

## Measurement to the highest degree

### Volume measurement is of utmost importance in routine laboratory operations

Volumetric instruments are standard equipment in each analytical laboratory. VITLAB has decades of experience and resulting know-how in the development and production of laboratory products which are used to measure volumes. We offer you a diverse product selection of highly developed precision instruments for a variety of different liquid handling applications as well as conformity-certified DIN ISO-compliant Class A volumetric measurement devices.



## Calibration certificates

For all volumetric instruments that are subject to test equipment monitoring, a written documentation about the regularly calibration resp. volume control is necessary. The documentation should contain the values for accuracy and coefficient of variation as well as the testing procedure and test frequency. A distinction is made between:

- Quality certificates (factory calibration report)
- Official calibration certificates (Bureau of standards, DAkkS)

### Quality certificates

The VITLAB quality certificate is a factory calibration report on the basis of the quality assurance system according to DIN EN ISO 9001. Quality certificates are available as a batch or individual certificate. Devices from one production batch have the same lot number as the quality certificate. The certificate records for the specific batch the mean value, standard deviation and day of issue. In the case of an individual certificate\*, the volumetric instrument and the certificate bear an individual serial number in addition to the lot number. The certificate records besides the day of issue also the measured volume and the measurement uncertainty.

### DAkkS calibration certificate

The DAkkS calibration certificate\* documents officially the traceability of measuring results to national and international standards as required by the standards DIN EN ISO 9001 and DIN EN ISO / IEC 17025 for the monitoring of measuring instruments. A major difference between factory calibration services and DAkkS laboratories is the accurate determination of the respective uncertainty of measurement guaranteed by the accredited laboratory and supervised by the DAkkS. DAkkS calibration certificates are appropriate in uses in which calibrations of an accredited laboratory are requested, where high level calibrations are demanded and for calibration of reference standards and instruments for comparative measurements.

### Calibration service

VITLAB offers a repair, maintenance and calibration service (incl. DAkkS calibration) for all Liquid Handling devices made by VITLAB. The calibration laboratory accredited by the „Deutsche Akkreditierungsstelle GmbH“ (DAkkS) is authorized to issue DAkkS Calibration certificates for the following instruments: Liquid Handling products like VITLAB piston-operated pipettes and burettes, VITLAB dispensers and VITLAB volumetric plastic labware.

\* Available at additional cost

Volume measurement is a routine laboratory operation. Therefore, volumetric instruments such as volumetric flasks, measuring cylinders and pipettes are standard equipment in any analytical laboratory.

The importance of the standard of measurement accuracy in your routine laboratory operations cannot be overstated. VITLAB has decades of experience in the development and production of laboratory products which are used to measure volumes.

VITLAB is the first manufacturer to produce Class A measuring cylinders from PMP that are certified compliant according to DIN 12681.

All Class A PMP volumetric flasks are optionally available in transparent or UV-absorbing variations for light-sensitive substances.

## Calibration

Type "Ex": The delivered quantity of liquid corresponds to the volume printed on the instrument (pipettes and burettes).

Type "In": The contained quantity of liquid corresponds to the volume printed on the instrument (volumetric flasks and measuring cylinders).

VITLAB calibrates each individual volumetric flask "to contain" (In) at a reference temperature of 20 °C.

The hydrophobic characteristics of the materials in plastic volumetric instruments lead to the measured volume being the same as the delivered quantity ("In" = "Ex") for aqueous solutions.

## Accuracy classes

Class A: The volume tolerances lie within the limits specified by DIN and ISO.

Class B: The volume tolerances are twice the error limits for Class A specified by DIN and ISO. Detailed explanations on "accuracy in volume measurement" are available in the chapter on "General and Technical Information".

## Certificate of conformity

The DE-M marking is VITLAB's guarantee that the respective products comply with the German Measurement and Calibration Regulation. The special manufacturing process developed by VITLAB, and the proven VITLAB quality management system, ensure compliance with the volume tolerances specified by the standards.





## Volumetric flasks, PFA, Class A, with screw cap, PFA



Highly transparent.

Ring mark individually calibrated to 'In'.

Class A tolerances according to DIN EN ISO 1042.

The PFA screw cap guards against contamination.

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

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

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

Also available with DAkkS calibration certificate or individual quality certificate (at additional cost).

The advantages of PFA:

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

Volume ml	Tolerance ± ml	Height* mm	Thread GL	PU	Cat. No.
10	0.04	90	18	2	107097
25	0.04	115	18	2	107197
50	0.06	150	18	2	107297
100	0.10	180	18	2	107397
250	0.15	235	25	2	107497
500	0.25	270	25	2	107597

\* Height without screw cap

### Compare: VITLAB® volumetric flasks ...

- ... have a circular, precisely calibrated ring mark with which the meniscus can be read accurately from any position
- ... have a straight neck for precise volume measurement
- ... have a specially formed bottom for superior stability

... are MADE IN GERMANY

## VITLAB® UV-protect volumetric flasks, PMP, Class A with NS stoppers, PP



UV-absorbing, highly transparent. For storage of light-sensitive substances.

With ring mark individually calibrated to 'In'.

Class A tolerances according to DIN EN ISO 1042.

With printed lot number and batch certificate.

Thermal stress up to 121 °C (autoclaving) does not permanently exceed the tolerance limit.

To preserve markings, cleaning at no higher than 60 °C is recommended.

Also available with DAkkS calibration certificate or individual quality certificate (at additional cost).

More information on VITLAB® UV-protect can be found on page 124.

Volume ml	Tolerance ± ml	Height* mm	Neck NS	PU	Cat. No.
10	0.04	90	10/19	2	670950
25	0.04	115	10/19	2	671950
50	0.06	150	12/21	2	672950
100	0.10	180	14/23	2	673950
250	0.15	235	19/26	2	674950
500	0.25	270	19/26	2	675950
1000	0.40	310	24/29	1	676950

\* Height without stopper



### VITLAB® UV-protect replaces brown glass and is...

- ... substantially lighter in weight
- ... practically unbreakable
- ... practically impermeable in the UV region
- ... comparable to a light protection factor of 20

## Volumetric flasks, PMP, Class A with NS stoppers, PP



Highly transparent.

With ring mark individually calibrated to 'In'.

Class A tolerances according to DIN EN ISO 1042.

With printed lot number and batch certificate.

Thermal stress up to 121 °C (autoclaving) does not permanently exceed the tolerance limit.

To preserve markings, cleaning at no higher than 60 °C is recommended.

Also available with DAkkS calibration certificate or individual quality certificate (at additional cost).

Volume ml	Tolerance ± ml	Height* mm	Neck NS	PU	Cat. No.
10	0.04	90	10/19	2	67704
25	0.04	115	10/19	2	67104
50	0.06	150	12/21	2	67204
100	0.10	180	14/23	2	67304
250	0.15	235	19/26	2	67404
500	0.25	270	19/26	2	67504
1000	0.40	310	24/29	1	67604

\* Height without stopper





## Volumetric flasks, PMP, Class B with NS stoppers, PP



Highly transparent.

With ring mark individually calibrated to 'In'.

Class B tolerances according to DIN EN ISO 1042.

Thermal stress up to 121 °C (autoclaving) does not permanently exceed the tolerance limit.

To preserve markings, cleaning at no higher than 60 °C is recommended.

Volume ml	Tolerance ± ml	Height* mm	Neck NS	PU	Cat. No.
10	0.08	90	10/19	2	67795
25	0.08	115	10/19	2	67195
50	0.12	150	12/21	2	67295
100	0.20	180	14/23	2	67395
250	0.30	235	19/26	2	67495
500	0.50	270	19/26	2	67595
1000	0.80	310	24/29	1	67695

\* Height without stopper



## Volumetric flasks, PMP, Class B with screw caps, PP



Highly transparent.

With ring mark individually calibrated to 'In'.

Class B tolerances according to DIN EN ISO 1042.

Thermal stress up to 121 °C (autoclaving) does not permanently exceed the tolerance limit.

To preserve markings, cleaning at no higher than 60 °C is recommended.

Volume ml	Tolerance ± ml	Height* mm	Thread GL	PU	Cat. No.
10	0.08	90	18	2	677895
25	0.08	115	18	2	671895
50	0.12	150	18	2	672895
100	0.20	180	18	2	673895
250	0.30	235	25	2	674895
500	0.50	270	25	2	675895
1000	0.80	310	32	1	676895

\* Height without screw cap

## Volumetric flasks, PP, Class B with NS stoppers, PP



Highly transparent.

With ring mark individually calibrated to 'In'.

Class B tolerances according to DIN EN ISO 1042.

Thermal stress up to 60 °C does not permanently exceed the tolerance limits.

To preserve markings, cleaning at no higher than 60 °C is recommended.

Volume ml	Tolerance ± ml	Height* mm	Neck NS	PU	Cat. No.
10	0.08	90	10/19	2	677941
25	0.08	115	10/19	2	671941
50	0.12	150	12/21	2	672941
100	0.20	180	14/23	2	673941
250	0.30	235	19/26	2	674941
500	0.50	270	19/26	2	675941
1000	0.80	310	24/29	1	676941

\* Height without stopper



## Volumetric flasks, PP, Class B, with screw cap, PP



Highly transparent.

With ring mark individually calibrated to 'In'.

Class B tolerances according to DIN EN ISO 1042.

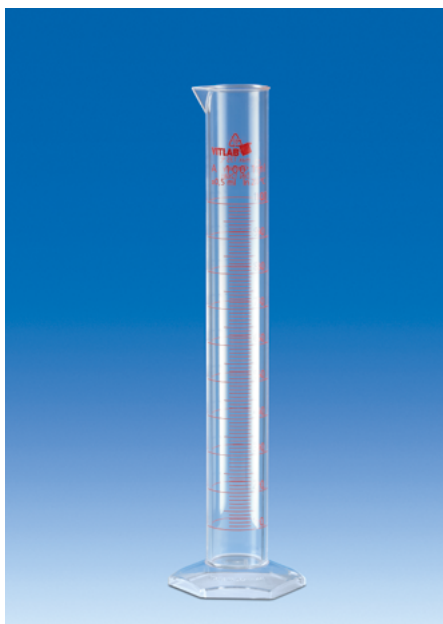
Thermal stress up to 60 °C does not permanently exceed the tolerance limits.

To preserve markings, cleaning at no higher than 60 °C is recommended.

Volume ml	Tolerance ± ml	Height* mm	Thread GL	PU	Cat. No.
10	0.08	90	18	2	677891
25	0.08	115	18	2	671891
50	0.12	150	18	2	672891
100	0.20	180	18	2	673891
250	0.30	235	25	2	674891
500	0.50	270	25	2	675891
1000	0.80	310	32	1	676891

\* Height without screw cap





## Graduated cylinders, PMP, Class A, tall form, red printed graduations



Highly transparent. DE-M marked.

With red printed graduations and ring marks at the primary scale points, calibrated 'In'.

The lot certificate supplied bears the batch number and the actual nominal value ascertained under the test conditions. The resulting deviations from the nominal value fall well under the allowed tolerances of Class A according to DIN 12681 and ISO 6706.

With printed batch number and year of production. Also available with DAkkS calibration certificate or individual quality certificate (at additional cost).

Hexagonal base with bottom studs provides high stability. To preserve markings, do not clean at temperatures exceeding 60 °C. Thus, conditionally autoclavable at 121 °C (2 bar) according to DIN EN 285. For autoclaving we recommend the design with molded graduations (Cat.-No. 64604 – 65304).

Volume ml	Tolerance ± ml	Graduation ml	Height mm	Ø mm	PU	Cat. No.
10	0.10	0.20	145	15	2	64614
25	0.25	0.50	170	22	2	64714
50	0.50	1.00	200	27	2	64814
100	0.50	1.00	250	33	2	64914
250	1.00	2.00	315	44	2	65014
500	2.50	5.00	360	58	2	65114
1000	5.00	10.00	440	69	1	65214
2000	10.00	20.00	535	97	1	65414



## Graduated cylinders, PMP, Class A, tall form, molded graduations



Highly transparent. DE-M marked.

With molded graduations and ring marks at the primary scale points, calibrated 'In'.

The lot certificate supplied bears the batch number and the actual nominal value ascertained under the test conditions. The resulting deviations from the nominal value fall well under the allowed tolerances of Class A according to DIN 12681 and ISO 6706. With the laser engraved batch number and the year of manufacture. Also available with DAkkS calibration certificate or individual quality certificate (at additional cost).

Hexagonal base with bottom studs provides high stability. Thermal stress up to 121 °C (autoclaving) does not cause tolerance limits to be permanently exceeded.

Volume ml	Tolerance ± ml	Graduation ml	Height mm	Ø mm	PU	Cat. No.
10	0.10	0.20	145	15	2	64604
25	0.25	0.50	170	22	2	64704
50	0.50	1.00	200	27	2	64804
100	0.50	1.00	250	33	2	64904
250	1.00	2.00	315	44	2	65004
500	2.50	5.00	360	58	2	65104
1000	5.00	10.00	440	69	1	65204
2000	10.00	20.00	482	97	1	65304



## Graduated cylinders, PP, Class B, tall form, with molded blue graduations



Highly transparent.

With easily readable, molded, embossed blue graduations and ring marks at the primary scale points. Calibrated 'In'. Class B tolerances according to DIN 12681 / ISO 6706.

Hexagonal base with bottom studs provides high stability. Thermal stress up to 80 °C does not cause tolerance limits to be permanently exceeded. To preserve markings, do not clean at temperatures exceeding 60 °C.

Suitable for contact with foodstuffs according to regulation (EU) No. 10/2011.

Volume ml	Tolerance ± ml	Graduation ml	Height mm	Ø mm	PU	Cat. No.
10	0.20	0.20	145	15	12	646081
25	0.50	0.50	170	22	12	647081
50	1.00	1.00	200	27	12	648081
100	1.00	1.00	250	33	12	649081
250	2.00	2.00	315	44	6	650081
500	5.00	5.00	360	58	6	651081
1000	10.00	10.00	440	69	6	652081
2000	20.00	20.00	482	97	3	653081



## Graduated cylinders, PP, Class B tall form, with molded graduations



Highly transparent.

With molded graduations and ring marks at the primary scale points, calibrated 'In'.

Class B tolerances according to DIN 12681 / ISO 6706.

Hexagonal base with bottom studs provides high stability. Thermal stress up to 80 °C does not cause tolerance limits to be permanently exceeded.

Suitable for contact with foodstuffs according to regulation (EU) No. 10/2011.

Volume ml	Tolerance ± ml	Graduation ml	Height mm	Ø mm	PU	Cat. No.
10	0.20	0.20	145	15	12	646941
25	0.50	0.50	170	22	12	647941
50	1.00	1.00	200	27	12	648941
100	1.00	1.00	250	33	12	649941
250	2.00	2.00	315	44	6	650941
500	5.00	5.00	360	58	6	651941
1000	10.00	10.00	440	69	6	652941
2000	20.00	20.00	482	97	3	653941





## Graduated cylinders, SAN, Class B tall form, with molded graduations



Crystal clear.

With molded graduations and ring marks at the primary scale points, calibrated 'In'.

Class B tolerances according to DIN 12681 / ISO 6706.

Hexagonal base with bottom studs provides high stability. Thermal stress up to 60 °C does not cause tolerance limits to be permanently exceeded.

Suitable for contact with foodstuffs according to regulation (EU) No. 10/2011.

Volume ml	Tolerance ± ml	Graduation ml	Height mm	Ø mm	PU	Cat. No.
50	1.00	1.00	199	28	12	64891
100	1.00	1.00	260	34	12	64991
250	2.00	2.00	315	47	6	65091
500	5.00	5.00	350	61	6	65191
1000	10.00	10.00	415	76	6	65291



## Graduated cylinders, PP, Class B short form, with molded graduations



Highly transparent.

With molded graduations, calibrated 'In'.

Thermal stress up to 80 °C does not cause tolerance limits to be permanently exceeded.

Suitable for contact with foodstuffs according to regulation (EU) No. 10/2011.

Volume ml	Tolerance ± ml	Graduation ml	Height mm	Ø mm	PU	Cat. No.
25	0.50	0.50	122	22	12	640941
50	1.00	1.00	142	27	12	641941
100	2.00	2.00	163	37	12	642941
250	5.00	5.00	192	51	6	643941
500	10.00	10.00	218	67	6	644941
1000	20.00	20.00	285	78	6	645941

## Graduated cylinders, SAN, Class B, short form, with molded graduations



Crystal clear.

With molded graduations, calibrated 'In'.

Thermal stress up to 60 °C does not cause tolerance limits to be permanently exceeded.

Suitable for contact with foodstuffs according to regulation (EU) No. 10/2011.

Volume ml	Tolerance ± ml	Graduation ml	Height mm	Ø mm	PU	Cat. No.
25	0.50	0.50	122	22	12	64091
50	1.00	1.00	142	27	12	64191
100	2.00	2.00	163	37	12	64291
250	5.00	5.00	192	51	6	64391
500	10.00	10.00	218	67	6	64491
1000	20.00	20.00	285	78	6	64591



Compare: VITLAB® graduated cylinders...

- ... have guaranteed seamless interiors, which mean the analysis is unaffected by residues and carryover
- ... have precise calibration ring marks at the primary scale points, with which the meniscus can be read accurately
- ... a sturdy, even stand for precise volume measurement

... are MADE IN GERMANY

## Hydrometer cylinder, PP

Highly transparent, with spout and overflow vessel. For density measurements using a hydrometer. Hydrometer can be read through the overflow vessel with a completely filled cylinder.

With molded graduations and ring marks at the primary scale points, calibrated 'In'.

Class B tolerances according to DIN 12681 / ISO 6706.

Hexagonal base with bottom studs provides high stability. Thermal stress up to 80 °C does not cause tolerance limits to be permanently exceeded.

Volume ml	Graduation ml	Height mm	Ø mm	PU	Cat. No.
500	5.00	351	73	1	760941



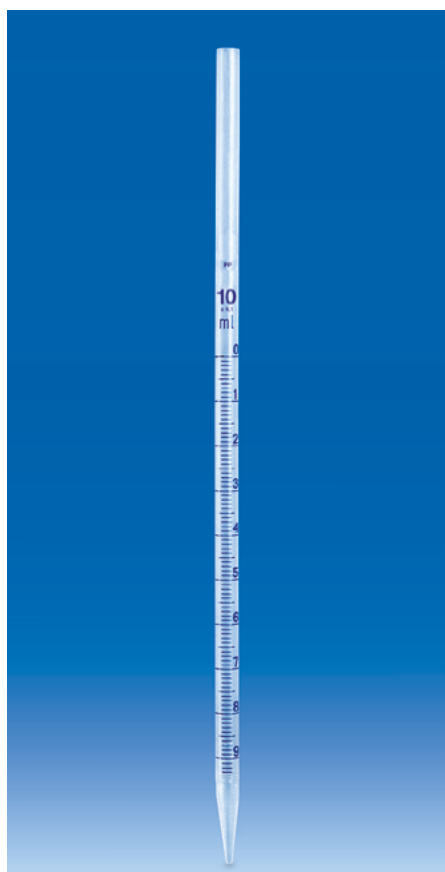


## Bulb pipettes, PP, Class B

Calibrated to deliver 'Ex'.  
 Highly transparent. With high-contrast, blue markings.  
 Break-resistant.  
 High chemical resistance.

Exposure to temperatures above 60 °C can lead to volume changes.  
 Recommended cleaning with mild alkaline detergents up to 60 °C.

Volume ml	Tolerance ± ml	Length mm	PU	Cat. No.
1	0.02	300	12	164094
2	0.02	300	12	164194
5	0.03	300	6	164294
10	0.04	440	6	164394
25	0.05	450	6	164494
50	0.10	460	6	164594



## Graduated pipettes, PP, Class B

Calibrated to deliver 'Ex'.  
 Highly transparent. With high-contrast, blue markings.  
 Break-resistant.  
 High chemical resistance.  
 Outer diameter of suction tube: max. 8 mm.

Exposure to temperatures above 60 °C can lead to volume changes.  
 Recommended cleaning with mild alkaline detergents up to 60 °C.

Volume ml	Tolerance ± ml	Graduation ml	Length mm	PU	Cat. No.
1	0.02	0.1	300	12	163094
2	0.02	0.1	300	12	163194
5	0.05	0.1	330	12	163294
10*	0.10	0.1	330	12	163394
10	0.10	0.1	320	12	163594

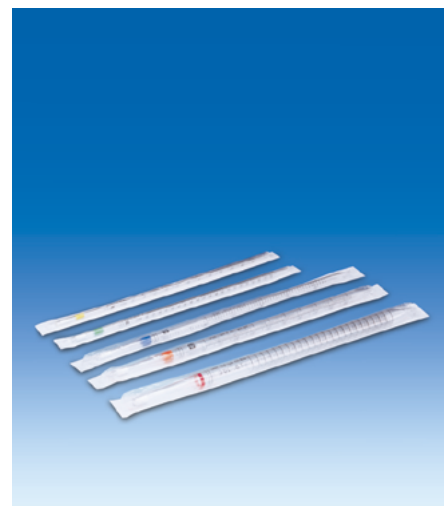
\* Suction tube outer diameter: 10 mm

## Disposable pipettes, PS, sterile



Crystal clear, graduated, individual sterile packaging, pyrogen-free. Identified by bar-code. With cotton-wool filter.

Volume ml	Graduation ml	Length mm	PU	Cat. No.
1	0.01	272	1000	160110
2	0.01	272	1000	160210
5	0.10	320	500	160510
10	0.10	320	500	161010
25	0.20	345	250	162510



## Disposable pipettes, PS, non-sterile

Crystal clear, graduated, non-sterile. Identified by bar-code. With cotton-wool filter.

Volume ml	Graduation ml	Length mm	PU	Cat. No.
1	0.01	272	200	160119
2	0.01	272	200	160219
5	0.10	320	100	160519
10	0.10	320	100	161019





## VITLAB pipeo®



For all pipettes from 0.1 to 200 ml.

With the VITLAB pipeo® pipette controller, pipette handling is simple and comfortable. The ergonomic handle - **very light weight** at about 190 grams - and excellent balance all contribute to ease of operation. The speed can be adjusted easily, continuously and exactly with one hand using two buttons. A 50 ml pipette can be filled comfortably in less than ten seconds. The liquid release can be done either by gravity delivery when calibrated 'Ex' (to deliver), or in blow out mode using the battery-operated motor.

Pipettes are held securely and tightly in the exchangeable adapter. Liquid vapours are purged directly to protect the instrument.

One full charge of the nickel-metal hydride battery allows 8 hours of non-stop pipetting. The charge level of the recyclable battery is shown by the LED indicator. Defective batteries are easily replaced. To avoid surprises, the LED light changes from green to red two hours before the battery must be recharged. **The VITLAB pipeo® can still be operated while the battery is being recharged.**

Included in delivery:

VITLAB pipeo®, battery charger (100 - 240 V, 50/60 Hz), four plug adapters (EU, UK, US/J, AUS), battery, battery compartment cover, two replacement 0.2 µm membrane filters and operating manual.

Description	PU	Cat. No.
pipeo®	1	1631500

## VITLAB maneus®



The VITLAB maneus® Pipette Helper enables both left- and right-handers to operate all current volumetric and graduated pipettes from 0.1 to 200 ml easily and fatigue-free. Its safe and easy handling allows even inexperienced users **to adjust the meniscus precisely**.

With the design, unscrewing the adapter enables easy replacement of the hydrophobic membrane filter, which **protects the instrument against fluid penetration**.

The valve system is optimised so that liquids can be drawn up simply, without exerting pressure. The highly sensitive filling and discharge of liquids are controlled gently by the pipetting knob. Thus, the suction element provides rapid filling of the pipette (capacity: 50 ml in less than 10 seconds). The discharge bellows are used for the emptying (blow-out) of the pipette. The specially moulded intake cone ensures secure seating for all normal bulb and graduated pipettes (0.1 to 200 ml).

The VITLAB maneus® is simple to dismantle, easy to clean, and completely autoclavable at 121 °C (2 bar) according to DIN EN 285.

Included in delivery: VITLAB maneus®, replacement 3 µm membrane filter und operating manual.



Description	PU	Cat. No.
maneus®	1	1630500

## Accessories for VITLAB pipeo® & maneus®

Description	PU	Cat. No.
Membrane filter, 0.2 µm, sterile, VITLAB pipeo®	1	1670647
Membrane filter, 0.2 µm, non-sterile, VITLAB pipeo®	10	1670648
Membrane filter, 3 µm, non-sterile, VITLAB pipeo®, VITLAB maneus®	10	1670650
Wall rack, VITLAB pipeo®	1	1670660





## Pipette fillers, NR

Classic accessory for pipetting with volumetric or measuring pipettes. With 3 valves.  
Valve A: Air release, Valve S: Liquid filling, Valve E: Liquid dispensing.

Type	PU	Cat. No.
Universal model, for pipettes up to 10 ml	1	104099
Universal model, for pipettes up to 100 ml	1	104199



## Pipette fillers

For pipetting liquids, fit all glass and plastic pipettes. Slow rotation of the actuator-wheels draws liquid into the pipette. Pressing the air bleed valve automatically empties the pipette without returning the piston.

For pipettes ml	Colour	PU	Cat. No.
2	Blue	10	324594
10	Green	10	324694
25	Red	10	324794



## Pipette stand, PP

Upper portion with 94 bore holes of different diameters for secure placement of volumetric and measuring pipettes of any size.

The stable base has a rotatable, ribbed base plate in which the pipette tips can be gently seated.

The racks are supplied unassembled, and can easily be assembled according to the accompanying assembly instructions.

Ø mm	Height mm	PU	Cat. No.
230	470	2	79194



## Pipette washer, PE-HD

For simple and basic cleaning of pipettes. With discharge siphon for an automatic water exchange.

The complete washing system includes the pipette washer, pipette jar (for pre-cleaning) and pipette basket (for dipping pipettes into the pipette washer or pipette jar). Pipette jars and pipette baskets need to be ordered separately.

Suitable for the use with pipette baskets (cat. nos. 80219 and 80222).

Ø mm	Height mm	Effective length mm	PU	Cat. No.
170	734	600	1	80217
170	990	840	1	80215



## Pipette jars, PE-HD

For pre-cleaning pipettes in detergent solutions.

Suitable for the use with pipette baskets (cat. nos. 80219 and 80222).

Ø mm	Height mm	PU	Cat. No.
162	503	1	80221
162	650	1	80218



## Pipette baskets, PE-HD

For dipping pipettes into the pipette jar or pipette-washer and for transferring pipettes.

Basket height 300 mm.

With the extension piece, the total height of the pipette basket (cat. no. 80219) increases from 650 to 870 mm.

Description	Ø mm	Overall height mm	PU	Cat. No.
Pipette basket	145	648	1	80219
Pipette basket	145	497	1	80222
Extension piece for the handle (pipette basket 80219)			2	81219

