Accuracy, CV*=coefficient of variation according to DIN EN ISO 8655-5
Other volumes are available upon request.

An adapter is available to mount the piccolo™ to GL 32/33mm threaded bottles. Inquire about other thread adapters for the piccolo™.

Description	Dispenser thread	Bottle thread	Cat. No.	2016 List Price
Adapter				
piccolo™ thread adapter	GL28	GL32	V1670145	$20.43

VITLAB®

Titrette® Bottletop Burette

The BRAND Titrette® bottletop burette makes routine titrations faster, easier, and more accurate. The Titrette® avoids the risk of spills from poured transfers to glass or plastic burettes, eliminates meniscus reading errors and offers accuracy that satisfies the tolerances for Class A glass burettes. The instrument is well suited for general chemistry, water treatment applications, food/beverage analysis, industrial titrations, and environmental work in the lab or field.

- **High accuracy:** Precise titrations within the error limits of Class A glass burettes.

- **Smooth operation:** Mechanism fills and titrates smoothly and easily, for exceptionally sensitive drop-wise titrations.

- **Compact design:** The Titrette® operates in a fixed position on top of titrant bottles. The low-profile design is stable and fits readily under shelves and cabinets.

- **Easy handling:** The Titrette® switches automatically between filling and titrating modes. The titrating tube adjusts vertically and horizontally to match receiving vessels, and operation is cordless, using economical commercial batteries that are protected from corrosive vapors.

- **Simple maintenance:** The Titrette® can be disassembled for cleaning, ensuring long, reliable service even with crystallizing titrants. Easy Calibration™ technology simplifies ISO/GLP compliance.

- **Special options:** Amber windows (included) protect light-sensitive reagents. Optional drying tube protects moisture-sensitive titrants.

- **PC interface:** Models available with direct data transmission to a PC.

The world's only bottletop burette with Class A precision

BRAND

Titrette® Bottletop Burette

Digital display

User selectable resolution of two or three decimal places

Power button

Power on/off with user adjustable auto-off function

Inspection window

Allows visual confirmation of the absence of bubbles, amber windows included for light sensitive reagents

Titration and recirculating valve

Eliminates reagent waste and splashing during priming

Titrating tube

Horizontally and vertically adjustable

Threaded safety cap

Coarse thread allows fingertip on/off

CLEAR/select button

Multifunction button clears display, transfers data via optional PC interface

PC interface (optional)

Eliminates transcription

User replaceable batteries

Pause button

Stops incrementing of display, useful for re-priming of instrument

Hand wheels

Non-slip handwheels provide variable titration speed from steady stream to dropwise

Drying tube (optional)

Port for drying tube (rear) affords protection of moisture-sensitive titrants

Freely rotating valve block

GL 45mm thread allows bottle label to always face user

Telescoping filling tube (inside bottle)

Adjusts easily to a broad range of bottle sizes. No measuring or cutting is required

Easy Handling

Smooth operation

The large, easy-to-grip hand wheels provide exceptionally smooth operation. With the optimized gear ratio, you can fill the device quickly and titrate dropwise with great sensitivity.

Class A precision

The Titrette® bottletop burette has an innovative new measuring system which matches the Class A error limits of glass burettes according to DIN EN ISO 385 and volumetric tolerances per ASTM E287. If needed, it can display 3 decimal places for volumes below 20mL.

No switching needed

To change between filling and titration, no switching is needed. The instrument automatically detects whether you are filling or titrating by the direction of hand wheel rotation. Pressing the Pause button allows you to interrupt the titration if priming was incomplete. Simply push the button again to resume titration.

Chemical Applicability

The Titrette® is suitable for use with the following titrating agents up to a concentration of 1mol/L

Acetic acid

Alcoholic potassium hydroxide solution

Ammonium iron (II) sulfate solution

Ammonium thiocyanate solution

Barium chloride solution

Bromide bromate solution

Cerium (IV) sulfate solution

EDTA solution

Hydrochloric acid

Hydrochloric acid in acetone

Iodide iodate solution*

Iodine solution*

Iron (II) sulfate solution

Nitric acid

Oxalic acid solution

Perchloric acid

Perchloric acid in glacial acetic acid

Potassium bromate solution

Potassium bromide bromate solution

Potassium dichromate solution

Potassium hydroxide solution

Potassium iodate solution

Potassium permanganate solution*

Potassium thiocyanate solution

Silver nitrate solution*

Sodium arsenite solution

Sodium carbonate solution

Sodium chloride solution

Sodium hydroxide solution

Sodium nitrite solution

Sodium thiosulfate solution

Sulfuric acid

Tetra-n-butylammonium hydroxide solution

Triethanolamine in acetone*

Zinc sulfate solution

This partial list reflects testing completed prior to publication of this catalog. For information on reagents not listed, please contact us.

Status as of 07-13/14

* Use lightshield inspection window

Titrette® Bottletop Burette

Lightweight and compact

All components move within the housing, reducing headroom requirements. The compact design and 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.

User serviceable

The Titrette® can be disassembled quickly and easily — in a matter of 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 in a few minutes the instrument is ready to go again!

Light protection

For protection of light-sensitive media, you can replace the clear inspection windows with the included amber colored windows. It's quick and easy, because the windows just clip into place.

Additional Features

Adjustment with Easy Calibration™

With Easy Calibration™ technology, you can easily make calibration adjustments of the instrument "at the push of a button."

Two or three decimal places

For use as a micro-burette, you can switch the titrated volume display from 2 to 3 decimal places under "dP" (decimal point). Above 20.00mL, the display automatically switches to 2 decimal places.

Auto power off

User adjustable power-off time from 1 to 30 minutes.

Calibration schedule

To save a date for the next calibration, simply store it under "GLP". The date can be called up each time the instrument is turned on.

Titrette® Bottletop Burette

Technical Data

Operating limits and exclusions

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

– Temperature of instrument and reagents must be between 15° and 40°C (59° and 104°F).

– Vapor pressure up to 500mbar.

– Viscosity up to 500mm²/s.

– Altitude: maximum 3000m above sea level.

– Relative humidity: 20% to 90%.

Chemically resistant materials

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.

– Suitability 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!

Items supplied

- Titrette® bottletop burette
- 45mm thread
- Performance certificate
- Telescoping filling tube, 170-330mm
- Recirculation tube
- 2 batteries, AAA/UM4/LR03
- 4 PP bottle adapters, 45/33mm, 45/S40mm, 33mm/STJ29/32 and 45/38mm
- 2 colored light shield inspection windows
- Operating manual
- One-year warranty

Comparison of Error Limits

Volume mL	Partial volume mL	Titrette® bottletop burette A* ≤ ± %	µL	CV* ≤ %	µL	Bottletop burettes according to DIN EN ISO 8655-3 A* ≤ ± %	µL	CV* ≤ %	µL	Glass burettes Class A according to DIN EN ISO 385 and ASTM E287 EL** (DIN EN ISO) Volumetric Tolerance (ASTM) ±µL
10	10	0.10	10	0.05	5	0.3	30	0.1	10	20
	5	0.20	10	0.10	5	0.6	30	0.2	10	20
	1	1.00	10	0.50	5	3	30	1	10	20
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

A*=Accuracy, CV*=Coefficient of Variation

* Error limits related to the nominal capacity (= maximum volume) indicated on the instrument, obtained when instrument and distilled water are equilibrated at ambient temperature (20°C/68°F) and with smooth operation.

** Error limit: EL = A + 2CV

The maximum resolution of the display: The titration volume is displayed in steps of 1µL for instruments with 10mL and 25mL size and in steps of 2µL for 50mL size instruments. For titration volumes above 20mL the display will automatically switch to steps of 10µL.

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 DAkkS laboratory at BRAND).

Titrette® Bottletop Burette

PC interface (optional)

The instrument is available with an optional RS232 communications interface.

- 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/RS232 adapter.

Titrette® bottletop burette

Description	Standard Cat. No.	Standard 2016 List Price	Interface Cat. No.	Interface 2016 List Price
10mL	4760141	$1,025.00	4760241	$1,427.00
25mL	4760151	1,025.00	4760251	1,427.00
50mL	4760161	1,025.00	4760261	1,427.00

Interface models include: connector 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.

Titrating tube

Filling valve

Dispensing cylinder

Telescoping filling tube

Inspection window

Piston head

Reservoir bottle

Drying tube

Titrette® parts & accessories

Description	Cat. No.	2016 List Price
Titrating tube		
With screw cap and integrated discharge and recirculation valve. Pack of 1		
For 10mL vol.	707525	$99.51
For 25mL and 50mL vol.	707529*	99.51

*Manufactured from Jan 2012 onwards (serial #01K)

Filling valve For nominal volume, mL		
With olive-shaped nozzle and sealing ring for Titrette®. Pack of 1		
10, 25, 50	6636	67.67
Telescoping filling tube For nominal volume, mL		
10, 25, 50- standard 170 - 330mm (6.7″ - 13.0″)	708218	46.00
10, 25, 50 250 - 480mm (9.8″ - 18.9″)	708220	48.00
Dispensing cylinder		
With valve head. Pack of 1		
For 10mL vol.	707533	165.85
For 25mLvol.	707535*	165.85
For 50mL vol.	707537*	165.85

*Manufactured from Jan 2012 onwards (serial #01K)

Piston head, Pack of 1		
For 10mL vol.	707531	63.69
For 25mLvol.	707530	63.69
For 50mL vol.	707532	63.69
Inspection window, Pack of 1		
	6783	20.17
Drying tube		
Drying Tube with sealing-ring (without drying agent). Pack of 1		
	707930	50.95

Description	Color	Cat. No.	2016 List Price
Reservoir bottle — Boro 3.3 / soda-lime glass			
2000mL	clear	23310	$152.50
2000mL	amber	23320	210.00
Bottle adapter 33mm-STJ 29/32		704429	35.67

More bottles and adapters available see page 41.

EASYCAL™ Calibration Software

Calibrations without calculations

EASYCAL™ 4.0 simplifies the tedious task of calibrating liquid handling, glass, and plastic volumetric instruments to ISO 9001 and GLP standards. Easy-to-follow procedures are outlined step-by-step and all calculations are performed automatically by the software. Weighing values may be entered manually into the software or imported directly from the balance via serial port. EASYCAL™ 4.0 generates reports to document the calibration testing in accordance to ISO 8655, ISO 4787 etc., all test records can be saved in a database for subsequent use and tracking of instrument performance.

- Simplifies data entry
- Organizes all test data
- Includes SOPs
- Clearly arranged test record

Demonstration software

Download free, fully-functional demo version at www.brand.de

Ordering information

Description	Cat. No.	2016 List Price
EASYCAL™ professional calibration software	708440	$672.00
EASYCAL™ testing tubes for pipettes <50µL, 250 pieces	708462	34.65
Micro-weighing container, includes 10 filters and 3 cover caps	708470	67.25
Filter pack, 20 replacement filters (capacity apx. 1000µL)	708471	49.93
Pipette holder (clip)	708605	102.00
Cover cap set, 3 spare closures	708472	45.86

EASYCAL™ 4.0 supports many balances from A&D, Denver, Kern, Ohaus, Precisa, sartorius, Scaltec, and YMC. Please contact your balance manufacturer for the appropriate interface cable.

Items supplied

- EASYCAL™ 4.0 software on one CD-ROM (English, French, German, Portuguese and Spanish)
- Installation instructions
- Operating manual
- CD-ROM also contains SOPs (English, French, German and Spanish) for Titrette®, HandyStep® *S*, HandyStep® *electronic*, Dispensette®, Transferpettor™, and all Transferpette® models from BRAND, as well as BLAUBRAND glassware

System requirements

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

BRAND

EASY Calibration™

Many of BRAND's instruments feature Easy Calibration™ technology, making compliance to ISO 9001 and GLP standards simple. Easy Calibration™ technology enables calibration adjustments to be completed in just seconds, without tools.

If gravimetric testing yields a delivered volume that is different from the set volume, the instrument can be adjusted in just a few easy steps. The steps are essentially the same for all BRAND instruments featuring Easy Calibration™ technology. The process is outlined below, specific instructions can be found in the instrument operating manual.

- Perform gravimetric testing to determine Accuracy (%) and Coefficient of Variation (%). If accuracy specification is greater than the stated error limits for the instrument then perform a calibration adjustment.

- Disengage the volume display mechanism.
- Set the volume display to match the actual dispensed volume.
- Reengage the volume display mechanism.

- Calibration adjustment is complete, no further testing or adjustment required! Adjustment from factory setting is indicated by a red recalibration flag.

The process is shown in more detail below for the Transferpette® *S* pipette and Dispensette® *S* Digital instruments.

Transferpette® *S* example

Gravimetric testing yields a delivered volume of 98.5µL at a set volume of 100µL. The instrument can be adjusted in five easy steps.

Step 1

Remove the label window and the label. Push the hook forward, raise it slightly and then pull it back.
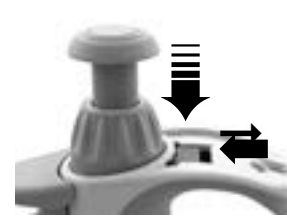
Step 2

Remove the protective film. Push the red adjustment slider completely back, and raise the volume-setting wheel and release the adjustment slider.

Step 3

Set displayed volume to actual value (e.g., 98.5µL).

Step 4

Push the adjustment slider back, push the volume-setting wheel downwards and release the adjustment slider.

Step 5

Reinsert the label and window. It's calibrated!

Dispensette® *S* Digital example

Gravimetric testing yields a delivered volume of 9.90mL at a set volume of 10mL. The instrument can be adjusted in three easy steps.

Step 1

Open housing by moving slide lock.

Step 2

Lift the red lever on right, slide knob left to disengage gears; set the display to actual delivered volume (e.g., 9.90mL), restore knob and lever position.

Step 3

Replace housing – done! Adjustment from factory setting is indicated by a red recalibration flag.

accu-jet® *pro* Pipette Controller

The BRAND accu-jet® *pro* pipette controller incorporates comfort and performance features that make it one of the most popular pipette controllers in the market.

- **Comfort:** The accu-jet® *pro* is contoured for better fit for small and large hands. It is lightweight and well-balanced for low-fatigue pipetting.

- **Control:** Pressure-sensitive buttons control pipetting speed, plus a motor-speed-limiter control thumbwheel adds extra assurance with pipettes as small as 0.1mL.

- **Charge indicator:** Do not worry about your pipette controller failing on you in the middle of your work. An LED indicates when approximately 2 hours of charge time is left. Instrument can be operated while charging.

- **Advanced electronics:** The accu-jet® *pro* features a long-life, environmentally-friendly Nickel-Metal hydride battery, with a special pulsed-mode charger to eliminate "lazy-battery effect." Instrument supplies approximately 8 hours of continuous pipetting (with a 10mL pipette) without recharging! LED indicates low battery.

- **Ergonomic design:** The accu-jet® *pro* weighs only 190g (6.7oz.) and features a smoothly curved shape to eliminate pressure points for operator comfort.

- **Corrosion protection:** A built-in check valve protects against liquid penetration. The unique active vapor exhaust system vents externally to protect internal components.

The standard in pipette controllers

BRAND

accu-jet® *pro* Pipette Controller

User-accessible battery compartment

Easy-access battery compartment makes changes a snap!
Two covers are included - one with ridges to allow inverted
storage of the accu-jet® *pro* on the bench

Low battery indicator

Red LED lights up when there
are two hours of pipetting left
in the battery

Hydrophobic filter

Includes 0.2μm filter for tissue
and cell culture applications.
Optional 3μm filters are
available for pipetting to
Class A tolerances

Silicone adapter (inside)

The silicone adapter with
a built-in check valve
provides a firm fit for glass
and plastic pipettes from
0.1 to 200mL with a suction
tube outer diameter of max.
9.2mm and reduces risk of
over-aspiration. Adapter
support, silicone adapter and
integral membrane filter are
autoclavable at
121°C (250°F)

Mode switch

Select either powered
delivery for tissue and
cell culture applications,
or gravity delivery
for analytical
applications

Motor speed control thumbwheel

Adjust maximum pipetting speed
for enhanced control with small
volume pipettes

**Intuitive push-button
control**

Press gently for smooth, slow
aspiration or dispensing,
press more for increased
speed. Use in conjunction
with the motor-speed control
thumbwheel for unsurpassed
control for small and large
volume pipettes

Charging socket

The charging socket is
conveniently located on the
bottom of the grip, keeping
the cord out of the way
when charging and pipetting
simultaneously

Sculpted grip

Contoured grip eliminates
pressure points for comfort in
small and large hands

Relaxed Operation

Mission: Control

The accu-jet® *pro* adds a motor speed limiter to the pressure-sensitive buttons to provide accurate, intuitive control for the complete spectrum of pipettes from 0.1mL to 200mL.

- **Filling:** Simply adjust the overall pipetting speed using the speed limiter thumbwheel, and use the upper button to bring liquid into the pipette; the powerful internal pump can draw 50mL in less than ten seconds.

- **Gravity-delivery mode:** Free descent of meniscus for volumetric accuracy– ideal for analytical applications.

- **Power-delivery mode:** Continuously adjustable dispensing speed from powered stream to dropwise dispensing including soft blowout–ideal for tissue culture applications.

- **Speed limiter:** for extra assurance. For extra protection against over-aspiration or excessively powered discharge, set the speed limiter dial at low. For faster or larger volume, set at high. Pipette controller buttons still provide touch-sensitive speed control within the selected speed range.

Storage

Ridged battery cover allows inverted storage of the instrument on the benchtop. To save bench space, an included wall support comes with snap tapes for easy cleaning.

Recharging

Dual-mode charger provides a quick charging of the environmentally-friendly NiMH battery in only four hours. After the full charge is complete, the charger switches automatically to a pulsed mode, to eliminate "lazy battery effect." The accu-jet® *pro* is fully functional during recharging.

accu-jet® *pro* Pipette Controller

Available in colors

The accu-jet® *pro* comes in four different color accents for personal preference or color-coding by laboratory or application. Select from Dark Blue, Magenta, Green or Royal Blue.

Operating limits

Temperature of instrument and reagents must be between 10° and 40°C (50° and 104°F).

Items supplied

The accu-jet® *pro* pipette controller is supplied with:

- Wall support, gray
- NiMH battery
- Two battery covers; one smooth, one ridged
- Two spare, sterile* 0.2µm membrane filters
- Charger (100-240V, 50-60Hz US plug models listed, others available)
- Operating manual
- One-year warranty

Description	Cat. No.	2016 List Price
accu-jet® *pro* pipette controller		
accu-jet® *pro* pipette controller, dark blue	26330	$407.00
accu-jet® *pro* pipette controller, magenta	26331	407.00
accu-jet® *pro* pipette controller, green	26332	407.00
accu-jet® *pro* pipette controller, royal blue	26333	407.00
Spare parts & accessories		
Wall support, gray	26540	59.71
Silicone adapter with PTFE check valve	26508	34.50
Snap tapes, 12 x 65mm	26542	30.52
Spare NiMH battery	26630	35.82
AC adapter input: AC 100-240V, 50-60Hz, US plug Output: DC 5V/200mA	26603	80.94
Membrane filter, 0.2µm, blister pack, sterile*, each	26530	14.33
Membrane filter, 0.2µm, non-sterile, pack of 10	26535	114.11
Membrane filter for Class A pipetting, 3µm, blister pack, non-sterile, each	26052	17.25
Membrane filter for Class A pipetting, 3µm, non-sterile, pack of 10	26056	92.88

* Sterilized with ethylene oxide (EO)

macro™ Pipette Controller

A laboratory standard for decades, the macro™ pipette controller has been completely redesigned for even finer control of all volumetric and serologic pipettes from 0.1-200mL. All of the function that made this the world's favorite manual pipette controller has been retained - from the "one-size-fits-all" silicone adapter, and the reinforced ridge for easy tip wiping, to the sensitive toggle for smooth aspiration and dispensing.

- **Simplifies pipetting:** Operation is as simple as squeezing the suction bellows and adjusting a lever. One squeeze of the bellows powers aspiration and dispensing up to 50mL. Equipped with a convenient blowout bulb to empty "to contain" pipettes. The macro™ is an excellent tool for laboratories with multiple and novice users.

- **Fits most pipettes:** The macro™ is compatible with glass and plastic 0.1 to 200mL serological, volumetric and graduated pipettes with a maximum suction tube outer diameter of 9.2mm, calibrated "to deliver" and "to contain." The modified control mechanism allows finer control with small volume pipettes.

- **Improves lab ergonomics:** The macro™ eliminates the awkward hand positioning associated with rubber pipette bulbs while increasing control of meniscus-level and flow rate. Relaxed grip design, low weight 125g (4oz.), and low-resistance operation minimize strain from prolonged pipetting.

- **Pipettes to Class A tolerances:** A 3µm hydrophobic membrane filter (included) reduces cross-contamination, protects against overaspiration, and allows proper drain times for Class A pipettes.

- **Autoclavable for decontamination and sterile pipetting:** The macro™ withstands repeated autoclaving at 121ºC (250ºF).

The improved macro™ – comfortable, convenient meniscus control

macro™ Pipette Controller

Suction bellows

Just a simple squeeze of the suction bellows powers the aspiration of up to 50mL. Need to fill a 100mL pipette? Just squeeze the bellows again and continue! The bellows are replaceable, if necessary, after years of use

Blow-out bulb

Simply press the convenient blow-out bulb to empty the last drop from blow-out pipettes

Unique valve system (inside)

Wide air channels allow fast filling of large pipettes. Sensitive valves give precise control of low-volume pipettes. The replaceable valve system is designed to ensure appropriate drain times for accurate measurement

Pressure release valve (inside)

Facilitates easy compression of the suction bellows

Simple thumb pressure controls aspiration and dispensing speed.

Pipetting Lever

A single lever controls filling, meniscus setting, and delivery speed, improved for finer control with small volume pipettes. Aspirate quickly for productivity, or slowly for meniscus control. Press down gently on the lever to dispense drops; press firmly for a steady stream

Pipette Adapter with Filter (inside)

Detachable, autoclavable silicone adapter fits 0.1-200mL pipettes. Hydrophobic filter limits over aspiration into unit

macro™ Pipette Controller

Description		Cat. No.	2016 List Price
macro™ with spare 3µm filter and operating manual			
Gray		26200	$84.00
Blue		26202	84.00
Magenta		26203	84.00
Green		26201	84.00
Membrane filter, 3µm (PP, PTFE), non-sterile, each		26052	17.25
Membrane filter, 3µm (PP, PTFE), non-sterile, pack of 10		26056	92.88
Silicone adapter, 44mm long, each		26146	11.15
Adapter housing (gray PP) 49mm long, each		26220	11.15
Silicone suction bellows with gray PP screw ring, each		26225	41.13
Valve system (PP, PTFE, Silicone), each		26128	45.11

QuikSip™ Bottletop Aspirator

The QuikSip™ is a convenient bottletop aspirator that removes supernatants, cell culture media, and other biological liquids from dishes, flasks, culture bottles, centrifugation tubes, multiwell plates, and more. It is small, portable, and does not require an external vacuum or power source.

- **Moves easily between labs:** The QuikSip™ works without any external vacuum source, allowing it to be easily transferred between workstations. Each plunger stroke powers up to 25mL of aspiration.
- **Provides fingertip aspiration control:** The QuikSip™ includes a unique thumb-operated controller that is compatible with disposable pipette tips, micropipettes, and glass Pasteur pipettes.

- **Adapts to sterile environments:** All wetted parts are autoclavable (except piston/cylinder cartridge). Sterile piston/cylinders are available for use in sterile applications.
- **Fits most reagent containers:** Mounts on most common reagent bottles with its 45mm thread and included 45/33mm and 45/S40mm adapters. Other thread adapters available.

The economy aspirator for biological fluids

Technical Data

BRAND®

Operating limits and exclusions

Liquids unsuitable for use with the QuikSip™ bottletop aspirator include, but are not limited to:

- Concentrated or oxidizing acids.
- Non-polar solvents, such as hydrocarbons and halogenated hydrocarbons.
- Hydrofluoric acid (HF).
- Those that attack PP, PE, EPDM and silicone.

- Temperature of instrument and reagents must be between 15° and 40ºC (59° and 104ºF).
- Piston/cylinder cartridge and pump housing are not autoclavable.

QuikSip™ aspirator shown with optional autoclavable 8-channel manifold.

Items supplied with QuikSip™

- QuikSip™ controller with 200cm (78in.) of silicone tubing
- Two PP thread adapters 45/33mm and 45/S40mm. See page 41 for other adapters

- Spare piston/cylinder cartridge
- Operating manual
- One-year warranty

Ordering information

Description	Cat. No.	2016 List Price
QuikSip™ bottletop aspirator	4723150	$325.00
8-channel manifold; PP, autoclavable, pack of 1	704526	19.11
25mL replacement piston/cylinder cartridge, pack of 3	704504	82.79
Bottles & adapters		

Aspiration

BVC Fluid Aspiration Systems

The family of BVC fluid aspiration systems are the first to account for the needs of a modern Biology laboratory.

- **Safety containment:** 2 or 4 liter vessels for safe collection and disposal of your biological waste; an autoclavable hydrophobic 0.2μm aerosol safety filter protects the pump or other vacuum supply from biohazardous aerosols. The VHC^{PRO} hand controller keeps all fluid within the aspiration tubing for the ultimate in containment and cleaning convenience.

- **"Bleach proof":** "G" models feature a 2 liter glass collection vessel with scratch and fragment protection coating for true bleach resistance. Standard versions include a 4 liter heavy duty polypropylene vacuum bottle for increased capacity.

- **Three models:** *basic, control* and *professional* to serve your fluid aspiration needs. The *control* & *professional* models include an integrated vacuum pump; the *basic* requires an external vacuum source.

- **Reliable aspiration capability:** The *control* and *professional* models feature powerful VACUUBRAND® chemistry-design vacuum pumps with exceptionally long service life and enough power for two users. The *professional* model includes a contact-free liquid level sensor for worry-free aspiration. High quality components mean years of trouble-free operation even when working with aggressive disinfectants. This results in low cost of operation.

- **Compact, quiet and stylish:** Streamlined design incorporates bottle, controls and pump (*control* & *professional* models), in a lab friendly small footprint.

- **Ergonomic VHC^{PRO} hand controller** allows easy, comfortable fluid aspiration in a number of different hand positions. One included with every BVC system.

BVC *professional*

VHC^{PRO}

VHC^{PRO} 8-channel adapter

Description	Cat. No.	2016 List Price
BVC BioChem-VacuuCenter systems		
BVC *basic* with 4 liter polypropylene bottle	727000	$1,049.00
BVC *basic* G with 2 liter glass bottle	727100	1,149.00
BVC *control*, with 4 liter polypropylene bottle, 100-120V, 50-60Hz	727203	2,091.00
BVC *control* G, with 2 liter glass bottle, 100-120V, 50-60Hz	727303	2,195.00
BVC *professional*, with 4 liter polypropylene bottle, 100-120V, 50-60Hz	727403	2,549.00
BVC *professional* G, with 2 liter glass bottle, 100-120V, 50-60Hz	727503	2,549.00
Accessories		
4 liter collection bottle, polypropylene, with aspiration cap	635810	439.19
2 liter collection bottle, glass, with aspiration cap	635809	493.20
2 liter bottle adapter for BVC control and BVC professional (included in BVC control G and BVC professional G)	635839	76.43
VHC^{PRO} Vacuum Hand Controller with 2.5 meters of tubing	688061	236.41
8-channel pipette tip adapter, with ejector for VHC^{PRO}	635679	417.79
Pipette tip adapter w/ ejector for VHC^{PRO}	635638	76.43
Stand for VHC^{PRO}	635680	145.72
Connector, to add second VHC^{PRO} to BVC bottle aspiration cap	699943	61.14
Aerosol filter, 0.2μm	638266	47.89
Quick coupling to connect VHC^{PRO} to BVC bottle aspiration cap	635807	164.06
Quick coupling to connect bottle to pump	635808	143.68
BVC Shuttle - allows easy movement of BVC under Biosafety cabinet	696880	203.80

vacuubrand

BVC Shuttle

BVC *basic*

BVC *professional* G

BrandTech® Scientific, Inc.   888-522-2726   www.brandtech.com

VACUUBRAND® Vacuum Products

A Complete Range of Vacuum Solutions

VACUUBRAND has been a pioneer in laboratory vacuum for over 50 years, and brings convenience, performance, reliability, and economy to laboratory vacuum supply. VACUUBRAND® pump-control options also offer distinct productivity advantages compared with uncontrolled pumps, central vacuum system, and competitive vacuum products.

- **Unsurpassed reliability:** Even with aggressive vapors. VACUUBRAND® chemistry diaphragm pumps have rugged diaphragms and valves made of corrosion resistant materials, and heads with a metallic stability core for long term reliability even in harsh chemical applications. 100% quality control testing after "run-in" ensures performance right out of the box.

- **Whisper quiet:** These are among the quietest diaphragm vacuum pumps available, operating at decibel levels comparable to a quiet conversation.

- **Lower lifetime cost:** The high flow rates, corrosion-resistant flow path materials, reliability (typical service intervals well in excess of 15,000 working hours) and durability of VACUUBRAND® pumps can save thousands of dollars per pump per year in operation and maintenance costs.
  Visit www.brandtech.com for details.

- **High performance:** Working vacuum flow rates of VACUUBRAND® pumps are up to 100% greater than competitive dry pumps for faster evaporative applications and higher productivity.

Being the only manufacturer that manufactures nothing but vacuum technology for laboratory applications gives VACUUBRAND a unique perspective on the market. It gives them the ability to make "no compromise" application-specific solutions, for rotary evaporators, vacuum ovens, gel dryers, biofluid aspiration and more.

PC3001 VARIO^PRO
2mbar, 1.2cfm

Quiet...powerful...low maintenance...unbeaten economy

Thick fluoropolymer molded over stability core provides chemical resistance and long term reliability.

63

Become a Vacuum Expert: A Short Course in Lab Vacuum

How deep of a vacuum do I need?

Vacuum pump specifications are typically stated as ultimate vacuum and flow rate. The ultimate vacuum required is task dependant. Most laboratory applications operate best in the range of 1-100mbar. For filtration, liquid aspiration and other pressure-differential ("fluid movement") applications, 100mbar is sufficient, achieving 90% of the possible "force" i.e. potential pressure difference. An ultimate vacuum of 7mbar is effective for rotary evaporation of most solvents more volatile than water. For challenging applications, like rotary evaporation of very high temperature boiling point solvents or centrifugal concentration of high boilers like DMF, a 2mbar ultimate vacuum is needed. VACUUBRAND® oil-free diaphragm pumps can do the job for all the above applications. VACUUBRAND® oil-free pumps are whisper quiet, economical and environmentally friendly, requiring no costly oil changes, or cold traps to protect the pump. A good rule of thumb is "never use an oil pump when an oil-free pump will do the job." Freeze-drying requires deeper vacuum, typically referred to as "fine vacuum", in the range of 10^{-3}-1mbar. Rotary vane or hybrid pumps are required for these applications.

Control

Gauges and controllers enable you to monitor and manage your laboratory vacuum applications. Whether you simply need to monitor your application, provide on/off control, need flow rate control or require precise adaptive vacuum control, VACUUBRAND offers mercury-free gauges and controllers, as well as integrated systems to meet your requirements.

What about "flow rate?"

The flow rate required for an application is determined by the application, system leakage, and your time requirements. The "free air capacity" (also known as displacement) specification of a vacuum pump represents its peak ability to move vapor at atmospheric pressure. It is important to note that actual flow rate decreases from the displacement specification to zero as a pump reaches its ultimate vacuum. A pump's flow curve illustrates its working flow rate through its operating range and can be useful for the selection of the correct pump for an application (see figure to the right). If a pump can't provide enough flow under vacuum, the application will proceed more slowly or in some cases not at all. VACUUBRAND® pumps are designed to retain more flow rate throughout their working range, and only drop off sharply close to their ultimate vacuum.

Solvent recovery

Catchpots and condensers protect the pump and your lab atmosphere from application vapors. An inlet catchpot captures condensed vapors from the vacuum line before they degrade pump performance. The outlet condenser (cooled by external means) and catchpot provide near 100% recovery of vapors that pass harmlessly through the pump's corrosion-resistant fluoropolymer flowpath, typically eliminating the need for a cold trap to protect the pump or environment. Depending on the temperature of your application and the vapor pressure of your solvent, you may not even need a condenser, an outlet catchpot may be sufficient.

Corrosion resistance

Evaporative and other corrosive applications can be very destructive to ordinary vacuum pumps. Conventional rotary vane pumps require frequent oil changes and cold traps to minimize the damaging effects of corrosive chemical vapors. VACUUBRAND® oil-free chemistry-design pumps incorporate a fully chemistry resistant fluoropolymer flow path for excellent corrosion resistance and low maintenance. For non-corrosive, non-evaporative applications, VACUUBRAND also offers a comprehensive line of high-performance Aluminum-FKM diaphragm pumps.

Pumping Speed
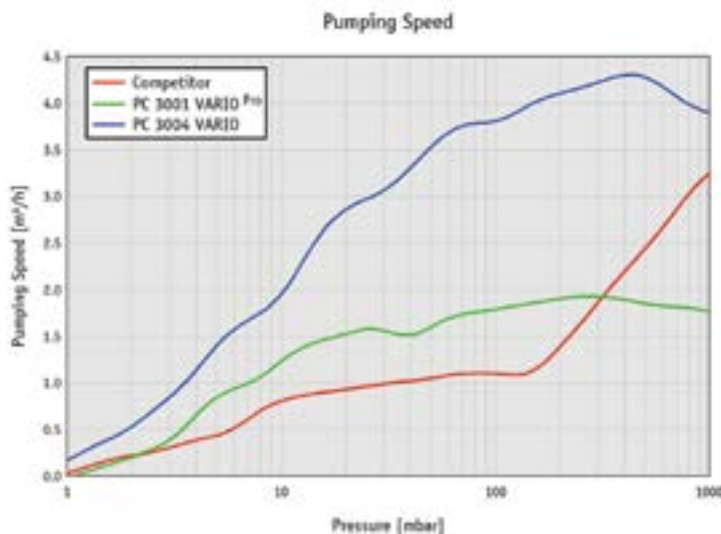
The essential oil-free, corrosion-resistant vacuum pump

High performance VACUUBRAND® chemistry-design diaphragm pumps provide dry vacuum levels as deep as 0.6mbar, making them an excellent choice for most applications from benchtop research to pilot plant installations. Pumps without controls are well-suited to high flow applications like vacuum ovens, or for applications in which the control is provided by the vacuum application apparatus. Even operations that don't require solvent recovery or sophisticated control benefit from a pump designed with your applications in mind.

Continuous condensate purge

All chemistry-design multistage models feature an integrated gas ballast that permits continuous purging of condensed vapor from the pump

From simple pumps to fully integrated vacuum systems – VACUUBRAND has the right pump for your lab

MZ2C NT Vacuum Pump
7mbar, 1.4cfm

Small footprint

Compact pumps fit easily on benchtops or under hoods

The VACUUBRAND nameplate – the sign of a quality product

VACUUBRAND continuously works to perfect an integrated management system in all departments; conforming with ISO 9001 and ISO 14001. The standard of performance is quality, customer focus, employee involvement and environmental orientation. Each vacuum pump goes through a performance test of hours to days at the VACUUBRAND facility, measuring specifications and equipment reliability with computer-controlled measuring and test instruments, with

a fully automated final test. An interlock system prevents the manufacturing of a serialized nameplate until all test parameters are met. This ensures that every vacuum pump bearing the VACUUBRAND name is not only designed to an exceptionally high level engineering standard, but also offers extraordinary lifetime economy because of their low service costs and above-average lifetimes.

Vacuum Pumps with Control

Vacuum Pumps & Systems

Types of electronic vacuum control

- **Traditional two-point control:** Found in systems with single-speed pumps, i.e. the PC620 NT two-application system, or older design single application systems. Analogous to a home thermostat, the pump runs until the desired setpoint is reached, at which point, the vacuum supply is interrupted, via a solenoid valve, or, in cheaper systems, by turning off the pump. The vacuum level is allowed to rise to a set hysteresis above the setpoint, at which point vacuum supply is restored, maintaining the vacuum between two-points. In an evaporative application, the setpoint necessarily can not be below what would cause bumping and foaming. Every point above that - even within the hysteresis, is somewhat suboptimal for evaporation, lengthening the time of evaporation by some amount. As the solute concentration increases, the setpoint will need to be adjusted to maintain evaporation speed, either by programming, or manual intervention.

- **VARIO® speed control:** VACUUBRAND's proprietary control for variable speed vacuum pumps automatically adjusts the speed of the vacuum pump to find boiling points and continuously optimize vacuum levels for faster evaporation, reduced noise, maintenance, and electrical consumption as well as improved solvent recovery when an outlet condenser is used. Optional VACUU•CONTROL™ software allows remote monitoring and control, from any web-enabled device. Increasing solute concentration or multiple solvents are not a problem for VARIO®.

- **Variable speed pumps:** (as supplied by other manufacturers) Less sophisticated software can only find the first boiling point, often overshooting, requiring frequent manual intervention.

Two-point control

VARIO® speed control comparison to variable speed pumps
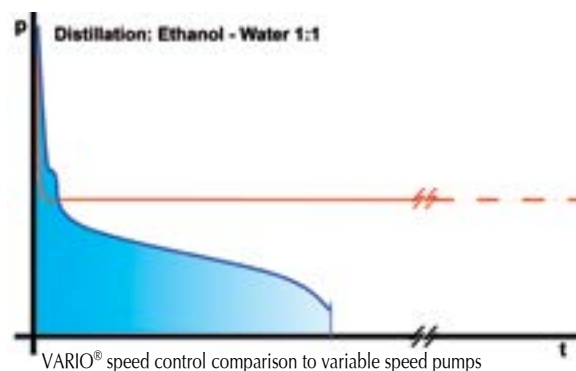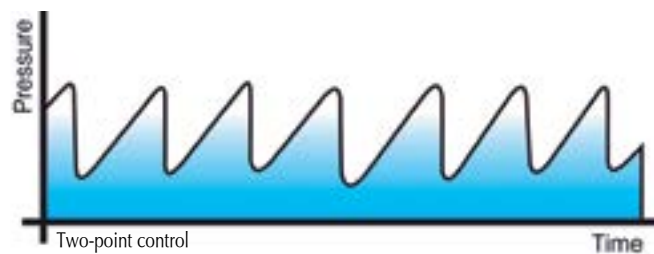
Competitive product in the automatic mode - First boiling pressure is determined, and then maintained. Evaporation dramatically slows because the vacuum is not continuously adapted to changing boiling pressures in mixtures

VACUUBRAND VARIO® controlled vacuum adapts automatically to all boiling points in the mixture, continuously optimizing the process for fast run times without bumping.

Vacuum pumps with manual control

Popular VACUUBRAND® chemistry-design vacuum pumps are available with manual flow control to provide the most basic management of vacuum where electronic control is unnecessary to achieve good results.

Centrifugal concentration, gel drying, and even simple rotary evaporation applications can often be effectively managed with manual control systems.

Diaphragm valve

A manually controlled PTFE diaphragm valve

Bourdon analog gauge

Dial (Bourdon) relative pressure gauge

Inlet catchpot

An "AK" inlet catchpot helps protect the pump from any condensation

PC101 NT
Vacuum System
7mbar, 1.4cfm

Self-regulating electronic control – VARIO®

VACUUBRAND® VARIO® vacuum systems offer users unsurpassed control of critical vacuum applications. A low maintenance chemistry-design pump is integrated with a variable speed motor and a mercury-free, digital controller. The system automatically finds and follows boiling curves, continuously optimizing the vacuum level without having to program presets. It's the ultimate productivity tool!

- **Faster:** Because the vacuum level is continuously optimized, evaporation times are up to 30% faster when compared to other electronically-controlled pumps.

- **Easier:** Just press "Start" and the VARIO® pump begins pumping down, and finds the first boiling point. It maintains and continually optimizes vacuum levels to vapor flow — even for mixtures!

- **Sustainable:** VARIO® technology greatly reduces energy consumption by reducing pumping speed to only what is necessary for optimal process performance. This greatly extends service intervals. No dry ice cold traps required for pump protection, and no oil changes massively reduce the carbon footprint.

- **Less "babysitting":** The VARIO® controller automatically adjusts vacuum levels, reducing the need for manual adjustment or complex pumping programs. The pump even shuts itself off at pre-set levels or when evaporation is complete.

- **Virtually no bumping:** The VARIO® controller automatically reduces the pumping speed as each boiling point is approached so "overpumping" is substantially reduced.

- **Less maintenance:** Because the pump only operates enough to maintain optimum vacuum, wear is reduced, extending the service interval greatly.

- **Computer interface:** An integrated bidirectional RS232 port allows control and monitoring of every parameter for process validation, and the execution of complex pumping programs. VACUU*CONTROL™ modules allow networking of pumps, allowing remote control and monitoring from any web-enabled device.

PC3001 VARIO^PRO
Vacuum System 2mbar, 1.2cfm

Low-profile outlet condenser reduces height requirements.

Dual application vacuum systems

Outlet condenser with catchpot

A condenser with an "EK" outlet catchpot captures vapors that pass through the pump, helping protect the lab atmosphere and environment

Electronic control

Solenoid valve, operated by a CVC3000 controller, provides precise two-point electronic control for critical applications

Manual control

PTFE diaphragm valve provides approximate control of vacuum levels for less demanding applications

PC511 NT
7mbar, 1.4cfm

Pumps with dual application control

VACUUBRAND® dual application vacuum systems harness the power of VACUUBRAND® oil-free pumps to increase lab efficiency and reduce the cost of vacuum generation. Operating two different applications from a single pump saves money and lab bench space.

These vacuum systems are available with manual control, electronic control, or both. Integrated check valves minimize interaction between applications.

All dual application systems include a high-performance 7mbar or 1.5mbar VACUUBRAND® NT series vacuum pump. Select a 7mbar system (MZ2C NT Synchro™, PC511 NT, or PC520 NT) for most lab applications and 1.5mbar systems (MD4C NT Synchro™, PC611 NT, PC620 NT) for larger applications or those with higher boiling point solvents.

Selecting the best pump for your application

Vacuum Pump Selection Guide—online!

Not sure which vacuum pump or system is best for your lab? Find out using the BrandTech® Scientific Vacuum Pump Selection Guide.

This free guide has been designed to recommend the best VACUUBRAND® vacuum pump or system for a wide variety of laboratory applications, including fluid aspiration, centrifugal concentration, rotary evaporation, and more.

Simply choose "Vacuum Pump Selection Guide" from the left hand navigation menu at www.brandtech.com to find the guide. Answer a few simple questions about your application. The software suggests the pump, controls, and solvent capture accessories that are right for your application. It even offers options for limited budgets or applications where control is critical.

VACUU•LAN® Mini-Network

The VACUU•LAN® Mini-Network is a great way to perform up to three applications from a single pump, increasing utility without eating up valuable lab space. It builds on VACUUBRAND's pioneering technology in vacuum local area networks for new laboratories and renovations, transferring the technology into a simple-to-install unit to add capability to existing labs. Three VACUU•LAN® vacuum ports with flow control are mounted onto a bar—each port has an integrated check valve to minimize

interference and the possibility of cross-contamination. Corrosion resistant materials are used throughout the vapor flowpath for long life in chemistry labs. The bar can be mounted to ring stands or laboratory framework with the pre-installed mounting support rods, or can be easily attached to walls. Vacuum can be supplied by any VACUUBRAND® chemistry-design pump, or even diaphragm pumps from other manufacturers.

VACUU•LAN Mini Network (for pricing see page 80)

VACUU•LAN vacuum port

VACUU•LAN® networks for new lab construction and renovation

Fully-customized VACUU•LAN® vacuum local area networks can provide the vacuum for your laboratory construction or renovation project. The modular network can be integrated into laboratory furniture and fume hoods, and powered by a quiet, compact VACUUBRAND® chemistry design vacuum pump that fits under your lab bench. With a VACUU•LAN® vacuum local area network, you have high-performance vacuum (as deep as 2mbar/1.5Torr) at each bench or fume hood port, without the instability and user interference of a central vacuum system, and without the bench space required for individual pumps. Individual ports can even be configured for electronic control, for fully programmable vacuum supply directly from the network. This modular approach offers long-term flexibility; install the vacuum you need where you need it, only when you need it.

Two decades of global experience developing VACUU•LAN® laboratory vacuum local area networks, for small college labs and major research institutions, make this VACUUBRAND innovation the smart choice for your laboratory vacuum. For more information on this innovative technology, contact BrandTech® Scientific.

VACUUBRAND® Rotary Vane Pumps

VACUUBRAND XS-Series rotary vane vacuum pumps for fine vacuum applications

- **Quiet:** XS-pumps are extremely low-noise and low vibration, even compared to earlier VACUUBRAND® rotary vane models.
- **Rugged:** The XS series have been designed from the ground-up for service in chemistry labs. They provide exceptional water vapor tolerances with minimal impact on ultimate vacuum. Internal components have been redesigned to improve corrosion resistance, reduce wearing forces, enhance performance and simplify maintenance. Internal steel surfaces have even been nitrogen-plasma treated for chemical resistance and mechanical hardness.

- **Energy efficient:** Pumps have very low power consumption, and generate low levels of waste heat compared to competitive models.
- **Great value:** On top of all of these advantages, VACUUBRAND® XS-series rotary vane pumps are competitively priced with other popular pumps.

Common belt-drive vacuum pump

Common direct-drive pump
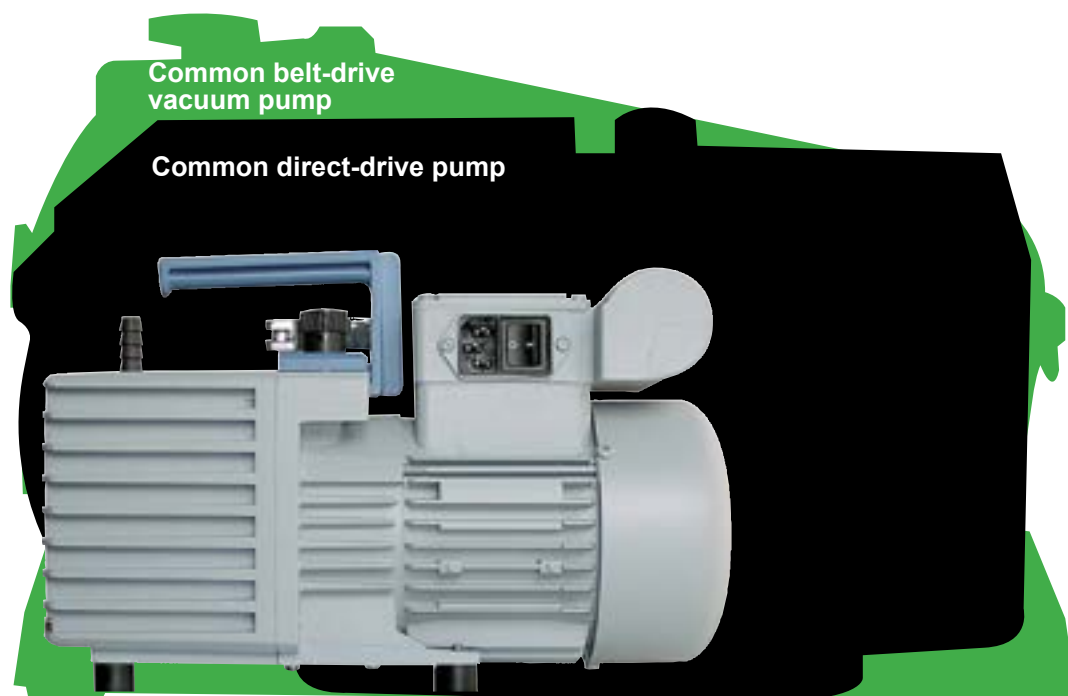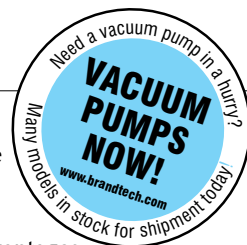
vacuubrand

Big vacuum in a small package!
VACUUBRAND® RZ2.5

Extremely compact compared to popular pump models

- **Compared with a belt-drive pump,** the RZ2.5 takes up 1/3 of the bench space, weighs half as much, and occupies less than 1/4 the volume, despite superior flowrates.
- **Compared with competitive direct drive pumps,** the RZ2.5 takes up half of the space and weighs half as much.

  For a detailed comparison see: www.brandtech.com/rvpumpcompare

Don't forget...

Adding accessories to your rotary vane pump can extend the pump lifetime and make your workplace more pleasant.

- **Inlet hose barbs:** Match the pump to your vacuum hose. A 10mm (3/8") polypropylene hose barb is included with RZ2.5 and RZ6 pumps, inlet centering and clamping rings (and outlet, where applicable) are included with the pump.
- **Inlet catchpot:** Collects condensates and particles from the vacuum line, before they can contaminate pump oil and can reduce pump lifetime.
- **Oil mist filter:** Captures up to 99% of oil-mist from the outlet of your pump, keeping your lab atmosphere and bench top clean (included with RC6).
- **Pump oil B:** For best performance, and long life, use Pump Oil B (supplied with all new pumps). Its special viscosity formula is an excellent choice for VACUUBRAND® pumps.

Vacuum Applications

Vacuum for Filtration and SPE

Filtration, SPE and aspiration

Fluid movement applications, such as filtration, fluid aspiration and solid phase extraction, typically don't require deep vacuum levels or high flow rates. For fluid aspiration, the best choice is usually an integrated solution like our BVC *control* or *professional* (see page 62).

However, when using an unpowered collection system like the BVC *basic*, or for filtration or SPE, these types of applications are best served by the VACUUBRAND® ME1C and ME4C NT. Users seeking additional capability or users with special circumstances, may

want to consider the VACUUBRAND® MZ2C NT+2AK or MD1C+AK+EK pumps with integrated solvent recovery.

When choosing the pump for your filtration or solid phase extraction application, consider the following factors:

How much vacuum do I need?

Vacuum filtration and solid phase extraction typically require just enough vacuum depth to generate a pressure differential between atmospheric pressure and the receiving vessel. These applications do not usually require control unless the vacuum level is too deep and may cause filtrate boiling.

The ME1 vacuum pump is an excellent selection for most fluid movement applications. It is a simple, compact, stand alone pump with sufficient vacuum to perform effective vacuum filtration. For acidic vapors, choose the ME1C.

How much flow do I need?

Labs running multiple filtration applications may require a pump with higher flow rates to maintain sufficient vacuum at all workstations.

For 2-4 filtrations, choose the ME2C NT; for more than 4 filtrations, the ME4C NT vacuum pump is an excellent pump for these circumstances. The higher flow rate ensures better results and faster process times in large-scale filtration labs. For solid phase extraction (SPE), choose the ME2C NT for small applications, the ME4C NT for medium size, and the ME8C NT for larger scale extractions.

Do I need solvent recovery?

During normal filtration and solid phase extraction applications, solvent recovery is not typically needed. However, pumps with higher performance and solvent recovery can support a broader range of applications or may be suitable for teaching laboratories, where aspiration of liquids may be inevitable. They are an excellent choice for labs seeking to support several different applications with only one pump.

ME1C Vacuum Pump
100mbar, 0.5cfm

MZ2C NT+2AK
Vacuum Pump 7mbar, 1.4cfm

Rotary Evaporation Vacuum Solutions

Vacuum pumps provide the operational muscle for your rotary evaporator. Apart from the vacuum control, your evaporator is just rotating glassware! In fact, you can get better control of your application directly from your vacuum pump. As such VACUUBRAND offers a full range of pumps and systems with integrated control that help optimize your rotary evaporation application.

To find the vacuum pump or system that best meets your needs, answer the following questions:

How much vacuum do I need?

The vacuum capacity required from a pump to support a rotary evaporation application is determined by the typical application temperatures and the solvents being evaporated. Virtually all rotary evaporation applications can be accomplished with diaphragm vacuum pumps. The vacuum pump should have the ability to reach the vapor pressure of the solvent at the application temperature. For most common solvents and bath temperature, a two-stage (MZ-series) pump provides sufficient vacuum levels, whereas for high boiling point solvents, such as DMF, DMSO or NMP, a three-stage (MD-series) pump would be preferred.

How much control do I need?

Rotary evaporation applications often require significant oversight and control because the heat and high surface area increase evaporation rates. This sensitivity can lead to solvent "bumping" or boiling over if vacuum is poorly controlled.

VARIO® adaptive vacuum control

The best way to prevent bumping is with a self-regulating, hysteresis-free vacuum control. Adaptive control, an innovation exclusive to VACUUBRAND® VARIO® pumps and systems, combines an electronic controller and a speed-controlled motor. Fifteen years of proprietary software refinement allows our VARIO® pumps to automatically perform the following tasks:

- Find and follow boiling points, hysteresis-free, without programming even for solvent mixtures or changing conditions
- Evaporate up to 30 percent faster
- Shut the pump off when evaporation is completed

For most benchtop rotary evaporators, the PC3001 VARIO^{PRO} vacuum system is an excellent choice. The powerful integral pump provides a deep 2mbar ultimate vacuum – enough to evaporate DMSO at a bath temperature of 50°C. It's truly the ultimate system for the benchtop rotary evaporator.

Manual control

For applications that require only minimal control, select the economical PC101 NT vacuum system for basic evaporation and vapor capture. It includes a 7mbar MZ2C NT pump along with a stand, inlet catchpot and outlet condenser with a manual flow-control valve and dial gauge for economy. It's an excellent choice for basic evaporation. Or support two evaporators with an economical, space-saving Synchro system. See pages 68 & 80 for description and ordering information.

On a budget?

If you would like to harness the power of the PC3001 VARIO**PRO**, but don't currently have the budget, consider the PC3001 basic. It features the same variable speed MD1C pump, and can easily be upgraded to full VARIO capability when your budget allows. Contact BrandTech® for more information.

Did you know?

Outlet condensers not only help collect solvent vapors, keeping the lab atmosphere clean, but they also make VACUUUBRAND® pumps even quieter!

PC3001 VARIO^{PRO} Vacuum System
2mbar, 1.2cfm

PC101 NT
7mbar, 1.4cfm

Electronic control

Some rotary evaporation applications might benefit from control, but not require the precision of adaptive control. The PC510 NT system is an excellent choice for these applications. It is a great workhorse system for evaporation of many common solvents in rotary evaporators up to 5 liters in size. The integrated MZ2C NT pump evaporates all but the highest boiling point solvents at reasonable bath temperatures, and the system includes a controller that allows preset or semi-automatic setting of vacuum level, with appropriate hysteresis adjustment. Solvent recovery is provided by an inlet catchpot and outlet condenser.

Need to run two evaporators? Consider the PC520 NT. See pages 68 & 80 for description and ordering information. It will provide different conditions to two applications at once, saving bench space and the cost of an additional pump or system. If you have a limited budget and anticipate needing a second electronically controlled port in the future, consider a PC511 NT or PC611 NT. The second flow-controlled port adds minimal cost, but can easily be upgraded to full electronic control with the purchase of a CVC3000 *detect* (see page 78).

The CVC3000 *detect* vacuum controller can let you select a setpoint, run a complex program 'ramp' or even automatically find the first boiling point. It works with benchtop diaphragm pumps from all manufacturers.

Do I need solvent recovery?

Solvent vapor that makes it past the evaporator's condenser can condense in the vacuum line. For best pump performance, an inlet catchpot "AK" can keep these condensed vapors out of the pump. Solvent vapors that pass through the pump can be captured efficiently at atmospheric pressure at the diaphragm pump outlet with an outlet condenser "EK," minimizing pollution of the laboratory environment.

Consider the MD1C+AK+EK for labs that already have a stand-alone vacuum controller, or one integrated into their evaporator. It features the same chemistry-design pump and solvent recovery as the 2mbar PC3001 VARIO^{PRO} system, but without control.

For applications that do not require either control or solvent recovery, consider a stand alone pump such as the MZ1C or MD1C. They provide superior flow rates at working vacuum to competitive pumps, with a significantly lower price and very small footprint. Integrated gas ballast provides high condensate tolerance. The MD1C is also preferred by customers who address vacuum control and solvent recovery through other methods.

What about larger or multiple rotary evaporators?

BrandTech® and VACUUBRAND offer the most comprehensive line of chemistry-design diaphragm vacuum pumps, including models that can operate rotary evaporators up to 100 liters or larger, with or without integrated VARIO® adaptive control.

We also offer systems that will run two different evaporation applications simultaneously without interference! Still not sure? Contact BrandTech® Scientific for more information.

NOT SURE WHAT PUMP IS RIGHT FOR YOUR NEEDS?

See our Vacuum Pump Selection Guide at www.brandtech.com.

MZ1C
vacuum pump
12mbar, 0.5cfm

MD1C+AK+EK
vacuum pump
2mbar, 0.88cfm

Vacuum Oven/Gel Dryer Vacuum Solutions

Vacuum oven solutions

How much vacuum do I need?

Vacuum ovens typically require a pump with vacuum levels below 10 mbar because the evaporative effect of elevated temperature is often offset by the poor thermal transfer of the oven environment.

How much flow do I need?

Vacuum ovens often require higher vacuum pump flow rates than other lab applications due to the relatively large sample capacity of most vacuum ovens. A distinction should be made between residual drying of damp samples vs. drying of high moisture content "wet" samples, which require considerably more flowrate. For residual drying, some assumptions can be made based on oven size.

The MZ2C NT+2AK vacuum pump is an excellent selection for labs with smaller vacuum ovens (<1.0 cubic foot in capacity) and semi-dry samples. Its performance, small footprint, and integrated catchpots for solvents make it a popular choice for gels and residual drying. Evaporation of higher boiling point solvents, however, may require a more powerful pump, such as the MD1C+AK+EK.

Laboratories with larger ovens (>1.0 cubic feet in capacity) or with samples having a high moisture content do well with the PC201 NT. It can generate vacuum levels for evaporation of most solvents, and its high flow rate reduces process times. For truly wet samples, calculations should be made to determine the right pump size. Contact BrandTech® Scientific for assistance.

Why use a cold trap?

Using a cold trap for solvent recovery gives users greater flexibility when selecting a pump for vacuum ovens. The cold trap reduces vapor loads, and eliminates the need for solvent capture by the pump. These applications are typically best-served by a stand alone pump such as the compact, economical MD1C vacuum pump.

Gel dryer vacuum solutions

How much vacuum do I need?

The vacuum level required for gel drying applications is usually determined by the concentration of SDS-PAGE. For standard-sized gels with SDS-PAGE concentrations up to 10%, select the MZ2C NT+2AK. It has the power to provide excellent results in most gel-drying applications and its two catchpots capture condensing vapors for clean operation.

MZ2C NT+2AK
vacuum pump
7mbar, 1.4cfm

For SDS-PAGE concentrations greater than 10%, choose the MD1C+AK+EK. Its integral pump achieves deeper vacuum levels for enhanced evaporative performance, and the catchpots and condenser protect the pump and the lab atmosphere without the cost and inconvenience of a cold trap.

MD1C
vacuum pump
2mbar, 0.88cfm

PC201 NT
vacuum system,
1.5mbar, 2.2cfm

Centrifugal Concentration Vacuum Solutions

The high performance and convenience of VACUUBRAND® pumps and systems makes them an excellent choice for most centrifugal concentration applications. VACUUBRAND offers a wide variety of pumps for excellent, reproducible results. When selecting the best pump for your lab, consider the following issues:

How much vacuum do I need?

Centrifugal concentration generally requires greater ultimate vacuum than other evaporative applications because it is usually performed at room temperature. Fortunately, VACUUBRAND® diaphragm pumps are available with enough power for room temperature evaporation of solvents with boiling points as high as that of DMF.

The performance demands of most tabletop concentrators are often well served with one of VACUUBRAND's three-stage vacuum pumps, the MD1C or MD4C NT. Both of these pumps are powerful enough to evaporate DMF. Select the MD1C for supporting smaller concentrators and the MD4C NT with its higher flow rate for larger benchtop concentrators. For more volatile solvents, a pump like an MZ2C NT would be an excellent choice.

For very high boiling point solvents at room temperature such as DMSO or ethylene glycol, rotary vane technology may be required. We suggest the unique RC6 Chemisty-HYBRID pump for deeper vacuum with maximum convenience.

Do I need solvent recovery?

Large centrifugal concentrators often come with cold traps, reducing the need for integrated solvent recovery with the pump. Concentrators without cold traps should have solvent recovery integrated with the pump to prevent pump contamination and pollution of the laboratory environment.

When using a small concentrator without a cold trap, choose the MD1C+AK+EK. It provides excellent flow rates at working vacuum to effectively operate a smaller concentrator without a cold trap (something not possible with many competitive pumps) and captures solvent vapors itself.

Are my samples prone to bumping?

When samples often bump in a centrifugal concentrator, control may be necessary to prevent cross-contamination. For more volatile solvents, use our VARIO® systems that adjust vacuum levels automatically.

What about larger concentrators?

VACUUBRAND® pumps are available for "mega" sized concentrators used in combinatorial chemistry and the drug discovery marketplace. Please contact BrandTech® Scientific for assistance in selecting the best pump for these applications.

MD12C NT VARIO,
1.5mbar, 7.6cfm

Pump economy and sustainability

When comparing the costs of vacuum pumps, it is important to include accessories that are needed and lifetime repair and maintenance costs. Rotary vane pumps require mist filters, catchpots, cold traps (including dry ice, liquid nitrogen or electricity costs) plus frequent oil changes. Competitive diaphragm pumps have much shorter service intervals (3,000-4,000 hours) compared with VACUUBRAND® oil-free pumps (15,000+ hours), and competitive diaphragm pumps often recommend cold traps to enhance performance, adding substantially to operating costs and inconvenience.

MD4C NT vacuum pump
1.5mbar, 2.2cfm

Freeze Drying Vacuum Solutions

Lyophilization is a demanding vacuum application that requires a deeper vacuum than can be achieved with diaphragm technology alone. It is usually best-served by the innovative VACUUBRAND® RC6 Chemistry-HYBRID™ pump.

How much vacuum do I need?

Lyophilization applications typically require vacuum levels as deep as 10^{-3} mbar. Traditionally, this requirement has been provided by oil-sealed rotary vane pumps.

To help users combat the high costs and contamination of rotary vane pumps, VACUUBRAND developed the RC6 Chemistry-HYBRID™ pump. The RC6 combines a rotary vane pump for vacuum capacity with a chemistry-design diaphragm pump to maintain peak performance uncompromised by solvent contamination, by continuously cleaning the pump oil during operation. This design also reduces oil changes and maintenance costs by up to 90%. The RC6 Chemistry-HYBRID™ pump, like other oil-sealed pumps, should always be operated with a cold trap.

What about larger applications?

The RC6 Chemistry-Hybrid pump may be used with freeze dryers with condensers of 6, 12, or 18 liters. VACUUBRAND also offers a full line of rotary vane pumps with the power to easily meet the demands of larger applications and the innovative design and quality assurance of VACUUBRAND® pumps.

For applications larger than 18 liters, contact BrandTech® Scientific.

Rotary vane options?

BrandTech® Scientific recommends that you should "never use an oil pump when an oil-free pump will do the job." However, certain applications require deeper vacuum levels than oil-free pumps can provide.

When these situations arise, consider the RC6 Chemistry HYBRID™ pump or a VACUUBRAND® rotary vane vacuum pump such as the RZ2.5, RZ6, or RZ9. These pumps feature the same high performance, innovative design, and quality assurance as VACUUBRAND® oil-free vacuum pumps and systems. See page 70 for more information.

RC6 Chemistry-HYBRID™
vacuum pump 2×10^{-3}mbar, 4.1 cfm

Save money with a VACUUBRAND® system!

Because VACUUBRAND® pumps provide high flow-rates at working vacuum levels, they can provide cost savings, both initially, and over the life of the pump.

- **Synchro™** multi-tasking systems harness the power of the VACUUBRAND® pump for two applications, reducing the cost per application. See page 69 for VACUU•LAN® systems.

- **No cold trap required** VACUUBRAND® chemistry diaphragm pumps require no cold trap to protect the pump in most applications; a huge cost saving in purchase and refrigerant costs.

- **Productivity savings** with the self-adjusting VARIO® systems, which free you up to perform other work with minimal pump oversight. Their continually optimized vacuum levels speed evaporation by up to 30%.

Find out more details on how to save money with VACUUBRAND® vacuum pumps at www.brandtech.com.

Non-Chemistry Diaphragm Vacuum Pumps

VACUUBRAND® Aluminum-FKM (e.g., Viton®) vacuum pumps are intended specifically for non-corrosive, non-evaporative applications. They are excellent for laboratory and process-plant applications including gas transfer, backing turbo pumps, and vacuum filtration. All wetted parts of these pumps are made of aluminum, FKM, and polyethylene. Aluminum-FKM pumps should not be used with organic solvents, corrosives, or other vapors inconsistent with the materials of construction.

- **Eliminates oil changes:** These pumps utilize diaphragm vacuum technology for totally dry operation. There is no oil to change or monitor!
- **Reduces maintenance:** Diaphragms typically withstand over 15,000 hours of use before replacement – that's years in most applications, minimizing downtime and service costs. When it is finally time for service, their unique design eliminates tedious, trial-and-error stroke length recalibration.
- **Improves productivity:** These pumps feature specially engineered pump heads for high flow rates at working vacuum. Higher flow rates mean reduced process times and higher throughput.

- **Ensures reliable use:** All VACUUBRAND® pumps and systems must pass rigorous product testing before leaving the factory. It's your assurance of a reliable pump.
- **Quiet operation:** Aluminum-FKM pumps operate very quietly, at about the same volume as a conversation.
- **FKM double diaphragm:** FKM double planar diaphragm for high performance and increased reliability.
- **Broad product range:** Vacuum as deep as 0.5mbar with flow rates as high as 307lpm.

ME1:

Features PTFE diaphragm and valves for enhanced corrosion resistance (not for use with acidic vapors). An excellent choice for filtration (see page 71).

ME1 vacuum pump
100mbar, 0.5cfm

ME8 NT:

A popular choice for plate washers, cell harvesters and other applications that require high flowrates with relatively shallow vacuum.

ME8 NT vacuum pump
70mbar, 4.6cfm

vacuubrand

Vacuum Gauges & Controllers

VACUUBRAND® vacuum gauges and controllers enable you to monitor and control vacuum generation for most laboratory vacuum applications. Gauges are compatible with most laboratory vacuum pumps and house vacuum, and feature both analog and digital displays. They help to rid laboratories of toxic, harmful mercury by replacing McLeod gauges and other manometers.

- **Meets the requirements of most vacuum applications:** VACUUBRAND® vacuum gauges cover the range from atmospheric pressure to 5×10^{-9}mbar/Torr/hPa. They are easy to read and feature a digital readout and analog indicator to simplify both data recording and trend-monitoring.
- **Rugged operation:** Gauges and controllers are manufactured without fragile springs or glass tubes and feature corrosion-resistant transducers to ensure rugged, reliable operation.
- **Displays results in your units:** Vacuum gauges and controllers provide results in millibar, Torr, or hectoPascal.

- **Provides complete process control:** The CVC 3000 *detect* is an all-in-one controller with integrated valve, providing two-point vacuum control in the range from atmospheric pressure to 1mbar/Torr/hPa (control range can be extended to 10^{-3}mbar with external Pirani vacuum sensor). It allows easy adjustment of vacuum setpoints as well as both automatic and manual hysteresis programming.
- **Integrated vacuum controller:** The CVC3000 *detect* pairs our sophisticated CVC3000 vacuum controller with a permanently mounted chemistry-design solenoid valve to provide a simple one-piece solution to single-application vacuum control.

DVR2 vacuum gauge

Eliminate fragile glass tubes and mercury and inaccurate, corrosion-prone dial gauges in your lab! Analog and digital display for easy monitoring of most lab applications. A transducer of corrosion-resistant ceramic for durability measures absolute pressures from atmosphere to 1mbar/Torr/hPa with user-selectable units. Battery power with adjustable sleep timer for long battery life.

CVC3000 *detect*

The new CVC3000 *detect* combines the market leading CVC3000 vacuum controller and a solenoid valve, to provide advanced two-point control for any stand-alone diaphragm vacuum pump from VACUUBRAND®, competitive units, or central vacuum. An integrated check valve helps protect your application from vacuum line instability. The new "*detect*" feature allows the CVC3000 to automatically find the first boiling point with a rotary evaporator. The CVC3000 also allows the pre-programming of up to ten multi-step programs, bi-directional communication via RS232 serial port and too many other features to mention here. Available in two models – one with a benchtop stand; or one for mounting on lab frames or ring stands

CVC3000 + VSP3000 Pirani control packages for "High Vac" applications

These packages enable convenient two point vacuum control in the fine vacuum range down to 10^{-3} mbar. They consist of a CVC3000 vacuum controller, a VSP3000 external Pirani vacuum sensor, a VVB 15C high performance chemistry in-line solenoid valve and all necessary small flange components. Two versions of this package are available: one with KF16 small flange connections suitable for the RZ2.5, RZ6 rotary vane pumps and our RC6 Chemistry-HYBRID™ pump; the other with KF25 small flanges suitable for our RZ9 rotary vane pumps. Either package can also be used with pumps from other manufacturers with the corresponding flange set. Control is achieved by use of an in-line solenoid valve, minimizing noise and oil-mist generation. The controller and components are completely self-configuring and automatically checked via VACUU•BUS® communication protocol.

The versatile DCP3000 vacuum gauge system

The DCP3000 utilizes VACUUBRAND's innovative VACUU•BUS® plug-and-play system to monitor a variety of different vacuum sensors including the new VACUU•VIEW models. The DCP3000 can monitor up to a total of four transducer sets. The DCP3000 also features a switching power supply.

DVR2

CVC3000 *detect*
benchtop stand

CVC3000
benchtop stand

DCP3000 with VSK

NEW! Remote control and monitoring VACUU•CONTROL®

Add remote control and monitoring to any vacuum pump – regardless of manufacturer with the VACUU•CONTROL® add-on for the CVC3000 controller, or any VACUUBRAND® system that incorporates the CVC3000. Unlike simple RF control that requires a dedicated controller, and limited control frequencies, VACUU•CONTROL® interfaces with your network, allowing control or monitoring from any web-enabled device, with multi-level security. LAN (Ethernet) and WLAN (WiFi) versions available.

NEW! VACUU•VIEW and VACUU•VIEW extended gauges

Vacuum gauges with corrosion-resistant transducers designed especially for the rigors of laboratory use. Both gauges are totally mercury-free, feature KF16 small flange vacuum connections, with screw-in hose barbs to allow fitting of 6-10mm ID vacuum hose. VACUU•BUS® connections allow interfacing with VACUUBRAND® DCP3000 and CVC3000. Universal power supplies are included.

The VACUU•VIEW gauge features a capacitive transducer made of alumina ceramic, and is suitable for absolute pressure readings in the rough vacuum range (atmosphere to 0.1mbar/hPa/Torr). The VACUU•VIEW extended features a dual technology gauge head — a capacitive transducer for absolute pressure readings in the rough vacuum range, paired with a Pirani transducer for measurements in the fine vacuum range. Both transducers have alumina ceramic wetted surfaces for corrosion and shock resistance.

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Mercury-free, digital/analog vacuum instruments

Product comparison

Name	Battery-powered	Chemical resistant	Lower measuring limit in mbar	Measuring principle			Measurement gas type independent
				Diaphragm (Capacitive)	Heat conduction (Pirani)	cold cathode	
VACUU•VIEW	–	✓	0.1	✓	–	–	✓
VACUU•VIEW Extended	–	✓	0.001	✓	✓	–	Yes (>5mbar)
DVR 2	✓	✓	1	✓	–	–	✓
Set DCP 3000 + VSK 3000	–	✓	0.1	✓	–	–	✓
Set DCP 3000 + VSP 3000	–	✓	1×10^{-3}	–	✓	–	–
Set DCP 3000 + MPT	–	–	5×10^{-9}	–	✓	✓	–

Vacuum Pump Ordering Information

Chemistry design pumps

Model	Controller(s)	Solvent Recovery	Ultimate Vacuum mbar	Torr	Free Air Capacity at 60Hz cfm	lpm	Cat. No.	2016 List Price
Oil-Free Chemistry design diaphragm vacuum pumps								
ME1C*	No	No	100	75	0.5	14	721103	$1,091.00
ME2C NT	No	No	70	52	1.4	40	730103	1,995.00
ME4C NT	No	No	70	52	2.5	72	731203	2,948.00
ME4C NT +2AK 100-120V/200-230V, 50-60Hz***	No	Yes	70	52	2.5	72	2614080	4,035.00
ME8C NT*	No	No	70	52	4.6	130	734203	4,995.00
ME16C NT	No	No	70	52	10.8	307	741303	Inquire
MZ1C*	No	No	12	9	0.5	15	724103	1,936.00
MZ2C NT	No	No	7	~ 5	1.4	38	732303	2,949.00
MZ2C NT +2AK	No	Yes**	7	~ 5	1.4	38	732503	3,851.00
MD1C*	No	No	2	1.5	0.88	25	696613	3,560.00
MD1C +AK+EK	No	Yes	2	1.5	0.88	25	696633	5,651.00
MD4C NT	No	No	1.5	1.1	2.2	63	736403	6,629.00
MD12C NT	No	No	2	1.5	7.2	205	743303	Inquire
MV10C NT	No	No	$9x10^{-1}$	$7x10^{-1}$	6.3	178	744303	Inquire
Accessories for oil-Free diaphragm vacuum pumps								
VACUU•LAN® Mini-Network							2614455	1,360.00
ME1C vacuum regulation valve with manometer (suitable for use with the MZ1C and MD1C)							696843	351.56
Power cord, L-shaped 120V, US							637655	43.82
Oil-free Chemistry design single application vacuum system								
MZ2C NT +AK+M+D	1 Manual	No	7	~ 5	1.4	38	732703	4,045.00
PC101 NT	1 Manual	Yes	7	~ 5	1.4	38	733003	3,753.00
MZ2C NT +AK+EK	1 Manual	Yes	7	~ 5	1.4	38	732603	3,953.00
MD4C NT +AK+EK	1 Manual	Yes	1.5	1.1	2.2	63	736703	7,813.00
PC510 NT	1 Electronic	Yes	7	~ 5	1.4	38	733103	7,069.00
PC3001 basic 100-120V/200-230V, 50-60Hz	1 Manual	No	2	1.5	1.2	33	696723	5,252.00
PC201 NT	1 Manual	Yes	1.5	1.1	2.2	63	737003	6,997.00
PC610 NT	1 Electronic	Yes	1.5	1.1	2.2	63	737103	11,009.00
Oil-free Chemistry design dual application vacuum systems								
MZ2C NT Synchro™	2 Manual	Yes	7	~ 5	1.4	38	732803	4,987.00
PC511 NT	1 Electronic +1 Manual	Yes	7	~ 5	1.4	38	733203	7,669.00
PC520 NT	2 Electronic	Yes	7	~ 5	1.4	38	733303	10,403.00
MD4C NT Synchro™	2 Manual	Yes	1.5	1.1	2.2	63	736803	8,853.00
PC611 NT	1 Electronic +1 Manual	Yes	1.5	1.1	2.2	63	737203	11,534.00
PC620 NT	2 Electronic	Yes	1.5	1.1	2.2	63	737303	14,161.00
Oil-free Chemistry design VARIO® adaptive single application vacuum systems								
ME16C NT VARIO	Adaptive	No	70	53	11.4	322	741703	Inquire
MZ2C NT VARIO	Adaptive	No	7	~ 5	1.6	47	732403	7,030.00
MD4C NT VARIO	Adaptive	No	1.5	1.1	2.7	77	736503	10,930.00
MV10C NT VARIO	Adaptive	No	$6x10^{-1}$	$4.5x10^{-1}$	6.8	193	744703	Inquire
MD12C NT VARIO	Adaptive	No	1.5	1.1	7.6	215	743703	Inquire
PC3001 VARIO^PRO	Adaptive	Yes	2	1.5	1.2	33	696703	8,588.00
PC3002 VARIO	Adaptive	Yes	7	~ 5	1.6	47	733503	8,620.00
PC3003 VARIO	Adaptive	Yes	$6x10^{-1}$	$4.5x10^{-1}$	1.6	47	738403	12,895.00
PC3004 VARIO	Adaptive	Yes	1.5	1.1	2.7	77	737503	12,310.00
PC3010 NT VARIO	Adaptive	Yes	$6x10^{-1}$	$4.5x10^{-1}$	6.8	193	744803	Inquire
PC3012 NT VARIO	Adaptive	Yes	1.5	1.1	7.6	215	743803	Inquire
PC3016 NT VARIO	Adaptive	Yes	70	53	11.4	322	741803	Inquire

* Can be fitted with vacuum regulation valve 696843. **Outlet catchpot for solvent collection only. *** US power cord (#637655) not included.

Note: All pumps 120V, 60Hz unless noted.

Rotary vane pumps

Model	Solvent Recovery	Ultimate Vacuum mbar	Ultimate Vacuum Torr	Free Air Capacity at 60Hz cfm	Free Air Capacity at 60Hz lpm	Cat. No.	2016 List Price
RZ2.5 100-120V/200-230V, 50-60Hz, US plug	No	2×10^{-3}	1.5×10^{-3}	1.6	47	698126	$2,495.00
RZ6 100-120V/200-230V, 50-60Hz, US plug	No	2×10^{-3}	1.5×10^{-3}	4.0	113	698136	3,427.00
RZ9,120V, 60Hz, US plug	No	2×10^{-3}	1.5×10^{-3}	6.0	170	698143	4,395.00
RZ16, 230V, 50-60Hz, CEE plug	No	2×10^{-3}	1.5×10^{-3}	11.2	318	698050	5,368.00

Chemistry-HYBRID vacuum pumps

Model	Solvent Recovery	Ultimate Vacuum mbar	Ultimate Vacuum Torr	Free Air Capacity at 60Hz cfm	Free Air Capacity at 60Hz lpm	Cat. No.	2016 List Price
RC6, 100-120V, 50-60Hz, US plug	No	2×10^{-3}	1.5×10^{-3}	4.1	115	698563	7,375.00

Accessories for your VACUUBRAND® rotary vane pump and RC6

	Cat. No.	List Price
KF16 to 10mm (3/8") hose barb, fits RZ2.5, RZ6, and RC6 inlet, aluminum	662511	41.78
KF25 to 19mm (3/4") hose nipple, fits RZ9 inlet and outlet, aluminum	662532	58.08
Inlet catchpot for RZ2.5	698000	405.56
Inlet catchpot for RZ6 and RC6	698006	594.08
Inlet catchpot for RZ9 and RZ16	698007	509.50
Oil mist filter for RZ2.5 and RZ6	698003	563.51
Oil mist filter for RZ9 and RZ16	698017	695.98
Pump Oil B, 1 liter bottle	687010	51.97
Pump Oil B, 5 liter can	687011	183.42

Other flanges, clamping rings and centering rings available, contact BrandTech® Scientific.

What's in a name?

A quick guide to VACUUBRAND diaphragm pump names

To get a better handle on the vacuum pump you are looking at, VACUUBRAND has a nomenclature that makes pump identification relatively easy:

M = "Membrane"/diaphragm pump

E, Z, D or V = From "eins," "zwei," "drei," and "vier" or 1, 2, 3 or 4 in German

Indicates the number of pump stages which gives vacuum depth. An "E" pump provides 70-100mbar, and is suitable for filtration, degassing, solid-phase extraction, aspiration, dessication and other pressure differential applications. Z, D or V pumps provide increasingly deeper vacuum levels typically used for evaporative applications.

C = Chemistry design

A full fluoropolymer flowpath suitable for use with aggressive chemicals. If selecting a "non-C" diaphragm pump, make sure that the vapors passing through the pump are compatible with the materials of construction of the flowpath - typically aluminum and FKM elastomer (aluminum and PTFE in the case of the ME1)

NT = "New Technology"

A series of pumps incorporating design changes for improved performance and easier service.

AK and EK = solvent recovery accessories

AK indicating a glass catchpot on the inlet (or in the case of 2AK, inlet and outlet), while EK represents an outlet condenser.

Synchro = A two-application vacuum system with flow control and check valves for each.

PC = Pumping unit, Chemistry

An integrated vacuum system with pump, solvent recovery and control accessories. They have a different, but equally descriptive nomenclature.

Vacuum Pump Ordering Information

Aluminum-FKM diaphragm vacuum pumps for non-corrosive applications

Model	Ultimate Vacuum		Free Air Capacity at 60Hz		Cat. No.*	2016 List Price
	mbar	Torr	cfm	lpm		
ME1	100	75	0.5	14	721003	$859.00
ME2 NT	70	52	1.3	37	730003	1,392.00
ME4 NT	70	52	2.6	73	731003	2,162.00
ME8 NT	70	52	4.8	135	734003	3,881.00
ME16 NT	70	53	10.8	307	741003	Inquire
MZ2 NT	7	5.2	1.4	40	732003	2,162.00
MD1, 100-120V/200-230V, 50-60HZ	1.5	1.1	0.82	23	696087**	2,570.00
MD4 NT	1	0.75	2.5	72	736005	4,079.00
MD12 NT	2	1.5	7.8	222	743003	6,400.00
MV2 NT	5×10^{-1}	4×10^{-1}	1.4	40	738003	4,610.00
MV10 NT	5×10^{-1}	3.8×10^{-1}	6.8	193	744003	Inquire

Accessory		
Vacuum regulation valve with manometer for ME1	696842	175.27
Vacuum regulation valve with manometer for ME2 NT	696840	319.97
Power cord, 120V, 60Hz	612065	27.51

* All pumps 120V, 60Hz unless noted. **Dual voltage pumps require purchase of a power cord.

Vacuum gauges & controllers

Model	Cat. No.	2016 List Price
DVR2 Vacuum Gauge, battery operated (9V, Lithium)	682902	$923.00
VACUU•VIEW, 100-230V, 50-60Hz	683220	1,242.00
VACUU•VIEW extended, 100-230V, 50-60Hz	683210	1,422.00
DCP 3000 + VSK 3000 vacuum gauge, 100-230V, 50-60Hz	683170	1,889.00
DCP 3000 + VSP 3000 vacuum gauge, 100-230V, 50-60Hz	683190	1,889.00
DCP 3000 + MPT 200 vacuum gauge, 100-230V, 50-60Hz	683175	3,569.00
CVC 3000 *detect* vacuum controller, frame rod version 100-230V, 50-60Hz (with integrated chemistry solenoid valve and check valve)	2614120	3,285.00
CVC 3000 *detect,* vacuum controller, benchtop version, 100-230V,50-60HZ (with integrated chemistry solenoid valve and check valve)	2614860	3,285.00
CVC 3000 + VSP 3000 + VVB 15C KF16 (Pirani control package), all inclusive, for rotary vane pumps with KF16 small flange inlets (RZ2.5, RZ6, RC6)	635983	3,369.00
CVC 3000 + VSP 3000 + VVB 15C KF25 (Pirani control package), all inclusive, for rotary vane pumps with KF25 small flange inlets (RZ9, RZ16)	635982	3,969.00
VSK 3000 VACUU•BUS® gauge head	636657	648.00
VSP 3000 VACUU•BUS® Pirani gauge head	636163	643.00
VACUU•CONTROL® add-on, LAN*	683120	818.00
VACUU•CONTROL® add-on, WLAN*	683110	818.00
VVKWB solenoid coolant valve	674220	440.21
VBMB solenoid vent valve	674217	380.09
Liquid Level Sensor for 500mL catchpot, VACUU•BUS®	699908	614.46
VACUU•BUS® extension cable, 2m	612552	75.41
VACUU•BUS® Y-adapter with cable, 2m	683240	255.00

*Software version 2.0 or higher (2009)

BRAND*plates*® Microplates

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

BRAND has applied its decades of experience in premium-quality molding of lab plastic consumables from pipette tips to volumetric plasticware to cuvettes, to the challenges of microplate design. Plates are designed to minimize cross-contamination, ensure excellent recovery, and offer many options in color, well-count, surface-treatment and well-shape.

For this comprehensive line, nine different surfaces have been developed under state of the art production conditions.

The 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

Immunology
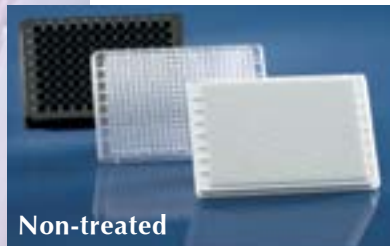
Cell culture

Non-treated surfaces
pureGrade™
pureGrade™ *S*

Immunology surfaces
immunoGrade™
hydroGrade™
lipoGrade™

Cell culture surfaces
cellGrade™
cellGrade™ plus
cellGrade™ premium
inertGrade™

A comprehensive, premium-quality line of plates for cell culture and immunoassay

BRAND*plates*® Microplates

Surfaces

BRAND*plates*® microplates are offered with 9 surface options. The surface modifications are generated via a physical-chemical process that creates stable surfaces for storage at room temperature. To enable easy identification of the surface type and well location, 96-well standard format plates have a color-coded embossing.

All BRAND*plates*® microplates are manufactured according to ANSI-/SLAS-Standards 1 to 4, 2004 and are free from endotoxins, DNase, DNA, and RNase. Sterilized plates are guaranteed to an SAL of 10^{-6}.

Non-treated surfaces

pureGrade™	non-treated, "medium binding," non-sterile
pureGrade™ *S*	non-treated, "medium binding," sterile

Immunoassay surfaces

immunoGrade™	ideal for immobilization of IgG, "high binding," non-sterile
hydroGrade™	hydrophilic, ideal for immobilization of hydrophilic molecules, non-sterile
lipoGrade™	hydrophobic, ideal for immobilization of hydrophobic molecules, non-sterile

Cell culture surfaces

cellGrade™	standard tissue culture surface for the cultivation of adherent cell lines, sterile
cellGrade™ plus	surface for the cultivation of fastidious adherent cells making serum-reduced cultivation possible, sterile
cellGrade™ premium	surface treatment with similar properties to poly-D-lysine, serum-reduced or serum-free cultivation is possible, sterile
inertGrade™	surface that inhibits adhesion of cells, e.g., and reduces protein adsorption for cultivation of suspension and stem cells, sterile

Color codes—96-well plates

To enable an easy identification of the surface type and to facilitate the legibility of the alphanumeric coding BRAND*plates*® microplates in the 96-well standard format have a color-coded embossing. All microplates have alphanumeric coding.

Gray Coded — Non-treated microplates for the most diversified applications

Blue Coded — Microplates for immunoassays such as ELISA, RIA, FIA, etc.

Orange Coded — Microplates for cell culture applications
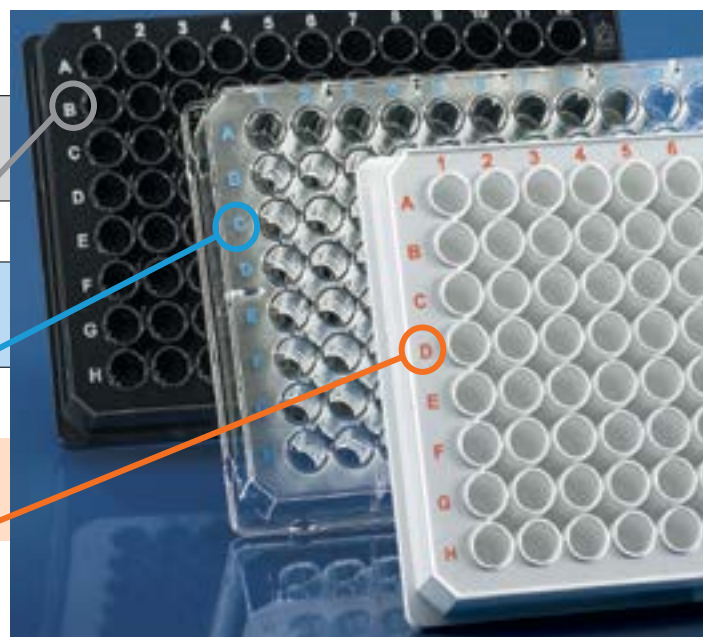
Well-count, colors, and well-shape

BRAND*plates*® microplates are available in a variety of different colors, well-number, and well shapes. Different combinations of these characteristics create the broad product range of BRAND*plates*® microplates.

Well number

BRAND*plates*® microplates are offered in 96-, 384-, and 1536-well formats. BRAND*plates*® microplates with 96-well standard format are manufactured with a "chimney well" design. Each individual well is separated from each other to reduce cross contamination risk. In addition, lids with condensation rings are available for substantial reduction in evaporative losses. In the 384- and 1536-well microplates, rounded wells allow optimal uniform meniscus formation.

Colors and plate types

The application to be performed in the plate generally determines the color of the plates used. A basic rule is: transparent for colorimetry; white for luminescence; and black for fluorescence. Plates are available as standard solid color plates or colored with transparent bottoms depending on the optical requirements of the application.

96-well white microplate
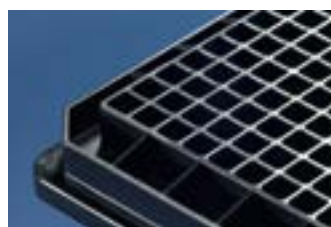
384-well black microplate

1536-well clear microplate

Transparent bottom microplates

Well shape

96-well BRAND*plates*® microplates are offered with four distinct bottom shapes. 384-well and 1536-well microplates are only available with flat-bottom (F-bottom).

Round (U-bottom): Round bottom plates have no edges and are suitable for stirring and washing of samples. This bottom shape is used for agglutination and other assays requiring these tasks.

Flat (F-bottom): Flat bottom plates are designed for precise optical measurements. Useful for many applications, including cell culture of adherent cell types.

Conical (V-bottom): Conical bottom plates are maximized for sample recovery after centrifugation, precipitation assays, and storage applications.

Curved (C-bottom): The curved bottom is a flat bottom with curved edges. By combining the advantages of round and flat bottom plates, better sample mixing is obtained with precise optical measurements for immunological assays.
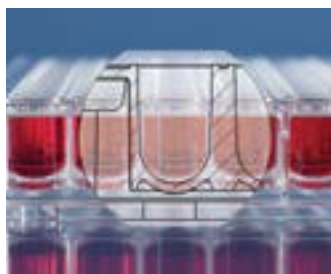
Round bottom (U)
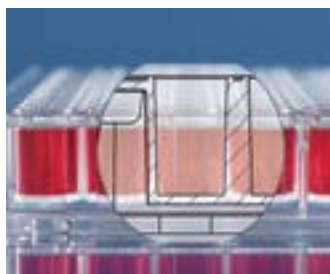
Flat bottom (F)
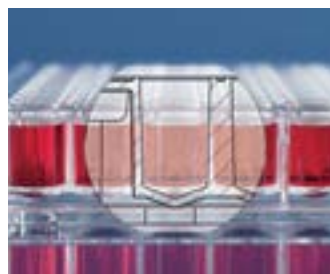
Conical bottom (V)

Curved bottom (C)

BRAND*plates*® Microplates

Samples and plate selection

Given the broad range of plates available, we would like to provide maximum assistance in the selection of the optimum plate for your application. Use BRAND's online plate selection guide at www.brandtech.com/plateselection to select the right plate for your needs. Samples are available without cost or obligation.

Barcodes

BRAND can provide high-quality and customized barcode labeling for your plate needs. Visit www.brandtech.com for more information

Accessories

BRAND offers many accessories for use with microplate products such as lids, sealing films, and more. Lids with and without condensation rings are optimally matched to the corresponding BRAND*plates*® microplate to protect samples. For enhanced protection against contamination and evaporation, self-adhesive sealing films are available in a variety of materials and can be easily applied with a rubber roller.

Condensation Rings	Height	Sterile	Pack of	Cat. No.	2016 List Price
Lids for 96-well standard plates					
Yes	8mm	No	Pack of 100 (5 lids per bag)	782150	$164.01
No	8mm	No	Pack of 100 (5 lids per bag)	782151	164.01

For BRAND*plates*® microplates Cat. No. ranges: 781600-08, 781660-68, 781720-29, 781780-89, 781840-49, 781900-09, 781960-68, 782022-28, 782082-88

Lids for 96-well plates with transparent bottom and all 384-well plates					
No	4.5mm	No	Pack of 50 lids (10 lids per bag)	782152	107.00

For BRAND*plates*® microplates Cat. No. ranges: 781610-27, 781670-87, 781731-42, 781800-02, 781850-67, 781910-11, 781970-87, 782030-47, 782090-107

Lids for all 1536-well plates					
No	5.5mm	No	Pack of 50 lids (10 lids per bag)	782153	107.00

For BRAND*plates*® microplates Cat. No. ranges: 781640-42, 781700-02, 782000-02

Application	Description	Material	Pack of	Cat. No.	2016 List Price
Sealing films, Self-adhesive					
ELISA, PCR	single film	polypropylene	100 sheets	781390	$125.00
ELISA, Real-Time PCR	single film, highly transparent	polyester	100 sheets	781391	Inquire **NEW!**
Cold storage	roll with 100 sheets	aluminum	1 roll	781380	273.02
Cold storage	single film	aluminum	100 sheets	781381	218.02
Cell and tissue culture	single film, gas-permeable	rayon	100 sheets	701364	125.00
Cell and tissue culture	single film, gas-permeable, sterile	rayon	50 sheets	701365	95.00
Storage	single film, DMSO-resistant	polypropylene	100 sheets	701367	316.01
Automation	single film	PE/PP	50 sheets	701370	245.02
Storage, fluorescence measurements	single film	vinyl	50 sheets	701371	85.00
Luminescence measurements	single film	vinyl	50 sheets	701372	70.00
Roller for sealing films				701380	65.00
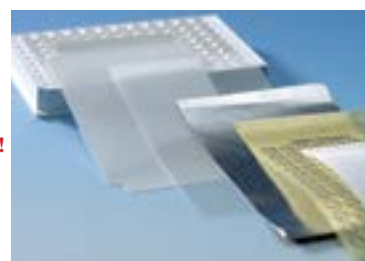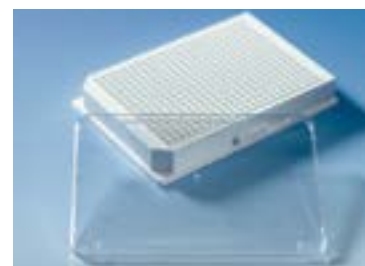
BRAND*plates*® microplates at a glance

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 / 330µL	781600	781660	781720	781780	781840	781960	—	—	781900
transparent	V / 360µL	781601	781661	781721	—	781841	781961	—	—	—
transparent	F / 350µL	781602	781662	781722	781782	781842	781962	782022	782082	781902
transparent	C / 350µL	781603	781663	781723	781783	781843	781963	—	—	—
white	U / 330µL	781604	—	781724	781784	781844	—	—	—	781904
white	F / 350µL	781605	781665	—	—	—	781965	782025	782085	781905
white	C / 350µL	—	—	781726	781786	781846	—	—	—	781906
black	U / 330µL	781607	—	781727	781787	781847	—	—	—	781907
black	F / 350µL	781608	781668	—	—	—	781968	782028	782088	781908
black	C / 350µL	—	—	781729	781789	781849	—	—	—	781909
With transparent bottom										
Color	Bottom / Well volume	pureGrade™	pureGrade™ S	immunoGrade™	hydroGrade™	lipoGrade™	cellGrade™	cellGrade™ plus	cellGrade™ premium	inertGrade™
white	F / 330µL	781610	781670	—	—	781850	781970	782030	782090	781910
black	F / 330µL	781611	781671	781731	—	781851	781971	782031	782091	781911
Strip plates										
Color	Bottom / Well volume	pureGrade™	pureGrade™ S	immunoGrade™	hydroGrade™	lipoGrade™	cellGrade™	cellGrade™ plus	cellGrade™ premium	inertGrade™
transparent, without grid	F / 360µL	782300	—	782305	—	—	—	—	—	—
transparent, with grid	F / 350µL	782301	—	782306	—	—	—	—	—	—

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 / 100µL	781620	781680	781740	781800	781860	781980	782040	782100	—
white	F / 100µL	781621	781681	781741	781801	781861	781981	—	—	—
black	F / 100µL	781622	781682	781742	781802	781862	781982	—	—	—
With transparent bottom										
Color	Bottom / Well volume	pureGrade™	pureGrade™ S	immunoGrade™	hydroGrade™	lipoGrade™	cellGrade™	cellGrade™ plus	cellGrade™ premium	inertGrade™
white	F / 120µl	781626	781686	—	—	781866	781986	782046	782106	—
black	F / 120µl	781627	781687	—	—	781867	781987	782047	782107	—

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 / 10µL	781640	781700	—	—	—	782000	—	—	—
white	F / 10µL	781641	781701	—	—	—	782001	—	—	—
black	F / 10µL	781642	781702	—	—	—	782002	—	—	—

Interactive Selection Guide with more information about BRAND*plates*® microplates available at www.brandtech.com.

For plate selection guide go to www.brandtech.com/plateselection

Non-treated BRAND*plates*®
for General Applications

pureGrade™

Non-treated surface, "medium binding" non-sterile

- The standard plate for most applications.
- PS, non-sterile.
- Particularly applicable for homogeneous assays, screening, and storage.
- Strip plates available (see page 89).

pureGrade™

Color	Bottom	Well volume	Cat. No.	2016 List Price
96-well standard microplates				
transparent	U-bottom	330µL	781600	$131.01
transparent	V-bottom	360µL	781601	131.01
transparent	F-bottom	350µL	781602	131.01
transparent	C-bottom	350µL	781603	131.01
white	U-bottom	330µL	781604	230.02
white	F-bottom	350µL	781605	230.02
black	U-bottom	330µL	781607	230.02
black	F-bottom	350µL	781608	230.02
Pack of 100 plates (20 stacks of 5 plates; 1 lid per stack)				
96-well transparent bottom microplates				
white	F-bottom	330µL	781610	660.00
black	F-bottom	330µL	781611	660.00
Pack of 100 plates (4 bags of 25 plates)				
384-well standard microplates				
transparent	F-bottom	100µL	781620	105.00
white	F-bottom	100µL	781621	211.01
black	F-bottom	100µL	781622	211.01
Pack of 50 plates (5 bags of 10 plates)				
384-well transparent bottom microplates				
white	F-bottom	120µL	781626	540.00
black	F-bottom	120µL	781627	540.00
Pack of 50 plates (2 bags of 25 plates)				
1536-well standard microplates				
transparent	F-bottom	10µL	781640	992.04
white	F-bottom	10µL	781641	1,009.05
black	F-bottom	10µL	781642	1,009.05
Pack of 50 plates (5 bags of 10 plates)				

pureGrade™ *s*

Non-treated surface, "medium binding" sterile

- Sterilized via β-radiation.
- PS, sterile.
- Especially suited for bacteriological assays, screening, and storage.

pureGrade™ *s*

Color	Bottom	Well volume	Cat. No.	2016 List Price
96-well standard microplates				
transparent	U-bottom	330µL	781660	$120.00
transparent	V-bottom	360µL	781661	120.00
transparent	F-bottom	350µL	781662	120.00
transparent	C-bottom	350µL	781663	120.00
white	F-bottom	350µL	781665	220.00
black	F-bottom	350µL	781668	220.00
Pack of 50 plates (individually wrapped, with lid)				
96-well transparent bottom microplates				
white	F-bottom	330µL	781670	592.02
black	F-bottom	330µL	781671	592.02
Pack of 50 plates (individually wrapped, with lid)				
384-well standard microplates				
transparent	F-bottom	100µL	781680	173.02
white	F-bottom	100µL	781681	240.00
black	F-bottom	100µL	781682	240.00
Pack of 50 plates (individually wrapped, with lid)				
384-well transparent bottom microplates				
white	F-bottom	120µL	781686	781.03
black	F-bottom	120µL	781687	781.03
Pack of 50 plates (individually wrapped, with lid)				
1536-well standard microplates				
transparent	F-bottom	10µL	781700	1,191.05
white	F-bottom	10µL	781701	1,213.05
black	F-bottom	10µL	781702	1,213.05
Pack of 50 plates (individually wrapped, with lid)				

Strip Plates for Immunology Applications

BRAND*plates*® strip plates offer high flexibility for immunoassay development. Available in two configurations of well strips in a frame with a grid, or in a frame without a grid, strip plates allow the end user to use only as many wells as necessary. In addition, two surface treatments are available for increased specificity in high binding or medium binding applications.

Selection tips:

Select a frame style (12 x F8):

a. Frames without a grid allow for individual strips to be removed from the frame and reinserted. With this style frame, the strips are not divisible.

b. Frames with a grid allow for individual strips to be removed from the plate and reinserted. Each strip can be divided into 8 individual vessels and inserted individually into the frame plate.

Select a surface treatment:

a. pureGrade™ plates are non-treated, medium binding plates. These are designed for the widest variety of applications and for binding of protein as well as nucleic acids and more.

b. immunoGrade™ plates are non-sterile, high binding plates. These are optimized for the immobilization of IgG and the standard ELISA assay. This surface treatment will allow for binding of a wide range of molecules, particularly with protein populations with mixed hydrophilic and hydrophobic regions.

pureGrade™

Color	Bottom	Well volume	Cat. No.	2016 List Price
Strip plates 12 x F8				
transparent, without grid, strips of 8 wells, not divisible				
	F-bottom	360µL	782300	$823.03
transparent, with grid, strips of 8 wells, divisible				
	F-bottom	350µL	782301	878.03
Pack of 100 plates (4 bags of 25 plates)				

immunoGrade™

Color	Bottom	Well volume	Cat. No.	2016 List Price
Strip Plates 12 x F8				
transparent, without grid, strips of 8 wells, not divisible				
	F-bottom	360µL	782305	$823.03
transparent, with grid, strips of 8 wells, divisible				
	F-bottom	350µL	782306	878.03
Pack of 100 plates (4 bags of 25 plates)				

BRAND*plates*® Microplates for Immunoassays

Suitable for ELISA, RIA, FIA and Other Immune Testing

immunoGrade™

Optimized for the immobilization of IgG

- 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.
- "high-binding."
- PS, non-sterile.
- Strip plates available (see page 89).

hydroGrade™

For the immobilization of hydrophilic molecules

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

immunoGrade™

Color	Bottom	Well volume	Cat. No.	2016 List Price
96-well standard microplates				
transparent	U-bottom	330µL	781720	$218.02
transparent	V-bottom	360µL	781721	218.02
transparent	F-bottom	350µL	781722	218.02
transparent	C-bottom	350µL	781723	218.02
white	U-bottom	330µL	781724	342.02
white	C-bottom	350µL	781726	342.02
black	U-bottom	330µL	781727	342.02
black	C-bottom	350µL	781729	342.02

Pack of 100 plates (20 stacks of 5 plates; 1 lid per stack)

Color	Bottom	Well volume	Cat. No.	2016 List Price
96-well transparent bottom microplates				
black	F-bottom	330µL	781731	697.50

Pack of 100 plates (20 stacks of 5 plates; 1 lid per stack)

Color	Bottom	Well volume	Cat. No.	2016 List Price
384-well standard microplates				
transparent	F-bottom	100µL	781740	209.01
white	F-bottom	100µL	781741	209.01
black	F-bottom	100µL	781742	209.01

Pack of 50 plates (10 stacks of 5 plates; 1 lid per stack)

hydroGrade™

Color	Bottom	Well volume	Cat. No.	2016 List Price
96-well standard microplates				
transparent	U-bottom	330µL	781780	$226.01
transparent	F-bottom	350µL	781782	226.01
transparent	C-bottom	350µL	781783	226.01
white	U-bottom	330µL	781784	400.00
white	C-bottom	350µL	781786	400.00
black	U-bottom	330µL	781787	400.00
black	C-bottom	350µL	781789	400.00

Pack of 100 plates (20 stacks of 5 plates; 1 lid per stack)

Color	Bottom	Well volume	Cat. No.	2016 List Price
384-well standard microplates				
transparent	F-bottom	100µL	781800	250.02
white	F-bottom	100µL	781801	326.01
black	F-bottom	100µL	781802	326.01

Pack of 50 plates (10 stacks of 5 plates; 1 lid per stack)

lipoGrade™

For the immobilization of hydrophobic molecules

- 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.

- PS, non-sterile.

- For solid phase with hydrophobic molecules and liquid phase with hydrophilic molecules, respectively.

96-well standard-volume microplates

96-well transparent bottom microplates

384-well standard-volume microplates

lipoGrade™

Color	Bottom	Well volume	Cat. No.	2016 List Price
96-well standard microplates				
transparent	U-bottom	330µL	781840	$145.00
transparent	V-bottom	360µL	781841	145.00
transparent	F-bottom	350µL	781842	145.00
transparent	C-bottom	350µL	781843	145.00
white	U-bottom	330µL	781844	314.01
white	C-bottom	350µL	781846	314.01
black	U-bottom	330µL	781847	314.01
black	C-bottom	350µL	781849	314.01
Pack of 100 plates (20 stacks of 5 plates; 1 lid per stack)				
96-well transparent bottom microplates				
white	F-bottom	330µL	781850	697.50
black	F-bottom	330µL	781851	697.50
Pack of 100 plates (20 stacks of 5 plates; 1 lid per stack)				
384-well standard microplates				
transparent	F-bottom	100µL	781860	179.01
white	F-bottom	100µL	781861	266.01
black	F-bottom	100µL	781862	266.01
Pack of 50 plates (10 stacks of 5 plates; 1 lid per stack)				
384-well transparent bottom microplates				
white	F-bottom	120µL	781866	557.50
black	F-bottom	120µL	781867	557.50
Pack of 50 plates (10 stacks of 5 plates; 1 lid per stack)				

BRAND*plates*® Microplates for Cell Culture

cellGrade™

For the cultivation of adherent cell lines

- Standard-volume, sterile plates for the cultivation of adherent cell lines.
- 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.
- PS, sterile.

cellGrade™

Color	Bottom	Well volume	Cat. No.	2016 List Price
96-well standard microplates				
transparent	U-bottom	330µL	781960	$144.79
transparent	V-bottom	360µL	781961	144.79
transparent	F-bottom	350µL	781962	144.79
transparent	C-bottom	350µL	781963	144.79
white	F-bottom	350µL	781965	160.00
black	F-bottom	350µL	781968	160.00
Pack of 50 plates (individually wrapped, with lid)				
96-well transparent bottom microplates				
white	F-bottom	330µL	781970	450.00
black	F-bottom	330µL	781971	450.00
Pack of 50 plates (individually wrapped, with lid)				
384-well standard microplates				
transparent	F-bottom	100µL	781980	175.00
white	F-bottom	100µL	781981	190.00
black	F-bottom	100µL	781982	190.00
Pack of 50 plates (individually wrapped, with lid)				
384-well transparent bottom microplates				
white	F-bottom	120µL	781986	660.00
black	F-bottom	120µL	781987	660.00
Pack of 50 plates (individually wrapped, with lid)				
1536-well standard microplates				
transparent	F-bottom	10µL	782000	975.04
white	F-bottom	10µL	782001	1,028.05
black	F-bottom	10µL	782002	1,028.05
Pack of 50 plates (individually wrapped, with lid)				

cellGrade™ plus

For reduced-serum media cultivation of cells

- 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 leading to better rate of yield.
- Sensitive cell lines can be cultivated.
- Suited for serum-reduced cultivation of cells.
- PS, sterile.

cellGrade™ plus

Color	Bottom	Well volume	Cat. No.	2016 List Price
96-well standard microplates				
transparent	F-bottom	350µL	782022	$220.02
white	F-bottom	350µL	782025	400.00
black	F-bottom	350µL	782028	400.00
Pack of 50 plates (individually wrapped, with lid)				
96-well transparent bottom microplates				
white	F-bottom	330µL	782030	450.00
black	F-bottom	330µL	782031	450.00
Pack of 50 plates (individually wrapped, with lid)				
384-well standard microplates				
transparent	F-bottom	100µl	782040	365.02
Pack of 50 plates (individually wrapped, with lid)				
384-well transparent bottom microplates				
white	F-bottom	120µL	782046	660.00
black	F-bottom	120µL	782047	660.00
Pack of 50 plates (individually wrapped, with lid)				
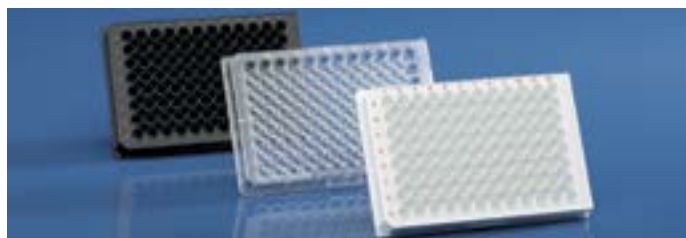
96-well standard volume microplates

cellGrade™ premium

Poly-D-Lysine-equivalent surface

- 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 to biologically coated surfaces.
- PS, sterile.

inertGrade™

For cultivation of suspension cell lines

- Especially suited for cell cultures, when adhesion is not desired.
- Optimized surface characteristics reduce cell adhesion and protein absorption, minimizing enzyme and cellular activation.
- Inhibits early differentiation of stem cells.
- Sterilized with ethylene oxide.
- PS, sterile.

cellGrade™ premium

Color	Bottom	Well volume	Cat. No.	2016 List Price
96-well standard microplates				
transparent	F-bottom	350µL	782082	$400.00
white	F-bottom	350µL	782085	635.02
black	F-bottom	350µL	782088	635.02
Pack of 50 plates (individually wrapped, with lid)				
96-well transparent bottom microplates				
white	F-bottom	330µL	782090	779.03
black	F-bottom	330µL	782091	779.03
Pack of 50 plates (individually wrapped, with lid)				
384-well standard microplates				
transparent	F-bottom	100µL	782100	714.03
Pack of 50 plates (individually wrapped, with lid)				
384-well transparent bottom microplates				
white	F-bottom	120µL	782106	1,195.06
black	F-bottom	120µL	782107	1,234.05
Pack of 50 plates (individually wrapped, with lid)				

inertGrade™

Color	Bottom	Well volume	Cat. No.	2016 List Price
96-well standard microplates				
transparent	U-bottom	330µL	781900	$599.03
transparent	F-bottom	350µL	781902	599.03
white	U-bottom	330µL	781904	679.03
white	F-bottom	350µL	781905	679.03
white	C-bottom	350µL	781906	679.03
black	U-bottom	330µL	781907	679.03
black	F-bottom	350µL	781908	679.03
black	C-bottom	350µL	781909	679.03
Pack of 40 plates (individually wrapped, with lid)				
96-well transparent bottom microplates				
white	F-bottom	330µL	781910	995.04
black	F-bottom	330µL	781911	995.04
Pack of 40 plates (individually wrapped, with lid)				
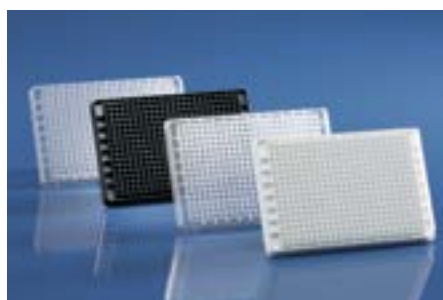
384-well standard-volume microplates

384-well transparent bottom microplates

1536-well standard-volume microplates

BRAND*plates*® Insert System

For Manual and Automated Cell and Tissue Culture Work

BRAND*plates*® Insert System

The BRAND Insert System, co-developed with the Fraunhofer Gesellschaft, Stuttgart Germany, includes a choice of two specialized cell culture plates and two types of cell culture inserts for applications such as co-culture, migration studies, chemotaxis assays and 3D tissue culture preparation (e.g. production of full-skin or epidermis models). Insert strips and plates are available individually or packed as a system. Key features to consider when selecting which components to utilize are plate selection and well size, insert type, and membrane pore size and material.

BRAND*plates*® Insert System

Plate selection

- **24-well standard plate**
  - Plate includes 24 individually fillable wells that can be fitted with strips of 4 inserts and/or individual inserts.
  - Used for basic applications such as co-culture, secretion studies, and migration studies.
- **6-well specialized plate**
  - Plate has 4 wells connected as one large, elongated well. This well is fitted with a strip of 4 inserts so that all 4 of the inserts in the strip can be supplied with medium at the same time.
  - Used for *in vitro* preparation of tissue (3D tissue culture).
- cellGrade™ plus (sterile, hydrophilic with different chemical groups, such as carboxyl and hydroxyl groups, that are freely accessible) and pureGrade™ *S* surface (untreated, sterile).
- Manufactured according to the requirements in ANSI/SLAS Standards 1 and 4.
- All plates have guide ridges for perfect insert fit and specially designed feeding ports for easy media changes, suitable for robotics/automation.

24-well standard plate

6-well specialized plate

Insert selection

- Smooth-walled Inserts or Inserts with Inlet Opening System (patent pending).
  - Smooth-walled for standard applications such as secretion studies, co-culture, migration studies, chemotaxis assays, etc.
  - Inlet Opening System with special inlet channels, for automated *in vitro* preparation of human tissues. The Inlet Opening System enables rapid, consistent changing of media, from submersion culture to air-lift culture. The special inlet channels enable adjustment of the medium level without damage to the tissue model.
- Membrane material of PC or PET material for different optical requirements and cell visibility.
- cellGrade™ plus surface.
- Multiple membrane pore sizes available for different applications: 0.4µm, 1.0µm, 3.0µm, 8.0µm.

BRAND*plates*® Insert System microplates

Description	Surface	Cat. No.	2016 List Price
24-well standard plate			
transparent	pureGrade™ *S*	782880	$137.63
transparent	cellGrade™ plus	782890	147.82
6-well specialized plate			
transparent	pureGrade™ *S*	782881	137.63
transparent	cellGrade™ plus	782891	147.82

Packs of 10 plates (individually wrapped with lid)

BRAND*plates*® Insert Strips

Pore Size (µm)	PC membrane Cat. No	2016 List Price	PET membrane Cat. No.	2016 List Price
Smooth-walled insert strips				
PS, cellGrade™ plus surface, sterile. 12 strips of 4 divisible inserts Qty. 48				
0.4	782800	$300.76	782810	$300.76
1	782820	300.76	—	—
3	782840	300.76	—	—
8	782860	300.76	782870	300.76
Strips with Inlet Opening System				
PS, cellGrade™ plus surface, sterile. 12 strips of 4 divisible inserts Qty. 48				
Pore Size (µm)	PC membrane Cat. No	2016 List Price	PET membrane Cat. No.	2016 List Price
0.4	782801	$372.12	782811	$372.12
1	782821	372.12	—	—
3	782841	372.12	—	—
8	782861	372.12	782871	372.12

BRAND*plates*® Insert System

General applications

Inserts and plates should be selected with care. Plates are available in non-treated, sterile configurations (pureGrade™ *S*) or with enhanced tissue culture treatment (cellGrade™ plus). Insert pore size and material selection should be based on application. The most common applications and recommended pore sizes or materials are listed in the tables below. To ensure your product selections will work for your applications, request a free sample at www.brandtech.com.

Guide grooves in the standard 24-well planes

Guide Ridge

Feeding port
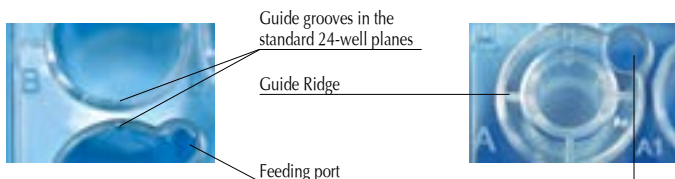
Pore size	Application range
0.4 µm	Co-culture, transport studies, secretion studies, cell polarity studies, etc.
1.0 µm	Co-culture, transport studies, secretion studies, etc.
3.0 µm	Migration studies, chemotaxis studies, metastasis experiments, etc.
8.0 µm	Migration studies, chemotaxis studies, metastasis experiments, etc. See also the construction of full-thickness skin models by the Fraunhofer IGB (www.tissue-factory.com)

Properties	PC	PET
Optical properties	translucent	transparent
Cell visibility under Light Microscopy	–	+

Specialized 6-well system for 3D tissue culture applications

For advanced applications, such as 3D tissue reconstruction, preconfigured systems are available as 6-well plates pre-filled with insert strips of a defined material, pore size and with or without the Inlet Opening System. For defined protocols on epidermis or full skin model reconstruction, please visit www.brandtech.com.

Full skin model   (photo © Fraunhofer IGB)
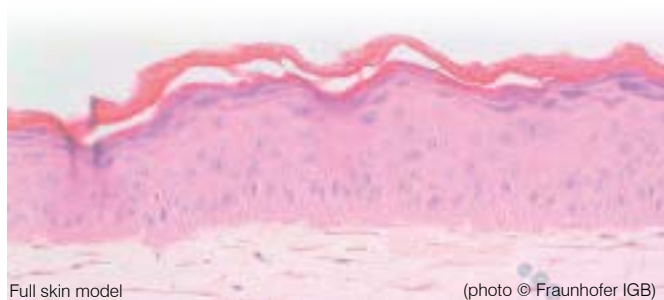
BRAND*plates*® Insert System

Pore Size (µm)	PC membrane Cat. No	2016 List Price	PET membrane Cat. No.	2016 List Price
6-well plates filled with 6 insert strips				
PS, cellGrade™ plus surface, sterile. Smooth-walled strips or strips with Inlet Opening System.				
System with smooth-walled insert strips				
0.4µm	782802	$841.09	782812	$841.09
1µm	782822	841.09	—	—
3µm	782842	841.09	—	—
8µm	782862	841.09	782872	841.09
Inlet Opening System				
0.4µm	782803	994.01	782813	994.01
1µm	782823	994.01	—	—
3µm	782843	994.01	—	—
8µm	782863	994.01	782873	994.01

Pack of 5 plates with lids (condensation rings) and 30 insert strips

Polypropylene & Deep-Well Plates

Deep-well plates

BRAND Deep-well plates are excellent for sample storage, high throughput screening (HTS) assays requiring a motherplate, cell and tissue culture, and more. Choose polypropylene for chemical resistance to phenols, chloroform and DMSO, or polystyrene for clarity or surface properties. Plates are compatible with most robotic samplers and automated liquid handling systems.

- Polypropylene plates are autoclavable at 121°C (250°F) for 20 minutes, and withstand temperatures as low as -80°C (-112°F).
- Round bottom wells for optimal sample mixing and recovery.
- Wells are alphanumerically coded, with a corner cutaway for easy orientation and well identification.
- Compatible with multichannel pipettes and automated liquid handling systems from all leading manufacturers.
- Plates come in 96-well and 384-well varieties, and are stackable for easy storage.

BRAND 1.2mL Low Profile plate reduces space requirements by approximately 30%
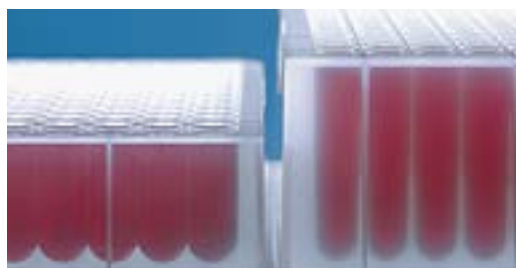
Color	Well volume	Well shape	Well bottom	Qty./ Pack	Cat. No.	2016 List Price
Deep-well plates						
96-well, polypropylene	0.3mL	round	U-bottom	100	701330	$233.02
96-well, polypropylene	0.5mL	round	U-bottom	48	701346	356.01
96-well, polypropylene	1.1mL	round	U-bottom	24	701350	136.01
96-well, polystyrene	1.1mL	round	U-bottom	32	701352	171.01
96-well, polypropylene, Low Profile	1.2mL	round	U-bottom	50	701340	274.01
96-well, polypropylene	2.2mL	square	U-bottom	24	701354	196.01
384-well, polypropylene	0.3mL	square	V-bottom	48	701355	582.02

	Autoclavable	Qty./ Pack	Cat. No.	2016 List Price
Mat covers				
Mat for 1.1mL volume deep-well plates, mod. PE	Yes, 121°C for 15 min.	24	701360	$109.01
Mat for 1.2mL volume deep-well plates, TPE	Yes, 121°C for 15 min.	50	701368	290.00
Mat for 2.2mL volume deep-well plates, EVA	No	24	701362	87.00
Mat for 0.5mL 96-well plates, PP	Yes, 121°C for 15 min.	50	701358	370.00
Mat for 0.3mL 384-well plates, Silicone	Yes, 101°C for 20 min.	50	701357	557.02

Sealing films available, see page 86
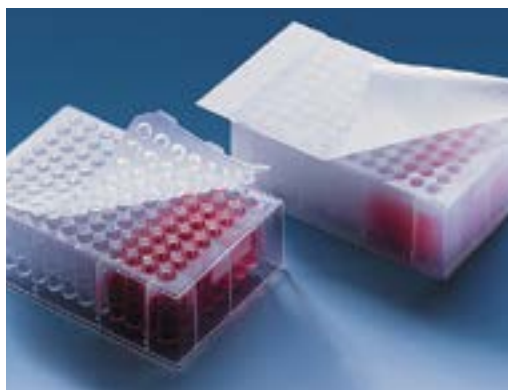
BRAND

Deep-well plate mat covers

Mat covers provide an effective plug seal for each well (maximum well volume is reduced).

BRAND Microcentrifuge Tubes

BRAND microcentrifuge tubes fit most common rotors and may be spun up to 30,000 RCF (g) (10,000 x g for 0.5mL; 20,000 x g for 1.5mL; 30,000 x g for tubes with lid closure). Manufactured from virgin polypropylene, these highly translucent tubes are free from flash, air bubbles, and streaks. Caps are flat with consistent thickness for trouble-free piercing.

- Tubes have uniform wall thickness for consistent, repeatable results.
- Caps form a tight, leak-free seal that is easy to open, even when wearing gloves.
- BIO-CERT® endotoxin-, RNase-, ATP-, and DNA-free microcentrifuge tubes are available for critical applications.
- Colored tubes simplify sample identification.
- Centrifuge Tube Mini Coolers hold twelve microtubes from 0.5mL to 2.0mL in size and, when pre-frozen, maintain the rated temperature for approximately an hour (45 minutes for -70°C model).

128-tube Rack

20-tube Rack

Tube Vol mL	Color	OD x H mm	Qty./ Pack	Cat. No.	2016 List price
Non-sterile microcentrifuge tubes with lids					
0.5 w/lid closure **NEW!**	clear	10 x 30	500	780536	$51.01
0.5	clear	8 x 32	1000	780507	67.00
1.5	clear	11 x 41	500	780500	13.80
1.5 w/lid closure	clear	11 x 39	1000	780540	76.01
1.5	yellow	11 x 41	500	780521	13.80
1.5	blue	11 x 41	500	780522	13.80
1.5	green	11 x 41	500	780523	13.80
1.5	orange	11 x 41	500	780524	13.80
1.5	amber	11 x 41	500	780525	13.80
2.0	clear	11 x 41	500	780550	53.00
2.0 w/lid closure **NEW!**	clear	12.8 x 40	500	780546	51.01
BIO-CERT® RNase-, DNase, DNA-free microcentrifuge tubes with lids					
1.5	clear	11 x 41	450	780400	127.50
Non-sterile microcentrifuge tubes without lid					
1.5	clear	11 x 39.5	2000	780505	106.01
Accessories					
128-tube rack			5	4341052	98.96
84-tube rack			5	4341002	98.96
20-tube rack for 1.5mL tubes and smaller*			1	780605	27.71
0.5mL adapters for 20-tube rack			20	780608	36.46
Centrifuge tube mini cooler, 0°C			1	114930	179.48
Centrifuge tube mini cooler, -20°C			1	114935	179.48
Centrifuge tube mini cooler, -70°C			1	114940	179.48

*adapter required for 0.5mL tubes

Centrifuge Tube Mini Cooler, -20°C

0.5mL Microcentrifuge tubes

1.5mL Microcentrifuge tubes

2.0mL Microcentrifuge tubes

1.5mL Microcentrifuge tubes with lid closure

Lid closure for 1.5mL Microcentrifuge tubes

BRAND PCR Tubes, Strips & Plates

BRAND PCR tubes, strips, and plates are manufactured from high quality virgin resins for excellent, reproducible results in most PCR applications. This collection of individual tubes, tube strips, cap strips and multiwell plates are manufactured without lubricants or chemical additives that can contaminate reagents and samples

- PCR tubes and strip tubes, and plates are compatible with most thermal cyclers.

- Standard (0.2mL) and low-profile (0.15mL) products available.
- All PCR products are autoclavable, and RNase-, DNase, and DNA-free.
- Thin, uniform walls for precise thermal transfer.
- White PCR products with smooth surfaces to optimize reflection of fluorescent signal for quantitative Real Time PCR (qPCR).

Description	Qty./Pack	Cat. No.	2016 List Price
PCR tubes			
0.2mL tubes with domed cap, Clear	1000	781300	$107.00
0.2mL tubes with flat cap, Clear	1000	781305	57.00
0.2mL tubes with flat cap, Rose	1000	781301	57.00
0.2mL tubes with flat cap, Yellow	1000	781302	57.00
0.2mL tubes with flat cap, Green	1000	781303	57.00
0.2mL tubes with flat cap, Blue	1000	781304	57.00
0.5mL tubes with flat cap, Clear	1000	781310	60.00
0.5mL tubes with flat cap, Rose	1000	781311	60.00
0.5mL tubes with flat cap, Yellow	1000	781312	60.00
0.5mL tubes with flat cap, Green	1000	781313	60.00
0.5mL tubes with flat cap, Blue	1000	781314	60.00
PCR 8-strip tubes			
8 x 0.2mL tube strip with individual attached flat caps, Clear (qPCR)	120	781332	190.00
8 x 0.15mL low profile tube strip with individual attached flat caps, Clear (qPCR)	120	781333	190.00
8 x 0.2mL tube strip with attached domed strip cap	125	781330	213.02
8 x 0.2mL tube strip with 8-strip flat caps, Clear (qPCR)	250	781326	251.01
8 x 0.2mL tube strip with 8-strip domed caps, Clear	250	781327	207.00
8 x 0.2mL tube strip, Clear (qPCR)	125	781320	71.01
8 x 0.2mL tube strip, Rose	125	781321	71.01
8 x 0.2mL tube strip, Yellow	125	781322	71.01
8 x 0.2mL tube strip, Green	125	781323	71.01
8 x 0.2mL tube strip, Blue	125	781324	71.01
PCR 8-strip caps			
8-strip flat caps, Clear (qPCR)	125	781334	58.00
8-strip domed caps, Clear	125	781340	34.81
8-strip domed caps, Rose	125	781341	34.81
8-strip domed caps, Yellow	125	781342	34.81
8-strip domed caps, Green	125	781343	34.81
8-strip domed caps, Blue	125	781344	34.81
8-strip flat caps, Clear (qPCR) plates **NEW!***	300	781413	138.11
8-strip domed caps, Clear (qPCR) plates **NEW!***	300	781414	138.11
PCR 12-strip tubes			
12 x 0.2mL tube strip, Clear	125	781280	206.01
12 x 0.2mL tube strip, Rose	125	781281	206.01
12 x 0.2mL tube strip, Yellow	125	781282	206.01
12 x 0.2mL tube strip, Green	125	781283	206.01
12 x 0.2mL tube strip, Blue	125	781284	206.01
PCR 12-strip caps			
12-strip domed caps, Clear	125	781290	53.00
12-strip domed caps, Rose	125	781291	53.00
12-strip domed caps, Yellow	125	781292	53.00
12-strip domed caps, Green	125	781293	53.00
12-strip domed caps, Blue	125	781294	53.00

*For use with 781377 & 781378

PCR accessories

PCR mats and films are available in a variety of materials to reduce evaporative losses by up to 75%. Mats are highly flexible, autoclavable, tight sealing, and piercable. All sealing films are DNA-, RNase-, and DNase-free. PCR racks and mini coolers are available for sample cooling and storage. A unique cap tool allows for easy and ergonomic sealing of PCR plates with strip caps.

PCR Mini Cooler
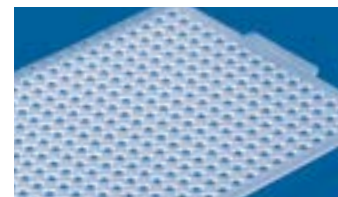
NEW!

Cap Tool

Description	Qty./Pack	Cat. No.	2016 List Price
Accessories			
Cap Tool **NEW!**	1	781419	$54.04
PCR Box/Rack	5	781362	77.00
PCR Mini Cooler	2	781260	128.00
PCR mats and sealing films			
TPE-mat for BRAND 96-well PCR plates, for 781350, 781400	5	781405	51.01
TPE 24-well mat for 781411	10	781402	29.01
TPE 48-well mat for 781415	10	781403	53.00
Silicone 384-well mat for 781345, 781347, 781348, 781358	10	781408	93.00
Sealing films available (see page 86)			

PCR plates in clear and white are available in 24-, 48-, 96-standard (0.2mL) and low profile (0.15mL) and 384-well configurations for most thermal cyclers. Plates have rigid decks and blue alphanumeric coding for easy handling and sample identification. For thermal cycler compatibility or product samples, visit www.brandtech.com.

Non-skirted
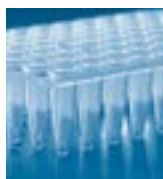
Low profile (0.15mL)	Standard profile (0.2mL)	Standard profile (0.2mL), elevated rim

Semi-skirted

Low profile (0.15mL)	Low profile (0.15mL), raised skirt	Standard profile (0.2mL), elevated rim	Standard profile (0.2mL)

Skirted
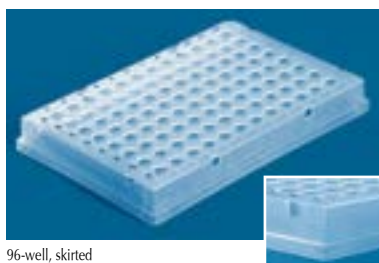
96-well, skirted
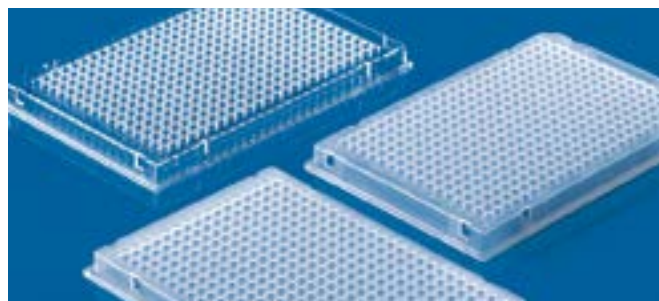
384-well, skirted

PCR plates

Description	Qty./ Pack	Cat. No.	2016 List Price
Clear PCR plates (all suitable for qPCR)			
24-well plate, non-skirted, 0.2mL, 8 bags of 5	40	781411	$96.01
48-well plate, non-skirted, 0.2mL, 4 bags of 5	20	781415	96.01
96-well plate, non-skirted, elevated rim, 0.2mL, 10 bags of 5	50	781350	185.00
96-well plate, non-skirted, low-profile, 0.15mL, 10 bags of 5	50	781366	196.15
96-well plate, non-skirted, standard profile, 0.2mL, 10 bags of 5	50	781368	196.15
96-well plate, semi-skirted, elevated rim, 0.2mL, 10 bags of 5	50	781400	241.01
96-well plate, semi-skirted, low-profile, 0.15mL, 10 bags of 5	50	781371	196.15
96-well plate, semi-skirted, low-profile, raised skirt, 0.15mL, 10 bags of 5	50	781373	196.15
96-well plate, semi-skirted, standard profile, 0.2mL, 10 bags of 5	50	781375	196.15
96-well plate, skirted, low-profile, 0.15mL, 5 bags of 10	50	781377	346.25
384-well plate, skirted, 5 bags of 10	50	781345	294.01
384-well plate, full skirt, 5 bags of 10	50	781347	371.01
384-well plate, full skirt, rigid plate, 5 bags of 10	50	781348	538.02
White PCR plastics (all suitable for qPCR)			
8 x 0.2mL tube strip	125	781325	158.02
8 x 0.2mL tube strip with individual attached flat caps,	120	781316	190.00
8 x 0.15mL low-profile tube strip with individual attached, 0.15mL, flat caps	120	781317	190.00
24-well plate, non-skirted, 0.2mL, 8 bags of 5	40	781412	110.00
48-well plate, non-skirted, 0.2mL, 4 bags of 5	20	781416	110.00
96-well plate, non-skirted, 0.2mL, 10 bags of 5	50	781354	225.02
96-well plate, non-skirted, low-profile, 0.15mL, 10 bags of 5	50	781367	222.17
96-well plate, non-skirted, standard profile, 0.2mL, 10 bags of 5	50	781369	222.17
96-well plate, semi-skirted, standard profile, 0.2mL, 10 bags of 5	50	781376	222.17
96-well plate, semi-skirted, 0.2mL, 10 bags of 5	50	781357	328.02
96-well plate, semi-skirted, low-profile, 0.15mL, 10 bags of 5	50	781372	222.17
96-well plate, semi-skirted, low-profile, raised skirt, 0.15mL, 10 bags of 5	50	781369	222.17
96-well plate, skirted, low-profile, 0.15mL, 5 bags of 10	50	781378	360.26
96-well plate, low-profile, for Roche LightCycler®, 0.15mL, 10 bags of 5	50	781364	274.01
96-well plate, low-profile, for Roche LightCycler®, with fifty sheets of qPCR sealing film, 0.15mL, 10 bags of 5	50	781365	390.02
384-well plate, full skirt, for Roche LightCycler®, 5 bags of 10	50	781358	562.02

BRAND

BRAND Plastic Cuvettes

Why BRAND Disposable Cuvettes?

BRAND is world-renowned as the producer of premium disposable cuvettes. Each and every BRAND cuvette benefits from their nearly thirty years of experience manufacturing cuvettes to the most exacting standards for reproducible results.

- **Virgin resins:** BRAND cuvettes are manufactured from the highest quality virgin resins for superior optical quality. Choose polystyrene for determinations above 340nm, and where cost is a concern. Choose polymethyl methacrylate (PMMA or "acrylic") when performing assays above 300nm. For assays with wavelengths as short as 230nm, or that require enhanced chemical compatibility, choose BRAND UV-Cuvettes, made of a proprietary resin.

- **Mold-cavity matching:** All plastic cuvettes are manufactured in multi-cavity molds, producing multiple cuvettes with each molding operation. Even with BRAND's experience and attention to manufacturing detail, nothing can prevent slight differences among the cavities that can lead to variation in extinction coefficients. Rather than randomly aggregate cuvettes from all cavities, BRAND's automated production process sorts the cuvettes by mold cavity; each package only contains cuvettes from the same mold cavity. This ensures the lowest possible cuvette-to-cuvette variance, and more accurate measurements. Robotic sorting also eliminates the risk of human error, and potential contamination.

- **Protective packaging:** BRAND cuvettes are encased in dust-free, low-scratching expanded polystyrene packaging. This ensures that your premium cuvettes arrive at your laboratory in the same pristine condition they were in at the factory, with optical quality windows, and free of contaminants. For applications in which the highest purity is required, BRAND ultra-micro UV-Cuvettes are available individually wrapped and free of DNA, DNase and RNase. Individual wrapping means that these cuvettes offer not only the convenience of disposability, but a degree of sample protection that is unmatched by any reusable cuvette.

- **NEW! Fluorimetry cuvettes:** BRAND brings their decades of experience molding high-quality spectrophotometry cuvettes to their new four-sided clear cuvettes for fluorimetry. Available in standard polystyrene and a proprietary polymer with ultra-low auto-fluorescence for the highest precision measurements.

The BRAND logo, your assurance of a quality cuvette
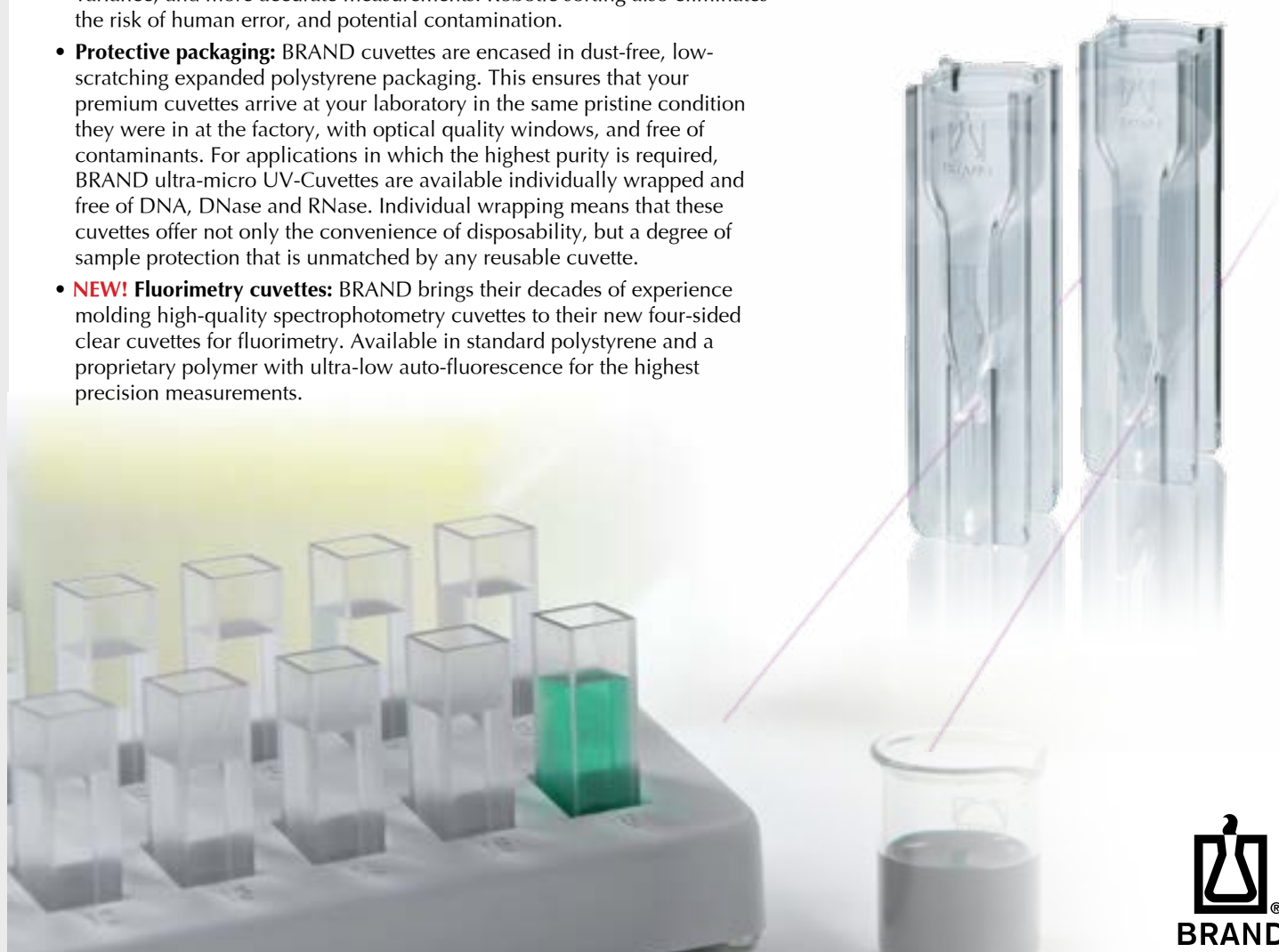
BRAND

Technical Data

BRAND plastic spectrophotometry cuvettes are an excellent choice for most spectrophotometry applications in the visible and UV ranges. When manufactured from PS and PMMA, they provide accurate, reliable results even at wavelengths as low as 300nm. For enhanced chemical compatibility, or measurements to 230nm, choose BRAND UV-Cuvettes. These disposable cuvettes are available in macro and semi-micro sizes to accommodate most sample volumes. BRAND plastic cuvettes are compatible with most spectrophotometers and photometers using a standard 10mm path length.

- **Easy to use:** BRAND plastic disposable cuvettes include an arrow mark to indicate direction of transmission and reduce variation.
- **Options for most needs:** PS and PMMA cuvettes are available in both macro and semi-micro sizes to adapt to the needs of most laboratory applications. Semi-micro cuvettes require only 1.5mL of sample volume to provide reliable, accurate results.
- **Perform consistently:** Cuvettes are manufactured from high-quality materials, and are grouped by manufacturing mold cavity number to ensure the lowest variation in extinction coefficient.
- **Manufactured by BRAND:** One of the world's largest producers of cuvettes, BRAND's nearly thirty years of quality cuvette manufacturing experience is your assurance of reliability.
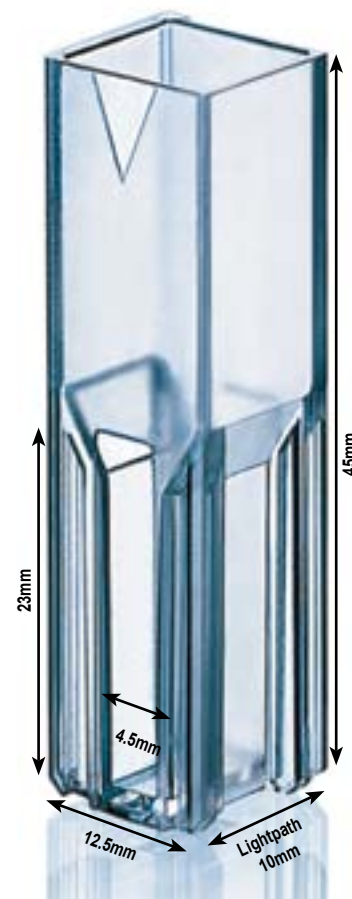
BRAND semi-micro disposable cuvette

Description	Cat. No.	2016 List Price
BRAND polystyrene (PS) cuvettes (specifications on p. 103)		
Macro, pack of 500	759070D	$79.96
Macro, pack of 100	759071D	18.39
Semi-micro, pack of 500	759075D	86.96
Semi-micro, pack of 100	759076D	19.39
BRAND methacrylate (PMMA) cuvettes (specifications on p. 103)		
Macro, pack of 500	759080D	112.95
Macro, pack of 100	759081D	25.59
Semi-micro, pack of 500	759085D	97.96
Semi-micro, pack of 100	759086D	21.39
Polypropylene cuvette rack, 16 numbered positions	759500	25.48

Transmission curves of different cuvettes

— UV-Cuvette micro
— UV-Cuvette semi-micro/macro
— Standard cuvette PMMA
— Standard cuvette PS
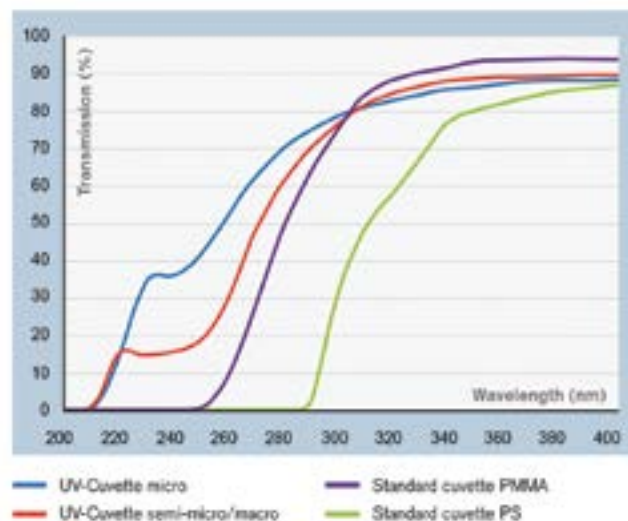
To achieve reproducible results: Before the actual measurement, always determine the blank value for the cuvette, and determine the linear range of measurement by means of a calibration curve.

BRAND UV-Cuvettes

UV-transparent, disposable cuvettes from BRAND replace expensive, fragile quartz cuvettes and are excellent for DNA, RNA, and protein analyses between 230-900nm. See transmission curves on page 101. Made from a proprietary polycyclical olefin, they are resistant to many aggressive solvents and eliminate the tedious maintenance, cleaning, and contamination risk of quartz cuvettes. Additionally, they fit most commercial spectrophotometers and photometers without requiring the use of special adapters.

- **Eliminate the hassles of quartz cuvettes:** Eliminate the washing, cross-contamination, breakage and expense associated with fragile quartz cuvettes.

- **Allow smaller sample sizes:** In addition to macro and semi-micro sizes that require 2.5mL and 1.5mL of sample volume, respectively, BRAND UV-Cuvettes are available in ultra-micro sizes that require only 70µL of sample volume.

- **Ultra-micro cuvettes are available individually-wrapped:** Independently-certified DNA-, DNase-, RNase-free for an extra degree of sample protection.

- **Resist most chemicals:** Cuvettes may be used with most polar organic solvents, as well as a broad range of acids and bases. They have much greater chemical resistance than PS or PMMA cuvettes and are compatible with chemicals such as acetone, butanone, DMF, and concentrated hydrochloric acid.

- **Perform consistently:** Cuvettes are manufactured from scratch- resistant materials, and are grouped by manufacturing mold cavity number to ensure the lowest variation in extinction coefficient.

- **Manufactured by BRAND:** BRAND is one of the world's largest cuvette manufacturers. Nearly thirty years of experience producing quality cuvettes is your assurance of reliability.
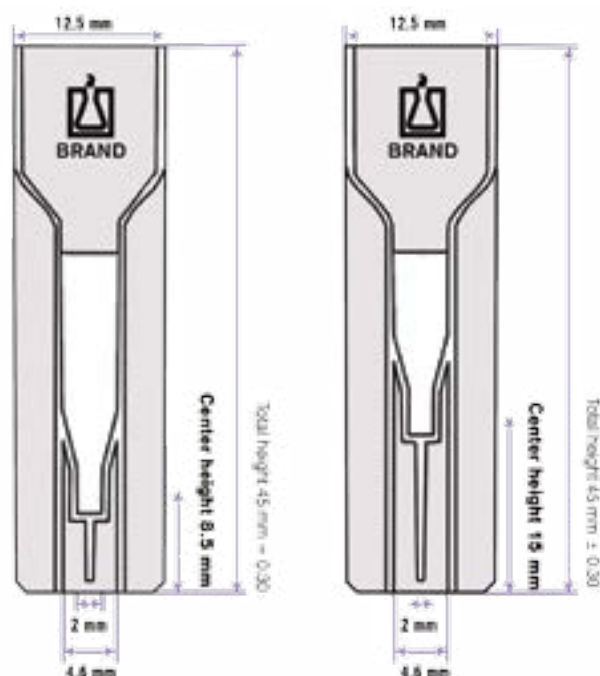
Two window heights to fit most spectrophotometers

To reduce the sample size required by BRAND's ultra-micro sized UV-Cuvettes, the floor of the sample chamber is elevated to just below the light path. As there is not a single standard for light beam height, BRAND offers ultra-micro cuvettes with two different z-dimensions, to help you conserve your sample.

Not sure of the beam height of your instrument? Check our website for help with cuvette selection www.brandtech.com/beam_heights.

Polypropylene cuvette rack with 16 numbered positions. Autoclavable to 121ºC (250ºF)

Specifications – BRAND Cuvette

Filling volume	Ultra-micro	Semi-micro	Macro
Minimum	70µL	1.5mL	2.5mL
Maximum	550µL (15mm window)	3.0mL	4.5mL
	850µL (8.5mm window)	—	—
Window dimensions	2 x 3.5mm (minimum)	4.5 x 23mm	10 x 35mm
Light path	10mm	10mm	10mm
Range of application UV	230-900nm	230-900nm	230-900nm
Range of application PMMA	—	300-900nm	300-900nm
Range of application PS	—	340-900nm	300-900nm

www.brandtech.com/cuvette_comp.asp for additional cuvette compatibility information.

BRAND ultra-micro UV-Cuvettes. 15mm (left) and 8.5mm (right) window heights

UV-transparent, chemical-resistant, and disposable... save time and money

Round polyethylene caps provide plug-seal for reliable sample storage. Available in 4 colors!

Description	Qty./Pack	Cat. No.	2016 List Price
BRAND UV-Cuvette (specifications below)			
Macro	100	759170	$83.96
Semi-micro	500	759165	376.83
Semi-micro	100	759150	83.96
BRAND UV-Cuvette ultra-micro (15mm window height)	500	759230	376.83
BRAND UV-Cuvette ultra-micro (15mm window height)	100	759220	83.96
Individually-wrapped BRAND UV-Cuvette ultra-micro (15mm window height)	100	759235	122.95
BRAND UV-Cuvette ultra-micro (8.5mm window height)	500	759210	376.83
BRAND UV-Cuvette ultra-micro (8.5mm window height)	100	759200	83.96
Individually-wrapped BRAND UV-Cuvette ultra-micro (8.5mm window height)	100	759215	122.95
Cuvette caps and accessories			
Cuvette caps, round, for ultra-micro cuvettes, Blue	100	759240	27.39
Cuvette caps, round, for ultra-micro cuvettes, Yellow	100	759241	27.39
Cuvette caps, round, for ultra-micro cuvettes, Green	100	759242	27.39
Cuvette caps, round, for ultra-micro cuvettes, Orange	100	759243	27.39
Polypropylene cuvette rack, 16 numbered positions	1	759500	25.48

Examples of chemical resistance of UV-Cuvettes

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

BRAND Fluorimetry Cuvettes

When results count, choose BRAND disposable cuvettes with four optically clear sides for fluorescence applications. Available in high quality polystyrene for measurements from 340nm to 800nm, as well as a proprietary polymer for precise measurements in both the visible and UV-range (230-800nm), allowing for shorter excitation wavelength than have been traditionally possible with disposable cuvettes. This UV-transparent plastic also has virtually no autofluorescence for high signal-to-noise ratios. Cuvettes have a standard 10mm light path for use in all standard fluorimeters.

BRAND fluorescence cuvettes, like all BRAND cuvettes, are made of the highest quality raw materials, precision molded for the best optical clarity, with parallel walls of uniform thickness to optimize transmission and minimize refraction. They are then mold-cavity sorted ensuring cuvette-to-cuvette consistency for highly reproducible results. With an industry standard 10mm light path, BRAND 4 sided clear cuvettes fit most common fluorometers.

Cuvettes are packaged in trays containing 100 cuvettes. Trays are made of low-dust, non-scratching, expanded polystyrene.

- **Mold-cavity sorted:** Each tray contains cuvettes from a single mold cavity to minimize variability between cuvettes.
- **Manufactured by BRAND:** One of the leading manufacturers of premium quality disposable cuvettes for nearly thirty years, BRAND is your assurance of reliability.

Technical Data

Specifications – BRAND Fluorimetry Cuvettes

Minimum filling volume	2.5mL
Maximum filling volume	4.5mL
Window dimensions	10 x 35mm
Light path	10mm
Exterior dimensions	12.5 x 12.5 x 45mm

Description	Cat. No.	2016 List Price
BRAND polystyrene (PS) Fluorimetry Cuvettes		
Pack of 100	759030	$19.00
Pack of 500	759035	80.00
BRAND UV-transparent Fluorimetry Cuvettes		
Pack of 100	759125	85.00
Pack of 500	759128	380.00

About fluorescence measurement

Fluorescence occurs when energy is supplied to a sample by electromagnetic radiation, usually UV-light (photons). The energy "excites" the molecules thereby "kicking" an electron of an atom from a lower energy state into an excited higher energy state. The lifetime of the excited state is very short (1-100ns). When the electron falls back to a lower energy state it releases the energy in the form of light i.e. fluorescence. Some of the fluorescent light passes through a monochromator and then reaches a detector. The fluorescent light is emitted in all directions, however the detector is usually placed at 90° to the excitation light beam to minimize interference. Hence the need for four-sided clear cuvettes for fluorescence applications.

Stainless Steel Support Jacks

Bochem® stainless steel support jacks are rugged supports that are excellent for a wide variety of critical laboratory applications. Constructed entirely from stainless steel with POM rollers and a PF31 phenolic knob, these support jacks are exceptionally stable and well-suited for corrosive environments such as fume hoods, water baths, marine and industrial labs, and more.

- **Supports a wide variety of items:** Stainless steel support jacks are available in a range of sizes and load capacities up to 60 kg, static load, for most lab applications.
- **Improved lift mechanism:** Provides increased stability and torsional rigidity.
- **Helps reduce contamination:** Support jacks feature smooth surfaces that are easy to clean and sanitize. All support jacks are fully autoclavable at 121°C for sterile applications.
- **Reaches new heights:** These stainless steel support jacks are now also available in Maxi-Lift models. Maxi-Lift stainless steel support jacks have a maximum height that is approximately 30% higher than traditional support jacks for special applications.
- **Offers a wide variety of options:** BrandTech® Scientific offers support jacks manufactured with anodized aluminum and powder-coated aluminum decks (on stainless steel lift mechanisms) for less critical applications.
- **Two-year warranty on all support jacks**

Rugged laboratory supports for critical environments

Maxi-Lift Stainless
Steel Support Jacks

Stainless Steel Support Jacks

Ratcheting handle

A ratcheting handle is provided to simplify use of larger (30 x 30cm and 40 x 40cm) support jacks.

This handle simply slides onto the handwheel of the support jacks to greatly reduce the effort required for raising and lowering the instrument.

Remote control

Wireless remote for Electronic Lift 240. Allows easy control, even when lift is in a fume hood.

Description Plate, L x W, cm	Minimum Height, cm	Maximum Height, cm	Maximum Static Load, kg	Catalog No.	2016 List Price
Stainless steel support jacks					
10 x 10	5.5	12.0	10	B11115	$240.00
16 x 13	6.0	27.5	30	B11120	265.00
20 x 20	6.0	27.5	30	B11130	317.00
24 x 24	6.0	27.5	30	B11140	337.00
30 x 30	9.0	47.0	60	B11180	1,640.00
40 x 40	9.0	47.0	60	B11190	1,844.00
Maxi-lift stainless steel support jacks					
16 x 13	7.5	40.0	30	B11122	317.00
20 x 20	7.5	40.0	30	B11132	386.00
Electronic Lift 240					
24 x 24	12	30.0	25*	B11220	4,090.00
Anodized aluminum deck support jacks					
10 x 10	5.5	12.0	10	B11016	185.00
16 x 13	6.0	27.5	30	B11021	207.00
20 x 20	6.0	27.5	30	B11031	250.00
24 x 24	6.0	27.5	30	B11041	278.00
30 x 30	9.0	47.0	60	B11081	1,194.00
40 x 40	9.0	47.0	60	B11091	1,409.00
Powder-coated aluminum deck support jacks					
10 x 10	5.5	12.0	10	B11015	169.00
16 x 13	6.0	27.5	30	B11020	191.00
20 x 20	6.0	27.5	30	B11030	230.00
24 x 24	6.0	27.5	30	B11040	253.00
30 x 30	9.0	47.0	60	B11080	1,046.00
40 x 40	9.0	47.0	60	B11090	1,290.00
Accessories					
Ratcheting handle				B11088	65.00

*Dynamic load

Also available

A) LIFT 240 Electronic adjustable support jack, with remote control, stainless steel construction and PTFE bellows to protect electronic components.

B) Support jacks with epoxy powder-coated aluminum and anodized aluminum decks, with stainless steel lift mechanisms.

A)

B)

Test tube racks

Stainless steel test tube racks

Racks are constructed entirely of rugged, corrosion-resistant 304 stainless steel. Highly polished surfaces reduce porosity and reinforce the corrosion-resistant properties.

Test tube racks (each)

Maximum Tube Diameter, mm	Maximum # of Tubes	Format	Length mm	Width mm	Height mm	Cat. No.	2016 List Price
17	12	2 x 6	145	52	90	B8210	$55.00
17	24	2 x 12	278	52	90	B8212	60.00
17	48	4 x 12	287	97	90	B8214	105.00
20	12	2 x 6	164	60	90	B8220	72.00
20	24	2 x 12	310	60	90	B8222	91.00

Test tube racks, Z-style

Test tube racks, Z-style

Maximum Tube Diameter, mm	Maximum # of tubes	Format	Length mm	Width mm	Height mm	Cat. No.	2016 List Price
13	50	10 x 5	50	165	85	B8290	$48.00
17	50	10 x 5	50	220	110	B8291	48.00
13	25	5 x 5	50	85	85	B8292	36.00
17	25	5 x 5	50	110	110	B8293	36.00

BRAND

Polypropylene test tube racks

Sturdy polypropylene racks with alphanumeric positions for easy sample identification. Racks are stackable, non-conductive and will not float in water baths. They are suitable for use in temperatures from -20°C to 90°C. Racks are supplied in packs of five. They are supplied in three pieces for easy and permanent assembly.

Test tube racks, PP

Test tube racks, PP

Maximum Tube Diameter, mm	Format	Length mm	Width mm	Height mm	White Cat. No.	Blue Cat. No.	Red Cat. No.	Yellow Cat. No.	2016 List Price
13	6 x 14	265	126	75	4340000	4340001	—	4340003	$76.97
16	5 x 11	265	126	75	4340060	4340061	4340062	4340063	76.97
18	5 x 11	265	126	75	4340010	4340011	4340012	4340013	76.97
20	4 x 10	265	126	75	4340020	4340021	4340022	4340023	76.97
25	4 x 8	265	126	88	4340030	4340031	4340032	4340033	76.97
30	3 x 7	265	126	88	4340040	4340041	4340042	4340043	76.97

Sample Cups for Clinical Analyzers

BRAND sample cups are made from virgin polystyrene and are designed to fit many common analyzers. Caps and lids are made of polyethylene for a snug fit. Cups and caps meet CE-IVD Directive 98/79 (except 722060).

[a] Sample Cups for Technicon® Analyzers

[b] Push-on Caps to fit cup #115015

[c] Sample cups for Coulter Counter® with lids

[d] Sample cups with snap caps

Sample cups

Description	Capacity mL	Upper diameter mm	Lower diameter mm	Height mm	Qty./Pack	Cat. No.	2016 List Price
Sample Cups for Technicon® Analyzers [a]	1.5	15	12.2	22.7	12000	115015	$497.00
	2	14.8	12.8	24.9	10000	115016	442.00
	4	17	13.3	38	6000	115017	377.00
Push-on caps to fit cup #115015 [b]					1000	115020	53.00
Sample Cups for Coulter Counter® with Lids [c]	20	32	n/a	56	1000	722055	163.00
Sample Cups with snap caps [d]	12	22	22	38	1000	722060	253.00

Mucasol® 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. Mucasol® 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.

Chemical and physical specifications

- Light green, clear liquid
- Density: approximately 1.4g/mL
- pH value (0.7%): approximately 11.5
- pH value (3%): approximately 11.7

Ingredients

- > 30% phosphates
- < 5% anionic surfactants, amphoteric surfactants, complexing agents, corrosion inhibitors, auxiliary agents

Concentration for use

- Ultrasonic bath 0.2 - 2% (1.4 - 14mL/L)
- Immersion bath 0.7 - 3% (5 - 22mL/L)

BRAND®

Mucasol®

Description	Cat. No.	2016 List Price
Mucasol® Universal Detergent, 2L bottle, each	44003B	$154.89

BRAND Class A, USP, Certified Volumetric Glassware

BLAUBRAND® volumetric glassware is made of chemically resistant glass for durability and precision. Each piece of glassware is individually calibrated at BRAND's DIN EN ISO 9001 certified facility in Wertheim, Germany.

- **Class A:** Certified as Class A for superior accuracy.
- **USP:** BLAUBRAND® USP volumetric instruments are constructed according to DIN EN ISO standards with error limits that meet the specifications of USP/ASTM. Perfect for companies who are audited by US authorities such as the FDA.
- **Individually adjusted:** Each individual piece of glassware is marked on a computer controlled, automated production line to ensure maximum precision.
- **Certificates:** USP batch certificates are supplied. USP individual and DAkkS calibration certificates are available upon request.
- **Thermal stress:** A carefully controlled annealing process ensures that the thermal stress of the BLAUBRAND® glassware is eliminated prior to adjustment. This ensures that there is no volume change during or after heating up to 250°C.
- **High quality inks:** The annealing process also bakes on the high quality ink which provides graduations that are durable and have a long service life.
- **Flexible screen stencils:** Flexible screen stencils are used for graduated cylinders and graduated pipettes to ensure that volume markings match the calibration marks at all intermediate volumes.
- **Statistical analysis:** Statistical process control ensures with a certainty of at least 99.6% compliance with predefined specifications.
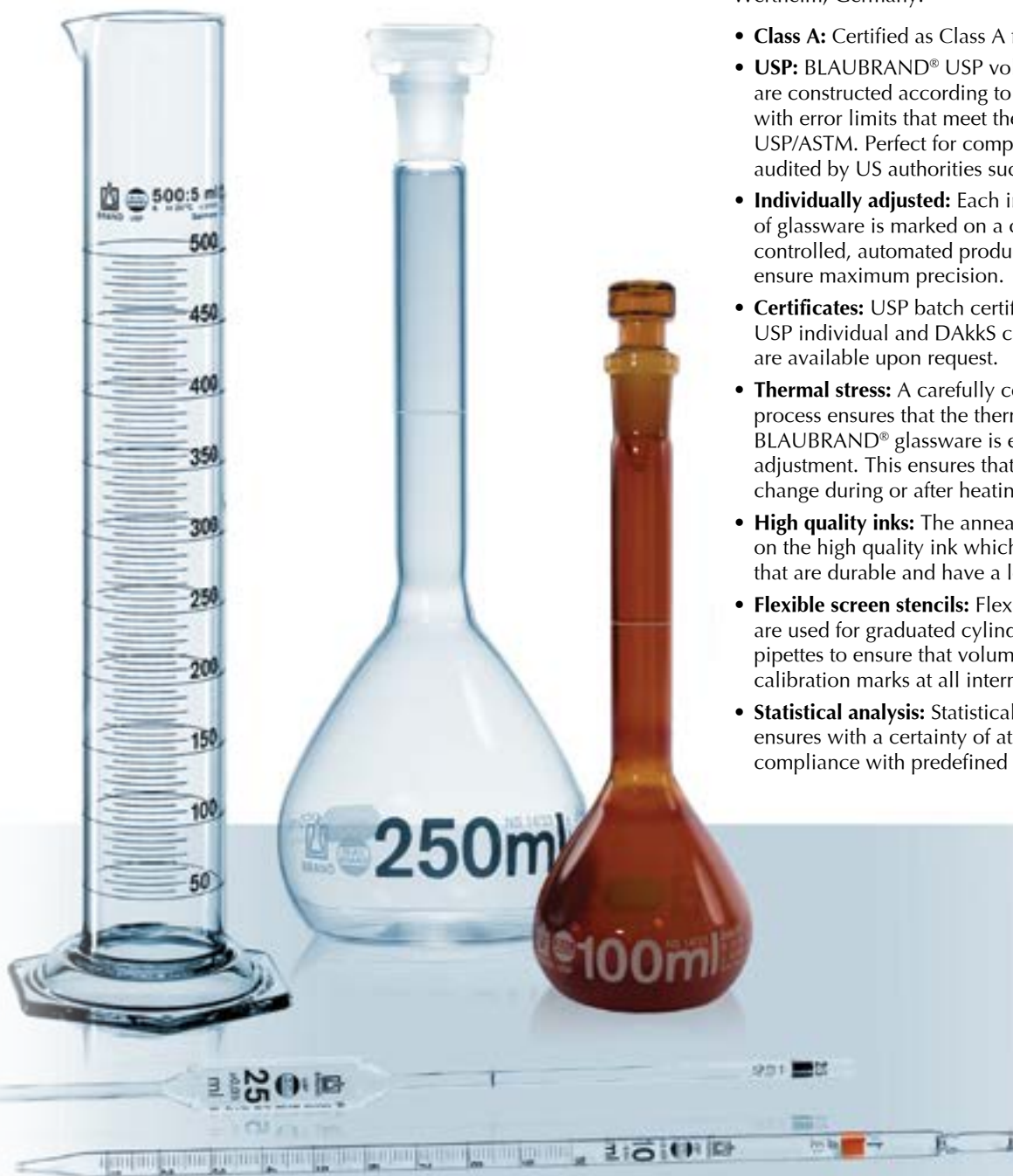
BLAUBRAND® Class A, USP, Certified Volumetric Glassware

BLAUBRAND® Bulb Pipette, 1 mark, Class AS, USP, Certified

• AR-GLAS®. DIN EN ISO 648. Calibrated to deliver (TD, Ex). Includes one USP batch certificate.

Volume (mL)	Error limit (+/-mL)	Qty./Pack	Cat. No.	2016 List Price
0.5	0.005	12	30601	$98.90
1	0.006	12	30602	90.20
2	0.006	12	30603	101.00
3	0.01	6	30605	63.20
4	0.01	6	30606	82.00
5	0.01	6	30607	63.70
6	0.01	6	30608	87.50
7	0.01	6	30609	87.50
8	0.02	6	30610	87.50
9	0.02	6	30611	87.50
10	0.02	6	30612	64.60
15	0.03	6	30613	76.40
20	0.03	6	30614	82.60
25	0.03	6	30615	84.30
30	0.03	6	30616	96.60
40	0.05	6	30617	118.00
50	0.05	6	30618	107.60
100	0.08	6	30619	149.60

BLAUBRAND® Graduated Pipette, Class AS , USP, Certified

• AR-GLAS®. DIN EN ISO 835. Calibrated to deliver (TD, Ex). Suitable for cotton plug. Includes one USP batch certificate.

Volume (mL)	Subdivision (mL)	Error limit (+/-mL)	Qty./Pack	Cat. No.	2016 List Price
1	0.01	0.007	12	27506	$74.30
2	0.02	0.01	12	27509	74.30
5	0.05	0.02	12	27511	91.00
10	0.1	0.03	12	27513	92.50

BLAUBRAND® Class A, USP, Certified Volumetric Glassware

BLAUBRAND® Volumetric Flask, Class A, USP, Certified, Glass Stopper

• Boro 3.3 DIN EN ISO 1042. Calibrated to contain (TC, In). Includes one USP batch certificate.

Volume (mL)	Error limit (+/-mL)	Stopper NS	Qty./Pack	Cat. No.	2016 List Price
5	0.02	10/19	2	36968	$46.80
10	0.02	10/19	2	36973	46.80
20	0.02	10/19	2	36975	47.20
25	0.03	10/19	2	36977	47.20
50	0.05	12/21	2	36978	50.50
100	0.08	14/23	2	36979	54.80
200	0.1	14/23	2	36980	72.60
250	0.12	14/23	2	36981	75.60
500	0.2	19/26	2	36982	90.00
1000	0.3	24/29	1	36983	72.00
2000	0.5	29/32	1	36984	95.80

BLAUBRAND® Amber Volumetric Flask, Class A, USP, Certified, Glass Stopper

• Boro 3.3, DIN EN ISO 1042. Calibrated to contain (TC, In). Includes one USP batch certificate.

Volume (mL)	Error limit (+/-mL)	Stopper NS	Qty./Pack	Cat. No.	2016 List Price
5	0.02	10/19	2	37461	$99.40
10	0.02	10/19	2	37462	99.40
20	0.02	10/19	2	37463	99.20
25	0.03	10/19	2	37464	99.20
50	0.05	12/21	2	37465	103.00
100	0.08	14/23	2	37467	104.00
200	0.1	14/23	2	37468	129.00
250	0.12	14/23	2	37469	143.00
500	0.2	19/26	2	37470	174.00
1000	0.3	24/29	1	37471	125.60
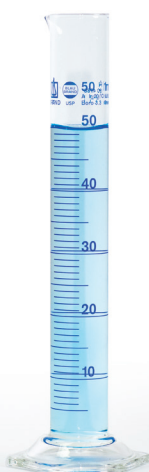
BLAUBRAND® Graduated Cylinder, Tall Form, Class A, USP, Certified

• Boro 3.3, DIN EN ISO 4788. Calibrated to contain (TC, In). Includes one USP batch certificate. With spout and hexagonal base.

Volume (mL)	Subdivision (mL)	Error limit (+/-mL)	Height (mm)	Qty./Pack	Cat. No.	2016 List Price
5	0.1	0.05	115	2	32805	$31.30
10	0.2	0.1	140	2	32808	31.30
25	0.5	0.17	170	2	32820	32.30
50	1	0.25	200	2	32828	36.60
100	1	0.5	260	2	32838	38.30
250	2	1	335	2	32848	72.90
500	5	2.0	365	2	32854	126.00
1000	10	3.0	465	1	32862	88.40
2000	20	6.0	505	1	32864	164.00

PFA Trace Analysis Labware

VITLAB® trace analysis labware is manufactured from PFA (a perfluoroalkoxy copolymer), which is highly resistant to heat and chemical contamination and has surface properties that greatly simplify cleaning. Use this labware for excellent results in ICP-MS, production and storage of trace analysis standards, isotope separations, sample digestions, and more.

With the increasing need in trace analysis labs for ultra-low concentration determinations in the ng/g (ppb) and pg/g (ppt) range, the use of PFA labware has become more and more important. Other materials, when not specially treated, may be subject to interaction between the vessel and the sample, standards or reagents it contains. This may cause incorrect results with modern trace analysis instrumentation.

All VITLAB® PFA trace analysis labware features visible, accurate, and permanent graduations for precise measuring. PFA labware is suitable for sterilization using heat, gas, and chemical methods for handling sensitive biological solutions. BrandTech® also offers corrosion-resistant PFA (Technical Grade) with small amounts of pre-consumer high-quality recycled PFA, for customers who need only the chemical resistance of PFA. See page 115.

Properties

Excellent temperatures stability: VITLAB® PFA trace analysis labware maintains its stability in temperatures from -200ºC to 250ºC (-328ºF to 482ºF).

No leachable metals: PFA is manufactured without metals such as calcium, aluminum, iron, magnesium, nickel, copper, manganese or zinc. These metals can leach into samples from other containers, and contaminate samples.

Simplified cleaning: Conventional labware for trace analysis requires time-consuming and expensive cleaning. The hydrophobic and anti-adhesive properties of the exceptionally smooth-surfaced PFA labware simplify the cleaning process, making it ideal for trace analysis.

Superior chemical resistance: PFA is inert with most reagents, including the nitric and hydrochloric acid routinely used in cleaning trace analysis labware. This stability significantly reduces the risk of cross-contamination.

Excellent long-term stability: PFA containers often extend the stability of low (ppb) concentration standards. Such stability reduces the time and cost of renewing trace analysis standard solutions.

Highly translucent: Translucency is important for making accurate measurements using volumetric labware.

Please see page 128 for description of various plastics.

Performing trace analysis?

See the new BRAND Dispensette® *S* Trace Analysis bottletop dispenser for Trace Analysis on page 35.

VITLAB® PFA Labware: pure, cleanable, rugged

Scanning electron microscopy illustrates the advantages of PFA in trace analysis. (Magnification: 8000X)

Bottle – HDPE

Scanning electron microscopy of this bottle wall shows the roughness of HDPE. The increased surface area of HDPE can lead to carryover of reagent molecules.
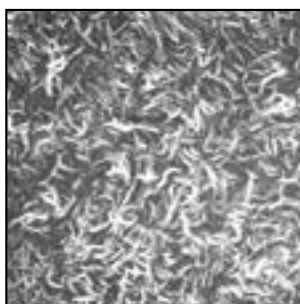
Beaker – PTFE

Similar to HDPE, electron micrographs of this PTFE beaker reveal a typically rough surface that can interact with reagent molecules and complicate cleaning.
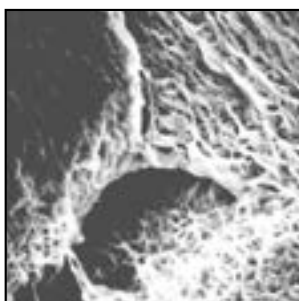
Evaporating dish – PFA

Even at 8000x magnification, the surfaces of this PFA evaporating dish are very smooth. It is this smoothness, combined with PFA's hydrophobic, anti-adhesive and inert properties, that simplify cleaning.
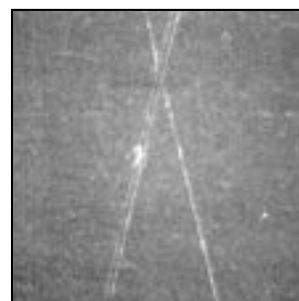
Low-form Griffin Beakers, PFA

- Molded graduations are easy to read and resistant to wear from repeated use.
- Nesting design conserves bench and storage space.
- Autoclavable at 121ºC (250ºF) and easy to clean.
- Can withstand temperatures from -200ºC to +250ºC.

Volume mL	Grad mm	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
25	5	50	32	1	V110205	$34.00
50	10	59	39	1	V110305	43.00
100	20	72	50	1	V110405	61.00
250	50	96	67	1	V110605	100.00
500	100	122	88	1	V110905	152.00
1000	100	141	109	1	V111005	273.00

Volumetric Flasks with screw caps, PFA

- Flasks feature individually calibrated ring-markings.
- Durable markings are easy to read. Limit cleaning temperature to 60ºC (140ºF) to preserve ring mark.
- High-transparency simplifies meniscus verification.
- PFA screw caps help protect against outside contamination and leakage.
- Meets Class A tolerances per DIN EN ISO 1042.
- Easy to clean. Autoclavable at 121ºC (250ºF) without affecting tolerances.

Volume mL	Tolerance mL	Height mm	Thread GL	Qty./Pack	Cat. No.	2016 List Price
10	0.04	90	18	1	V107097	$231.00
25	0.04	115	18	1	V107197	232.00
50	0.06	150	18	1	V107297	237.00
100	0.10	180	18	1	V107397	293.00
250	0.15	235	25	1	V107497	368.00
500	0.25	270	25	1	V107597	424.00

Evaporating Dishes, PFA with snap on lid, PE

- For contamination-free sample preparation and efficient transportation.
- Autoclavable at 121ºC (250ºF) and easy to clean. Lid is not autoclavable.

Volume mL	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
25	25	50	1	V103297	$77.00
50	54	50	1	V103397	103.00

PFA Trace Analysis Labware

Wide Mouth Reagent Bottles with screw caps, PFA

- Leach-resistant bottles for long-term storage of solvents and standards.
- PFA screw caps have a molded sealing ring for a positive seal.
- Autoclavable at 121°C (250°F) and easy to clean.
- Can withstand temperatures from -200°C to +250°C.

Volume mL	Height mm	Diameter mm	Thread	Qty./Pack	Cat. No.	2016 List Price
250	150	61	S40	1	V109497	$196.00
500	179	76	S40	1	V109597	271.00
1000	217	96	S40	1	V109697	376.00
2000	245	130	S40	1	V109797	775.00

Narrow Mouth Reagent Bottles with screw caps, PFA

- Leach-resistant bottles for long-term storage of solvents and standards.
- PFA screw caps have a molded sealing ring for a positive seal.
- Autoclavable at 121°C (250°F) and easy to clean.
- Can withstand temperatures from -200°C to +250°C.

Volume mL	Height mm	Diameter mm	Thread	Qty./Pack	Cat. No.	2016 List Price
50	86	37	S28	1	V109297	$113.00
100	120	45	S28	1	V109397	161.00
250	160	61	S28	1	V108297	187.00
500	190	76	S28	1	V108397	256.00
1000	240	96	S28	1	V108497	353.00

Round Bottom Flasks, PFA

- For rotary evaporators and distillation of high-purity chemicals.
- With 29/32 ground socket.
- Translucent surfaces simplify solvent monitoring.
- Autoclavable at 121°C (250°F) and easy to clean.
- Can withstand temperatures from -200°C to +250°C.
- Maximum temperature under vacuum is 50°C (122°F).

Volume mL	Height mm	Neck mm	Diameter	Qty./Pack	Cat. No.	2016 List Price
100	117	29/32	65	1	V107797	$153.00
250	147	29/32	88	1	V107897	180.00
500	177	29/32	107	1	V107997	246.00

Sample Containers with screw cap, PFA

- For sample collection, transport and storage.
- Supplied with a PFA screw cap.
- Autoclavable at 121ºC (250ºF) and easy to clean.
- Can withstand temperatures from -200ºC to +250ºC.

Volume mL	Height mm	Diameter mm	Thread GL	Qty./Pack	Cat. No.	2016 List Price
30	54	38	40	1	V130297	$73.00
60	90	38	40	1	V130397	88.00
90	62	54	56	1	V130497	73.00
180	112	54	56	1	V130597	123.00

Narrow Mouth Reagent Bottles with screw caps, PFA, technical grade

- Reagent bottles with recycled PFA content offer the full chemical resistance of PFA, but may not be suited for trace analysis applications.
- Supplied with an ETFE cap.
- Autoclavable at 121ºC (250ºF) and easy to clean.
- Can withstand temperatures from -200ºC to +250ºC.

Volume mL	Thread GL	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
50	18	90	37	1	V108092	$63.00
100	18	114	45	1	V108192	84.00
250	25	157	61	1	V108292	138.00
500	25	189	76	1	V108392	198.00
1000	32	233	96	1	V108492	272.00

VITLAB®

Volumetric Labware and Containers

Class A Graduated Cylinders, PMP, certified

- Glass-clear tall-form cylinders calibrated "to contain"; Class A per DIN 12681 and ISO 6706.
- Imprinted lot and year; supplied certificate includes mean test value and lot.
- Red-screened graduations for legibility
- Temperatures of 60ºC must not be exceeded during cleaning to preserve marks and inscriptions.

Volume, mL	Tolerance +/-mL	Grad mm	Height mm	Diameter mm	Qty./ Pack	Cat. No.	2016 List Price
10	0.10	0.20	145	15	2	V64614	$23.00
25	0.25	0.50	170	22	2	V64714	24.00
50	0.50	1.00	200	27	2	V64814	25.00
100	0.50	1.00	250	33	2	V64914	34.00
250	1.00	2.00	315	44	2	V65014	53.00
500	2.50	5.00	360	58	1	V65114	43.00
1000	5.00	10.00	440	69	1	V65214	62.00
2000	10.00	20.00	535	97	1	V65414	100.00

Class A Graduated Cylinders, PMP, certified

- Glass-clear tall-form cylinders calibrated "to contain"; Class A per DIN 12681 and ISO 6706.
- Molded graduations with ring marks at major increments.
- Imprinted lot and year; supplied certificate includes mean test value and lot.
- Autoclaving at 121°C will not cause permanent exceeding of tolerance limits.

Volume, mL	Tolerance +/-mL	Grad mm	Height mm	Diameter mm	Qty./ Pack	Cat. No.	2016 List Price
10	0.10	0.20	145	15	2	V64604	$18.00
25	0.25	0.50	170	22	2	V64704	18.00
50	0.50	1.00	200	27	2	V64804	19.00
100	0.50	1.00	250	33	2	V64904	26.00
250	1.00	2.00	315	44	2	V65004	40.00
500	2.50	5.00	360	58	1	V65104	41.00
1000	5.00	10.00	440	69	1	V65204	60.00
2000	10.00	20.00	482	97	1	V65304	98.00

Class B Graduated Cylinders, PP

- Highly translucent tall-form cylinders calibrated "to contain"; Class B per DIN 12681 and ISO 6706.
- Molded graduations, with blue screened overprint for legibility.
- Hexagonal base resists rolling.
- Temperatures of 60ºC must not be exceeded during cleaning to preserve marks and inscriptions.

Volume, mL	Tolerance +/-mL	Grad mm	Height mm	Diameter mm	Qty./ Pack	Cat. No.	2016 List Price
10	0.20	0.20	145	15	12	V646081	$55.00
25	0.50	0.50	170	22	12	V647081	65.00
50	1.00	1.00	200	27	12	V648081	79.00
100	1.00	1.00	250	33	12	V649081	96.00
250	2.00	2.00	315	44	6	V650081	72.00
500	5.00	5.00	360	58	6	V651081	99.00
1000	10.00	10.00	440	69	6	V652081	136.00
2000	20.00	20.00	482	97	3	V653081	122.00

VITLAB®

V64914

V64904

V649081

VITLAB® Volumetric Labware and Containers

Class B Graduated Cylinders, PP

- Highly translucent tall-form cylinders calibrated "to contain"; Class B per DIN 12681 and ISO 6706.
- Molded graduations, with ring marks at major increments.
- Hexagonal base resists rolling.

Volume mL	Tolerance +/-mL	Grad mL	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
10	0.20	0.20	145	15	12	V646941	$43.00
25	0.50	0.50	170	22	12	V647941	54.00
50	1.00	1.00	200	27	12	V648941	60.00
100	1.00	1.00	250	33	12	V649941	75.00
250	2.00	2.00	315	44	6	V650941	51.00
500	5.00	5.00	360	58	6	V651941	68.00
1000	10.00	10.00	440	69	6	V652941	95.00
2000	20.00	20.00	482	97	3	V653941	90.00

V649941

V64991

Class B Graduated Cylinders, SAN

- Glass-clear tall-form cylinders calibrated "to contain"; Class B per DIN 12681 and ISO 6706.
- Molded graduations, with ring marks at major increments.
- Hexagonal base resists rolling.

10	0.20	0.20	140	16	12	V64691	$55.00
25	0.50	0.50	169	21	12	V64791	64.00
50	1.00	1.00	199	28	12	V64891	79.00
100	1.00	1.00	260	34	12	V64991	105.00
250	2.00	2.00	315	47	6	V65091	78.00
500	5.00	5.00	350	61	6	V65191	106.00
1000	10.00	10.00	415	76	6	V65291	137.00
2000	20.00	20.00	482	97	3	V65391	128.00

V64291 family

Short-form Graduated Cylinders, SAN

- Short-form design increases stability to help prevent spills.
- Circular base.
- Cylinders are clear with molded graduations for easy measurement.

25	0.50	0.50	122	22	12	V64091	$68.00
50	1.00	1.00	142	27	12	V64191	88.00
100	2.00	2.00	163	37	12	V64291	99.00
250	5.00	5.00	192	51	6	V64391	73.00
500	10.00	10.00	218	67	6	V64491	103.00
1000	20.00	20.00	285	78	6	V64591	128.00

Short-form Graduated Cylinders, PP

- Short-form design increases stability to reduce spills.
- Circular base.
- Cylinders are highly transparent with molded graduations for easy measurement.

25	0.50	0.50	122	22	12	V640941	$46.00
50	1.00	1.00	142	27	12	V641941	64.00
100	2.00	2.00	163	37	12	V642941	74.00
250	5.00	5.00	192	51	6	V643941	54.00
500	10.00	10.00	218	67	6	V644941	77.00
1000	20.00	20.00	285	78	6	V645941	102.00

V642941 family

VITLAB® Volumetric Labware and Containers

Class A Light-Shielding Volumetric Flasks with PP screw cap

- PMP, certified.
- Superior light protection to amber glass at most wavelengths.*
- Meets Class A tolerances per DIN EN ISO 1042**.
- Supplied with imprinted lot number, batch certificate.

Volume mL	Tolerance +/-mL	Height mm	Thread GL	Qty./Pack	Cat. No.	2016 List Price
10	0.04	90	18	2	V670040	$53.00
25	0.04	115	18	2	V671040	75.00
50	0.06	150	18	2	V672040	84.00
100	0.10	180	18	2	V673040	90.00
250	0.15	235	25	2	V674040	109.00
500	0.25	270	25	2	V675040	142.00
1000	0.40	310	32	1	V676040	87.00

Class A Light-Shielding Volumetric Flasks with PP NS stopper

- PMP, certified.
- Superior light protection to amber glass at most wavelength.*
- Meets Class A tolerances per DIN EN ISO 1042**.
- Supplied with imprinted lot number, batch certificate.

Volume mL	Tolerance +/-mL	Height mm	Stopper NS	Qty./Pack	Cat. No.	2016 List Price
10	0.04	90	10/19	2	V670950	$53.00
25	0.04	115	10/19	2	V671950	74.50
50	0.06	150	12/21	2	V672950	83.60
100	0.10	180	14/23	2	V673950	90.80
250	0.15	235	19/26	2	V674950	109.80
500	0.25	270	19/26	2	V675950	142.00
1000	0.40	310	24/29	1	V676950	93.00

V673040

V673950

Class A Volumetric Flasks, PMP, with NS stopper, PP, certified

- Meets Class A tolerances per DIN EN ISO 1042**.
- Supplied with imprinted lot number, batch certificate.

10	0.04	90	10/19	6	V67704	$98.00
25	0.04	115	10/19	6	V67104	98.00
50	0.06	150	12/21	6	V67204	124.00
100	0.10	180	14/23	6	V67304	141.00
250	0.15	235	19/26	5	V67404	149.00
500	0.25	270	19/26	4	V67504	123.00
1000	0.40	310	24/29	3	V67604	110.00

Class B Volumetric Flasks, PMP, with NS stopper, PP

- Individually adjusted ring-marked flasks are Class B per DIN EN ISO 1042.
- Temperatures of 60°C must not be exceeded during cleaning to preserve marks and inscriptions.

10	0.08	90	10/19	6	V67795	$82.00
25	0.08	115	10/19	6	V67195	83.00
50	0.12	150	12/21	6	V67295	103.00
100	0.20	180	14/23	6	V67395	117.00
250	0.30	235	19/26	5	V67495	125.00
500	0.50	270	19/26	4	V67595	105.00
1000	0.80	310	24/29	3	V67695	92.00

*More information at www.brandtech.com.
**Autoclaving at 121°C will not cause permanent exceeding of tolerance limits; Temperatures of 60°C must not be exceeded during cleaning to preserve marks and inscriptions.

V67304

V67395

VITLAB® Volumetric Labware and Containers

Class B Volumetric Flasks, PP, with NS stopper, PP

- Individually adjusted ring-marked flasks are Class B per DIN EN ISO 1042.*

Volume mL	Tolerance +/-mL	Height mm	Stopper NS	Qty./Pack	Cat. No.	2016 List Price
10	0.08	90	10/19	6	V677941	$71.00
25	0.08	115	10/19	6	V671941	71.00
50	0.12	150	12/21	6	V672941	79.00
100	0.20	180	14/23	6	V673941	83.00
250	0.30	235	19/26	5	V674941	73.00
500	0.50	270	19/26	4	V675941	68.00
1000	0.80	310	24/29	3	V676941	65.00

Class B Volumetric Flasks, PMP, with screw caps, PP

- Individually adjusted ring-marked flasks are Class B per DIN EN ISO 1042.*

Volume mL	Tolerance +/-mL	Height mm	Thread GL	Qty./Pack	Cat. No.	2016 List Price
10	0.08	90	18	6	V677895	$82.00
25	0.08	115	18	6	V671895	82.00
50	0.12	150	18	6	V672895	104.00
100	0.20	180	18	6	V673895	117.00
250	0.30	235	25	5	V674895	111.00
500	0.50	270	25	4	V675895	106.00
1000	0.80	310	32	3	V676895	92.00

Class B Volumetric Flasks, PP, with screw caps, PP

- Individually adjusted ring-marked flasks are Class B per DIN EN ISO 1042.*

10	0.08	90	18	6	V677891	$72.00
25	0.08	115	18	6	V671891	73.00
50	0.12	150	18	6	V672891	84.00
100	0.20	180	18	6	V673891	89.00
250	0.30	235	25	5	V674891	98.00
500	0.50	270	25	4	V675891	87.00
1000	0.80	310	32	3	V676891	75.00

Erlenmeyer Flasks, PP, with screw caps, PP

- Wide neck flasks made from highly translucent polypropylene.
- Flask neck also accommodates NS stoppers (not included).

Volume mL	Increment mL	Thread GL	Stopper NS	Qty./Pack	Cat. No.	2016 List Price
50	10	40	34/35	6	V666941	$41.00
100	20	40	34/35	6	V667941	47.00
250	50	52	45/40	6	V668941	62.60
500	100	52	45/40	6	V669941	74.00
1000	200	52	45/40	4	V670941	71.00

* Temperatures of 60°C must not be exceeded during cleaning to preserve marks and inscriptions.

Please see page 128 for description of various plastics.

V673941 V673895 V673891 V667941

VITLAB®

VITLAB® Volumetric Labware and Containers

Griffin Beakers, PP

- Molded graduations with blue screened overprint for legibility.*
- Meets the requirements of ISO 7056.

Volume mL	Grad mL	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
10**	2	36	30	12	V605081*	$22.40
25	5	50	38	12	V606081*	22.40
50	10	60	47	12	V607081*	23.40
100	10	70	55	12	V608081	28.00
150**	20	80	66	12	V609081	38.00
250	25	95	77	6	V610081	20.40
400**	50	112	87	6	V611081	27.00
500	50	118	94	6	V618081	29.60
600**	50	127	100	6	V612081	30.00
1000	100	147	120	6	V614081	41.00
2000	200	187	149	6	V615081	82.00
3000	250	212	170	4	V616081	99.00
5000	500	247	203	4	V617081	126.00

Griffin Beakers, PP

- Molded graduations for durability.
- Meets the requirements of ISO 7056.
- Autoclavable at 121°C according to DIN EN 285

25	5	50	38	12	V606941	$22.00
50	10	60	47	12	V607941	23.00
100	10	70	55	12	V608941	27.00
150**	20	80	66	12	V609941	37.00
250	25	95	77	6	V610941	19.00
400**	50	112	87	6	V611941	26.00
500	50	118	94	6	V618941	28.00
600**	50	127	100	6	V612941	29.00
1000	100	147	120	6	V614941	40.00
2000	200	187	149	6	V615941	81.00
3000	250	212	170	4	V616941	98.00
5000	500	247	203	4	V617941	125.00

Griffin Beakers, PMP

- Easily readable, printed red scale.*
- Meets the requirements of ISO 7056.

10**	2	36	30	12	V60503	$31.00
25	5	50	38	12	V60603	31.00
50	10	60	47	12	V60703	39.00
100	10	70	55	12	V60803	48.00
150**	20	80	66	12	V60903	63.00
250	25	95	77	6	V61003	33.00
400**	50	112	87	6	V61103	48.00
500	50	118	94	6	V61803	51.00
600**	50	127	100	6	V61203	55.00
1000	100	147	120	6	V61403	80.00
2000	200	187	149	6	V61503	138.00
3000	250	212	170	4	V61603	150.00
5000	500	247	203	4	V61703	201.00

* Printed scale, not raised ** Variant in addition to ISO 7056.

VITLAB® Volumetric Labware and Containers

Griffin Beakers, PMP

- Molded graduations for durability.
- Meets the requirements of ISO 7056.
- Autoclavable to 121ºC according to DIN EN 285.

Volume mL	Grad mL	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
25	5	50	38	12	V60695	$30.00
50	10	60	47	12	V60795	38.00
100	10	70	55	12	V60895	47.00
150*	20	80	66	12	V60995	62.00
250	25	95	77	6	V61095	32.00
400*	50	112	87	6	V61195	47.00
500	50	118	94	6	V61895	50.00
600*	50	127	100	6	V61295	54.00
1000	100	147	120	6	V61495	79.00
2000	200	187	149	6	V61595	137.00
3000	250	212	170	4	V61695	149.00
5000	500	247	203	4	V61795	200.00

* Variant in addition to ISO 7056

Griffin Beakers, ETFE

- Beakers are translucent with black graduations for legibility.
- Withstands temperatures from -100ºC to +150ºC.
- Temperatures of 60ºC must not be exceeded during cleaning to preserve marks and inscriptions.
- High chemical resistance.

Volume mL	Grad mL	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
25	5	50	32	1	V110204	$16.00
50	10	59	39	1	V110304	18.00
100	20	72	50	1	V110404	26.00
250	50	96	67	1	V110604	49.00
400	50	109	77	1	V110704	59.00
500	100	122	88	1	V110904	67.00
600	100	125	91	1	V110804	82.00
1000	100	143	105	1	V111004	128.00

Please see page 128 for description of various plastics.

VITLAB

VITLAB® Volumetric Labware and Containers

Graduated Pitchers, PP

- Translucent with molded graduations.

Volume mL	Grad mL	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
50	2	70	40	24	V446941	$45.00
100	2	80	50	24	V447941	60.00
250	5	120	74	12	V440941	52.00
500	10	140	92	12	V441941	55.00
1000	20	181	117	6	V442941	41.00
2000	50	213	152	6	V443941	62.00
3000	50	242	172	6	V444941	82.00
5000	100	270	204	6	V445941	170.00

Graduated Pitchers, PP

- Translucent with blue screened molded graduations.

50	2	70	40	24	V446081	$60.00
100	2	80	50	24	V447081	68.00
250	5	120	74	12	V440081	59.00
500	10	140	92	12	V441081	66.00
1000	20	181	117	6	V442081	45.00
2000	50	213	152	6	V443081	80.00
3000	50	242	172	6	V444081	107.00
5000	100	270	204	6	V445081	171.00

Graduated Pitchers, SAN

- A safer, more durable alternative to glass pitchers.
- Transparent with molded graduations.

250	5	120	70	12	V44091	$59.00
500	10	133	91	12	V44191	78.00
1000	10	170	116	6	V44291	57.00
2000	20	215	150	6	V44391	104.00
3000	50	242	170	6	V44491	131.00

Nesting Graduated Pitchers, PP

- Nesting design conserves bench space and simplifies storage.
- Graduations are printed with screening for easy, accurate measurements.

250	5	115	75	12	V480941	$52.00
500*	10	140	100	12	V481941	55.00
1000*	10	167	125	12	V482941	87.00
2000	20	212	148	12	V483941	162.00
3000	50	242	170	12	V484941	219.00

*Colors available – inquire

Please see page 128 for description of various plastics.

VITLAB® General Laboratory Products
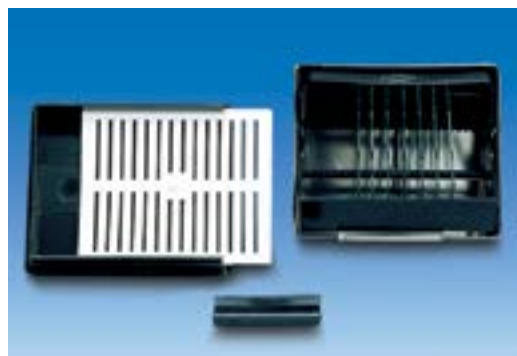
Forceps

Length mm	Qty./Pack	Cat. No.	2016 List Price
Forceps, PMP with pointed ends			
115	10	V67895	$27.00
145	10	V67995	32.00
Forceps, POM with rounded ends			
115	5	V68099	12.60
145	5	V68199	15.20
180	5	V68299	28.60
250	5	V68399	45.00

Scoops

Volume mL	Length mm	Qty./Pack	Cat. No.	2016 List Price
Measuring Scoops, PP volume marked on handle				
2	60	12	V39194	$6.20
5	82	12	V39294	7.60
10	100	12	V39394	10.00
25	135	12	V39494	10.40
50	160	12	V39594	20.00
100*	200	12	V39694	26.00
250	260	6	V39794	33.00
500	315	6	V39894	46.00
1000	385	6	V39994	57.00

*Colors available – inquire

Volume mL	Length mm	Qty./Pack	Cat. No.	2016 List Price
Measuring Scoops, HDPE				
15	115	12	V40093	$11.00
25	135	12	V40193	16.20
65	185	12	V40293	21.00
110	215	12	V40393	30.00
150	250	12	V40493	35.00
350	310	6	V40593	34.00
750	350	6	V40693	56.00
1250	400	6	V40793	78.00

Slide Staining Kit, POM

Description	Size mm	Height mm	Qty./Pack	Cat. No.	2016 List Price
Universal Slide Staining Kit	100 x 87	51	5	V99099*	$175.00
Staining jar	100 x 87	51	5	V99199	126.00
Staining rack	91 x 79	38	10	V99299	100.00

*Universal Kit V99099 includes one staining jar and a staining rack for 25 slides, 76 x 26 mm.

Please see page 128 for description of various plastics.

VITLAB®

VITLAB® General Laboratory Products

Funnels, PP

• Handle with loop for hanging.

Diameter mm	Approx vol. mL	Length mm	Stem Diameter mm	Qty./pack	Cat. No.	2016 List Price
30	5	45	1.5	24	V40894	$20.00
30	6	47	4	24	V41094	20.00
40	14	65	4	24	V41194	24.00
50	32	85	7	24	V41294	30.00
75	88	108	7	12	V41394	19.00
100	222	155	8	12	V41494	36.00
120	342	180	11	12	V41594	45.00
150	817	220	15	12	V41694	60.00

Large Funnels, PP or HDPE

• Integrated handle (except V41994).

200 (PP)	1300	200	22	6	V41794	$69.00
250 (PP)	3200	260	30	6	V41894	120.00
350 (PP)	12500	440	35	1	V41994	42.00
400 (HDPE)*	12500	365	42	1	V42294	107.00
430 (HDPE)*	17500	420	37	1	V42393	142.00

*HDPE Large Funnels V42294 and V42393 are not food-safe products.

Powder Funnels, PP

65		68	15	10	V70794	$25.60
80		75	21	10	V70894	37.00
100		94	22	10	V70994	39.00
120		110	26	10	V71094	48.00
150		138	28	5	V71194	31.00

Sample Vials, PP, with snap caps, LDPE

Volume mL		Height mm	Diameter mm	Qty./pack	Cat. No.	2016 List Price
5		25	20	25	V68594	$46.00
18		57	22	25	V68894	59.00
50		97	30	10	V69194	30.60
160		110	50	10	V69294	35.80

Sample Vials, PP, with screw caps, PP

Volume mL	Height mm	Diameter mm	Thread GL	Qty./pack	Cat. No.	2016 List Price
60	90	38	40	10	V130394	$106.00
180	112	54	56	10	V130594	155.00

Powder funnels

Sample Vials, with snap caps

Sample Vials with screw caps

VITLAB® General Laboratory Products

Dropping Bottles, LDPE with dropper screw cap

Volume mL	Thread GL	Diameter mm	Height mm	Qty./Pack	Cat. No.	2016 List Price
50	18	37	117	24	V94587	$65.00
100	18	43	142	24	V94687	73.00
250	25	58	183	12	V94987	54.00
500	25	74	228	12	V95087	71.00
1000	32	92	269	12	V95187	96.00

Reagent Bottles, PP, with NS stoppers, PP

• NS stoppers help prevent leakage.

Volume mL	Stopper NS	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
100	14/23	106	52	30	V100394	$69.00
1000	29/32	213	108	10	V100694	92.00

Reagent Bottles, PP, with screw caps, PP

• Screw caps help protect against outside contamination and leakage.

Volume mL	Thread GL	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
100	18	100	52	20	V100389	$61.00
250	25	132	70	20	V100489	81.00
500	25	165	87	10	V100589	58.00
1000	32	202	108	10	V100689	77.00
2000	32	245	131	6	V100789	96.00
5000	45	315	178	1	V100889*	28.00
10000	63	394	222	1	V100989*	70.00

*Bottle V100889 includes 1 handle; bottle V100989 includes 2 handles.

Wide Mouth Reagent Bottles, PP, with screw caps, PP

• Screw caps help protect against outside contamination and leakage.

• Wider mouth for easier filling.

Volume mL	Thread GL	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
100	32	96	55	20	V101589	$81.00
250	45	132	73	20	V101689	103.00
500	45	172	87	10	V101789	66.00
1000	63	204	108	10	V101889	119.00
2000	63	243	131	6	V101989	90.00

Please see page 128 for description of various plastics.

VITLAB® General Laboratory Products

Bottles, LDPE, with screw caps, PP

- Screw caps help protect against outside contamination and leakage.

Volume mL	Thread GL	Height mm	Diameter mm	Qty./Pack	Cat. No.	2016 List Price
50	18	73	37	24	V94589	$62.00
100	18	95	43	24	V94689	66.00
250	25	135	58	12	V94989	46.00
500	25	180	74	12	V95089	66.00

Wide Mouth Bottles LDPE, with screw caps, PP

- Screw caps help protect against outside contamination and leakage.
- Wider mouth for easier filling.

250	45	146	58	12	V93789	$53.00
500	45	166	76	12	V93989	73.00
1000	63	226	91	12	V94189	104.00

Square Bottles, HDPE, with screw caps, PP

- Screw caps help protect against outside contamination and leakage.
- Space-saving smaller footprint with square-shaped bottle.

Volume mL	Thread GL	Height mm	Size mm	Qty./Pack	Cat. No.	2016 List Price
100	25	76	43 x 43	24	V91789	$74.00
250	28	80	80 x 80	24	V91989	99.00
500	32	106	90 x 90	12	V92089	66.00
1000	32	187	80 x 80	12	V92189	90.00

Wide Mouth Square Bottles, HDPE, with screw caps, PP

- Screw caps help protect against outside contamination and leakage.
- Space-saving smaller footprint with square-shaped bottle.

100	32	78	46 x 46	24	V92489	$98.00
250	50	83	80 x 80	24	V92689	111.00
500	65	120	90 x 90	12	V92789	83.00
1000	65	168	90 x 90	12	V92889	104.00

VITLAB®

Please see page 128 for description of various plastics.

VITLAB® General Laboratory Products

Bucket, PP

Bucket, HDPE

Buckets, PP, with handles, pouring lips, and graduations.

- With handle and lip for ease of pouring.
- Markings at 1L graduations.

Volume L	Height mm	Diameter mm	Qty./ Pack	Cat. No.	2016 List Price
12	330	310	1	V96694	$47.00
15	370	310	1	V96794	53.00

Buckets, HDPE, with handles

- With carrying handle.
- Markings at 1L graduations.

Buckets

5	240	250	1	V96093	$23.40
10	300	290	1	V96393	28.00

Lids, PP

for 5L bucket	-	-	1	V96293	6.20
for 10L bucket	-	-	1	V96593	7.20

Imhoff Sedimentation Cones, SAN

- Transparent.
- Graduated to 1000mL.
- Screw closure allows drainage.

1000 mL Cone	1	388000	$33.12
Rack PMMA (for 2 cones) 150x300x290mm	1	388050	284.00

VITLAB® custom imprinting

VITLAB® has specialized capabilities in high-precision printing on plastic products with superior chemical and break resistance. Many VITLAB® products can be imprinted with logos or custom graduations for OEM or promotional use in relatively small quantities. Custom imprinted VITLAB® products are ideal for handling granulates, powders or liquids commonly used in agriculture, laboratories, and in the food, beverage and chemical industries. From multi-color logos to specialized measuring scales, VITLAB can imprint plastic labware to meet your individual requirements and specifications. Custom imprinted labware by VITLAB is of the highest quality and offers a unique and functional means of presenting your company brand. Beakers, pitchers and scoops can also be made in colored plastic.

Contact BrandTech® Scientific for more information.

Plastics Reference

	Suitable for Microwaves	Suitable for Autoclaving	Transparency	Max. Operating Temp (ºC)	Brittleness Temp (ºC)	Density (g/cm^3)
ETFE	Yes	Yes	Translucent	150	-100	1.70
HDPE	Yes	No	Translucent	105	-50	0.95
LDPE	Yes	No	Translucent	80	-50	0.92
PC	Yes	Yes*	Transparent	125	-130	1.20
PFA	Yes	Yes	Translucent	260	-200	2.17
PMP	Yes	Yes	Transparent	150	0	0.83
POM	No	Yes*	Opaque	130	-40	1.42
PP	Yes	Yes	Translucent	125	0	0.90
SAN	No	No	Transparent	70	-40	1.03

* Frequent autoclaving may reduce mechanical stability. "Autoclaving" refers to steam sterilization at 121ºC (250ºF) at 15 PSIG for 20 minutes

+ Excellent chemical resistance	o Good to limited resistance	- Poor chemical resistance
Continuous exposure to the substance does not cause damage within 30 days. The plastic may remain resistant for years.	Continuous exposure to the substance causes minor damages, some of which is reversible, within 7-30 days (e.g., swelling, softening, decrease of mechanical strength, discoloration).	Not suitable for continuous medium exposure to the substance. Immediate damage may occur (loss of mechanical strength, deformation, discoloration, cracking, dissolution).

Chemical resistance of plastics to classes of substances at 20ºC

	SAN	PC	POM	PMP	LDPE	HDPE	PP	ETFE	PFA
Alcohols, aliphatic	+	+	+	+	+	+	+	+	+
Ether	-	-	+	-	o	o	o	+	+
Aldehydes	-	o	o	o	o	+	+	+	+
Ester	-	-	-	o	o	o	o	+	+
Hydrocarbons, aliphatic	-	o	+	o	o	+	+	+	+
Hydrocarbons, aromatic	-	-	+	-	o	+	o	+	+
Hydrocarbons, halogenated	-	-	+	-	o	o	o	+	+
Ketones	-	-	+	o	o	o	o	o	+
Alkalis	+	-	+	+	+	+	+	+	+
Acids, strong or concentrated	-	-	-	+	+	+	+	+	+
Acids, weak or diluted	o	o	-	+	+	+	+	+	+
Oxidizing acids, oxidizing agents	-	-	-	-	-	-	-	+	+

Abbreviations of the described plastics to DIN 7728

SAN	Styrene Acrylonitrile Copolymer	**PP**	Polypropylene
PMMA	Polymethlymethacrylate	**PMP**	Polymethylpentene
PC	Polycarbonate	**ETFE**	Ethylene-tetrafluoro ethylene copolymer
POM	Polyoxymethylene	**FEP**	Perfluoroethylene-propylene copolymer
LDPE	Low Density Polyethylene	**PFA**	Perfluoroalkoxy copolymer
HDPE	High Density Polyethylene		

The recommendations listed here are based on technical literature and information provided by the manufacturers of raw materials. They were prepared carefully and are intended to inform and advise. However, they cannot replace suitability testing performed by the user under actual working conditions.

Food-safe products according to EC Directive No. 10/2011

The proper quality grade for every application

The right quality grade should be used in each application. Consequently, BRAND offers a range of quality grades so that the optimal one is always available.

	sterile acc. ISO 11 137	free of DNA	free of RNase	free of endotoxins	free of ATP	free of cytotoxic substances acc. ISO 10 993
Pipette tips and filter tips standard		✔	✔	✔	✔	
Pipette tips and filter tips BIO-CERT®	✔	✔	✔	✔	✔	
PD-Tips BIO-CERT®	✔	✔	✔	✔	✔	
Microcentrifuge tubes sterile BIO-CERT®	✔	✔	✔	✔	✔	
Microcentrifuge tubes with lid closure		✔	✔	✔		
PCR products		✔	✔	✔		
Deep-well plates		✔	✔	✔		
BRANDplates® standard		✔	✔	✔		✔
BRANDplates® sterile	✔	✔	✔	✔		✔
UV-Cuvettes micro, individually wrapped		✔	✔	✔		

BIO-CERT® products correspond to the highest quality grade – They are sterile, free from DNA, RNases, endotoxins and ATP

Sterility: Sterility means being free of living organisms. BRAND products are sterilized with beta radiation according to ISO 11 137 and the AAMI Guidelines. The radiation dose is at least 12.1 kGy. The inertGrade™ microplates are an exception; these are sterilized with ethylene oxide due to their special surface characteristics.

An SAL (sterility assurance level) of 10^{-6} is guaranteed, meaning no more than one part in 1×10^6 can be contaminated! This level of sterility complies with the requirements of USP 29 and the Ph.Eur.

DNA and RNases: DNA (deoxyribonucleic acid) is the carrier of genetic information. RNases (ribonucleases) are enzymes that can degrade ribonucleic acid (RNA) through hydrolysis. Products from BRAND are free from DNA ($< 4 \times 10^{-14}$ g/tip = 40 fg), to avoid false positive results, e.g., in PCR, and free from RNases ($< 8.6 \times 10^{-15}$ g/tip = 8.6 fg), to make it possible to work with RNA.

Endotoxins: Endotoxins are an indicator of the presence of Gram negative bacteria and make up the largest group of pyrogens. These two are often falsely believed to be synonymous. The concentration of endotoxins in products from BRAND is determined by the kinetic-turbidimetric limulus amebocyte lysate (LAL) test. The detection limit is 0.01 EU/ml. This corresponds to an endotoxin concentration of $< 1 \times 10^{-12}$ g/tip (1 pg/tip). Freedom from endotoxins is required in pharmaceutical manufacture and cell culture.

ATP: ATP serves as a marker for detecting viable bacteria, yeasts, and human cells, etc. Products from BRAND are free of ATP (ATP concentration $< 1 \times 10^{-15}$ g/tip = 1 fg) and thus are especially suitable for luminescence measurements.

Trademarks

Trademark	Owner	Trademark	Owner
accu-jet®	BRAND GMBH + CO KG	sartorius®	SARTORIUS AG
AutoRep™	Rainin Instrument, LLC	seripettor®	BRAND GMBH + CO KG
BIO-CERT®	BRAND GMBH + CO KG	Synchro™	VACUUBRAND GMBH + CO KG
BIOHIT®	Sartorius Biohit Liquid Handling Oy	Tip-Stack™	BRAND GMBH + CO KG
BOCHEM®	Bochem Instrumente GmbH	Titrette®	BRAND GMBH + CO KG
BRAND®	BRAND GMBH + CO KG	Transferpette®	BRAND GMBH + CO KG
BRAND*plates*®	BRAND GMBH + CO KG	Transferpettor™	BRAND GMBH + CO KG
BrandTech®	BrandTech Scientific, Inc.	Tween®	ICI Americas, Inc.
cellGrade™	BRAND GMBH + CO KG	VACUUBRAND®	VACUUBRAND GMBH + CO KG
Combitips advanced®	Eppendorf AG	VACUU•BUS®	VACUUBRAND GMBH + CO KG
Daigger®	A. Daigger and Company, Inc.	VACUU•CONTROL™	VACUUBRAND GMBH + CO KG
Dispensette®	BRAND GMBH + CO KG	VACUU•LAN®	VACUUBRAND GMBH + CO KG
DistriTips®	Gilson, Inc.	VARIO®	VACUUBRAND GMBH + CO KG
Easy Calibration™	BRAND GMBH + CO KG	VITLAB®	VITLAB GmbH
EASYCAL™	BRAND GMBH + CO KG	VITON®	DuPont Performance Elastomers, LLC
Encode™	Rainin Instruments, LLC	VWR®	VWR International, LLC
Eppendorf®	Eppendorf AG	Windows®	Microsoft Corporation
Finnpipette®	Thermo Fisher Scientific, Inc.	Windows® NT	Microsoft Corporation
Fisherbrand®	Thermo Fisher Scientific, Inc.		
Gilson®	Gilson, Inc.		
HandyStep®	BRAND GMBH + CO KG		
hydroGrade™	BRAND GMBH + CO KG		
immunoGrade™	BRAND GMBH + CO KG		
LightCycler®	Roche Diagnostics GmbH		
lipoGrade™	BRAND GMBH + CO KG		
LTS™	Rainin Instruments, LLC		
macro™	BRAND GmbH + CO KG		
Microsoft®	Microsoft Corporation		
Mucasol®	Merz Pharma GmbH & Co. KGaA		
nano-cap™	BRAND GMBH + CO KG		
PD-Tip™	BRAND GMBH + CO KG		
Peltronic™	VACUUBRAND GMBH + CO KG		
PLT™	BRAND GMBH + CO KG		
pureGrade™	BRAND GMBH + CO KG		
QuikSip™	BRAND GMBH + CO KG		
Rainin®	Rainin Instrument, LLC		
RC6 Chemistry-HYBRID™	VACUUBRAND GMBH + CO KG		
Repeater®	Eppendorf AG		

Other product names, corporate names or titles used within this catalog may be trademarks or registered trademarks of other companies, and are mentioned only in an explanatory manner and for identification purposes to the benefit of their respective owners, and without intent to infringe.

ISO 9001

The ISO 9001 and 9002 certifications earned by BRAND, BOCHEM®, VACUUBRAND and VITLAB®, are your 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.

ISO 14001

Active protection of the environment is an integral part of our partners' manufacturing philosophies. BRAND, and VITLAB® participate in the voluntary European Community environmental management program, and have been certified according to the internationally recognized ISO 14001 standard for the environmental sensitivity of their corporate operations.

DAkkS Calibration Laboratories

This accreditation documents instrument traceability to national and international standards. VACUUBRAND was accredited in 1997 as a calibration laboratory for vacuum gauges in the pressure range of 1300mbar to 10^{-3}mbar. In 1998, a calibration laboratory at BRAND was officially accredited for volumetric instruments such as piston-operated pipettes and burettes, and for volumetric instruments made of glass and plastics. Both companies are thus certified to calibrate the instruments that you depend on to control your operations. This technical achievement by both companies is your assurance that your instruments are the most reliable you can buy.

DAkkS is the successor to the DKD (Deutscher Kalibrierdienst) for German calibration laboratories. It is a member of the European Cooperation for Accreditation (EA). A multilateral agreement assures obligatory recognition of the DAkkS-Calibration Certificate in a variety of countries. DAkkS, as part of the European Cooperation for Accreditation (EA), has signed the international convention for reciprocal recognition, the "Mutual Recognition Agreement (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, as well as a wealth of other information on this topic, can be read at www.ilac.org.

Terms and Conditions of Sale of BrandTech® Scientific, Inc. ("Agreement")

These terms and conditions set forth the business terms on which BrandTech® Scientific, Inc., a Delaware corporation ("Seller") agrees to sell Products (as defined herein) for the Buyer (as defined herein). These terms and conditions may only be changed by written agreement signed by both parties. The issuance of a purchase order by Buyer for any of Seller's products or services constitutes Buyer's acceptance of these terms and conditions.

Definitions: The term "Product(s)" shall refer to the materials, supplies, items and equipment covered by the related order. The term "Contract" shall refer to an accepted order which will then be subject to the terms and conditions as set forth herein. Other defined terms have the meanings given to them herein. The term "Buyer(s)" shall refer to the person, institute, company, organization, or corporation making the order in exchange for Product(s).

1. Acceptance by BrandTech® Scientific, Inc.

All orders are subject to credit approval and acceptance by the Seller in Essex, CT. These terms and conditions constitute the sole terms and conditions which govern the sale of the Product(s) covered hereby. This Agreement is the sole and complete agreement between Buyer and Seller and supersedes all prior discussions, agreements, or understandings whether stated orally or in writing. No deviating or additional terms shall be binding unless expressly agreed to in writing signed by an authorized representative of Seller. To the extent that any term or condition of a validly issued and accepted purchase order conflicts with a term or condition contained in this Agreement, the term or condition contained in this Agreement shall control. Seller may, in its sole discretion and at any time for any reason, change this Agreement or any policies or guidelines. The most current terms and conditions are available at www.brandtech.com which may contain additional and supplementary terms and conditions, and are hereby incorporated by reference. Buyer is responsible for reviewing these terms and conditions, the online terms, and any applicable changes.

2. Shipping Terms

Delivery shall be made Ex Works Essex, CT. Payment terms shall be net 30 days for Buyers with credit approved and established prior to order and if written on face of invoice. All other shipments must be prepaid or paid by credit card. All payments shall be made in U.S. dollars. Products will only be shipped to valid addresses within the United States of America and Canada. Buyer is responsible for any federal, state, local, sales, VAT, GST, or other taxes whether or not those taxes are set forth on the applicable invoice from Seller.

3. Payment Terms

Buyer shall pay all invoiced amounts due to Seller within 30 days of Seller's invoice. Buyer shall make all payments hereunder by ACH, Wire Transfer, check, or credit card and in U.S. dollars. Past due accounts will be subject to payment of a finance charge on all late payments. Buyer shall pay interest on all late payments at the lesser of the rate of 1½% per month (18% per annum) or the highest rate permissible under Connecticut law. In the event Buyer's account is past due, the total amount outstanding shall be payable immediately, and Seller shall have no obligation to deliver any Products or deliveries in process. In such event Seller may demand that all outstanding orders be paid in advance of shipment.

4. Prepaid shipping charges

Buyer is responsible for all shipping, duties, customs, and brokerage fees. At the request of Buyer, Seller may prepay freight charges and include such charges on the invoice. Such prepaid charges, if paid, are an accommodation to the Buyer only, and do not modify the Ex Works Essex, CT delivery term.

5. Shipping dates

Shipping dates listed on purchase orders are estimates only, and Seller shall not be liable for non-shipment or delay due to acts of God, strikes, accidents or any other causes beyond control of Seller, whether or not similar in class or kind to those mentioned. Seller shall not be liable or responsible for incidental, special or consequential damages suffered by Buyer, whether foreseen or unforeseen, due to incorrect, delayed, or undelivered shipments.

6. Inspection and claims

Claims for damage in shipment must be filed in accordance with the delivering carrier's procedures. Claims for shortages, shipping errors or any claim that the goods do not conform to the terms of the Contract must be submitted to the Seller in writing within five (5) days of receipt. If Buyer fails to give such notice, the goods shall be deemed in conformance with the Contract terms and accepted by Buyer, and Buyer shall pay for the goods in accordance with the Contract. Buyer waives any right to reject or revoke acceptance after such five (5) day period. All claims must be accompanied by a copy of the packing slip.

7. Returns

Buyer has no right to return Product(s) purchased hereunder to Seller, and Seller has no obligation to accept any such returns, without Seller's express prior written authorization, which may be withheld in Seller's sole discretion. In the event Buyer desires to return a Product or Products, Buyer must obtain Seller's written authorization within thirty (30) days of shipment. Unless indicated otherwise by Seller, any written authorization given to Buyer will expire within thirty (30) days of issuance. With the exception of those returns specified in Paragraph 12, returns will be accepted only if Product is in new, unused, resalable condition in the original packaging. All Product returns must be accompanied by a completed Health and Safety Declaration regarding potential contamination with hazardous materials due to Buyer's use of the Product. In the event of a return, Seller shall be entitled to handling charges of 25% of the purchase price of the Product(s) or such greater amount as expended by Seller in connection with such returns.

8. Cancellations

In the event of cancellation of a purchase order by Buyer, Seller shall be entitled to cancellation charges of 25% of the cancelled order or such greater amount as expended by Seller in connection with such cancellations.

9. Deferred orders

Requests by Buyer for changes in shipping schedule on orders in process are subject in all cases to approval and acceptance by Seller in writing, and will be further subject to revisions in price and/or charges for work already in progress.

10. Typographical or printing errors

Any typographical, printing, stenographic, clerical, or other errors are subject to correction by the Seller.

11. Prices

All prices are subject to change without notice. In the event the price of a Product increases from a previously defined price, Seller will so notify Buyer prior to shipment, and Buyer shall have ten (10) days to cancel that part of the purchase order as applies to such Product if the increased price is unacceptable.

12. Limited Warranty

Seller warrants that its Products are free from defects in materials and workmanship as set forth in applicable operating instructions at the date of shipment to the original Buyer and will conform to the Contract specifications or such other specifications which constitute technical improvements to the Product.* The exclusive remedy of the Buyer in the event of a breach of the foregoing warranty is replacement or repair (at Seller's option) of any defective Product. No goods shall be returned to Seller for repair or replacement pursuant to this warranty without prior written approval and accompanied by a completed Health and Safety Declaration (as specified in Paragraph 7). All cleaning, decontamination, and shipping costs shall be the sole responsibility of the Buyer together with any damage to the goods that might occur in transit to or from Seller. Under no circumstances does Seller's responsibility or warranty extend to Products other than those manufactured or distributed by Seller; nor does Seller's liability extend to any Products, articles or parts which are furnished by Buyer or obtained from other manufacturers or suppliers at Buyer's request and/or in accordance with Buyer's specifications. In the event that Seller is unwilling or unable to repair or replace any defective or nonconforming Product due to change in technical standards, technical modifications, unavailability of material or parts, or any other reason, Buyer shall be entitled to a return of the purchase price paid for such Product as its sole and exclusive remedy. Seller assumes no responsibility for the effective performance of any specific scientific application relying on Products supplied under this Contract beyond published Product specifications at the time of sale. Seller assumes no responsibility for conformance with local building codes as they may apply in the installation of Products supplied by the Seller. Seller assumes no responsibility whatsoever for the accuracy of designs, specifications or materials furnished or specified by Buyer.

TO THE EXTENT PERMITTED BY LAW, THE LIMITED WARRANTY SET FORTH ABOVE IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE BUYER ACKNOWLEDGES THAT IT IS NOT RELYING ON THE SELLER'S SKILL OR JUDGEMENT TO SELECT OR FURNISH GOODS SUITABLE FOR ANY PARTICULAR PURPOSE AND THAT THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THOSE SET FORTH HEREIN. TO THE EXTENT PERMITTED BY LAW, IN NO EVENT SHALL SELLER BE LIABLE FOR BUYER'S LOSS OF PROFIT OR INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES OF ANY KIND. THE REMEDIES SET FORTH IN THIS SECTION 12 SHALL BE THE BUYER'S SOLE AND EXCLUSIVE REMEDY AND SELLER'S ENTIRE LIABILITY FOR ANY BREACH OF LIMITED WARRANTY SET FORTH IN THIS SECTION 12.

*All wearing and glass parts, e.g., pistons, seals, diaphragms, valves, are excluded from this Warranty.

13. Indemnity for nuclear uses

Buyer or lessee agrees to indemnify, defend and hold Seller harmless from any and all liability or damage arising out of the use of the equipment sold or leased hereunder in, on or with any nuclear installation, activity, use, or purpose.