b.safe

Sophisticated Safety Solutions for HPLC.

A product brand of Bohlender

Strong NEWS

b.safe Collecting Trays

Collecting trays help to put aside e. g. Waste Caps or Funnels during container exchange without contaminating floor or working area through dripping liquids. In a worst-case scenario they collect escaping liquids from a damaged or spilling waste container and thus increase your own safety.
Corresponding to their installation site, you get b.safe Collecting Trays in PE or static dissipative PE-HD-EX.

Depending of the displacement volume of the canister, we recommend the following maximum number of b.safe Canisters per b.safe Collecting Tray:

Recommended maximum number of canisters for Collecting Tray R 540-01:
- 2x Canister 2,5 l / R 205-02
- 2x Canister 5 l / R 205-05, R 210-05, R 225-05, R 230-05
- 1x Canister 10 l / R 205-10, R 225-10, R 230-10, R 265-10

Order directly: Suitable for Trolley R 510-06

Recommended maximum number of canisters for Collecting Tray R 540-02:
- 5x Canister 2,5 l / R 205-02
- 3x Canister 5 l / R 210-05
- 2x Canister 5 l / R 205-05, R 225-05, R 230-05
- 2x Canister 10 l / R 205-10, R 225-10, R 230-10, R 265-10
- 1x Canister 20 l / R 230-20

Order directly: Suitable for Trolley R 510-06

Recommended maximum number of canisters for Collecting Tray R 548-05:
- 1x Canister 10 l / R 231-10, R 236-10, R 268-10(as leakage tray)
- 1x Canister 20 l / R 236-20 (as splash guardtray)

Order directly: Suitable for Trolley R 510-06

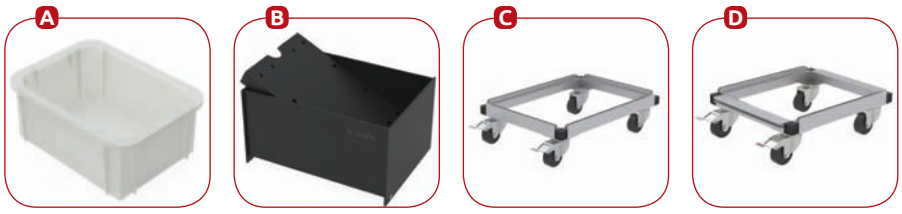
Recommended maximum number of canisters for Collecting Tray R 548-10:
- 2x Canister 10 l / R 231-10, R 236-10, R 268-10
- 2x Canister 20 l / R 236-20 (as splash guard tray)
- 1x Canister 20 l / R 236-20 (as leakage tray)
- 1x Canister 30 l / R 231-30 (as splash guard tray)

Order directly: Suitable for Trolley R 510-06

b.safe Collecting Trays

Material: **PE, PE-EX** | Temperature resistance: **-50 °C bis +80 °C** |
Chemical resistance: **++ very good**

Practical collecting tray made of PE or static dissipative PE-EX. Place your waste canister in a collecting tray. Escaping liquids are collected in case of container exchange or leakages. Version and scope of delivery as per below chart.



	Dimensions L x W x H, mm inside	outside	Volume Litres	Material	With drip tray and grounding connection	Cat. No.
A	335 x 235 x 160	390 x 290 x 165	12	PE-HD	No	R 540-01
A	385 x 290 x 200	460 x 340 x 220	25	PE-HD	No	R 540-02
B	315 x 215 x 156	323 x 233 x 175	10	PE-HD-EX	Yes	R 548-05
B	435 x 315 x 156	443 x 333 x 175	20	PE-HD-EX	Yes	R 548-10

Accessories NEW

Trolley. Made of aluminium profiles and polyamide connectors, with 4 casters two of them with brakes. Canisters can be flexibly placed under the work bench, full containers can be transported.

	Suitable for collecting tray	Outside dimensions L x W x H, mm	Cat. No. Trolley
C	R 540-01	359 x 262 x 99	R 510-06
C	R 540-02	434 x 315 x 99	R 510-11
D	R 548-05	323 x 245 x 99	R 510-05
D	R 548-10	416 x 323 x 99	R 510-10

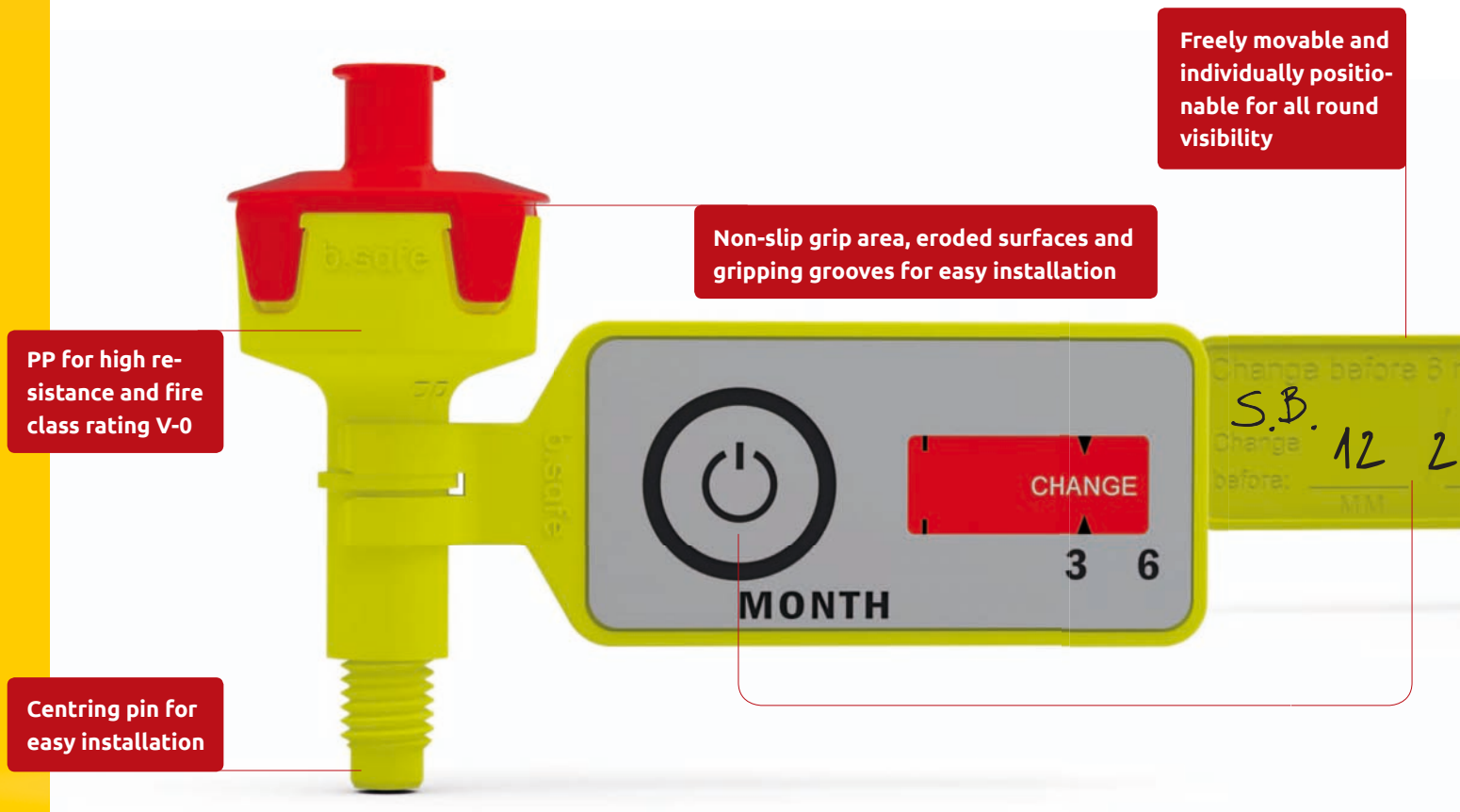
b.safe Air Valve

The handy b.safe Air Valve provides the necessary pressure compensation during solvent extraction. Furthermore, it restrains pollutant particles from the bottle content and lets flow as much ambient air as necessary through the lid and the inside PTFE membrane (pore size 1 µm) for guaranteed six months until exchange.

In order not to forget this, the Air Valve has a practical service life indicator with activation through the touch of the button as well as a title block for documentation in GMP/GLP regulated laboratories. The valve is easily mounted and demounted, even with gloves, through the large head, eroded surfaces, grooves and strongly connected parts.

The universal Luerlock connector offers diverse opportunities for special applications such as oxidation protection by filling the bottle with inert gases as well as the adaptation of dry tubes to maintain water-free eluent mixtures.

At least, the b.safe Air Valve made of PP offers high chemical resistances and a fire class rating V-0 as per UL 94.



Better b.safe

One click and the service life indicator is mounted without slipping in height

b.safe Air Valves

Material: **PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

Valve body made of PP with connection (thread UNF 1/4" 28G) suitable for b.safe Caps. Lid with aeration opening and Luerlock connector, integrated non-return valve with upstream porous PTFE membrane (1 µm), including plug-in service life indicator.

	Packing unit	Service life	Cat. No.
	2 pcs.	6 months	M 505-01
	10 pcs.	6 months	M 505-02
	50 pcs.	6 months	M 505-05
NEW	100 pcs.	6 months	M 505-10

Application:
For removal of eluents. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve.

One Luerlock connector, diverse possibilities such as filling the solvent with gas to protect it from oxidation

Or comfortable connection of dry tubes to keep humidity outside.

b.safe Control Waste Caps DLC

Material: **PTFE, PPS,PE** I Temperature resistance: **-50 °C to +80 °C** I chemical resistance: **++ very good**

Screw cap made of PPS, free movable insert made of PTFE with 2 permanently fixed cables (length approx. 0,5 m each) for the connection to a b.safe Display) which signals a pre-alert when approx. 50% of the nominal volume are reached and a main alert for canister change as soon as 100% of the nominal volume are reached. With 1 additional red LED flashing light for easy identification of a full canister. With PFA fittings for capillary tubes with OD 1,6/2,2/3,2 mm (thread UNF 1/4“), hose connector for tubing ID 5,5-8 mm (thread NPT 1/8“), blind fittings for closing unused connections and 1 connector GL 14 for fixing the b.safe Exhaust Filter. Design and scope of delivery according to table.

A For Canister thread GL45

	Number of capillary tubes	Number of fittings mm	Number of hose connections for ID	Number of blind fittings	Cat. No.
	2	2x Ø 1,6 (green) 2x Ø 2,2 (purple) 2x Ø 3,2 (yellow)	1x Ø 5,5 - 8 mm	2x (milky-white, UNF1/4“) 1x (white, NPT1/8“)	M 250-30

B For Canister thread S55

	Number of capillary tubes	Number of fittings mm	Number of hose connections for ID	Number of blind fittings	Cat. No.
	4	4x Ø 1,6 (green) 4x Ø 2,2 (purple) 4x Ø 3,2 (yellow)	2x Ø 5,5 - 8 mm	4x (milky-white, UNF1/4“) 2x (white, NPT1/8“)	M 255-30

C For Canister thread S60

	Number of capillary tubes	Number of fittings mm	Number of hose connections for ID	Number of blind fittings	Cat. No.
	4	4x Ø 1,6 (green) 4x Ø 2,2 (purple) 4x Ø 3,2 (yellow)	3x Ø 5,5 - 8 mm	4x (milky-white, UNF1/4“) 3x (white, NPT1/8“)	M 256-30

Application:
To avoid spill over of canisters through the connection of a b.safe Control Waste Cap to a b.safe Mini-Display DLC Cat. No. R 659-03/ b.safe Display Cat. No. R 655-01 for electronic level control. The additional pre-alert enables the user to provide exchange containers for big volumes of waste e.g. before the end of work or the weekend. Reliable monitoring of the filling levels of waste canisters in laboratory cupboards and workbenches. With the use of b.safe Waste Tubes, solvent waste is led directly into the canister, solvent vapours are held back by the exhaust filter with activated carbon.

b.safe

b.safe
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b.safe

Sophisticated Safety Solutions for HPLC.

BY BOLA

A product brand of Bohlender

b.safe

INDEX

Your Benefits	4
b.safe EXTRACTION	6
b.safe Caps	8
b.safe Starter Boxes	37
b.safe Air Valve	39
b.safe Fittings und Blind Fittings	42
b.safe COLLECTION OF WASTE	48
b.safe Waste Caps	50
b.safe Exhaust Filters	90
b.safe Adaptor for Exhaust Filter	94
b.safe Corrugated Tubing Coupling	100
b.safe Flasks, Canisters and Containers	110
b.safe Collecting Trays	116
b.safe Thread Adaptors	118
b.safe Funnels	122
b.safe Fill Level Control	132
b.safe Tubing	154
b.safe Technical Information	160
Operating Principle	162
Determination of Thread Types	168

Dear HPLC Experts,

The product brand **b.safe** is new on the market and stands for high-professional safety solutions in HPLC. You may already know many of our self-developed and high-quality products. We from BOHLENDER have constructed and produced high-performance fluoroplastic labware under the brand name BOLA for more than 60 years now and realize nearly every custom requirement as a reliable partner.

This is now the same for High Performance Liquid Chromatography. We have developed and produced safety solutions for HPLC such as Extraction Caps, Exhaust Filters and Fittings for well-known suppliers in Europe for more than 10 years.

Corresponding to our engagement to offer best performance for your lab, time has come for the next step: **With b.safe, we present sophisticated and reliable HPLC safety solutions with all benefits directly from the manufacturer from now on. Safe application, easy handling and especially economic processes.**

Check this out! We look forward to your special challenges and your feedback on **b.safe**

Your

Volker Bohlender
Managing Director

Easy. Better. Quicker. Directly from the manufacturer.

If you need good quality and safety, we leave nothing to chance we develop, construct and produce HPLC solutions by ourselves. Even customizations if you need. That allows many features that make HPLC as economic and efficient as possible.

In case of questions, ask experts!

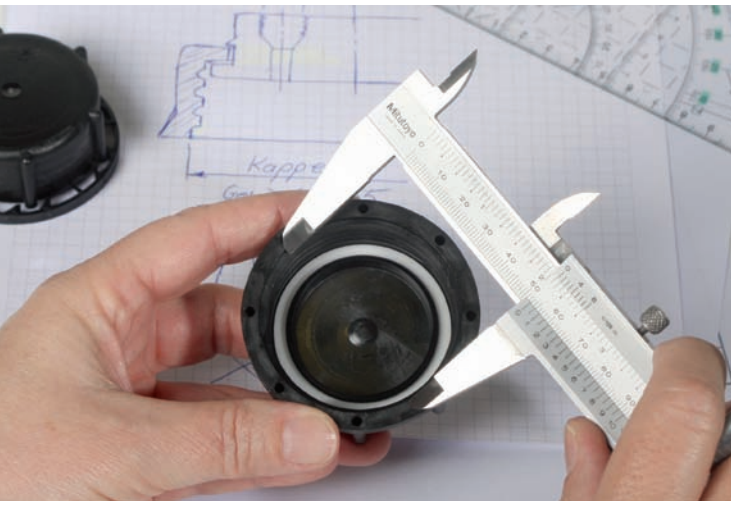
We know our customers´ challenges and thus develop and produce HPLC solutions at our premises in Grünsfeld, South Germany. Everything is repeatedly tested, reworked and optimized for current HPLC requirements. If you have any questions or wishes, our experts will be pleased to give you advice.

High-performance plastics? Trust us.

We are aware of many characteristics of PTFE, PPS etc. Depending on the component and requirements, we choose the best one. For best chemical resistance, easy cleaning, sterilization, grip, …

We look forward to your special requirements.

If you require either an existing product modified or a completely new product, a simple sketch is sufficient and our construction department starts with work. Even cheaper than you might think. Get your free quotation.



Short-term delivery? You´ll get it the next day.

Some wishes cannot wait. We are well prepared for that and have all HPLC solutions in stock. Because of quick processes, our sets and products are delivered within one day within Germany and within three to five days within the EU. Place your order easily by fax, phone, letter, e-mail or in our online shop on bsafe.de.

What about quality? It´s our top priority.

Best raw materials, high-qualified personnel and modern machinery guarantee full reliability. Should you not be satisfied against all expectations, we provide quick replacement or rework your part. We probably ask for return of the product for evaluation.

One word on discounts.

Thank you for asking: In case of bulk quantities, we offer special prices and discounts. Ask us.

Where can I get more information?

bsafe.de
+49 (0) 9346 9286-0

b.safe at extraction: Safety and efficiency from the beginning

Perfect protection from hazardous vapours, reduction of expensive solvent losses, guarantee of pure eluents and easy handling. Better b.safe.

HPLC challenges lab experts variously, especially through precise results, economic processes and high reliability at best protection from hazardous chemicals. Our solution are the new b.safe Caps being equipped with all that is important for safe, economic and easy solvent extraction.

b.safe Caps provide absolutely tight closure of the extraction flasks and safe extraction of eluents through the connected capillaries.

Hazardous solvent vapours cannot escape; mixing ratio stay constant and eluents are protected from environmental influences. Thus, the contamination of the mobile phase and downtimes in the analysis are outdated.

b.safe Caps offer high comfort through good grip and easy screwing without disarranging of capillaries. The results are precise and reliable analysis results, efficient processes and satisfied employees.


MONTH
CHANGE
3
6
HPLC
AA
BB

b.safe Caps GL45

b.safe Caps GL45 together with Fittings, Tubing and an Air Valve form a perfect unit for solvent extraction from bottles and canisters with GL45 thread.

With the cap made of robust PPS and the chemically highly resistant PTFE insert, b.safe Caps GL45 can be sterilized and autoclaved and easily cleaned in the dishwasher.

The ergonomic design and eroded surfaces offer stable grip for gloved hands.

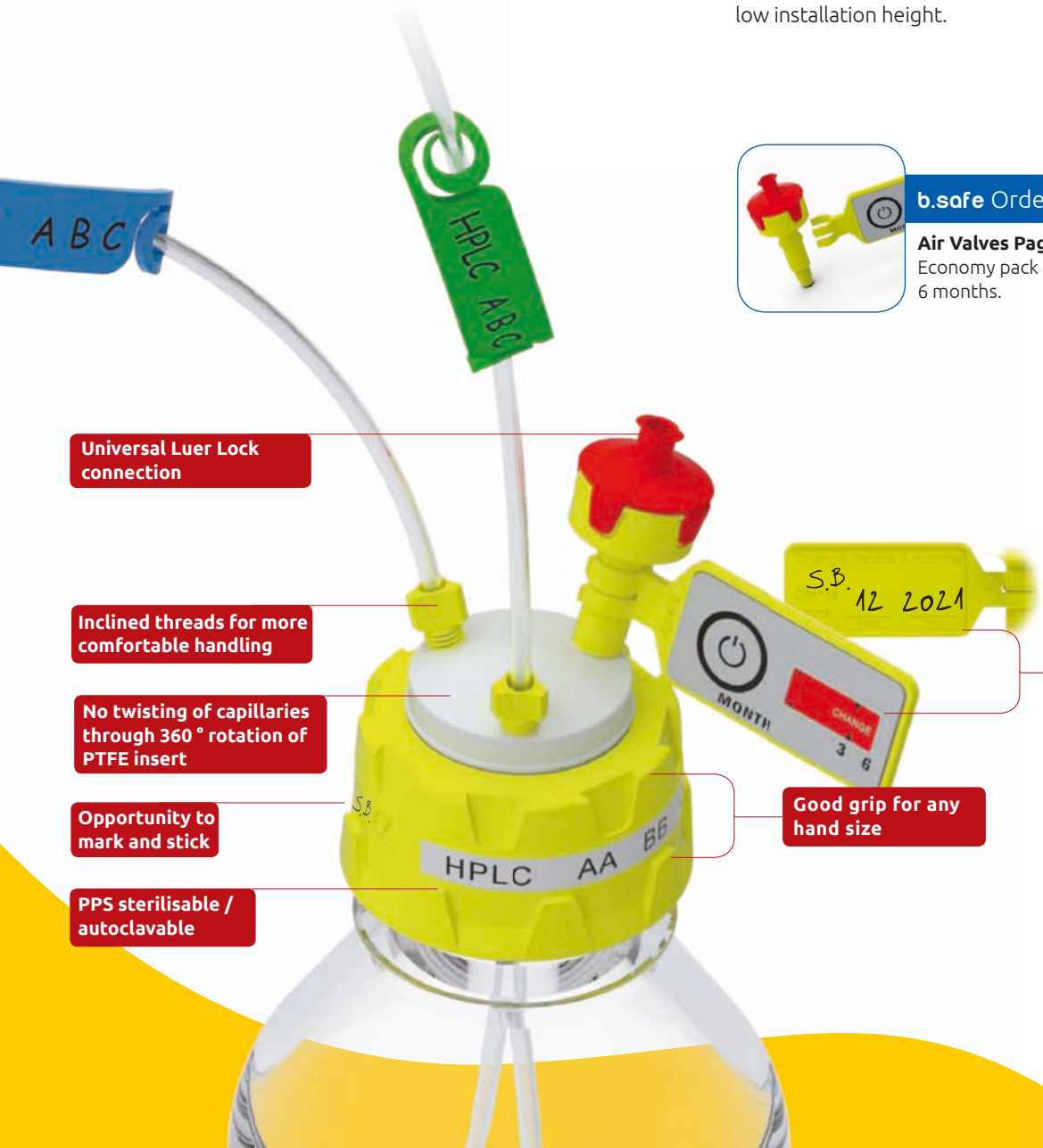
Through their freely movable insert, they can be easily screwed without disarranging the connected capillaries.

Inclined threads (UNF 1/4") guarantee intuitive insertion of fittings and air valve and offer more space on the PTFE insert and a better overview. Tubes can be inserted into the bottle safely and without being bent.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances on the bottle neck. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.

b.safe Order directly

Air Valves Page 39
Economy pack for an exchange every 6 months.



Universal Luer Lock connection

Inclined threads for more comfortable handling

No twisting of capillaries through 360 ° rotation of PTFE insert

Opportunity to mark and stick

PPS sterilisable / autoclavable

Activation of service life through touch of the button and/or individual marking on the back side

Good grip for any hand size

b.safe Caps GL45

Material: **PTFE, PPS** I Temperature resistance: **-20 °C to +200 °C** I
Chemical resistance: **+++ universal**

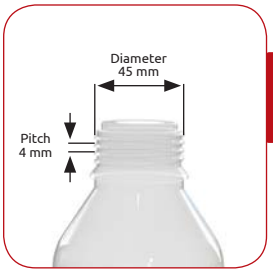
Screw cap made of PPS for GL45 thread, free movable insert made of PTFE. With PFA fittings for capillaries with O. D. 3,2 mm (thread UNF 1/4“ 28G), blind fittings made of PFA to close unused connections and an Air Valve with service life indicator. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings	Number of Blind Fittings	Cat. No.
A	1	1 x Ø 3,2 mm (yellow)	0 (milky white)	M 145-01
B	2	2 x Ø 3,2 mm (yellow)	1 (milky white)	M 145-02
C	3	3 x Ø 3,2 mm (yellow)	2 (milky white)	M 145-03
D	4	4 x Ø 3,2 mm (yellow)	3 (milky white)	M 145-04
E	6	6 x Ø 3,2 mm (yellow)	5 (milky white)	M 145-05

Application:
Perfectly matched system for removal of eluents. Tubing can be inserted down to the ground of the bottle by means of the b.safe fittings made of PFA. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and for other tubing diameters can be found from page 43.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.



Bottle thread
GL45 (DIN168)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Space-saving Caps GL45

The special clou of b.safe Space-saving Caps: their lateral threads for the connection of capillary tubing and the air valve. Thus the installation height can be easily reduced if the available space is limited in regards to the height.

With the cap made of robust PPS and the chemically highly resistant PTFE insert, b.safe Caps GL45 can be sterilized and autoclaved and easily cleaned in the dishwasher.

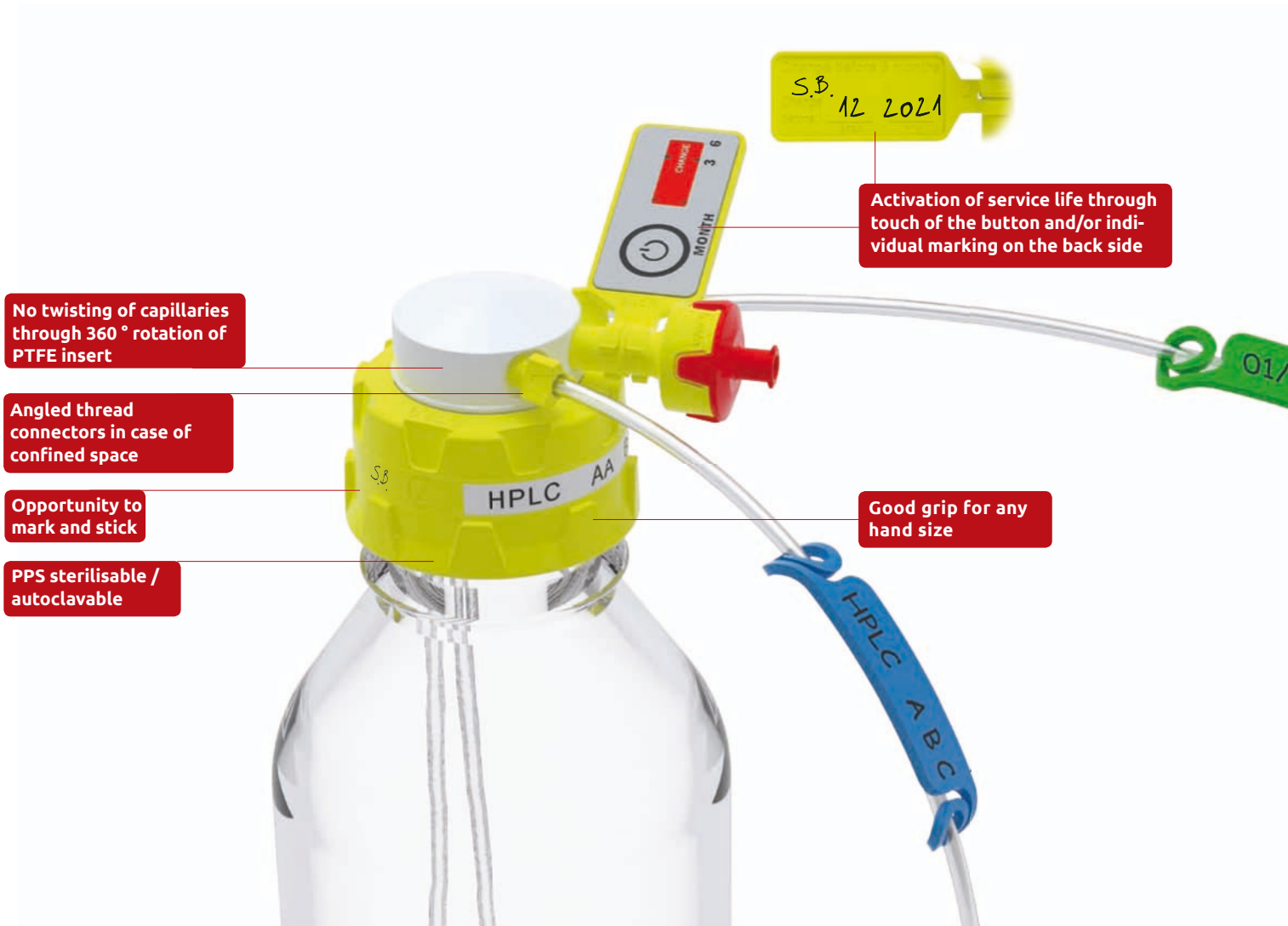
The ergonomic design and eroded surfaces offer stable grip for gloved hands.

Through their freely movable insert, they can be easily screwed without disarranging the connected capillaries.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances on the bottle neck. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.

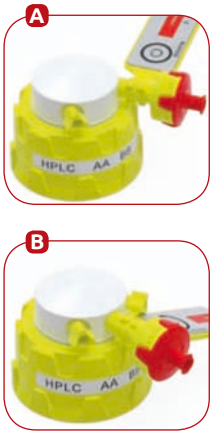
b.safe APPROPRIATE

Blind Fittings Page 44
For easy closure of unused connectors.



b.safe Space-saving Caps GL45

Material: **PTFE, PPS** I Temperature resistance: **-20 °C to +200 °C** I
Chemical resistance: **+++ universal**



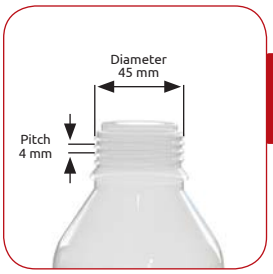
Screw cap made of PPS for GL45 thread, flat and freely turnable insert made of PTFE with lateral threaded necks in an 90° angle to the bottle thread. With PFA Fittings for capillaries with O. D. 3,2 mm, Blind Fittings made of PFA to close unused connectors and an Air Valve with Service Life Indicator. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings	Number of Blind Fittings	Cat. No.
A	1	1 x Ø 3,2 mm (yellow)	0	M 147-01
B	2	2 x Ø 3,2 mm (yellow)	1 (milky white)	M 147-02

Application:
Especially recommended for applications with confined height space. Perfectly matched system for removal of eluents. Tubing can be inserted down to the ground of the bottle by means of the b.safe Fittings made of PFA. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and for other tubing diameters can be found from page 43.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.



Bottle thread GL45 (DIN168)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Caps GL45 with Stopcocks

b.safe Caps GL45 with Stopcocks together with Fittings, Tubing and an Air Valve form a perfect unit for solvent extraction from bottles and canisters with GL45 thread.

The special feature: a PTFE-insert with integrated stopcocks. They minimize dripping of connected capillaries during bottle exchange or can be used for simply closing unused ports.

With the cap made of robust PPS and the chemically highly resistant PTFE insert, b.safe Caps GL45 can be sterilized and autoclaved and easily cleaned in the dishwasher.

The ergonomic design and eroded surfaces offer stable grip for gloved hands.

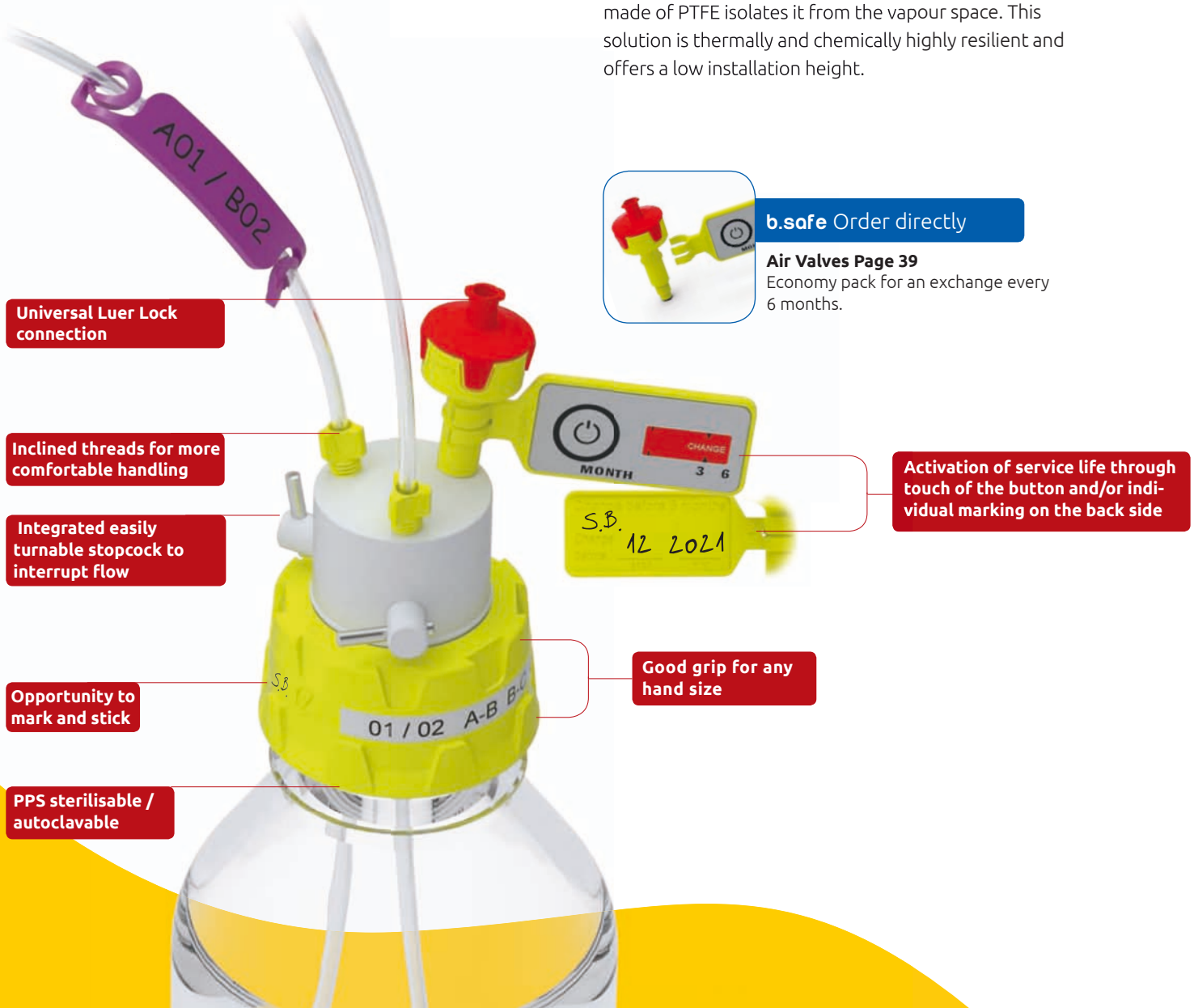
Through their freely movable insert, they can be easily screwed without disarranging the connected capillaries.

Inclined threads (UNF 1/4") guarantee intuitive insertion of Fittings and Air Valve and offer more space on the PTFE insert. Additional threads (UNF ¼") on the bottom side of the insert allow to extend the extraction tube to the bottom of the bottle.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances on the bottle neck. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.

b.safe Order directly

Air Valves Page 39
Economy pack for an exchange every 6 months.



b.safe Caps GL45 with Stopcocks

Material: **PTFE, PPS** I temperature resistance: **-20 °C to +200 °C** I chemical resistance: **+++ universal**

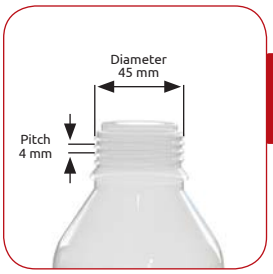
Screw cap made of PPS for thread GL45, free movable insert made of PTFE. With PFA fittings for capillaries with O. D. 3,2 mm (UNF ¼") and an Air Valve with service life indicator. All capillary connectors with integrated stopcock, connection to the bottle ground through additional capillary connector on the bottom side of the lid. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings (top side)	Number of Fittings (bottom side)	Cat. No.
A	1	1 x Ø 3,2 mm (yellow)	1x Ø 3,2 mm (milky-white)	M 143-01
B	2	2 x Ø 3,2 mm (yellow)	2x Ø 3,2 mm (milky-white)	M 143-02
C	3	3 x Ø 3,2 mm (yellow)	3x Ø 3,2 mm (milky-white)	M 143-03

Application:
Perfectly matched system for removal of eluents. By means of the b.safe Fittings made of PFA, tubing can be connected to the capillary connectors. The conical seal cone clamps the tubing and seals the connection safely. Through additional capillary connectors on the bottom side of the lid, you can lead tubing down to the bottle ground. Dripping from connected lines during bottle exchange can be avoided through the stopcocks. Unused connectors can be closed if necessary. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and hose connectors for many inner diameters can be found from page 43.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.



Bottle thread GL45 (DIN168)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Caps GL45 Preparative

b.safe Caps GL45 Preparative are supplied with Fittings for tubing O.D. 6,35 and especially adapted to the flow rates in preparative HPLC.

With the cap made of robust PPS and the chemically highly resistant PTFE insert, b.safe Caps GL45 can be sterilized and autoclaved and easily cleaned in the dishwasher.

The ergonomic design and eroded surfaces offer stable grip for gloved hands.

Through their freely movable insert, they can be easily screwed without disarranging the connected capillaries.

Inclined threads (NPT 1/8"UNF 1/4") guarantee intuitive insertion of Fittings and Air Valve and provide thus sufficient space also for the assembly of b.safe Fittings Preparative. The included b.safe Air Valve is also suitable for preparative HPLC and can be stocked with the standard Air Valves.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances on the bottle neck. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.

Universal Luer Lock connection

Inclined threads for more comfortable handling

Fittings Preparative for tubing O.D. 4,0/ 4,76/ 6,0/ 6,35 mm

Opportunity to mark and stick

Activation of service life through touch of the button and/or individual marking on the back side

Good grip for any hand size

PPS sterilisable / autoclavable

b.safe Caps GL45 Preparative

Material: **PTFE, PPS** I Temperature resistance: **-20 °C to +200 °C** I
Chemical resistance: **+++ universal**

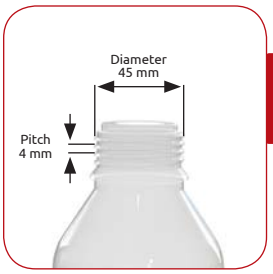
Screw cap made of PPS for thread GL45, free movable insert made of PTFE. With PFA fittings for capillaries with O. D. 3,2 mm (UNF 1/4"), PTFE Fittings Preparative for tubing with O.D. 6,35 mm (thread NPT 1/8"), Blind Fittings made of PTFE to close unused connections and an Air Valve with service life indicator. Version and scope of delivery as per below chart.

	Number of tube connectors	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Cat. No.
A	1	0	1x Ø 6,35(white)	0	M 144-01
B	2	0	2x Ø 6,35(white)	1 (white)	M 144-02
C	3	0	3x Ø 6,35 (white)	2 (white)	M 144-03
D	1	1	1x Ø 3,2 (yellow) 1x Ø 6,35 (white)	0	M 144-05

Application:
Adapted to the requirements in preparative HPLC. Tubing with O.D. 4,0 up to 6,35 mm can be inserted down to the ground of the bottle by means of the b.safe Fittings Preparative made of PTFE. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. b.safe Fittings Preparative for tubing O.D. 4,0/4,35/4,76/6,0/6,35 mm can be found from page 43.

b.safe APPROPRIATE

Fittings Preparative Page 43
For easy connection of tubing with Ø 4,0 - 6,35 mm.



Bottle thread GL45 (DIN168)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Caps S40

b.safe Caps S40 together with Fittings, Tubing and an Air Valve form a perfect unit for solvent extraction from bottles with S40 thread without aids such as threaded adaptors.

With the cap made of robust PPS and the chemically highly resistant PTFE insert, b.safe Caps S40 can be sterilized and autoclaved and easily cleaned in the dishwasher.

The ergonomic design and eroded surfaces offer stable grip for gloved hands.

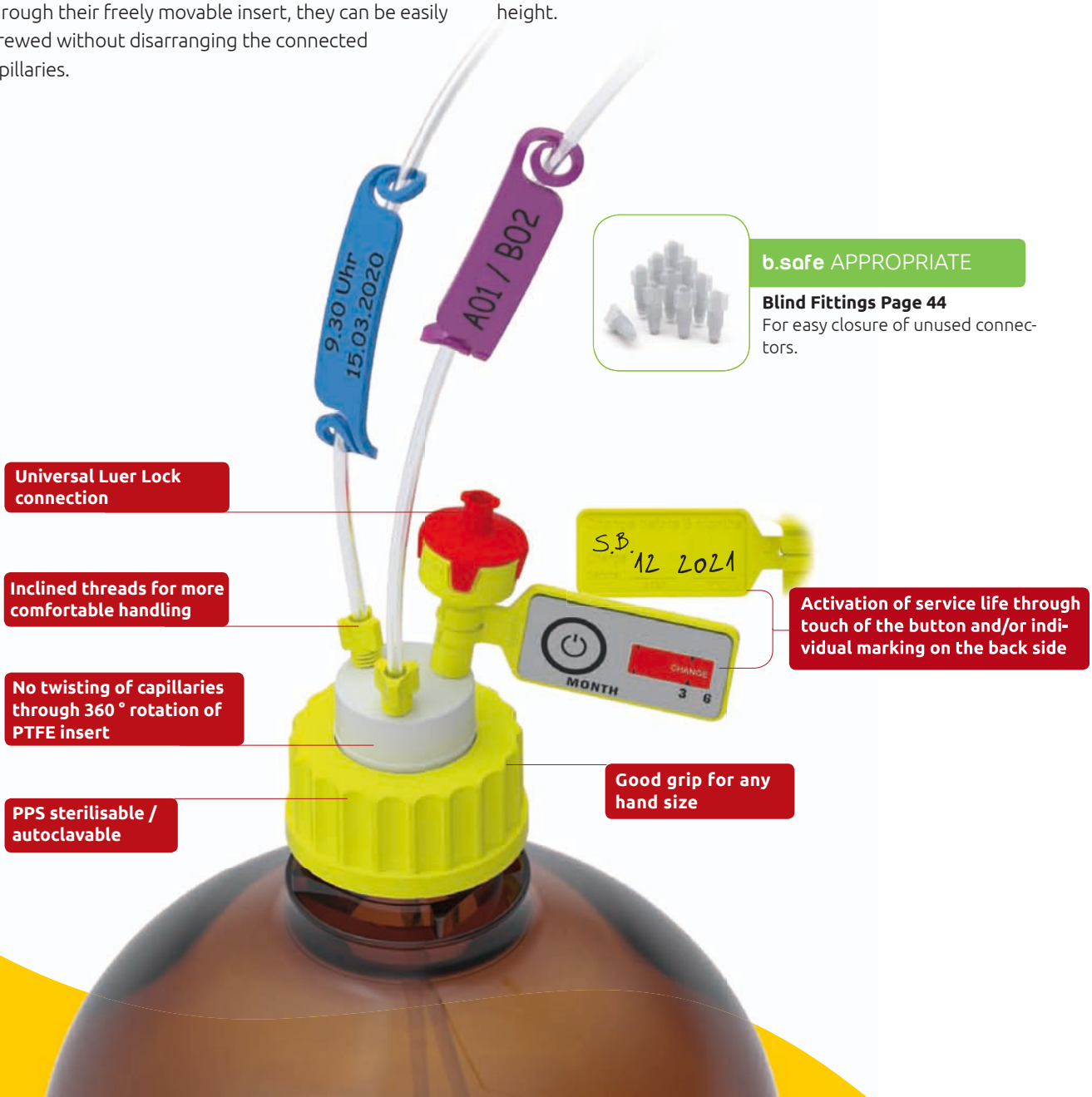
Through their freely movable insert, they can be easily screwed without disarranging the connected capillaries.

Inclined threads (UNF 1/4") guarantee intuitive insertion of fittings and air valve and offer more space on the PTFE insert and a better overview. Tubes can be inserted into the bottle safely and without being bent. The 6 months service life of the filter can be easily monitored through the attached service life indicator.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.

b.safe APPROPRIATE

Blind Fittings Page 44
For easy closure of unused connectors.

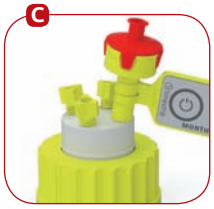


b.safe Caps S40

Material: **PTFE, PPS** | Temperature resistance: **-20 °C to +200 °C** |
Chemical resistance: **+++ universal**

Screw cap made of PPS for thread S40, free movable insert made of PTFE. With PFA fittings for capillaries with O. D. 3,2 mm (UNF 1/4"), Blind Fittings made of PFA to close unused connections and an Air Valve with service life indicator. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Cat. No.
A	1	1 x Ø 3,2 (yellow)	0	M 140-01
B	2	2 x Ø 3,2 (yellow)	1 (milky-white)	M 140-02
C	3	3 x Ø 3,2 (yellow)	2 (milky-white)	M 140-03



Application:
Perfectly matched system for removal of eluents. Tubing can be inserted down to the ground of the bottle by means of the b.safe fittings made of PFA. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and for other tubing diameters can be found from page 43.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.

Bottle thread
S40 (DIN55 525)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Caps S40 with Stopcocks

b.safe Caps S40 with Stopcocks together with Fittings, Tubing and an Air Valve form a perfect unit for solvent extraction from bottles and canisters with S40 thread.

The special feature: a PTFE-insert with integrated stopcocks. They minimize dripping of connected capillaries during bottle exchange or can be used for simply closing unused ports.

With the cap made of robust PPS and the chemically highly resistant PTFE insert, b.safe Caps S40 can be sterilized and autoclaved and easily cleaned in the dishwasher.

The ergonomic design and eroded surfaces offer stable grip for gloved hands.

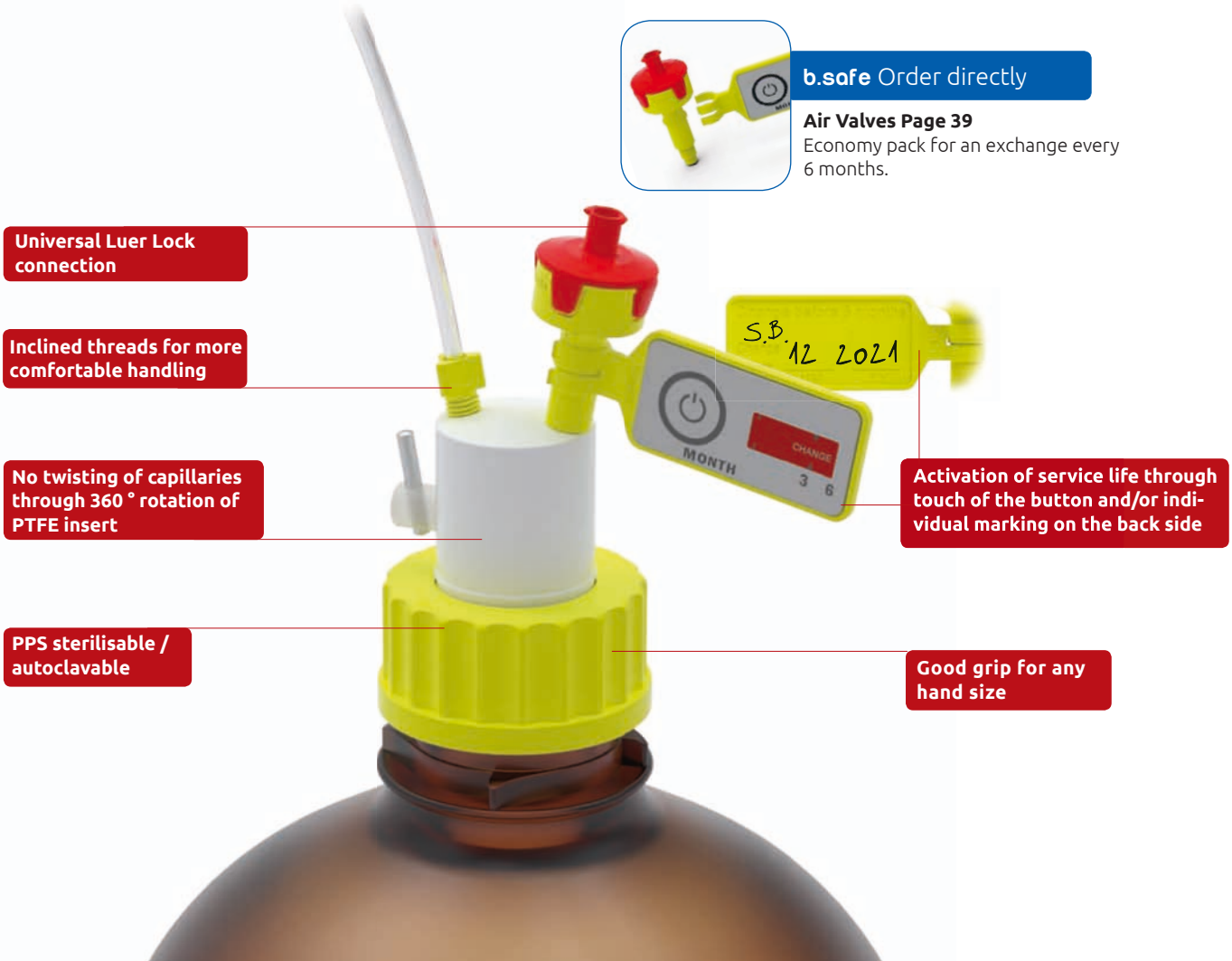
Through their freely movable insert, they can be easily screwed without disarranging the connected capillaries.

Inclined threads (UNF 1/4") guarantee intuitive insertion of Fittings and Air Valve and offer more space on the PTFE insert. Additional threads (UNF 1/4") on the bottom side of the insert allow to extend the extraction tube to the bottom of the bottle.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances on the bottle neck. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.

b.safe Order directly

Air Valves Page 39
Economy pack for an exchange every 6 months.



b.safe Caps S40 with Stopcocks

Material: **PTFE, PPS** |Temperature resistance: **-20 °C to +200 °C** |
Chemical resistance: **+++ universal**

Screw cap made of PPS for thread S40, free movable insert made of PTFE.
With PFA fittings for capillaries with O. D. 3,2 mm (thread UNF 1/4“) and an Air Valve with service life indicator. All capillary connectors with integrated stopcock, connection to the bottle ground through additional capillary connector on the bottom side of the lid. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings (top side) mm	Number of Fittings (bottom side) mm	Cat. No.
A	1 with stopcock	1 x Ø 3,2 (yellow)	1 x Ø 3,2 (milky-white)	M 141-01

Application:
Perfectly matched system for removal of eluents. By means of the b.safe Fittings made of PFA, tubing can be connected to the capillary connectors. The conical seal cone clamps the tubing and seals the connection safely. Through additional capillary connectors on the bottom side of the lid, you can lead tubing down to the bottle ground. Dripping from connected lines during bottle exchange can be avoided through the stopcocks. Unused connectors can be closed if necessary. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and hose connectors for many inner diameters can be found from page 43.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.

Bottle thread
S40 (DIN55 525)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Caps GLS 80

If you stock solvents in bottles with GLS80 thread, a direct extraction with b.safe Caps is noproblem. b.safe Caps GLS80 together with Fittings, Tubing and an Air Valve form a perfect unit for solvent extraction from bottles and containers with GLS80 thread.

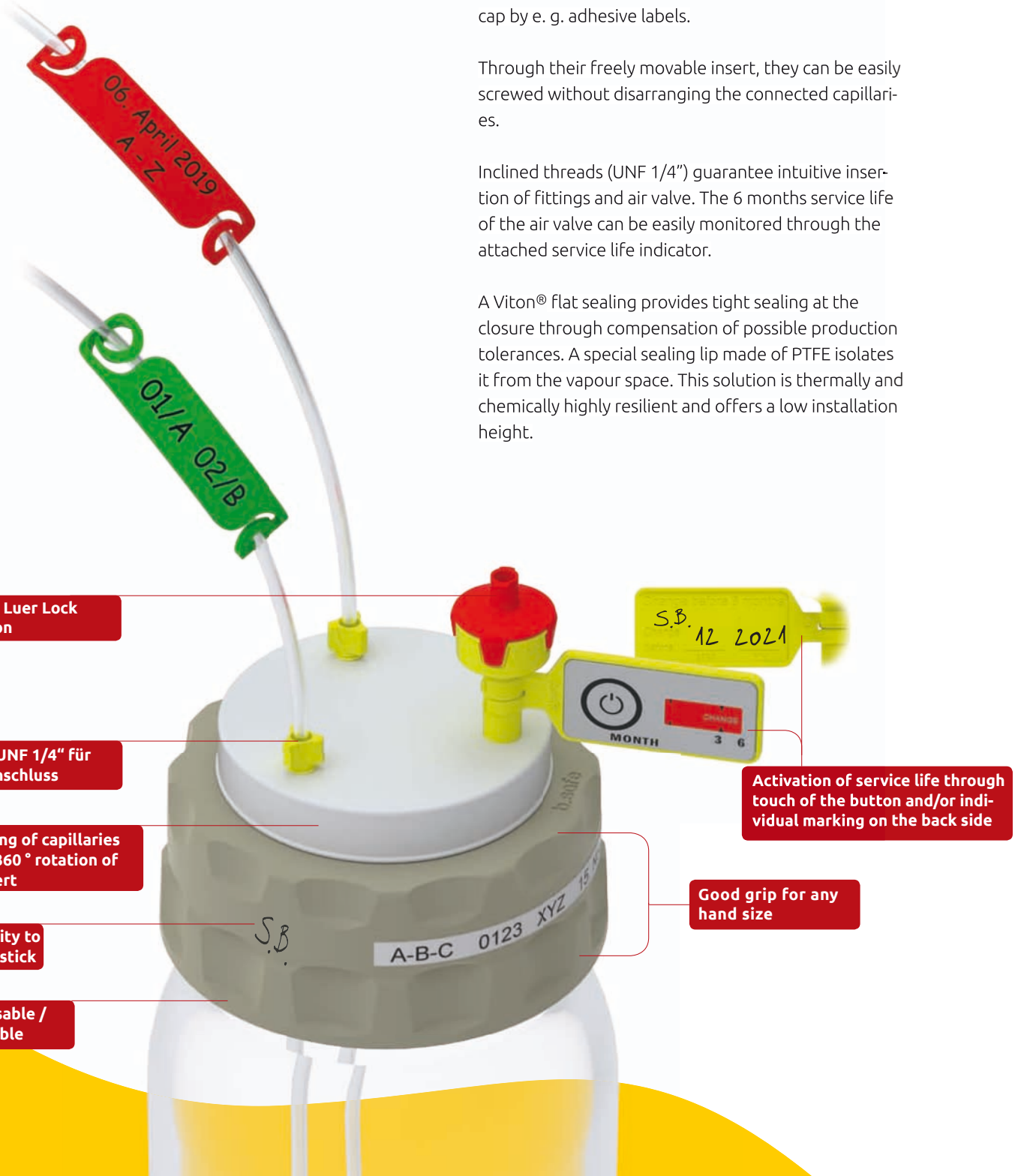
With the cap made of robust PPS and the chemically highly resistant PTFE insert, b.safe Caps GLS80 can be easily cleaned if necessary.

The ergonomic design and eroded surfaces offer stable grip for gloved hands. Additionally, the bottle content can be marked on the circulating marking strip on the cap by e. g. adhesive labels.

Through their freely movable insert, they can be easily screwed without disarranging the connected capillaries.

Inclined threads (UNF 1/4") guarantee intuitive insertion of fittings and air valve. The 6 months service life of the air valve can be easily monitored through the attached service life indicator.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.

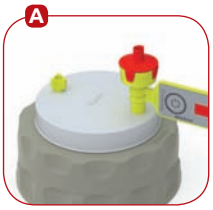


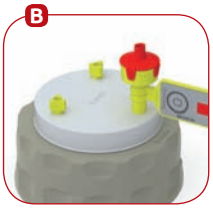
b.safe Caps GLS 80

Material: **PTFE, PP** I Temperature resistance: **0 °C to +110 °C** I
Chemical resistance: **++ very good**

Screw cap made of PP for thread GLS80, free movable insert made of PTFE. With PFA fittings for capillaries with O. D. 3,2 mm (UNF 1/4"), Blind Fittings made of PFA to close unused connections and an Air Valve with service life indicator. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Cat. No.
A	1	1 x Ø 3,2 (yellow)	0	M 180-01
B	2	2 x Ø 3,2 (yellow)	1 (milky white)	M 180-02
C	3	3 x Ø 3,2 (yellow)	2 (milky white)	M 180-03





Application:
Perfectly matched system for removal of eluents. Tubing can be inserted down to the ground of the bottle by means of the b.safe fittings made of PFA. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and for other tubing diameters can be found from page 43.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.

b.safe Order directly

Air Valves Page 39
Economy pack for an exchange every 6 months.

Bottle thread GLS80 (DIN168)

Not sure if this cap fits?

Help for thread determination from page 168.

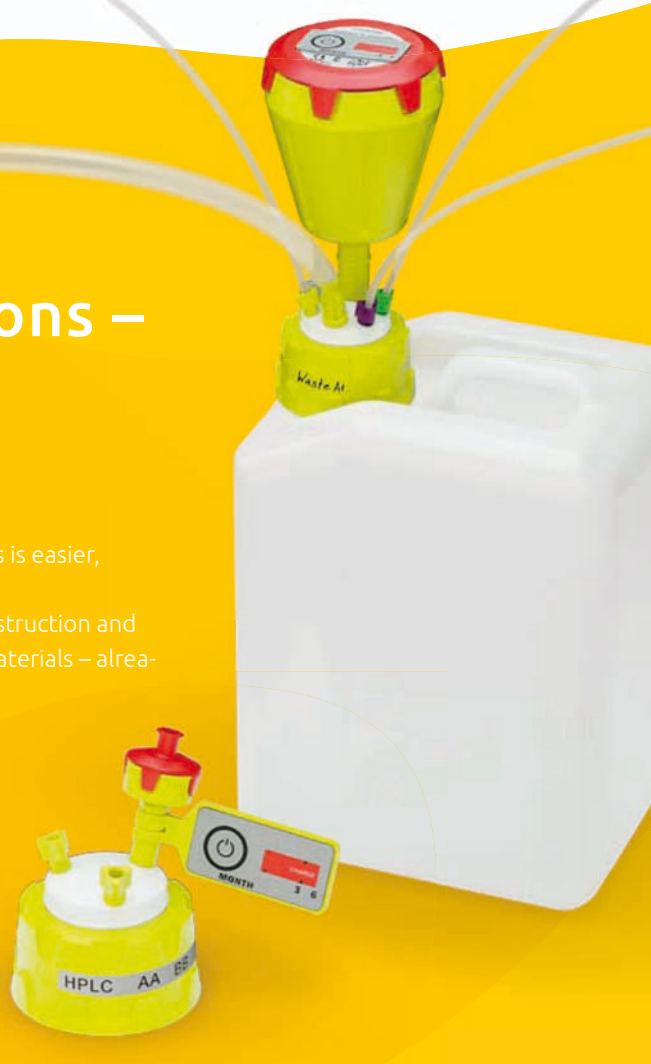
Sophisticated Safety Solutions – custom made!

You are looking for a solution exactly adapted to your application?

As a manufacturing company, we can make products to your specifications. This is easier, quicker and often more economic than you may expect.
Contact our experts – we give advice and support already starting with the construction and production as per your requirements and in compliance with the chosen raw materials – already from 1 piece.

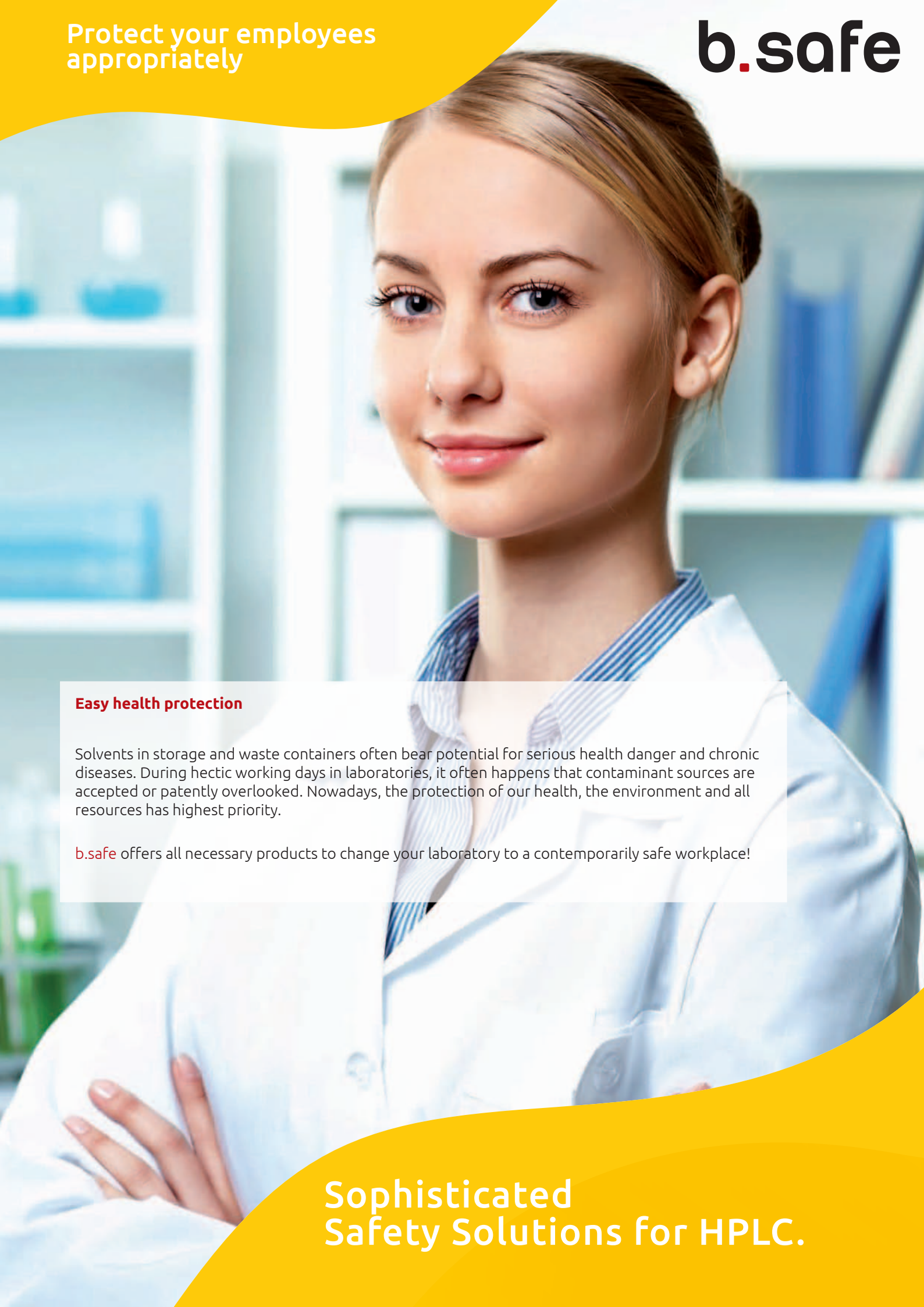
We only need a drawing (a sketch is sufficient) and some further information.

You have a special request?
www.bsafe.de or **+49 (0) 93 46-92 86-0**



Protect your employees appropriately

b.safe



Easy health protection

Solvents in storage and waste containers often bear potential for serious health danger and chronic diseases. During hectic working days in laboratories, it often happens that contaminant sources are accepted or patently overlooked. Nowadays, the protection of our health, the environment and all resources has highest priority.

b.safe offers all necessary products to change your laboratory to a contemporarily safe workplace!

Sophisticated Safety Solutions for HPLC.

b.safe Distributors for Flushing Bottles

Use the b.safe Distributors for Flushing Bottles and rely also during flushing of inlet channels on a consequently tight system.

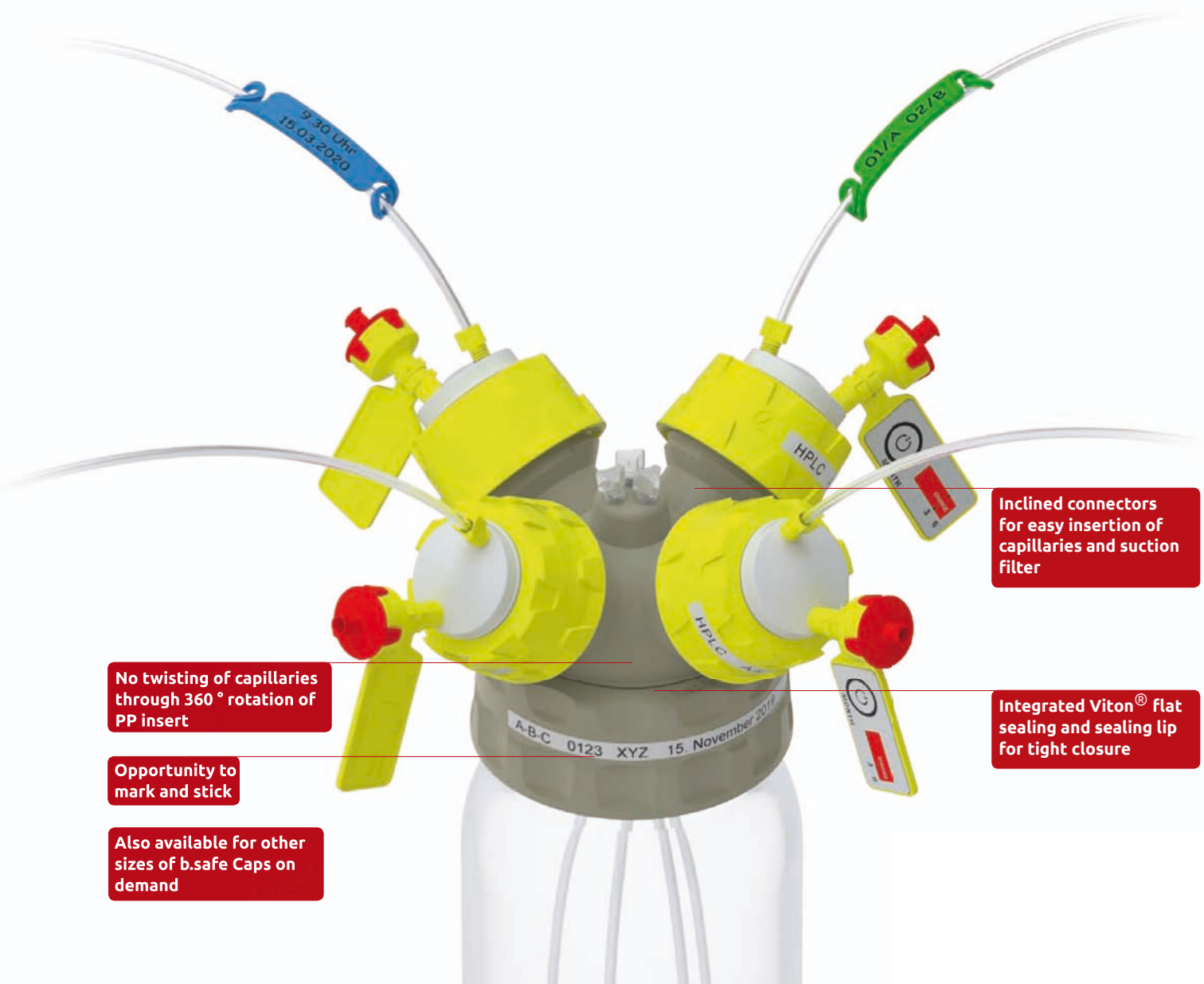
Instead of hanging the capillaries in an open flushing bottle, you can remove the b.safe Cap GL45 from the extraction bottle, introduce all connected tubing including suction filters into the flushing bottle and close it tightly by screwing the b.safe Cap on the lateral GL45 neck of the distributor.

By using completely assembled b.safe Caps the system can be flushed without any worries regarding a contamination of the used solvents or an escape of solvent vapours.

The special feature of the b.safe Distributor for Flushing Bottles: besides the cleaning of the inlet capillaries via the four GL45 ports, also piston back flushing and needle seat irrigation are possible by connecting suitable tubing to the 3 central capillary connectors (thread UNF 1/4).

Unused ports on the Distributor for Flushing Bottles can be closed with standard screw caps GL45.

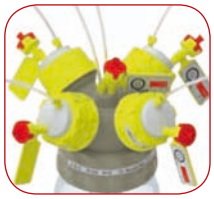
b.safe Distributors for Flushing Bottles are available for flasks with either thread GL45 or GLS80. We recommend to use bottles with thread GLS80 in order to ensure a comfortable insertion and removal of the tubing including assembled suction filters.



b.safe Distributors for Flushing Bottles

Material: **PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

Screw cap made of PPS for GL45 thread / PP for GLS 80 thread, free movable insert made of PP with 4 lateral connectors (GL45) suitable for b.safe Caps GL 45 and 3 centric capillary connectors (UNF ¼"). Version and scope of delivery as per below chart.



	Suitable for	Number of flushing connectors	Number of capillary connectors	Number of Blind Fittings	Cat. No.
A	GL45	4x GL45	3	3 (milky white)	M 181-03
B	GLS80	4x GL45	3	3 (milky white)	M 181-10

Application:
Flushing the HPLC installation without pollution or loss of solvents. The handling is very easy as the distributor is directly mounted on the flushing bottle. Remove the b.safe Caps from the eluent bottles and mount them on the connectors of the Distributor for Flushing Bottles. The passage at the distributor neck is sufficiently dimensioned so that the capillaries mounted on the cap can be inserted into the flushing bottle together with the filter. For the GL45 version of the Distributor for Flushing Bottles, we recommend to use smallest possible suction filters (max. O.D. 14 mm) to facilitate the insertion of tubing through the small bottle neck. If a connector of the distributor is not used, it can be closed with a screw cap GL45. Harmful solvent vapours cannot escape and the rinse solution is not polluted through ambient air by means of b.safe Caps with Air Valve. The Distributor for Flushing Bottles can also be used for back flushing the piston and/or the needle seat. Just connect the needed capillaries as well as an Air Valve with b.safe Fittings on the centric capillary connectors.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.

b.safe APPROPRIATE

Blind Fittings Page 44
For easy closure of unused connectors.

Bottle thread
GLS80 (DIN168)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Caps GL28

b.safe Caps GL28 together with Fittings, Tubing and an Air Valve form a perfect unit for solvent extraction from bottles with GL28 thread without aids such as threaded adaptors. Please check page 168 for determination of standard threads.

With the cap made of robust PPS and the chemically highly resistant PTFE insert, b.safe Caps GL28 can be easily cleaned if necessary.

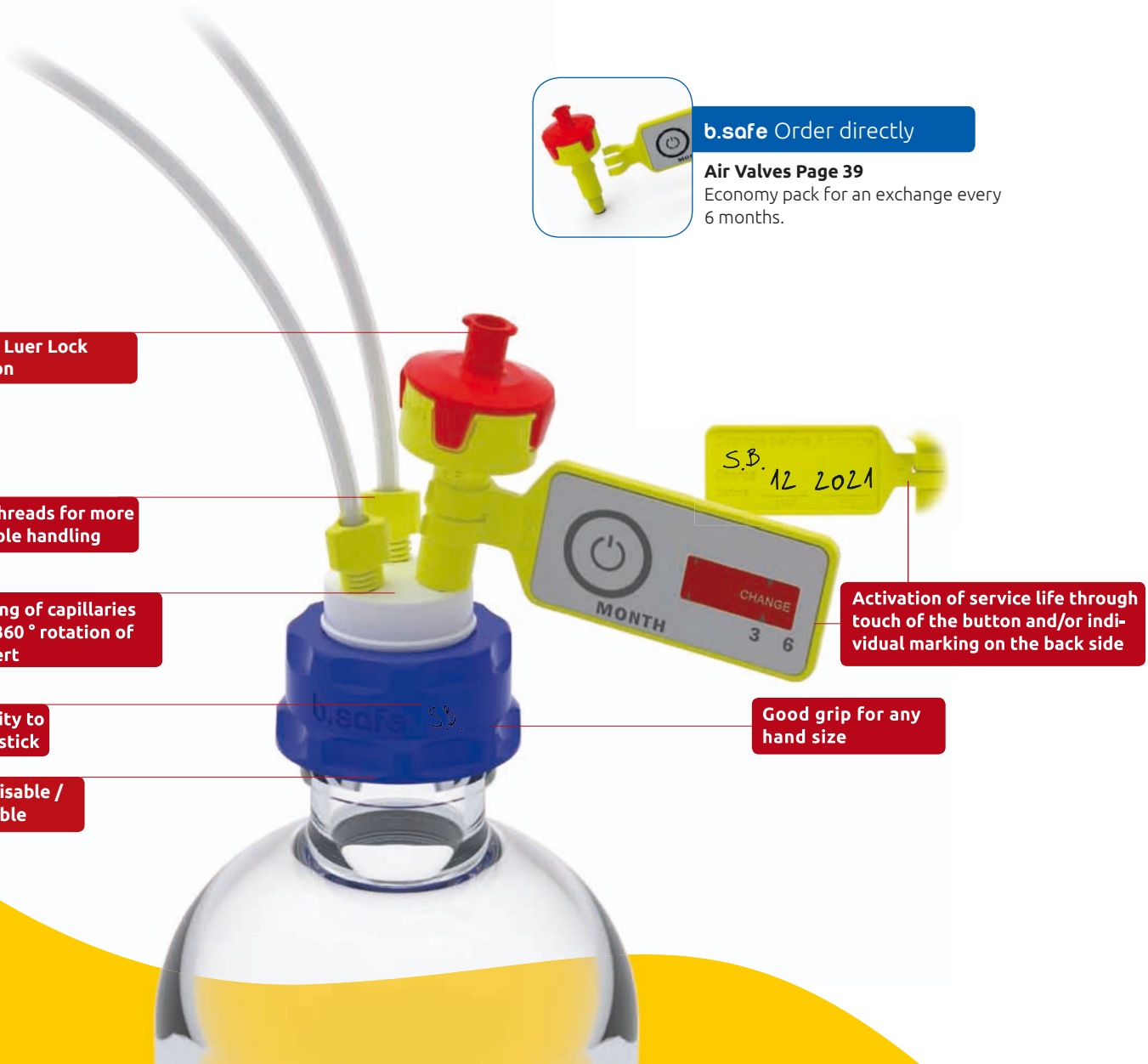
The ergonomic design and eroded surfaces offer stable grip for gloved hands.

Inclined threads (UNF 1/4") guarantee intuitive insertion of fittings and air valve and offer more space on the PTFE insert and a better overview. Tubes can be inserted into the bottle safely and without being bent.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.

b.safe Order directly

Air Valves Page 39
Economy pack for an exchange every 6 months.



b.safe Caps GL28

Material: **PTFE, PPS** | Temperature resistance: **-20 °C to +200 °C** |
Chemical resistance: **+++ universal**

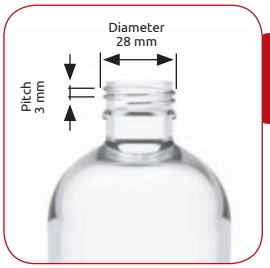
Screw cap made of PPS for GL28 thread, free movable insert made of PTFE. With PFA fittings for capillaries with O. D. 3,2 mm (thread UNF 1/4"), Blind Fittings made of PFA to close unused connections and an Air Valve with service life indicator. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Cat No.
A	1	1 x Ø 3,2 (yellow)	0	M 128-01
B	2	2 x Ø 3,2 (yellow)	1 (milky white)	M 128-02

Application:
Perfectly matched system for removal of eluents. Tubing can be inserted down to the ground of the bottle by means of the b.safe fittings made of PFA. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and for other tubing diameters can be found from page 43.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.



Bottle thread GL28 (DIN168)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Caps GPI 38/400

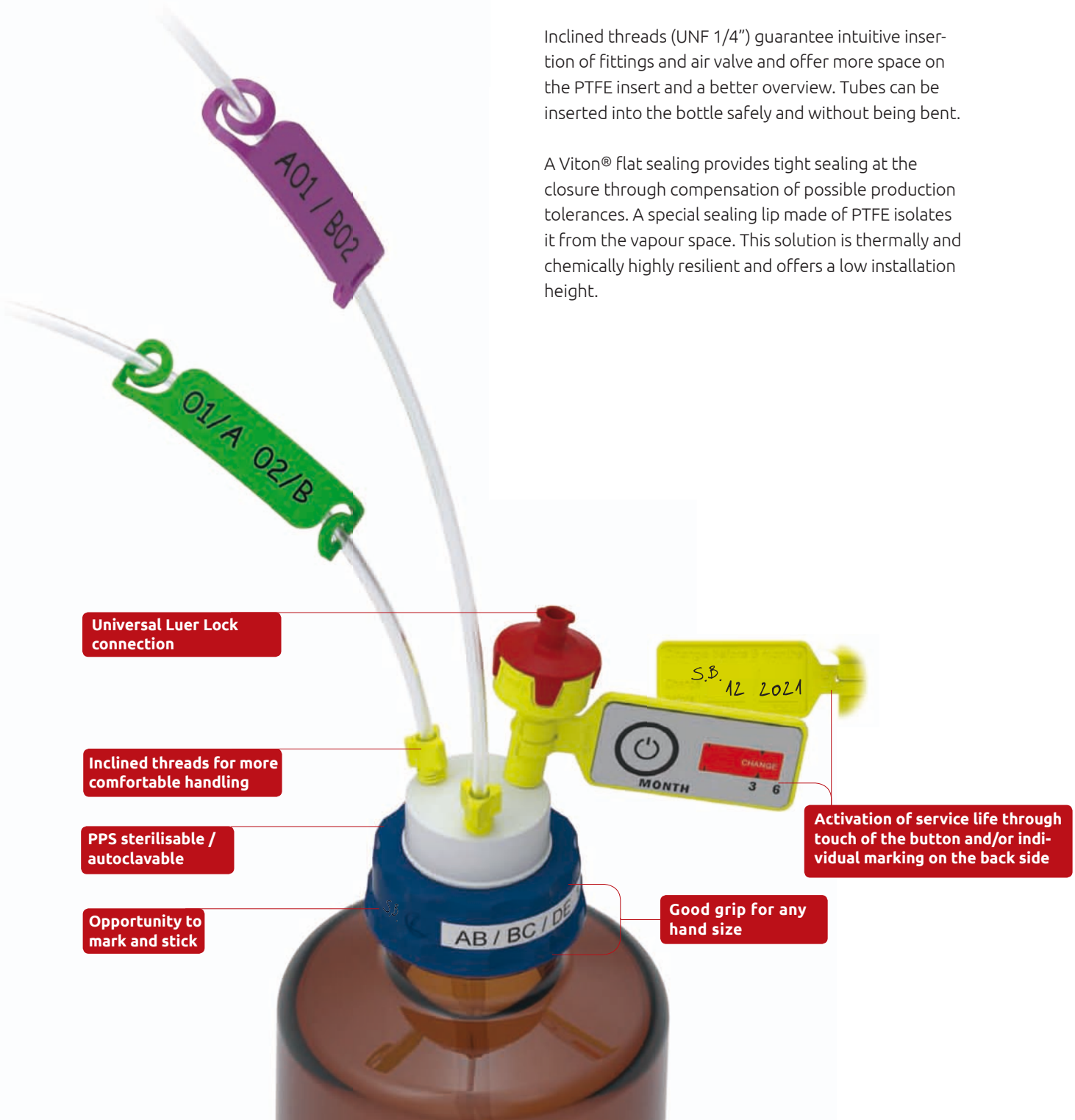
b.safe Caps GPI38/400 together with Fittings, Tubing and an Air Valve form a perfect unit for solvent extraction from bottles with GPI38/400 thread without aids such as threaded adaptors. Please check page 168 for determination of standard threads.

With the cap made of robust PPS and the chemically highly resistant PTFE insert, b.safe Caps GPI38/400 can be easily cleaned if necessary.

The ergonomic design and eroded surfaces offer stable grip for gloved hands. Additionally, the bottle content can be marked on the circulating marking strip on the cap by e. g. adhesive labels.

Inclined threads (UNF 1/4") guarantee intuitive insertion of fittings and air valve and offer more space on the PTFE insert and a better overview. Tubes can be inserted into the bottle safely and without being bent.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.



b.safe Caps GPI 38/400

Material: **PTFE, PPS** | Temperature resistance: **-20 °C to +200 °C** |
Chemical resistance: **+++ universal**

Screw cap made of PPS for thread GPI38/400, free movable insert made of PTFE. With PFA fittings for capillaries with O. D. 3,2 mm (UNF 1/4”), Blind Fittings made of PFA to close unused connections and an Air Valve with service life indicator. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings	Number of Blind Fittings	Cat. No.
A	1	1 x Ø 3,2 mm (yellow)	0	M 138-01
B	2	2 x Ø 3,2 mm (yellow)	1 (milky-white)	M 138-02
C	3	3 x Ø 3,2 mm (yellow)	2 (milky-white)	M 138-03

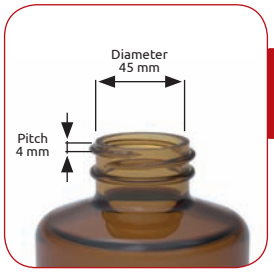
Application:
Perfectly matched system for removal of eluents. Tubing can be inserted down to the ground of the bottle by means of the b.safe fittings made of PFA. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and for other tubing diameters can be found from page 43.

b.safe Order directly

Air Valves Page 39
Economy pack for an exchange every 6 months.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.



Bottle thread
GPI38/400

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Caps GPI 38/430

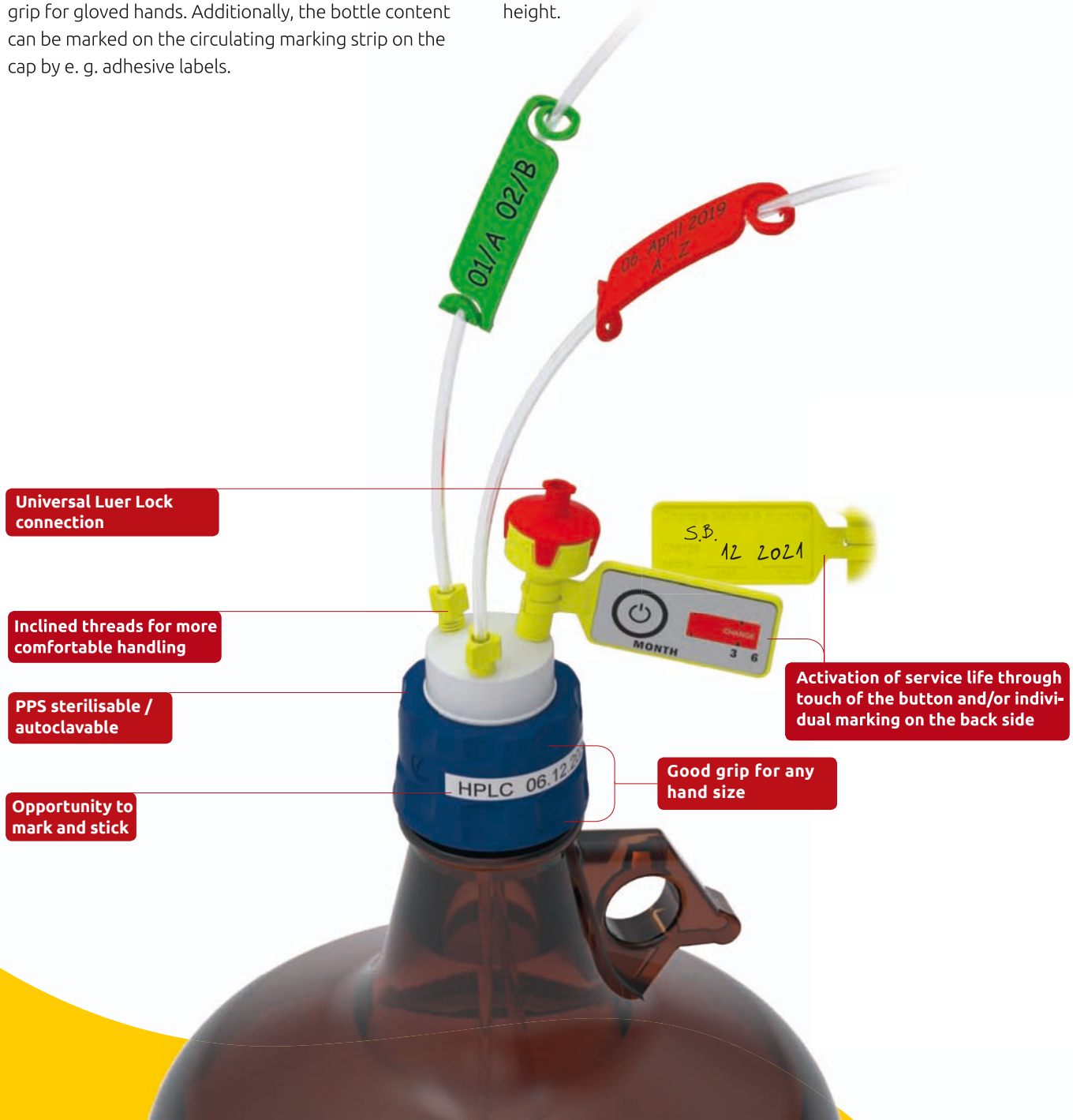
Together with Fittings, Tubing and an Air Valve, b.safe Caps GPI38/430 form a perfect unit for eluent extraction from bottles with GPI38/430 thread. Please check page 168 for determination of standard threads.

With the cap made of robust PPS and the chemically highly resistant PTFE insert, b.safe Caps GPI38/430 can be easily cleaned if necessary.

The ergonomic design and eroded surfaces offer stable grip for gloved hands. Additionally, the bottle content can be marked on the circulating marking strip on the cap by e. g. adhesive labels.

Inclined threads (UNF 1/4") guarantee intuitive insertion of fittings and air valve and offer more space on the PTFE insert and a better overview. Tubes can be inserted into the bottle safely and without being bent.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.



b.safe Caps

GPI 38/430

Material: **PTFE, PPS** I Temperature resistance: **-20 °C to +200 °C** I
Chemical resistance: **+++ universal**

Screw cap made of PPS for thread GPI38/430, free movable insert made of PTFE. With PFA fittings for capillaries with O. D. 3,2 mm (UNF 1/4"), Blind Fittings made of PFA to close unused connections and an Air Valve with service life indicator. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings	Number of Blind Fittings	Cat. No.
A	1	1 x Ø 3,2 mm (yellow)	0	M 139-01
B	2	2 x Ø 3,2 mm (yellow)	1 (milky-white)	M 139-02
C	3	3 x Ø 3,2 mm (yellow)	2 (milky-white)	M 139-03

Application:
Perfectly matched system for removal of eluents. Tubing can be inserted down to the ground of the bottle by means of the b.safe Fittings made of PFA. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and for other tubing diameters can be found from page 43.

b.safe APPROPRIATE

Blind Fittings Page 44
For easy closure of unused connectors.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.

Bottle thread GPI38/430

Not sure if this cap fits?

Help for thread determination from page 168.

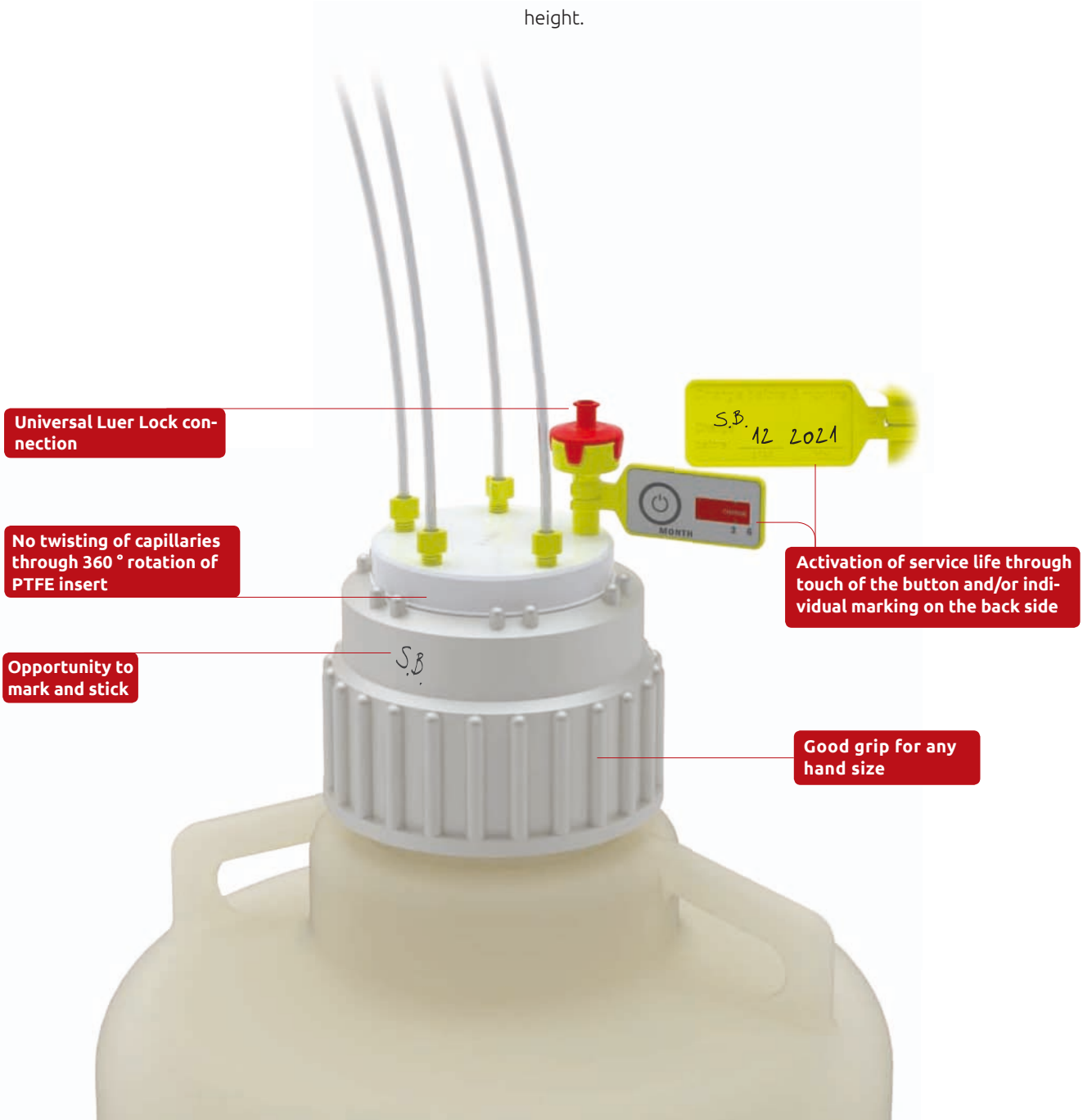
b.safe Caps B83

b.safe Caps B83 together with Fittings, Tubing and an Air Valve form a perfect unit for solvent extraction from balloon bottles with B83 thread without aids such as threaded adaptors. Please check page 168 for determination of standard threads.

With the cap made of robust PE and the chemically highly resistant PTFE insert, b.safe Caps B83 can be easily cleaned if necessary.

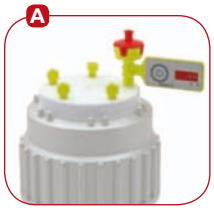
Inclined threads (UNF ¼") guarantee intuitive insertion of fittings and air valve and offer more space on the PTFE insert and a better overview. Tubes can be inserted into the bottle safely and without being bent.

A Viton® flat sealing provides tight sealing at the closure through compensation of possible production tolerances. A special sealing lip made of PTFE isolates it from the vapour space. This solution is thermally and chemically highly resilient and offers a low installation height.



b.safe Caps B83

Material: **PTFE, PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **++ very good**



Screw cap made of PE for B83 thread, free movable insert made of PTFE. With PFA fittings for capillaries with O. D. 3,2 mm (thread UNF 1/4"), Blind Fittings made of PFA to close unused connections and an Air Valve with service life indicator. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Cat. No.
A	4	4 x Ø 3,2 (yellow)	3	M 183-04

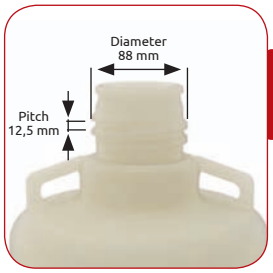
Application:
Perfectly matched system for removal of eluents. Tubing can be inserted down to the ground of the bottle by means of the b.safe Fittings made of PFA. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and for other tubing diameters can be found from page 43.

b.safe Order directly

Air Valves Page 39
Economy pack for an exchange every 6 months.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.



Bottle thread
B83

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Caps with Ground Joint

NS 29/32

b.safe Caps with Ground Joint NS29/32 are especially made for the direct extraction of solvents from flasks with ground joint NS29/32. The threaded ports on the top can be used to connect a b.safe Air Valve and up to two capillary tubes.

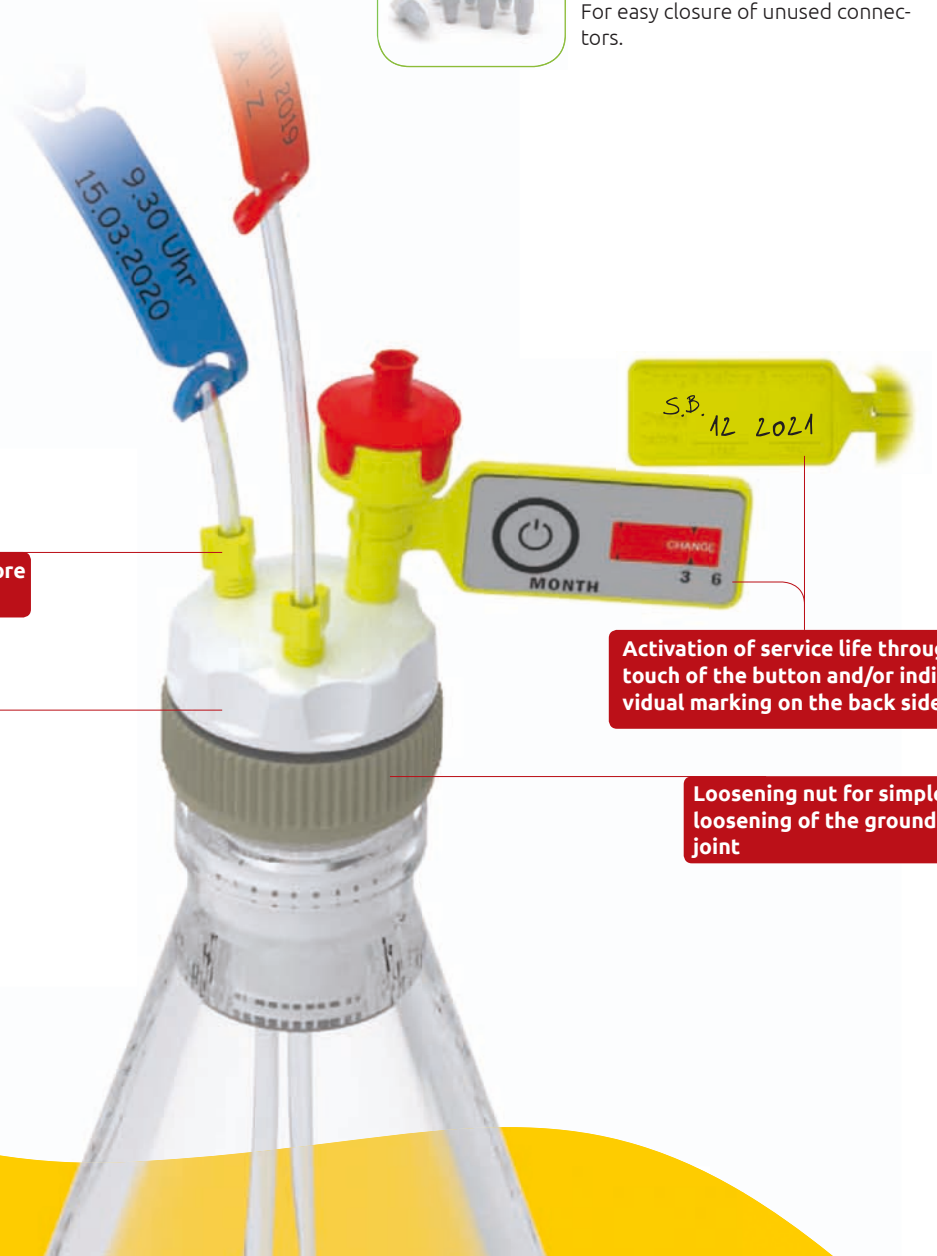
The robust ground joint body made of PTFE with sealing rings on the outside of the cone provides a tight closure. To prevent glass break due to a stuck connection, b.safe Caps with Ground Joint are equipped with a loosening nut. By turning the nut the stuck body is lifted without any effort and can easily be removed.

The ergonomic design of the knurled handle offers stable grip for gloved hands.

Inclined threads (UNF 1/4") guarantee intuitive insertion of Fittings and Air Valve and offer more space on the PTFE insert for a better overview. Tubes can be inserted into the bottle safely and without being bent.

b.safe APPROPRIATE

Blind Fittings Page 44
For easy closure of unused connectors.



Inclined threads for more comfortable handling

Good grip for any hand size

Activation of service life through touch of the button and/or individual marking on the back side

Loosening nut for simple loosening of the ground joint

b.safe Caps with Ground Joint

NS 29/32

Material: **PTFE, PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

Distributor body with ground joint cone NS 29/32, integrated nut (PP) to loosen stuck ground joints. With PFA Fittings for capillaries with O. D. 3,2 mm (thread UNF ¼"), Blind Fittings made of PFA to close unused connections and an Air Valve with service life indicator. Version and scope of delivery as per below chart.

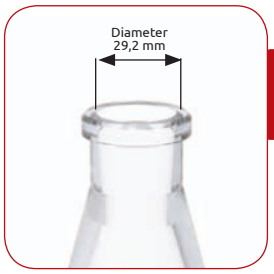
	Number of Fittings	Number of Fittings	Number of Blind Fittings	Cat. No.
A	2	2x Ø 3,2 mm (yellow)	1 (milky white)	M 529-01

	Accessories	Version	Cat. No.
B	Loosening nut for M 529-01	To loosen stuck ground joints. The ground joint cone is lifted and loosened without using excessive force through turning the nut.	M 529-90

Application:
Perfectly matched system for removal of eluents. Tubing can be inserted down to the ground of the bottle by means of the b.safe fittings made of PFA. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve. PFA Fittings in other colours and for other tubing diameters can be found from page 43.

b.safe INFORMATIVE

Operating Principle Page 162
This is how pressure compensation is made during extraction.



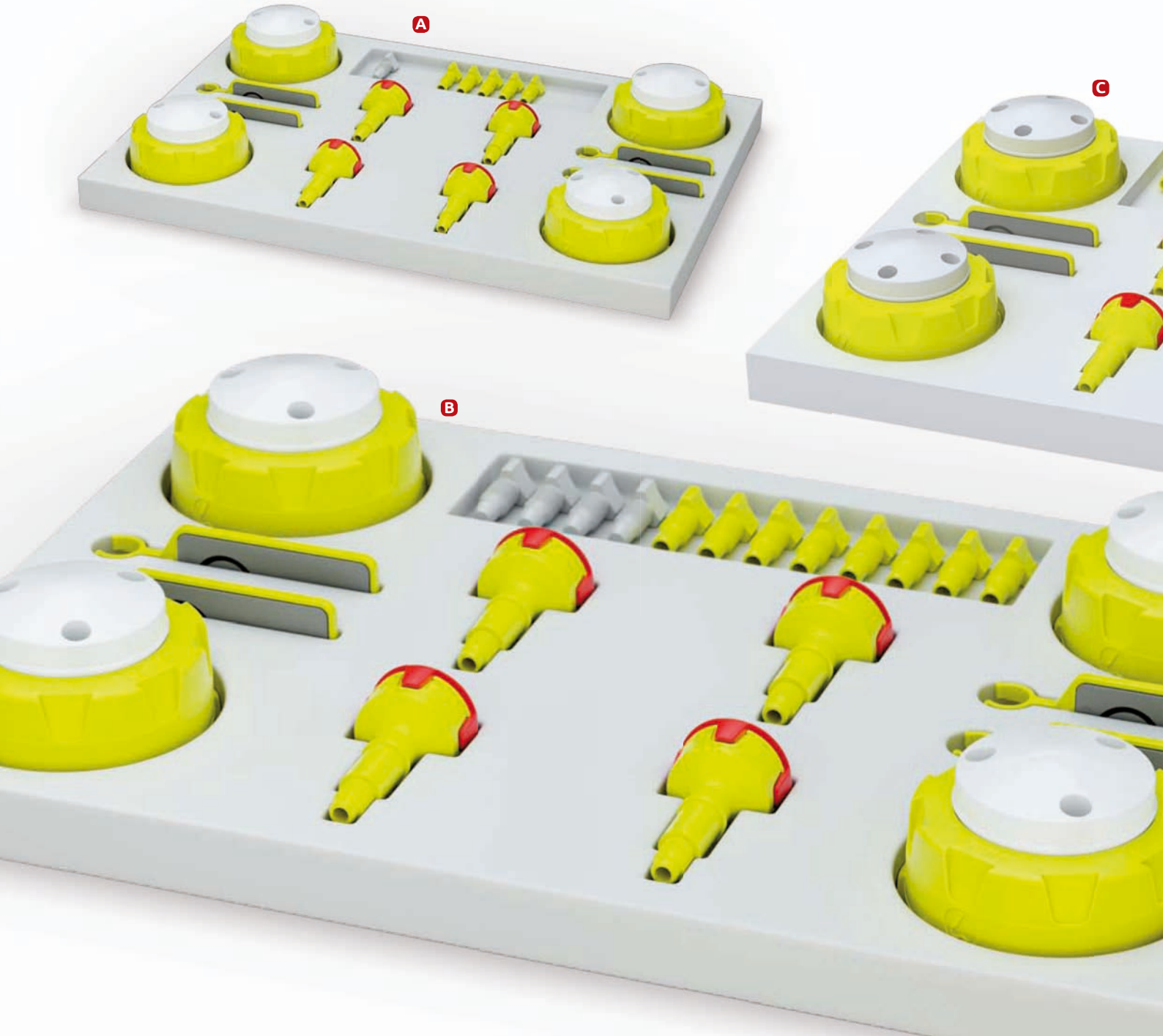
Bottle thread
NS29/32 (DIN12242)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Starter Boxes

As HPLC already challenges lab experts in their work; we help to simplify their work as much as possible. Our b.safe Starter Boxes offer everything necessary for a safe and economic extraction. Thus, you are perfectly equipped at an economic special price! Just decide for what you need. Tip: The b.safe Starter Box C has more connectors and if they are not needed, practical b.safe Blind fittings will help.



b.safe Starter Boxes

Material: **PTFE, PPS** | Temperature resistance: **-20 °C to +200 °C** |
Chemical resistance: **+++ universal**

HPLC-Sets for solvent supply containing b.safe Caps GL 45 for four bottles, PFA-Fittings for capillaries with O. D. 3,2 mm, Blind Fittings made of PFA to close unused connections as well as Air Valves with service life indicator. Version and scope of delivery as per below chart.

	Description	Scope of delivery	Cat. No.
A	Starter Box A	3 x b.safe Caps GL 45 with 1 capillary connection 1 x b.safe Cap GL 45 with 2 capillary connections 4 x Air Valves with service life indicator 5 x Fittings for tubing O. D. 3,2 mm (yellow) 1 x Blind fitting (milky white)	M 146-10
B	Starter Box B	4 x b.safe Caps GL 45 with 2 capillary connections 4 x Air Valves with service life indicator 8 x Fittings for tubing O. D. 3,2 mm (yellow) 4 x Blind fittings (milky white)	M 146-20
C	Starter Box C	4 x b.safe Caps GL 45 with 3 capillary connections 4 x Air Valves with service life indicator 12 x Fittings for tubing O. D. 3,2 mm (yellow) 8 x Blind fittings (milky white)	M 146-30

Application:
Perfectly matched system for removal of eluents. Tubing can be inserted down to the ground of the bottle by means of the b.safe fittings made of PFA. The conical seal cone clamps the tubing and seals the connection safely. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve.

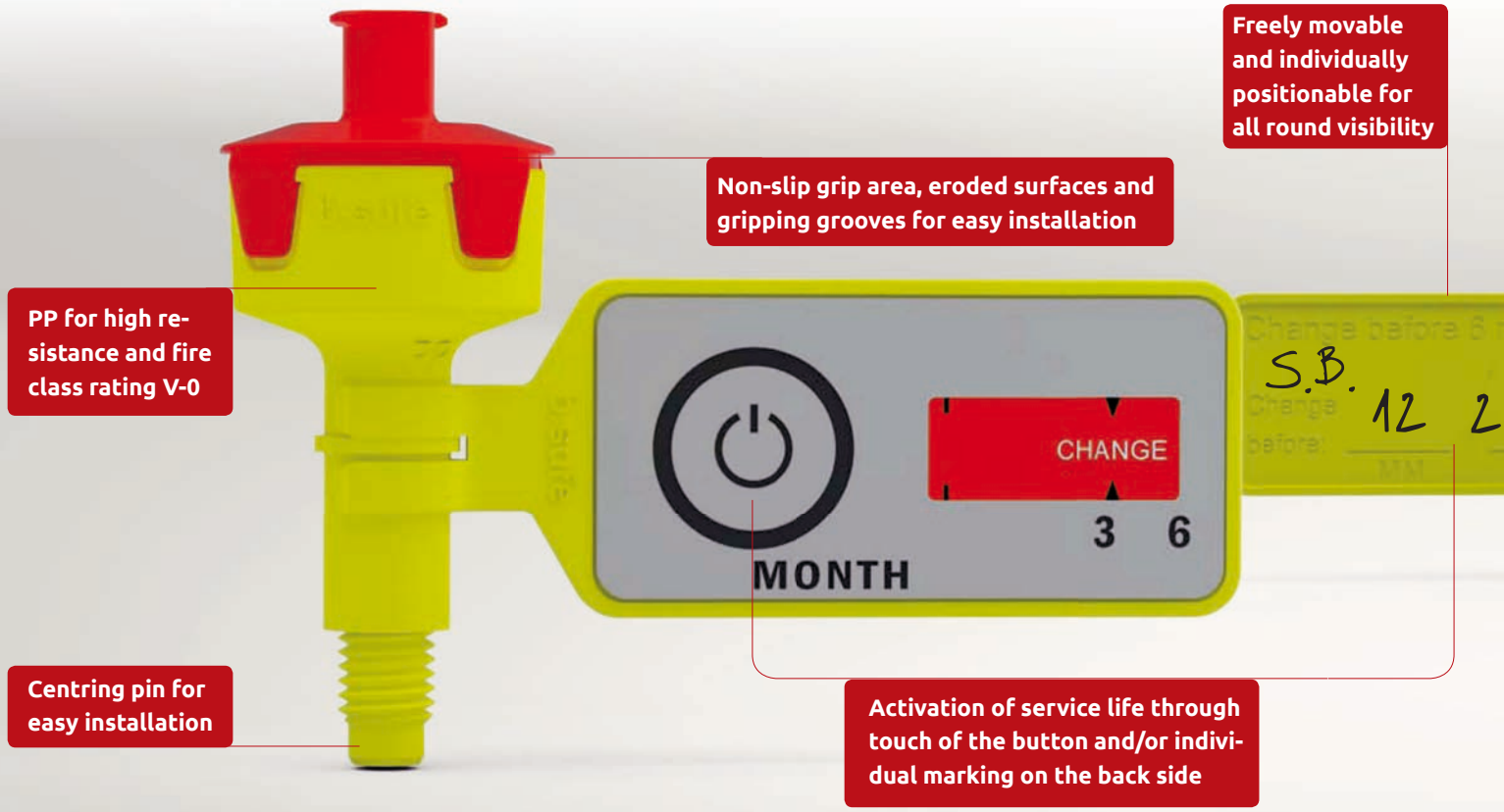
b.safe Air Valve

The handy b.safe Air Valve provides the necessary pressure compensation during solvent extraction. Furthermore, it restrains pollutant particles from the bottle content and lets flow as much ambient air as necessary through the lid and the inside PTFE membrane (pore size 1 µm) for guaranteed six months until exchange.

In order not to forget this, the Air Valve has a practical service life indicator with activation through the touch of the button as well as a title block for documentation in GMP/GLP regulated laboratories. The valve is easily mounted and demounted, even with gloves, through the large head, eroded surfaces, grooves and strongly connected parts.

The universal Luerlock connector offers diverse opportunities for special applications such as oxidation protection by filling the bottle with inert gases as well as the adaptation of dry tubes to maintain water-free eluent mixtures.

At least, the b.safe Air Valve made of PP offers high chemical resistances and a fire class rating V-0 as per UL 94.



Better b.safe

One click and the service life indicator is mounted without slipping in height

b.safe Air Valves

Material: **PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

Valve body made of PP with connection (thread UNF 1/4“ 28G) suitable for b.safe Caps. Lid with aeration opening and Luerlock connector, integrated non-return valve with upstream porous PTFE membrane (1 µm), including plug-in service life indicator.

	Packing unit	Service life	Cat. No.
	2 pcs.	6 months	M 505-01
	10 pcs.	6 months	M 505-02
	50 pcs.	6 months	M 505-05

Application:
For removal of eluents. The b.safe Air Valve is especially adapted to the flow rate in HPLC. The integrated non-return valve avoids evaporation of solvents and lets ambient air flow into the bottle in case of vacuum. The upstream porous PTFE membrane restrains pollutant particles and other contaminations from outside. The 6 months service life of the filter can be easily monitored through either activating the display on the cap and exchanging the valve in case of completely red colouring or documentation of the exchange date by hand and clip in the display at the valve.

One Luerlock connector, diverse possibilities such as filling the solvent with gas to protect it from oxidation

Or comfortable connection of dry tubes to keep humidity outside.

Better b.safe

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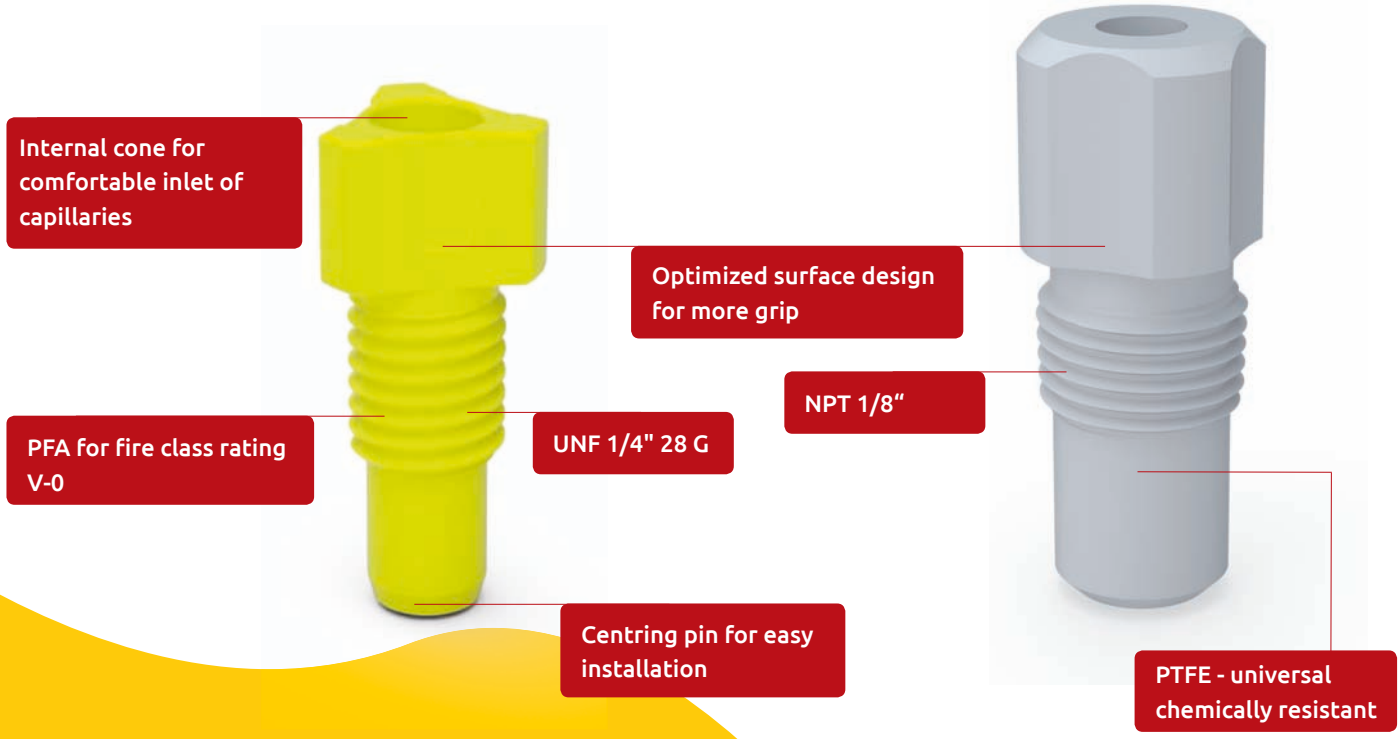
b.safe Fittings and Blind Fittings

Either if you extract solvents or collect waste: In order to connect capillaries perfectly respectively close unused connectors, b.safe Fittings, b.safe Fittings Preparative and b.safe Blind fittings have to be used. They are made of fluoroplastics (PFA and PTFE) and have high chemical and thermal resistance. Their male threads exactly fit onto b.safe Caps and b.safe Waste Caps. Their ergonomic head form with internal cone simplifies gripping and turning to lead in tubes and capillaries into a bottle and hold them safely.

b.safe Fittings made of PFA are available in different colours for a clear and simple application.

When choosing the fittings, please consider the thread on your cap besides the outer diameter of your tubing: Capillaries with O. D. up to 3,2 mm can be lead into the bottle through the capillary connection with b.safe Fittings with UNF 1/4“ thread. Tubing with O. D. 4,0 to 6,35 mm require a b.safe Fitting Preparative with NPT 1/8“ thread.

b.safe Blind fittings are neutral in colour but have an important reason as unused connectors on your b.safe Caps and b.safe Waste Caps can be closed tightly. Thus, expensive eluents cannot escape and foreign particles cannot reach the solvent. If you have a waste collection container, solvent vapours cannot escape.



b.safe Fittings

Material: **PFA** | Temperature resistance: **-200 °C to +260 °C** |
Chemical resistance: **+++ universal**

Fittings made of PFA to fix tubing in the capillary connectors (thread UNF 1/4“ 28G) of b.safe Caps and b.safe Waste Caps. The conical seal cone clamps the tubing and seals the connection safely.

For Tubing O. D.	Colour	Packing unit	Cat. No.
1,6 mm (1/16")	green	10 pcs.	M 501-06
2,2 mm (7/8")	purple	10 pcs.	M 501-11
2,2 mm (7/8")	grey	10 pcs.	M 501-12
3,2 mm (1/8")	milky-white	10 Stück	M 501-15
3,2 mm (1/8")	blue	10 pcs.	M 501-16
3,2 mm (1/8")	red	10 pcs.	M 501-17
3,2 mm (1/8")	yellow	10 pcs.	M 501-18

b.safe Fittings Preparative

Material: **PTFE** | Temperature resistance: **-200 °C to +250 °C** |
Chemical resistance: **+++ universal**

Fittings made of PTFE to fix tubing in the tubing connectors (thread NPT 1/8“) of b.safe Caps. The conical seal cone clamps the tubing and tightens at the connector.

For tubing O. D. mm	Packing unit		Cat. No.
4,0	10 pcs.		M 510-01
4,76 (3/16“)	10 pcs.		M 510-02
6,0	10 pcs.		M 510-03
6,35 (1/4“)	10 pcs.		M 510-04

Application:
For connection of tubing O. D. 4,0 to 6,35 mm to the tubing connectors of b.safe Preparative Caps (see Cat. No. M 144-.. on page 15), suitable for throughput in preparative HPLC. Compatible with the tubing connector on b.safe Waste Caps (from page 48) to collect solvent waste.

b.safe Blind Fittings

Material: **PFA, PTFE** | Temperature resistance: **-200 °C to +260 °C** |
Chemical resistance: **+++ universal**

Blind fittings made of PFA for closing unused capillary connections on b.safe Caps and b.safe Waste Caps.

	Suitable for	Material	Packing unit	Cat. No.
A	Capillary Connector (thread UNF 1/4“)	PFA milky white	10 pieces	M 501-01
B	Exhaust Filter (thread GL 14)	PTFE white	1 piece	M 501-45
C	Hose Connector (thread NPT 1/8“)	PTFE white	1 piece	M 501-50
D	Ground Joint (NS 29/32)	PTFE white	1 piece	M 501-55

Application:
For tight closure of unused connectors on b.safe Caps and b.safe Waste Caps. With ergonomic gripping surface or knurl for easy assembly. The version with ground joint has an integrated nut to loosen stuck ground joints.

b.safe Mounting Keys

Material: **POM** I Temperature resistance: **-30 °C to +100 °C** I
Chemical resistance: **++ very good**

Inner shape fits the outer shape of b.safe Fittings for capillary tubing. Lateral slot to lead through tubing, gripping surface to tighten or loosen b.safe Fittings on b.safe Caps and Waste Caps. Packing unit: 1 piece.

	For b.safe Fittings O. D. mm		Cat. No.
	1,6 / 2,2 / 3,2		M 542-01

Application:
Tightening: Put the fitting onto the tubing and position it in the requested connector. Lead in the tubing on the requested height. Put the Mounting Key and tighten the fitting. For disassembly, just put the Mounting Key onto the tubing and the fitting that is to be loosened, turn and you are ready.

b.safe Suction Filters

Material: **PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **++ very good**

Filter candle made of porous PE with a bore to be put on capillary tubing. Packing unit: 10 pieces.

	Pore size µm	For tubing O. D. mm	Filter-Ø mm	Total length mm	Cat. No.
A	20	3,2 (1/8“)	9	21	M 515-01

Application:
Restrains pollution from solvents to achieve constant analysis results. Exchange the filter regularly every 3 months for reliable operation.

b.safe Suction Filters

Material: **PFA, PTFE** | Temperature resistance: **-20 °C to +200 °C** |
Chemical resistance: **+++ universal**

Suction Filter with PTFE membrane to be put on capillary tubing.
Packing unit: 5 pieces.

	Pore size µm	For tubing O. D. mm	Filter dia. mm	Total length mm	Cat. No.
A	5	3,2 (1/8“)	13	10	M 570-05

Application:
Restrains pollution from solvents to achieve constant analysis results. Exchange the filter regularly every 3 months for reliable operation.

b.safe Septum Adaptors

Material: **PTFE** | Temperature resistance: **-200 °C to +250 °C** |
Chemical resistance: **+++ universal**

Threaded adaptor to connect a septum cap with a capillary connector of b.safe Caps.

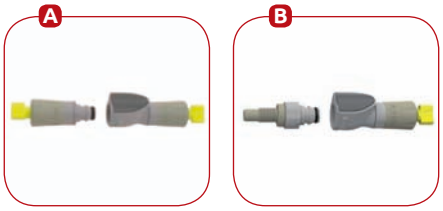
	Suitable for	Transition to	Material	Cat. No.
A	Capillary connector (thread UNF 1/4“)	Septum cap (thread ND9)	PTFE	M 508-01

Application:
Easy sampling on the capillary connectors of b.safe Caps and Waste Caps without contamination or evaporation of solvents.

b.safe Capillary Coupling

Material: **PP** I Temperature resistance: **0 °C to +110 °C** I
Chemical resistance: **++ very good**

Two-part tubing coupling made of PP with PFA Fitting to connect capillaries with O. D. 3,2 mm. The passage with the integrated quick lock is tightly closed through loosening the coupling. Tubing connections are easily interrupted without dripping from the tube, tubes and removal flasks are tightly closed during exchange. Version and scope of delivery as per below chart.



	Female thread	Male thread	With Coupling connection female	male	Number of Fittings	Cat. No.
A	2x UNF 1/4“	-	1x	1x	2x 3,2 mm (yellow)	M 535-05
B	1x UNF 1/4“	1x UNF 1/4“	1x	1x	1x 3,2 mm (yellow)	M 536-05

Application:
The Capillary Coupling is stacked together simply by hand. The coupling is successfully snapped if a clicking noise is audible. The valves automatically open and a leakage free connection is now achieved. If the parts are separated, the valves are automatically closed in order to avoid solvent escape. Depending on the combination of the coupling parts, the coupling can also be screwed as a capillary connection onto b.safe Caps or just be used as quick connector of individual tubes.

b.safe Coupling Pieces

Material: **PP** I Temperature resistance: **0 °C to +110 °C** I
Chemical resistance: **++ very good**

Coupling pieces for free combination or complements of b.safe Capillary Couplings.
Version and scope of delivery as per below chart.

	Female thread	Male thread	With Coupling connection female	male	Number of Fittings	Cat. No.
C	1x UNF 1/4“	-	1x		1x 3,2 mm (yellow)	M 530-01
D	1x UNF 1/4“	-		1x	1x 3,2 mm (yellow)	M 531-01
E		1x UNF 1/4“		1x		M 532-01

b.safe at collection of waste: Play it safe until the last step

Safe collection of harmful solvent waste as well as perfect protection from hazardous vapours and liquids and absolute control until non-hazardous collection of waste. That´s b.safe

The extraction and analysis have been successfully completed. However, lab experts cannot relax because at the end of every HPLC process, harmful solvent waste exists that increases the risk of fire and explosion and thus endangers the health of the employees! The waste has to be collected in special vessels until its disposal without vapours and liquids being able to escape. A clear case for b.safe Exhaust Filters and b.safe Waste Caps that are equipped with all that is required for a safe and easy collection of waste.

b.safe Waste Caps are fixed tightly on the threads of the waste containers. Through the fittings, hose connectors and the practical distributor body, tubing and capillaries can be fixed without being disarranged. Thus, eluents come into the waste containers safely and not outside of them. A special activated carbon in the b.safe Exhaust Filters absorbs all solvent vapours in order to have only harmless air coming into the environment. Practical service life indicators guarantee full control on the permitted service life.
b.safe Waste Caps as well as b.safe Exhaust Filters offer well grip and can be easily and comfortably mounted. For quick processes, safe working conditions and lower costs for air purification in laboratories.

Further connectors, e.g. filling funnels on demand

Helpful tips for determing the thread of your canisters, **page 168**

b.safe Waste Caps GL45

b.safe Waste Caps GL45 are especially adapted to the requirements on the collection of solvent waste in HPLC. The PTFE-insert is equipped with several threads (UNF 1/4“, NPT 1/8”) for a direct connection of different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread GL45.

The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

The PPS screw cap and the PTFE insert are extremely robust and resistant against thermal or chemical load. Furthermore, they can be sterilized by autoclaving up to 200 °C and also easily be cleaned in the dish washer.

The freely turnable PTFE insert allows a simple container exchange without disarranging the installed capillary tubing and tubes. All tubes and tubing are firmly and tight fixed by Fittings with optimized inner cone and/or non-slip hose connectors.

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps GL45 are the perfect protection for the disposal of solvent waste.

b.safe Waste Caps GL45

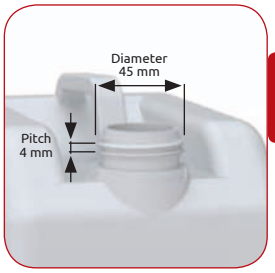
Material: **PTFE, PPS** | Temperature resistance: **-20 °C to +200 °C** |
Chemical resistance: **+++ universal**

Screw cap made of PPS for GL 45 thread, free movable insert made of PTFE. With PFA fittings for capillaries with O. D. 1,6 / 2,3 / 3,2 mm (thread UNF 1/4" 28G), blind fittings made of PFA to close unused connections. Hose connector for tube I. D. 5,5 - 8 mm (thread NPT 1/8") and another connector (thread GL14) to screw in a b.safe Exhaust Filter (not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky-white)	0	M 345-01
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	2 (milky-white)	1 x Ø 5,5 - 8 mm	M 345-05
C	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky-white)	1 x Ø 5,5 - 8 mm	M 345-10

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can easily inserted in the waste container; the conical seal cone clamps the tubing and seals the connection safely. Through the connection of tubing with I. D. 5,5 - 8 mm, large amounts of liquids can be disposed. Solvent vapours from the escaping air during filling are restrained through the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. PFA Fittings in other colours and hose connectors for many inner diameters can be found from page 97.

PPS sterilisable / autoclavable



Canister thread GL45 (DIN45)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps with Filling Funnel

GL45

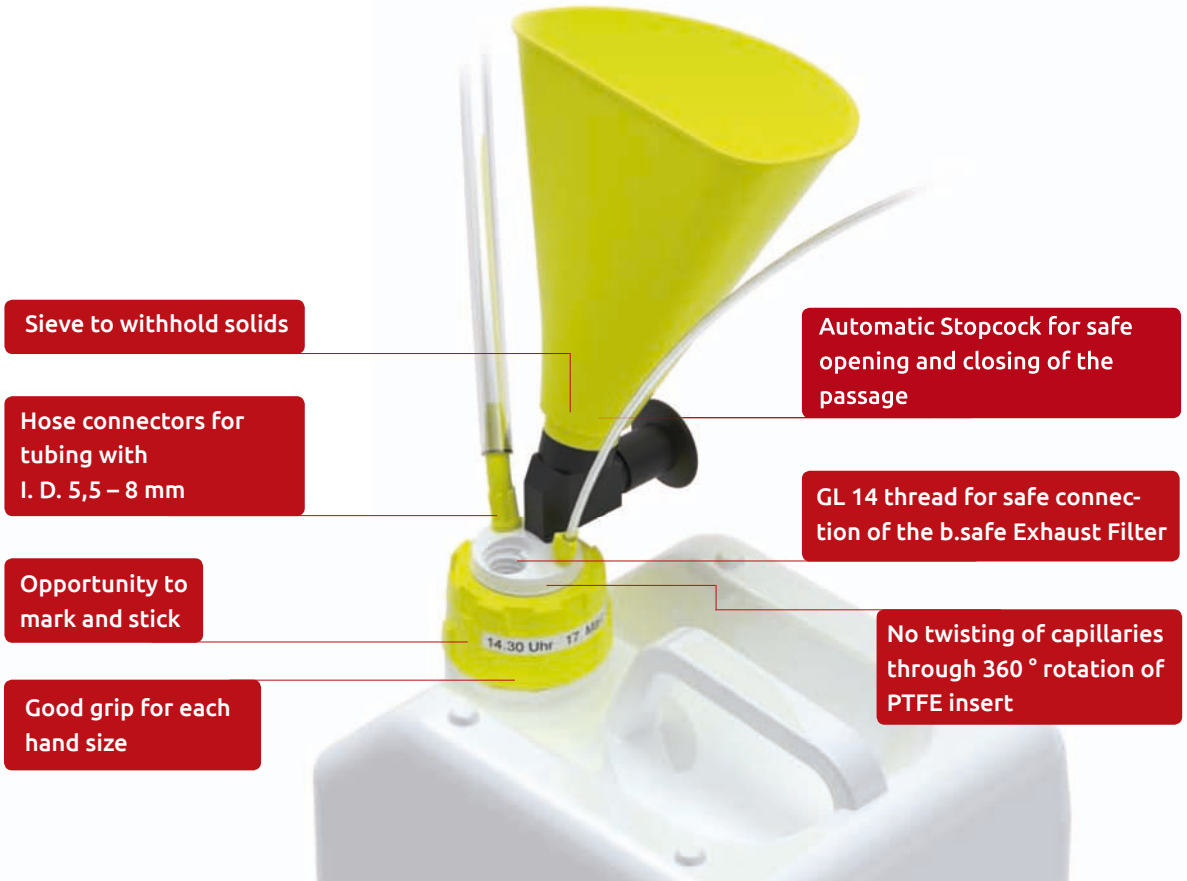
b.safe Waste Caps GL45 with Filling Funnel are the best choice for the collection of HPLC solvent waste. The freely turnable PTFE insert is equipped with the standard thread connectors UNF 1/4" and NPT 1/8" for connecting different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread GL45.

Also liquid waste as for example produced for the preparation of samples can be directly filled into a collection container by using the permanently fixed Filling Funnel. The integrated stopcock reliably blocks the passage as protection against escaping vapours.

Choose one of the offered Filling Funnel designs: Version "Stopcock with grip" where the passage opens by turning the grip and the grip position indicates if the stopcock is closed. The funnel of this version is generously measured for a good liquid drain. The sieve can be removed.

In the version "Automatic Stopcock", the passage is opened by pushing the grip. As long as the grip is pushed, the passage remains open. As soon as the grip is loosened, the passage is closed automatically. The integrated sieve cannot be removed.
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps GL45 are the perfect protection for the disposal of solvent waste.



b.safe Waste Caps GL45 with Filling Funnel

Material: **PTFE, PPS, PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

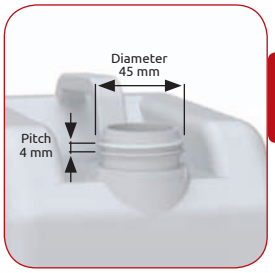
Screw cap made of PPS for GL 45 thread, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (thread UNF 1/4“), Blind Fittings made of PFA to close unused connections, 1 hose connector for tube I. D. 5,5 - 8 mm (thread NPT 1/8“) mm and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included in the scope of delivery). Permanenty fixed Filling Funnel with integrated stopcock. Choose the stopcock between the versions “Stopcock with grip”, where the passage opens through turning the grip and the grip position shows if the stopcock is closed, or “Automatic stopcock” where the passage opens through pushing the grip and closes automatically if the grip is loosened. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Hose Connectors	Stopcock Grip	Stopcock Automatic	Cat. No.
A	1	1 x Ø 1,6 (green) 1 x Ø 2,2 (purple) 1 x Ø 3,2 (yellow)	1 x Ø 5,5 - 8 mm		●	M 345-25
B	1	1 x Ø 1,6 (green) 1 x Ø 2,2 (purple) 1 x Ø 3,2 (yellow)	1 x Ø 5,5 - 8 mm	●		M 345-35

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can easily inserted in the waste container; the conical seal cone clamps the tubing and seals the connection safely. Through the connection of tubing with I. D. 5,5 - 8 mm respectively through the Filling Funnel directly from flasks, large amounts of liquids can be disposed. The integrated stopcock avoids leakage of harmful vapours through the filling hole. Solvent vapours from the escaping air during filling are restrained through the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. To connect corrugated tubing with I. D. 6,5 or 8,5 mm to the tubing connection (NPT 1/8” thread), just use the b.safe Corrugated Tubing Coupling M 514-.. on page 100.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread GL45 (DIN45)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps S40

b.safe Waste Caps S40 with Filling Funnel are the best choice for the collection of HPLC solvent waste. The freely turnable PTFE insert is equipped with the standard thread connectors UNF 1/4" and NPT 1/8" for connecting different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread S40.

The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

The PPS screw cap and the PTFE insert are extremely robust and resistant against a thermal or chemical load. Furthermore, they can be sterilized by autoclaving up to 200 °C and also easily be cleaned in the dish washer.

The number of connectors on the PTFE insert can easily be extended by adding a multiport adapter so that additional capillary tubing and tubes can be connected.

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps S40 are the perfect protection for the disposal of solvent waste.

b.safe Waste Caps S40

Material: **PTFE, PPS** I temperature resistance: **-20 °C to +200 °C** I chemical resistance: **+++ universel**

Screw cap made of PPS for canister thread S40, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF ¼"), Blind Fittings made of PFA to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8") and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included). Version and scope of delivery as per below chart.

	Number of tube connectors	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Cat. No.
A	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky-white)	0	M 340-01
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1 (milky-white)	1 x Ø 5,5 - 8 mm	M 340-03

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with OD 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. PFA Fittings in other colours and hose connectors for many inner diameters can be found from page 97.

b.safe APPROPRIATE

Hose Connectors Page 103
Hose connectors for different diameters

b.safe Order directly

Exhaust Filter Page 90
Economy pack for regular exchange.

Bottle thread S40 (DIN55 525)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps S50

The collection of all HPLC waste in the same container can result in harmful solvent mixtures. Protect yourself against harmful solvent vapours by using b.safe Waste Caps S50 even if you already have the results of your analysis.

A Viton® flat sealing provides tight closure of the collection container with S50 thread as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space.

The single outlet capillaries and tubes which transport the waste are connected to the thread connectors (UNF 1/4", NPT 1/8") on the PTFE-insert. The freely turnable PTFE insert allows a simple container exchange without disarranging the installed capillary tubing and tubes. All tubes and tubing are firmly and tightly fixed by Fittings with optimized inner cone and/or non-slip hose connectors.

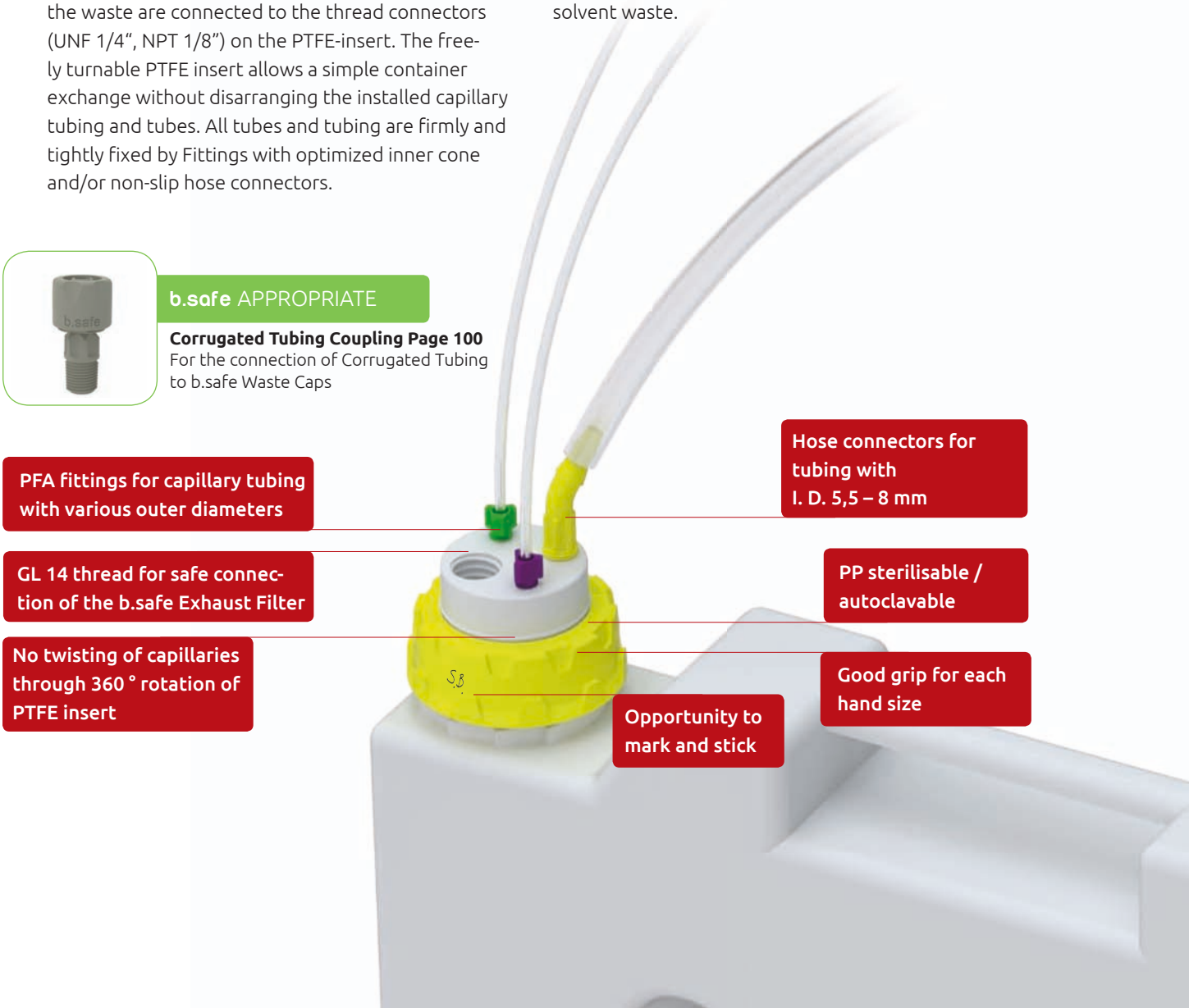
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

The PP screw cap and the PTFE insert are extremely robust and resistant against thermal or chemical load. Furthermore, they can easily be cleaned in the dish washer.

Combined with an Exhaust Filter, b.safe Waste Caps S50 are the perfect protection for the disposal of solvent waste.

b.safe APPROPRIATE

Corrugated Tubing Coupling Page 100
For the connection of Corrugated Tubing to b.safe Waste Caps



b.safe Waste Caps S50

Material: **PTFE, PP** | Temperature resistance: **-0 °C to +110 °C** |
Chemical resistance: **++ very good**

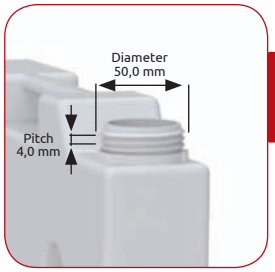
Screw cap made of PP for canister thread S50, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF ¼"), Blind Fittings to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8") and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included).
Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connector	Cat. No.
A	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky white, UNF 1/4")	0	M 350-01
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1 (milky white, UNF 1/4")	1 x Ø 5,5 - 8 mm	M 350-03
C	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	4 (milky white, UNF 1/4") 4 (white, NPT 1/8")	4 x Ø 5,5 - 8 mm	M 350-40

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with ID 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. PFA Fittings in other colours and hose connectors for many inner diameters can be found from page 97.

b.safe Order directly

Exhaust Filter Page 90
Economy pack for regular exchange.



Canister thread
S50 (KS 50)

Not sure if this cap fits?

Help for thread determination from page 168.

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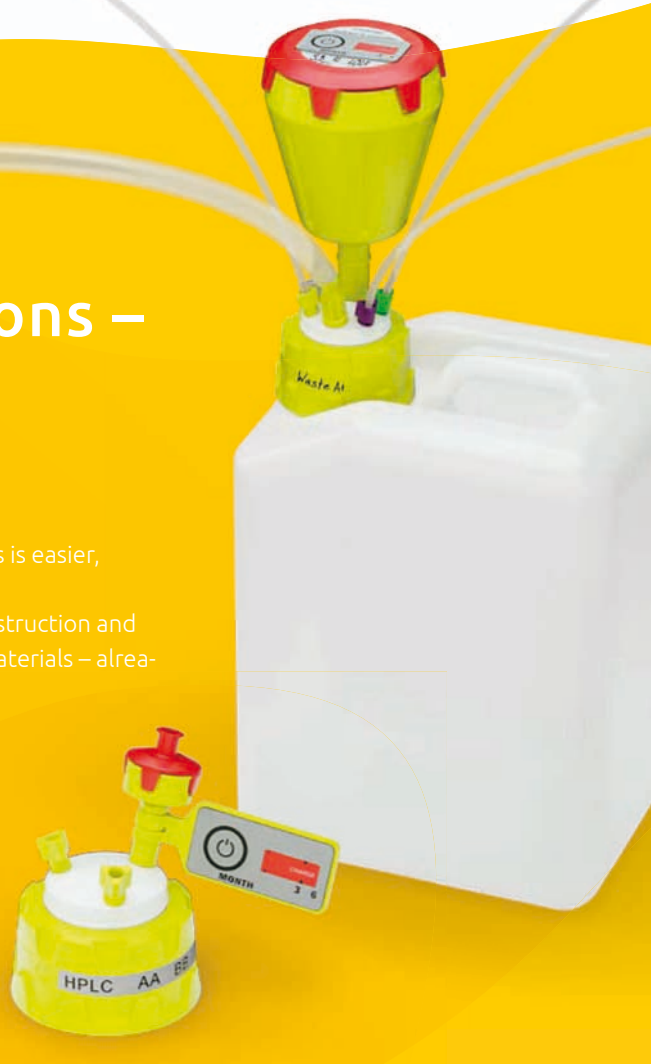


Sophisticated Safety Solutions for HPLC.

b.safe

Spontaneous questions and quick answers

Work in laboratories differs from day to day. Many factors determine if an experiment is successful or completely fails. I often need short-term and competent information on the equipment used in order to progress quickly. The b.safe experts with their concentrated knowledge of a manufacturer give answers and information at any time. Direct information at first hand via phone, mail, live chat or social media.

b.safe - is quick, precise and reliable – as I do work in my laboratory.

Sophisticated
Safety Solutions for HPLC.

b.safe Waste Caps S51

b.safe Waste Caps S51 are especially adapted to the requirements on the collection of solvent waste in HPLC. The PTFE-insert is equipped with several threads (UNF 1/4“, NPT 1/8”) for a direct connection of different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread S51. The freely turnable PTFE insert allows a simple container exchange without disarranging the installed capillary tubing and tubes.

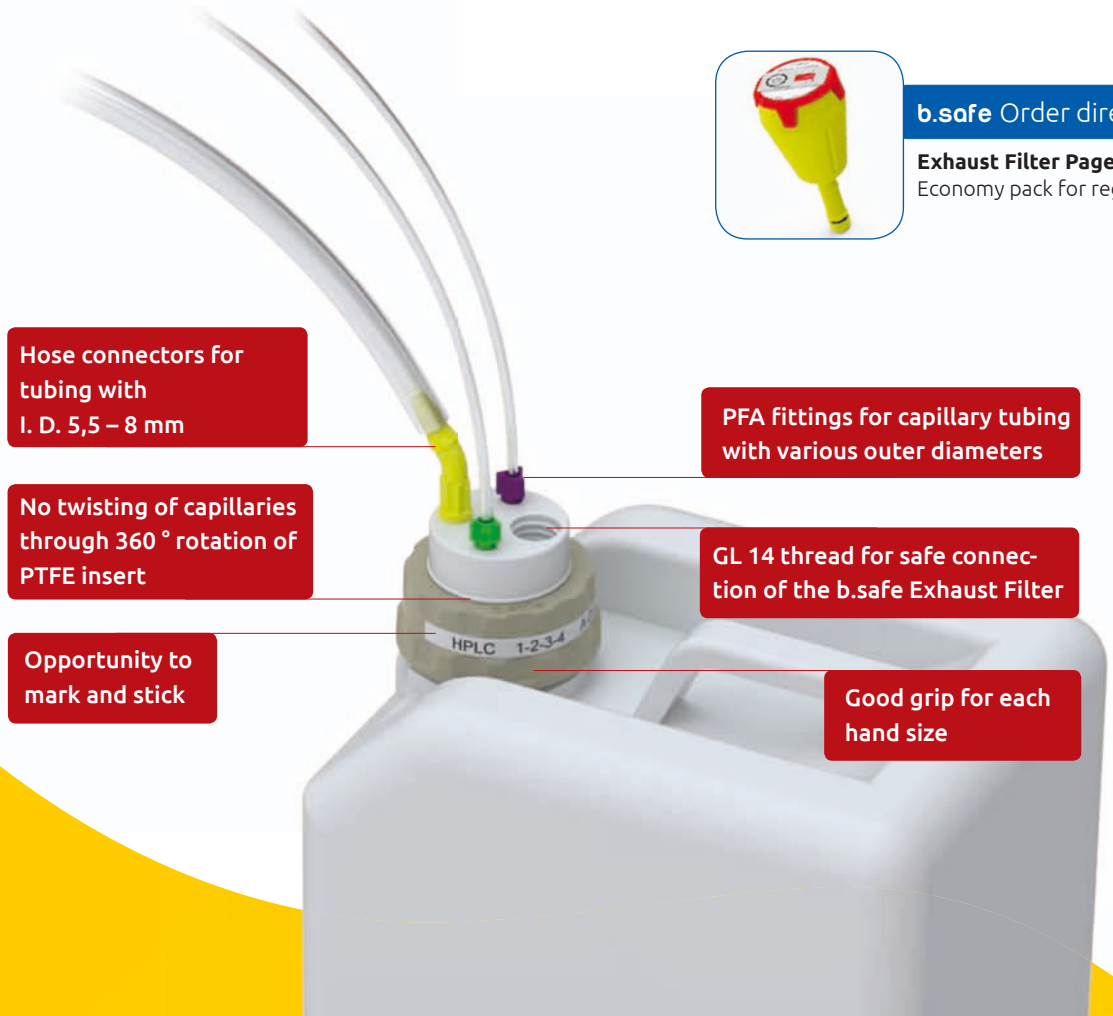
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

Using the available space in a lab is rather challenging. b.safe offers a solution for this task: use b.safe Adapters for Exhaust Filters for a space-saving installation of the Exhaust Filter (see page XXX).

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps S51 are the perfect protection for the disposal of solvent waste.

b.safe Order directly

Exhaust Filter Page 99
Economy pack for regular exchange.



b.safe Waste Caps S51

Material: **PTFE, PP** | Temperature resistance: **-0 °C to +110 °C** |
Chemical resistance: **++ very good**

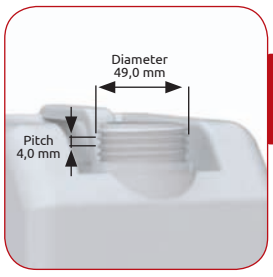
Screw cap made of PP for canister thread S51, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF ¼"), Blind Fittings made of PFA to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8") and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connector	Cat. No.
A	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky white)	0	M 351-01
B	2	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	1 (milky white)	1 x Ø 5,5 - 8 mm	M 351-03

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with OD 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. To connect corrugated tubing with I. D. 6,5 or 8,5 mm to the tubing connection (NPT 1/8" thread), just use the b.safe Corrugated Tubing Coupling M 514-.. on page 100.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread S51 (DIN 50)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps with Filling Funnel

S51

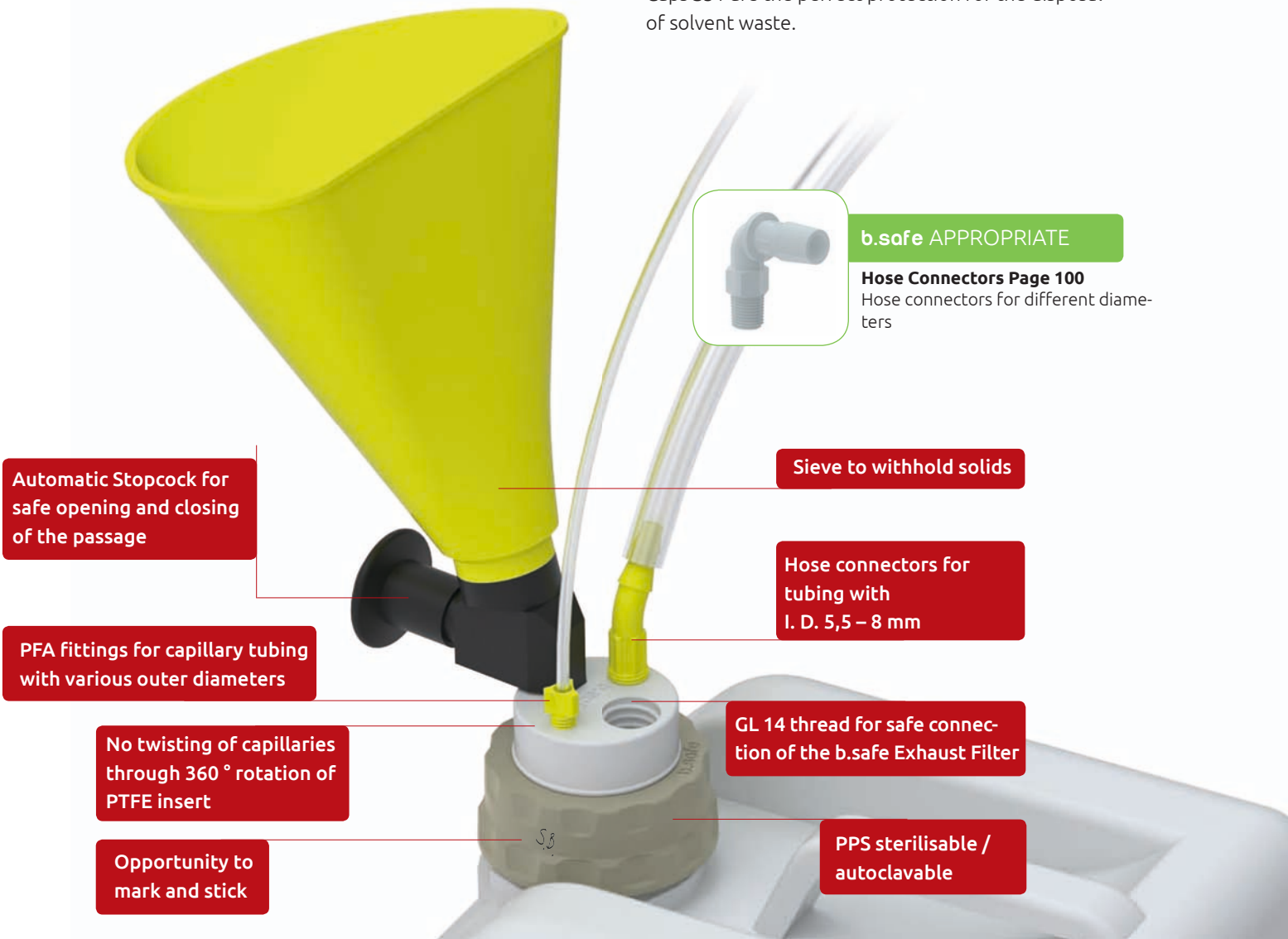
b.safe Waste Caps S51 with Filling Funnel are the best choice for the collection of HPLC solvent waste. The freely turnable PTFE insert is equipped with the standard thread connectors UNF 1/4“ and NPT 1/8” for connecting different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread S51.

Also liquid waste as for example produced for the preparation of samples can be directly filled into a collection container by using the permanently fixed Filling Funnel. The integrated stopcock reliably blocks the passage as protection against escaping vapours.

The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

The PP screw cap and the PTFE insert are extremely robust and resistant against thermal or chemical load.

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps S51 are the perfect protection for the disposal of solvent waste.



b.safe APPROPRIATE

Hose Connectors Page 100
Hose connectors for different diameters

b.safe Waste Caps S51 with Filling Funnel

Material: **PTFE, PP** | Temperature resistance: **-0 °C to +110 °C** |
Chemical resistance: **++ very good**

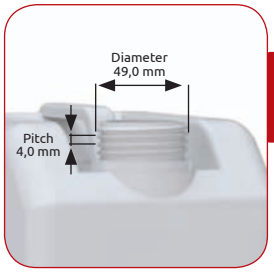
Screw cap made of PP for canister thread S51, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF ¼"), Blind Fittings made of PFA to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8"). Permanently fixed Filling Funnel made of PP with integrated automatic stopcock (the passage opens by pushing the grip and closes automatically as soon as the grip is loosened). 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connector	Cat. No.
A	1	1 x Ø 1,6 (green) 1 x Ø 2,2 (purple) 1 x Ø 3,2 (yellow)	1 (milky white)	1 x Ø 5,5 - 8 mm	M 351-25

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by either connecting tubing with ID 5,5 - 8 mm or directly from bottles or other containers by using the funnel. The integrated stopcock in the funnel avoids that harmful vapours can escape into the ambient air through the filling hole. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. To connect corrugated tubing with I. D. 6,5 or 8,5 mm to the tubing connection (NPT 1/8" thread), just use the b.safe Corrugated Tubing Coupling M 514-.. on page 100.

b.safe Order directly

Exhaust Filter Page 90
Economy pack for regular exchange.



Canister thread
S51 (DIN 50)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps S55

The collection of all HPLC waste in the same container can result in harmful solvent mixtures. Protect yourself against harmful solvent vapours by using b.safe Waste Caps S55 also after having finished your analysis.

A Viton® flat sealing provides tight closure of the collection container with S55 thread as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space.

The single outlet capillaries and tubes which transport the waste are connected to the thread connectors (UNF 1/4“, NPT 1/8”) on the PTFE-insert. The freely turnable PTFE insert allows a simple container exchange without disarranging the installed capillary tubing and tubes. All tubes and tubing are firmly and tightly fixed by Fittings with optimized inner cone and/or non-slip hose connectors.

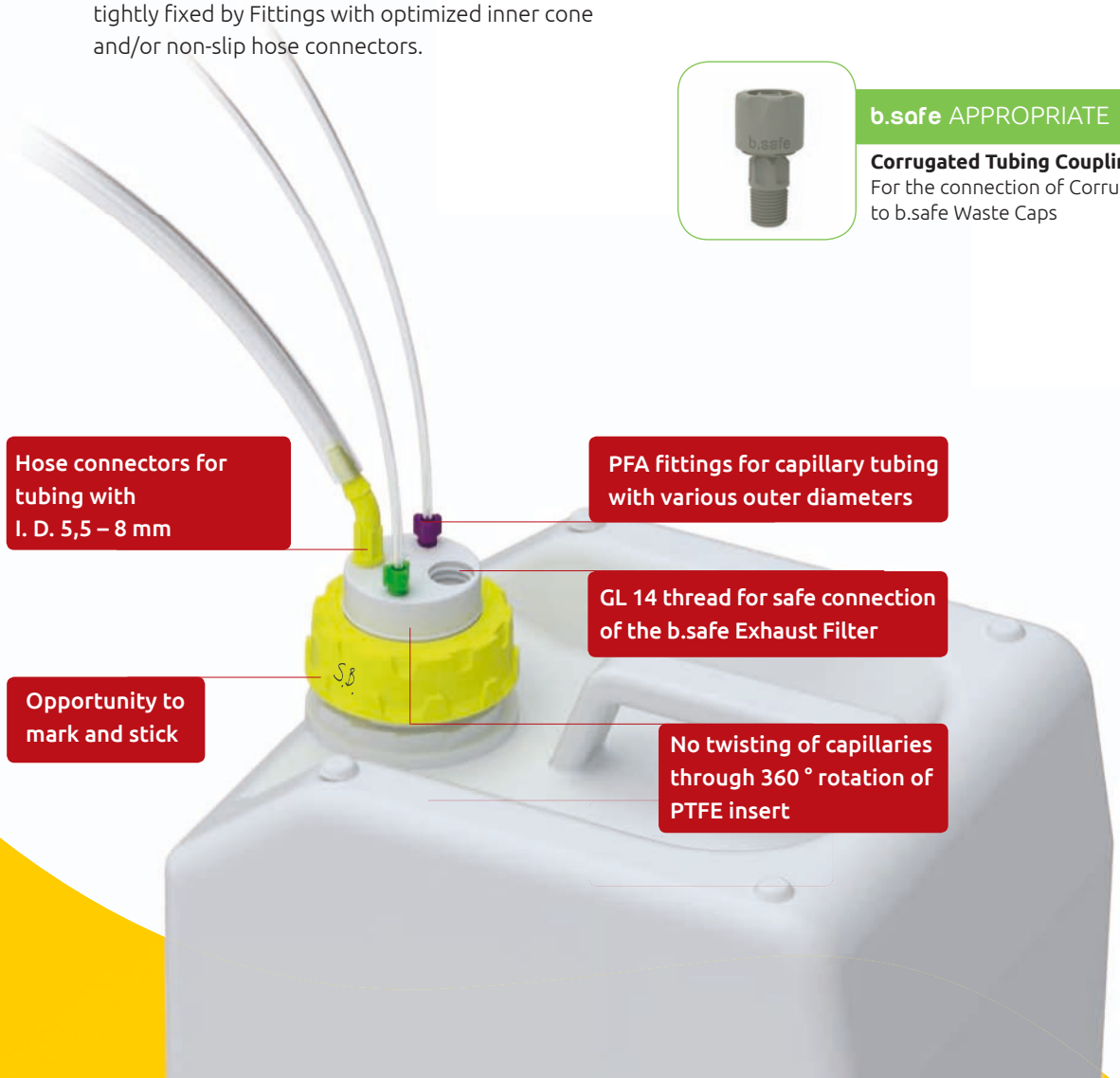
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

The PP screw cap and the PTFE insert are extremely robust and resistant against thermal or chemical load. Furthermore, they can easily be cleaned in the dish washer.

Combined with an Exhaust Filter, b.safe Waste Caps S55 are the perfect protection for the disposal of solvent waste.

b.safe APPROPRIATE

Corrugated Tubing Coupling Page 100
For the connection of Corrugated Tubing to b.safe Waste Caps



b.safe Waste Caps S55

Material: **PTFE, PP** | Temperature resistance: **-0 °C to +110 °C** |
Chemical resistance: **++ very good**

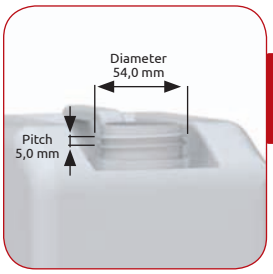
Screw cap made of PP for canister thread S55, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF ¼"), Blind Fittings to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8") and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included).
Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connector	Cat. No.
A	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky white, UNF 1/4")	0	M 355-01
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1 (milky white, UNF 1/4")	1 x Ø 5,5 - 8 mm	M 355-03
C	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	4 (milky white, UNF 1/4") 4 (white, NPT 1/8")	4 x Ø 5,5 x 8 mm	M 355-40

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with OD 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. PFA Fittings in other colours and hose connectors for many inner diameters can be found from page 97.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread S55 (DIN 51)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps with Filling Funnel

S55

b.safe Waste Caps S55 with Filling Funnel are the best choice for the collection of HPLC solvent waste. The freely turnable PTFE insert is equipped with the standard thread connectors UNF 1/4" and NPT 1/8" for connecting different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread S55.

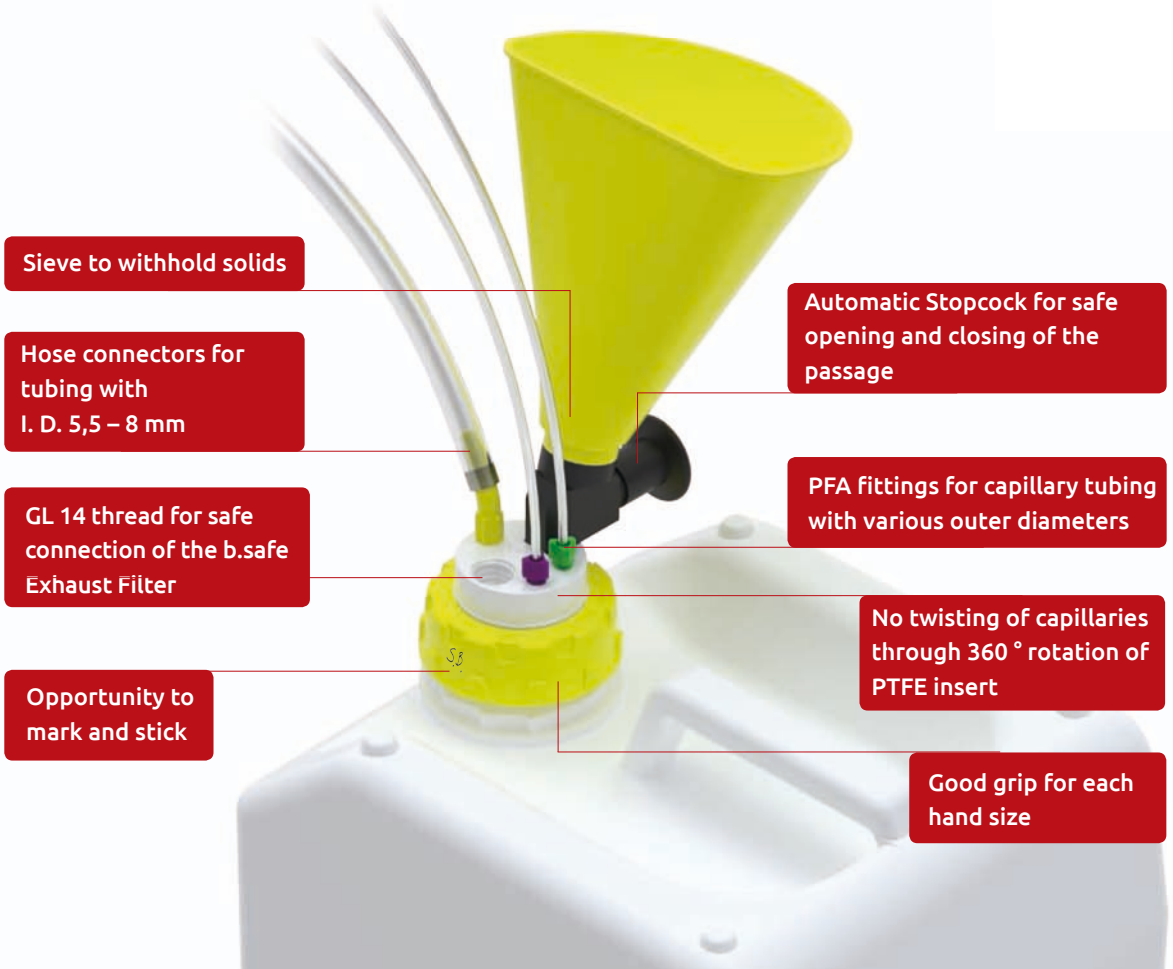
Also liquid waste as for examble produced for the preparation of samples can be directly filled into a collection container by using the permanently fixed Filling Funnel. The integrated stopcock reliably blocks the passage as protection against escaping vapours.

Choose one of the offered Filling Funnel designs: Version "Stopcock with Grip" where the passage opens by turning the grip and the grip position indicates if the stopcock is closed. The funnel of this version is generously measured for a good liquid drain. The sieve can be removed.

In the version "Automatic Stopcock", the passage is opened by pushing the grip. As long as the grip is pushed, the passage remains open. As soon as the grip is loosened, the passage is closed automatically. The integrated sieve cannot be removed.

The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps S55 are the perfect protection for the disposal of solvent waste.



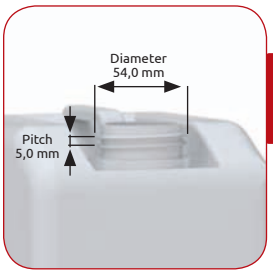
b.safe Waste Caps S55 with Filling Funnel

Material: **PTFE, PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

Screw cap made of PP for S55 thread, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (thread UNF 1/4“), Blind Fittings made of PFA to close unused connections, 1 hose connector for tube I. D. 5,5 - 8 mm (thread NPT 1/8“) and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included in the scope of delivery). Permanently fixed Filling Funnel PP with integrated stopcock. Choose the stopcock between the versions “Stopcock with grip”, where the passage opens through turning the grip and the grip position shows if the stopcock is closed, or “Automatic stopcock” where the passage opens through pushing the grip and closes automatically if the grip is loosened. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Stopcock Grip	Stopcock Automatic	Cat.Nr.
A	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1	1 x Ø 5,5 - 8 mm		●	M 355-25
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1	1 x Ø 5,5 - 8 mm	●		M 355-35

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can easily inserted in the waste container; the conical seal cone clamps the tubing and seals the connection safely. Through the connection of tubing with I. D. 5,5 - 8 mm respectively through the Filling Funnel directly from flasks, large amounts of liquids can be disposed of. The integrated stopcock avoids leakage of harmful vapours through the filling hole. Solvent vapours from the escaping air during filling are restrained through the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. To connect corrugated tubing with I. D. 6,5 or 8,5 mm to the tubing connection (NPT 1/8” thread), just use the b.safe Corrugated Tubing Coupling M 514-.. on page 100.



Canister thread S55 (DIN 51)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps S60

b.safe Waste Caps S60 are especially adapted to the requirements on the collection of solvent waste in HPLC. The PTFE-insert is equipped with several threads (UNF 1/4“, NPT 1/8”) for a direct connection of different tubing diameters by means of Fittings or Hose Connectors. The version with the maximum number of connectors allows to install in total four capillaries and four tubes with I. D. 5,5-8 mm at the same time.

All tubes and tubing are firmly and tightly fixed by Fittings with optimized inner cone and/or non-slip hose connectors. The freely turnable PTFE insert allows a simple container exchange without disarranging the installed capillary tubing and tubes.

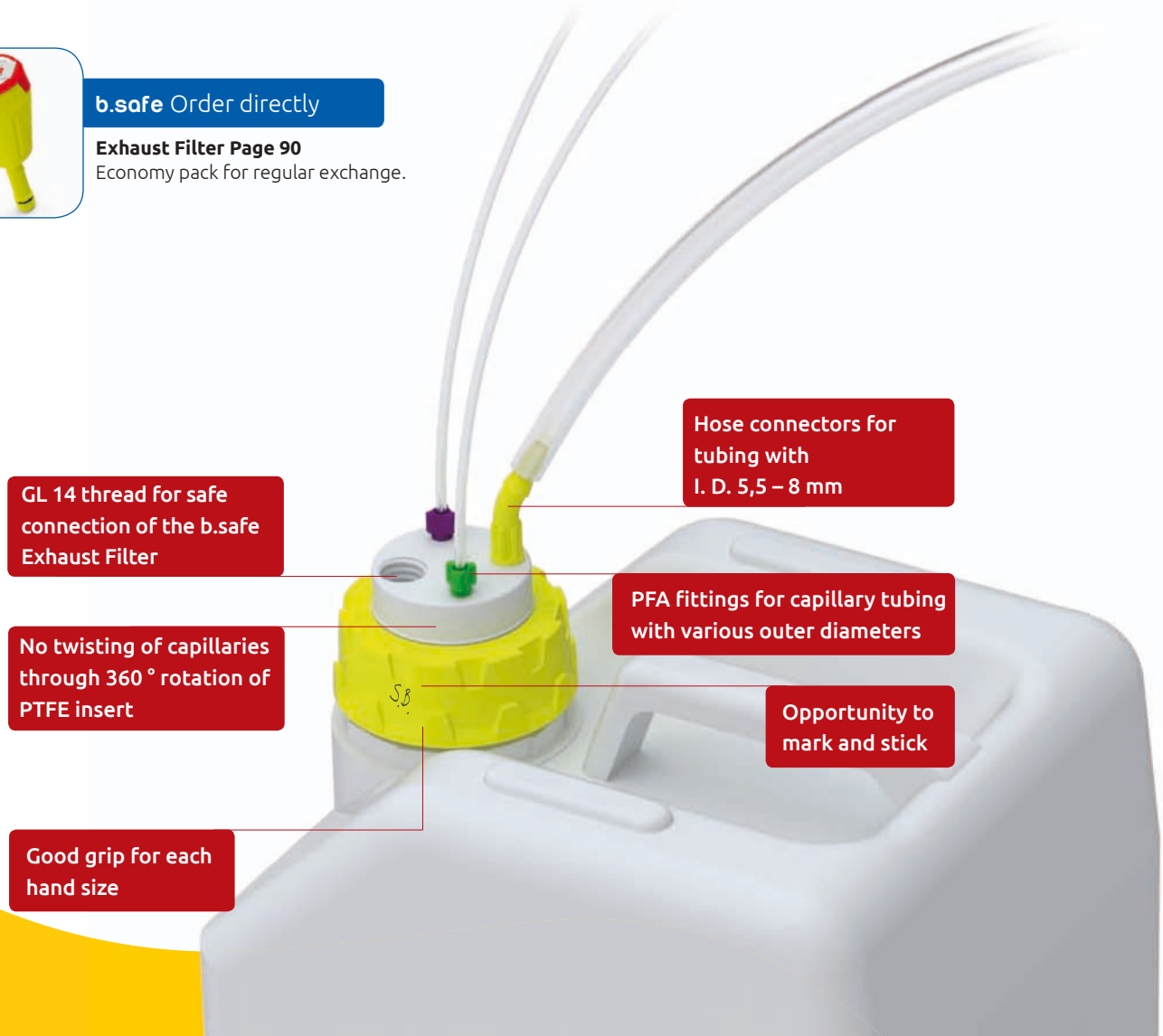
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

The PPS screw cap and the PTFE insert are extremely robust and resistant against thermal or chemical load.

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps S60 are the perfect protection for the disposal of solvent waste.

b.safe Order directly

Exhaust Filter Page 90
Economy pack for regular exchange.



b.safe Waste Caps S60

Material: **PTFE, PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

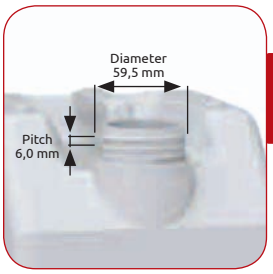
Screw cap made of PP for canister thread S60, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF ¼"), Blind Fittings to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8") and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included).
Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connector	Cat. No.
A	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky white, UNF 1/4")	0	M 360-01
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1 (milky white, UNF 1/4")	1 x Ø 5,5 - 8 mm	M 360-03
C	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	4 (milky white, UNF 1/4") 4 (white, NPT 1/8")	4 x Ø 5,5 - 8 mm	M 360-40

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with OD 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. To connect corrugated tubing with I. D. 6,5 or 8,5 mm to the tubing connection (NPT 1/8" thread), just use the b.safe Corrugated Tubing Coupling M 514-.. on page 100.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread S60 (DIN60/61)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps with Filling Funnel

S60

b.safe Waste Caps S60 with Filling Funnel are the best choice for the collection of HPLC solvent waste. The freely turnable PTFE insert is equipped with the standard thread connectors UNF 1/4" and NPT 1/8" for connecting different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread S60.

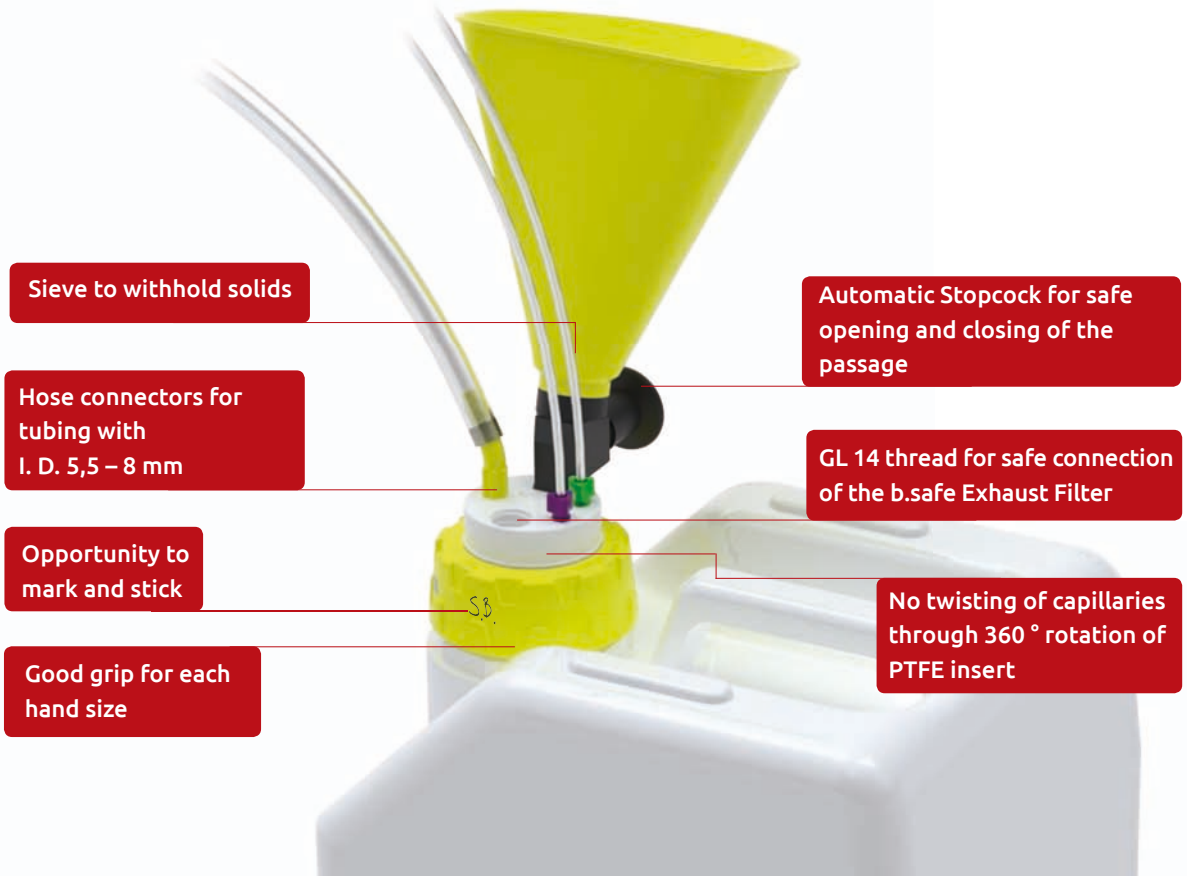
Also liquid waste as e. g. produced for the preparation of samples can be directly filled into a collection container by using the permanently fixed Filling Funnel. The integrated stopcock reliably blocks the passage as protection against escaping vapours.

Choose one of the offered Filling Funnel designs: Version "Stopcock with grip" where the passage opens by turning the grip and the grip position indicates if the stopcock is closed. The generously measured funnel provides a good liquid drain. The sieve can be removed.

In the version "Automatic Stopcock", the passage is opened by pushing the grip. As long as the grip is pushed, the passage remains open. As soon as the grip is loosened, the passage is closed automatically. The integrated sieve cannot be removed.

The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps S60 are the perfect protection for the disposal of solvent waste.



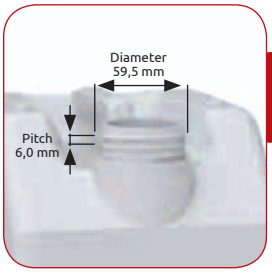
b.safe Waste Caps S60 with Filling Funnel

Material: **PTFE, PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

Screw cap made of PP for S60 thread, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (thread UNF 1/4“), Blind Fittings made of PFA to close unused connections, 1 hose connector for tube I. D. 5,5 - 8 mm (thread NPT 1/8“) and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included in the scope of delivery). Permanently with fixed Filling Funnel with integrated stopcock. Choose the stopcock between the versions “Stopcock with grip”, where the passage opens through turning the grip and the grip position shows if the stopcock is closed, or “Automatic stopcock” where the passage opens through pushing the grip and closes automatically if the grip is loosened. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Stopcock Grip	Stopcock Automatic	Cat. No.
A	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1	1 x Ø 5,5 - 8 mm		●	M 360-25
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1	1 x Ø 5,5 - 8 mm	●		M 360-35

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can easily inserted in the waste container; the conical seal cone clamps the tubing and seals the connection safely. Through the connection of tubing with I. D. 5,5-8 mm respectively through the Filling Funnel directly from flasks, large amounts of liquids can be disposed. The integrated stopcock avoids leakage of harmful vapours through the filling hole. Solvent vapours from the escaping air during filling are restrained through the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. To connect corrugated tubing with I. D. 6,5 or 8,5 mm to the tubing connection (NPT 1/8” thread), just use the b.safe Corrugated Tubing Coupling M 514-.. on page 100.



Canister thread S60 (DIN60/61)

Not sure if this cap fits?

Help for thread determination from page 168.

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b.safe Waste Caps S65

b.safe Waste Caps S65 are especially adapted to the requirements on the collection of solvent waste in HPLC. The PTFE-insert is equipped with several threads (UNF 1/4“, NPT 1/8”) for a direct connection of different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread S65. The freely turnable PTFE insert allows a simple container exchange without disarranging the installed capillary tubing and tubes.

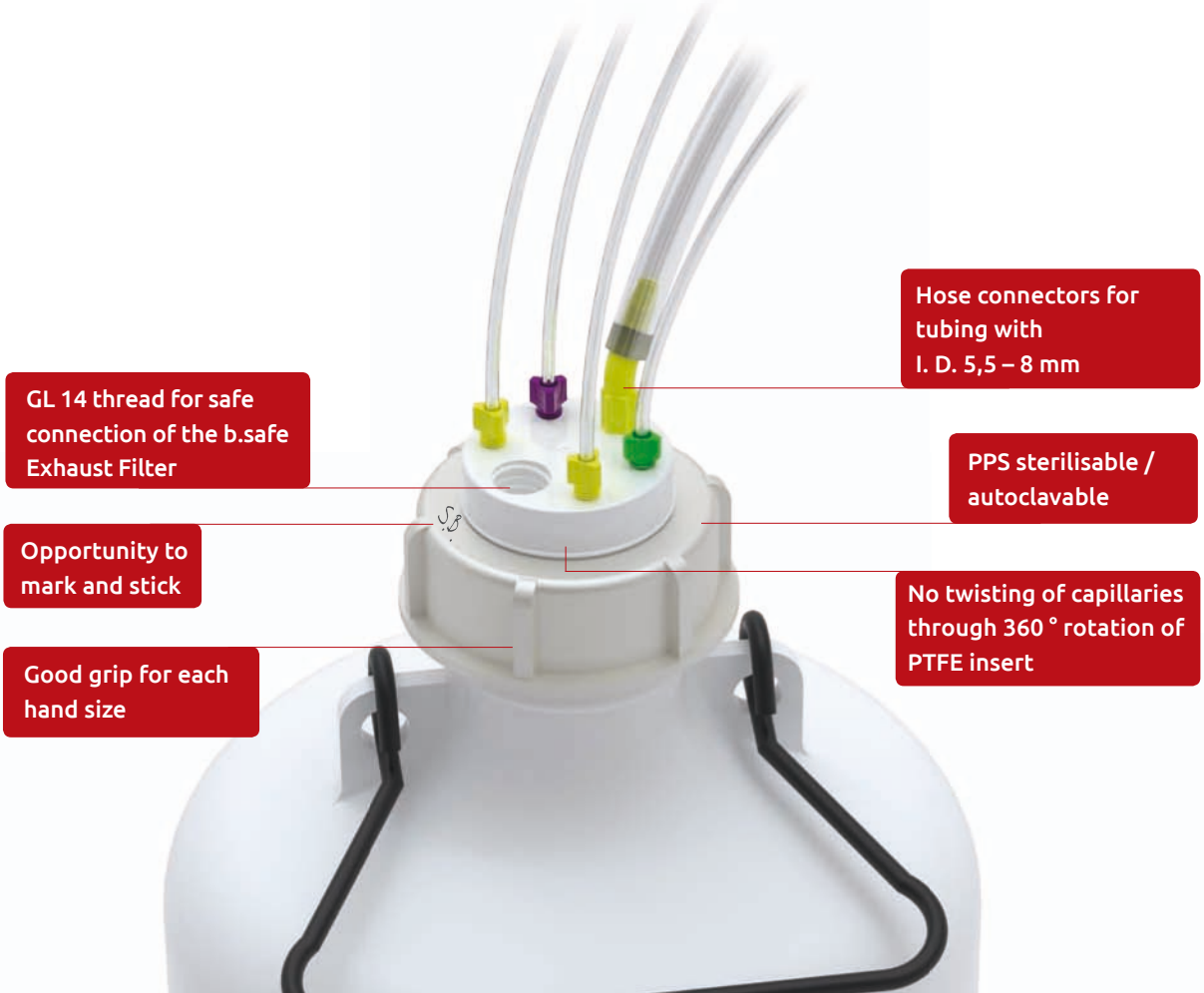
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

Using the available space in a lab is rather challenging. b.safe offers a solution for this task: use b.safe Adapters for Exhaust Filters for a space-saving installation of the Exhaust Filter (see page 94).

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps S65 are the perfect protection for the disposal of solvent waste.

b.safe APPROPRIATE

Corrugated Tubing Coupling Page 100
For the connection of Corrugated Tubing to b.safe Waste Caps



b.safe Waste Caps S65

Material: **PTFE, PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **++ very good**

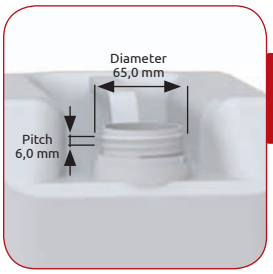
Screw cap made of PE for thread S65, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF 1/4“), Blind Fittings made of PFA to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8“) and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	5	5 x Ø 1,6 (green) 5 x Ø 2,2 (purple) 5 x Ø 3,2 (yellow)	4 (milky white)	-	M 365-01
B	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky white)	1 x Ø 5,5 - 8 mm	M 365-03

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with OD 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. PFA Fittings in other colours and hose connectors for many inner diameters can be found from page 97.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread
S65

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps S70

b.safe Waste Caps S70 are especially adapted to the requirements on the collection of solvent waste in HPLC. The PTFE-insert is equipped with several threads (UNF 1/4“, NPT 1/8”) for a direct connection of different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread S70. The freely turnable PTFE insert allows a simple container exchange without disarranging the installed capillary tubing and tubes.

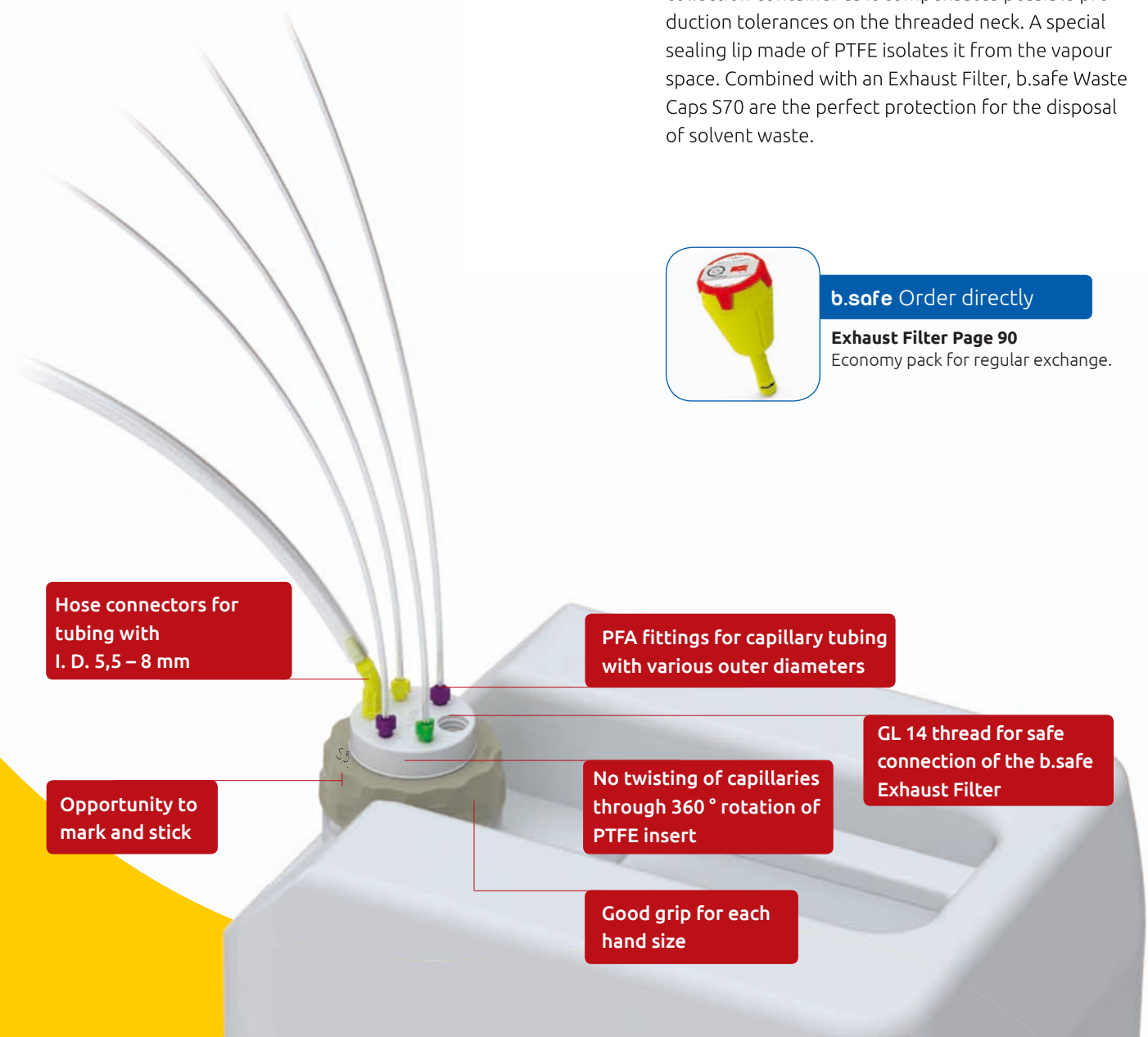
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

Using the available space in a lab is rather challenging. b.safe offers a solution for this task: use b.safe Adapters for Exhaust Filters for a space-saving installation of the Exhaust Filter (see page 94).

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps S70 are the perfect protection for the disposal of solvent waste.

b.safe Order directly

Exhaust Filter Page 90
Economy pack for regular exchange.



b.safe Waste Caps S70

Material: **PTFE, PP** | Temperature resistance: **-0 °C to +110 °C** |
Chemical resistance: **++ very good**

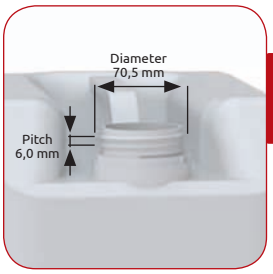
Screw cap made of PP for canister thread S70/71, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF ¼"), Blind Fittings made of PFA to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8") and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connector	Cat. No.
A	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky white)	0	M 371-01
B	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky white)	1 x Ø 5,5 - 8 mm	M 371-03

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with OD 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. To connect corrugated tubing with I. D. 6,5 or 8,5 mm to the tubing connection (NPT 1/8" thread), just use the b.safe Corrugated Tubing Coupling M 514-.. on page 100.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread S70 (DIN 70/71)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps with Filling Funnel

S70

b.safe Waste Caps S70 with Filling Funnel are the best choice for the collection of HPLC solvent waste. The freely turnable PTFE insert is equipped with the standard thread connectors UNF 1/4“ and NPT 1/8” for connecting different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread S70.

Also liquid waste as for examble produced for the preparation of samples can be directly filled into a collection container by using the permanently fixed Filling Funnel. The integrated stopcock reliably blocks the passage as protection against escaping vapours.

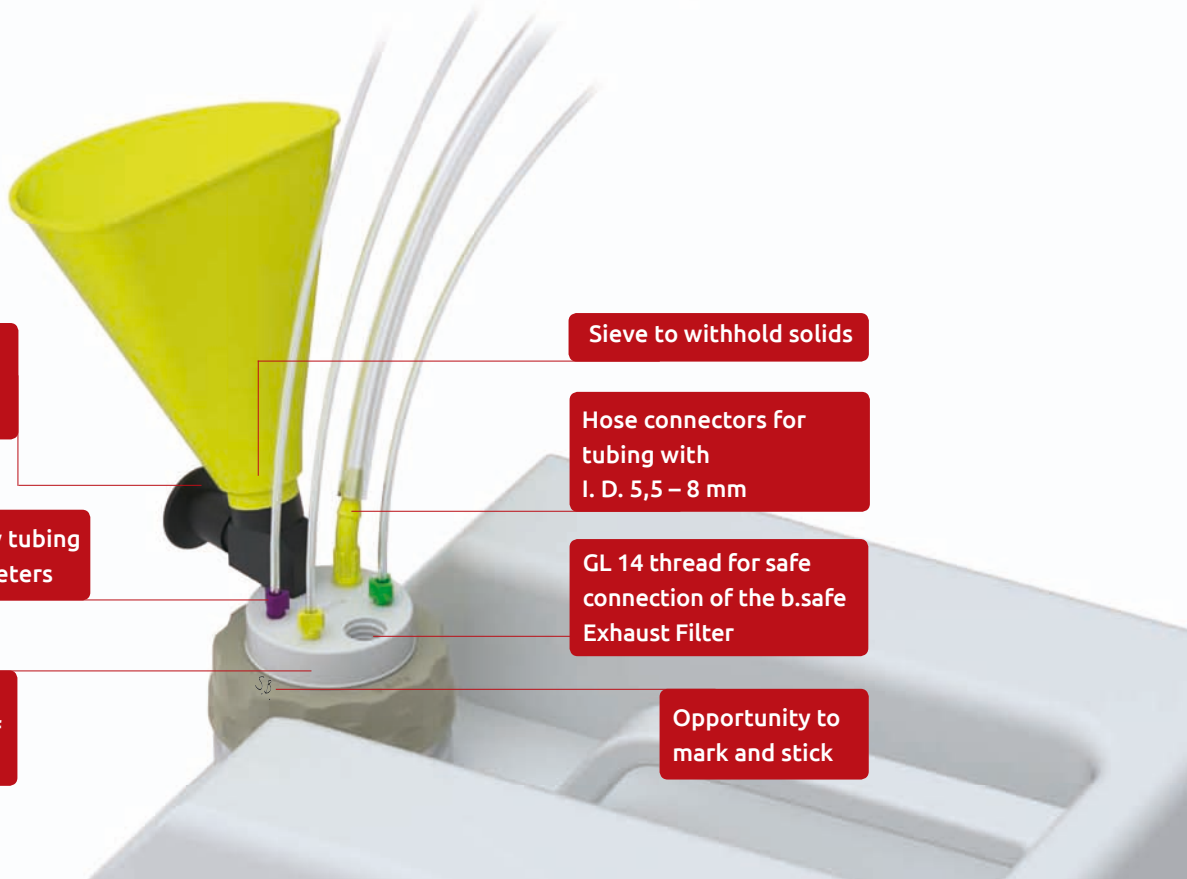
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

The PP screw cap and the PTFE insert are extremely robust and resistant against thermal or chemical load.

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps S70 are the perfect protection for the disposal of solvent waste.

b.safe APPROPRIATE

Hose Connectors Page 103
Hose connectors for different diameters



b.safe Waste Caps S70 with Filling Funnel

Material: **PTFE, PP** | Temperature resistance: **-0 °C to +110 °C** |
Chemical resistance: **++ very good**

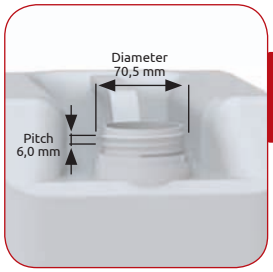
Screw cap made of PP for canister thread S70/71, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF ¼"), Blind Fittings made of PFA to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8"). Permanently fixed Filling Funnel made of PP with integrated automatic stopcock (the passage opens by pushing the grip and closes automatically as soon as the grip is loosened). 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connector	Cat. No.
	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky white)	1 x Ø 5,5 - 8 mm	M 371-25

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by either connecting tubing with ID 5,5 - 8 mm or directly from bottles or other containers by using the funnel. The integrated stopcock in the funnel avoids that harmful vapours can escape into the ambient air through the filling hole. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. To connect corrugated tubing with I. D. 6,5 or 8,5 mm to the tubing connection (NPT 1/8" thread), just use the b.safe Corrugated Tubing Coupling M 514-.. on page 100.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread
S70 (DIN 70/71)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps S90

b.safe Waste Caps S90 are the best choice for the collection of HPLC solvent waste. The freely turnable PTFE insert is equipped with the standard thread connectors UNF 1/4“ and NPT 1/8” for connecting different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread S90.

The number of connectors on the PTFE insert can easily be extended by adding a multiport adapter so that additional capillary tubing and tubes can be connected.

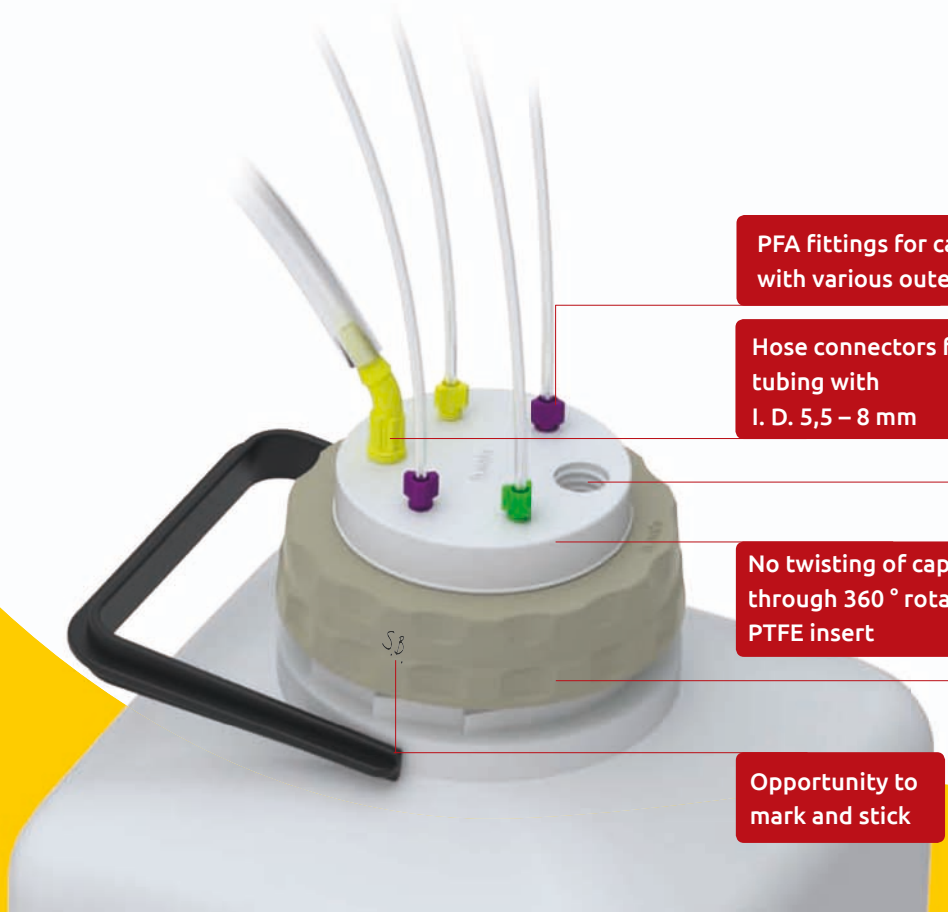
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

Using the available space in a lab is rather challenging. b.safe offers a solution for this task: use b.safe Adapters for Exhaust Filters for a space-saving installation of the Exhaust Filter (see page 94).

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps S70 are the perfect protection for the disposal of solvent waste.

b.safe APPROPRIATE

Corrugated Tubing Coupling **Page 100**
For the connection of Corrugated Tubing to b.safe Waste Caps



b.safe Waste Caps S90

Material: **PTFE, PP** | Temperature resistance: **-0 °C to +110 °C** |
Chemical resistance: **++ very good**

Screw cap made of PP for canister thread S90, free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF ¼"), Blind Fittings made of PFA to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8") and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connector	Cat. No.
A	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky white)	0	M 390-01
B	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky white)	1 x Ø 5,5 - 8 mm	M 390-03

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with OD 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. To connect corrugated tubing with I. D. 6,5 or 8,5 mm to the tubing connection (NPT 1/8" thread), just use the b.safe Corrugated Tubing Coupling M 514-.. on page 100.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.

Canister thread
S90 (DIN 90)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps B53

b.safe Waste Caps B53 are especially adapted to the requirements on the collection of solvent waste in HPLC. The PTFE-insert is equipped with several threads (UNF 1/4“, NPT 1/8”) for a direct connection of different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread B53. The freely turnable PTFE insert allows a simple container exchange without disarranging the installed capillary tubing and tubes.

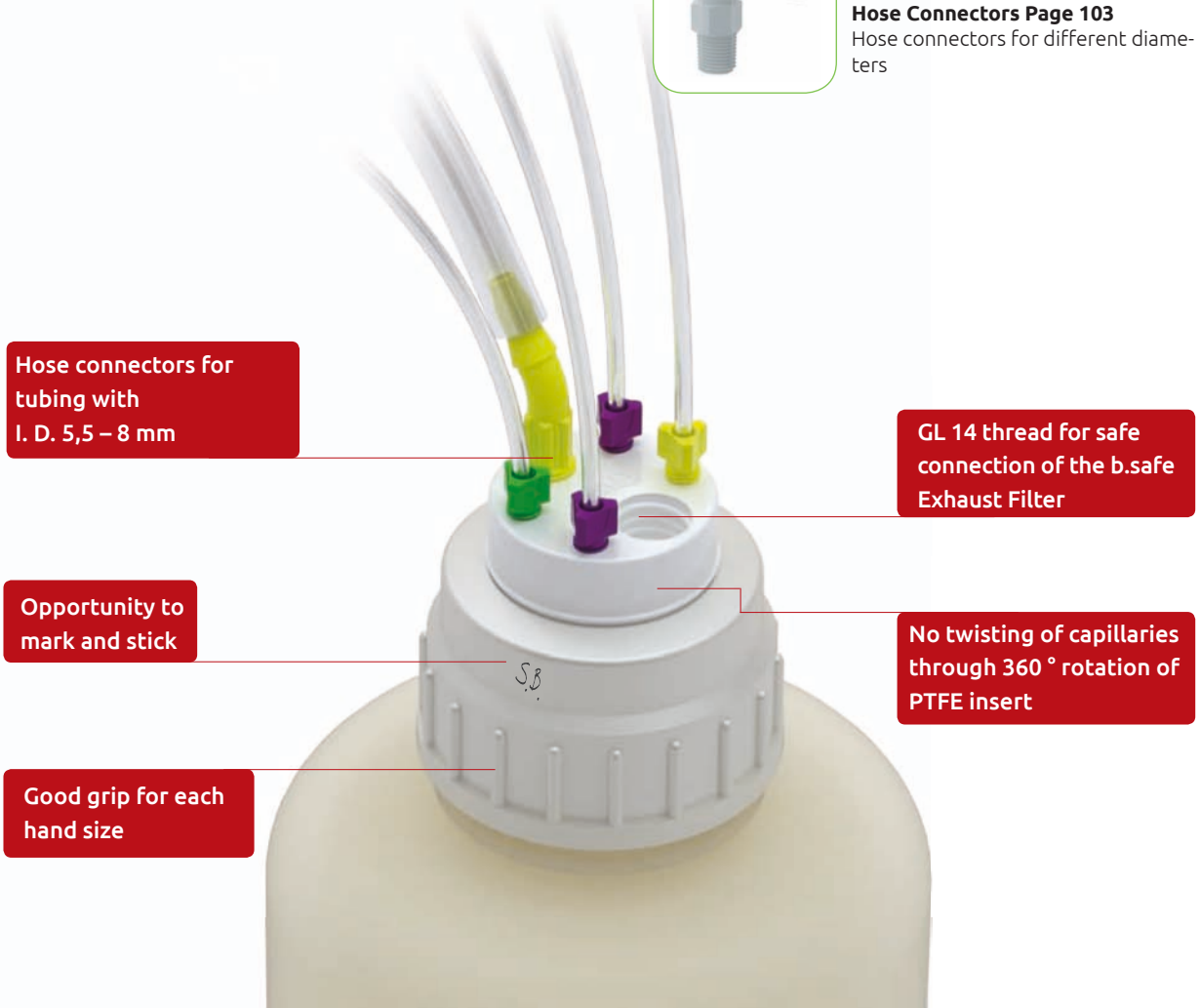
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

Using the available space in a lab is rather challenging. b.safe offers a solution for this task: use b.safe Adapters for Exhaust Filters for a space-saving installation of the Exhaust Filter (see page 94).

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps B53 are the perfect protection for the disposal of solvent waste.

b.safe APPROPRIATE

Hose Connectors Page 103
Hose connectors for different diameters



b.safe Waste Caps B53

Material: **PTFE, PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **++ very good**

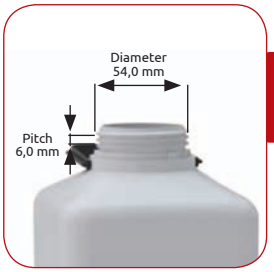
Screw cap made of PE for thread B53 (NALGENE®-thread), free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF 1/4"), Blind Fittings made of PFA to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8") and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky-white)	1 x Ø 5,5 - 8 mm	M 353-01

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with OD 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. PFA Fittings in other colours and hose connectors for many inner diameters can be found from page 97.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread
B53

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps with Filling Funnel

B53

b.safe Waste Caps B53 with Filling Funnel are the best choice for the collection of HPLC solvent waste. The freely turnable PTFE insert is equipped with the standard thread connectors UNF 1/4“ and NPT 1/8” for connecting different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread B53.

Also liquid waste as for examble produced for the preparation of samples can be directly filled into a collection container by using the permanently fixed Filling Funnel. The integrated stopcock reliably blocks the passage as protection against escaping vapours. Choose one of the offered Filling Funnel designs: Version “Stopcock with grip” where the passage opens by turning the grip and the grip position indicates if the stopcock is closed The generously measured funnel provides a good liquid drain. The sieve can be removed.

In the version “Automatic Stopcock”, the passage is opened by pushing the grip. As long as the grip is pushed, the passage remains open. As soon as the grip is loosened, the passage is closed automatically. The integrated sieve cannot be removed.

The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps B53 are the perfect protection for the disposal of solvent waste.

b.safe Waste Caps B53 with Filling Funnel

Material: **PTFE, PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **++ very good**

Screw cap made of PE for thread B53 (NALGENE®-thread), free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (thread UNF 1/4"), Blind Fittings made of PFA to close unused connections, 1 hose connector for tube I. D. 5,5 -8 mm (thread NPT 1/8") and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included in the scope of delivery). Permanently with fixed Filling Funnel with integrated stopcock. Choose the stopcock between the versions "Stopcock with grip", where the passage opens through turning the grip and the grip position shows if the stopcock is closed, or "Automatic stopcock" where the passage opens through pushing the grip and closes automatically if the grip is loosened. Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Stopcock Grip	Stopcock Automatic	Cat. No.
A	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (violett) 2 x Ø 3,2 (yellow)	1	1 x Ø 5,5 - 8 mm		●	M 353-25
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (violett) 2 x Ø 3,2 (yellow)	1	1 x Ø 5,5 - 8 mm	●		M 353-35

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can easily inserted in the waste container; the conical seal cone clamps the tubing and seals the connection safely. Through the connection of tubing with I. D. 5,5 - 8 mm respectively through the Filling Funnel directly from flasks, large amounts of liquids can be disposed of. The integrated stopcock avoids leakage of harmful vapours through the filling hole. Solvent vapours from the escaping air during filling are restrained through the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. To connect corrugated tubing with I. D. 6,5 or 8,5 mm to the tubing connection (NPT 1/8" thread), just use the b.safe Corrugated Tubing Coupling M 514 on page 100.

Canister thread B53

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps B63

b.safe Waste Caps B63 are especially adapted to the requirements on the collection of solvent waste in HPLC. The PTFE-insert is equipped with several threads (UNF 1/4“, NPT 1/8”) for a direct connection of different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be led directly into a collection container with thread B63. The freely turnable PTFE insert allows a simple container exchange without disarranging the installed capillary tubing and tubes.

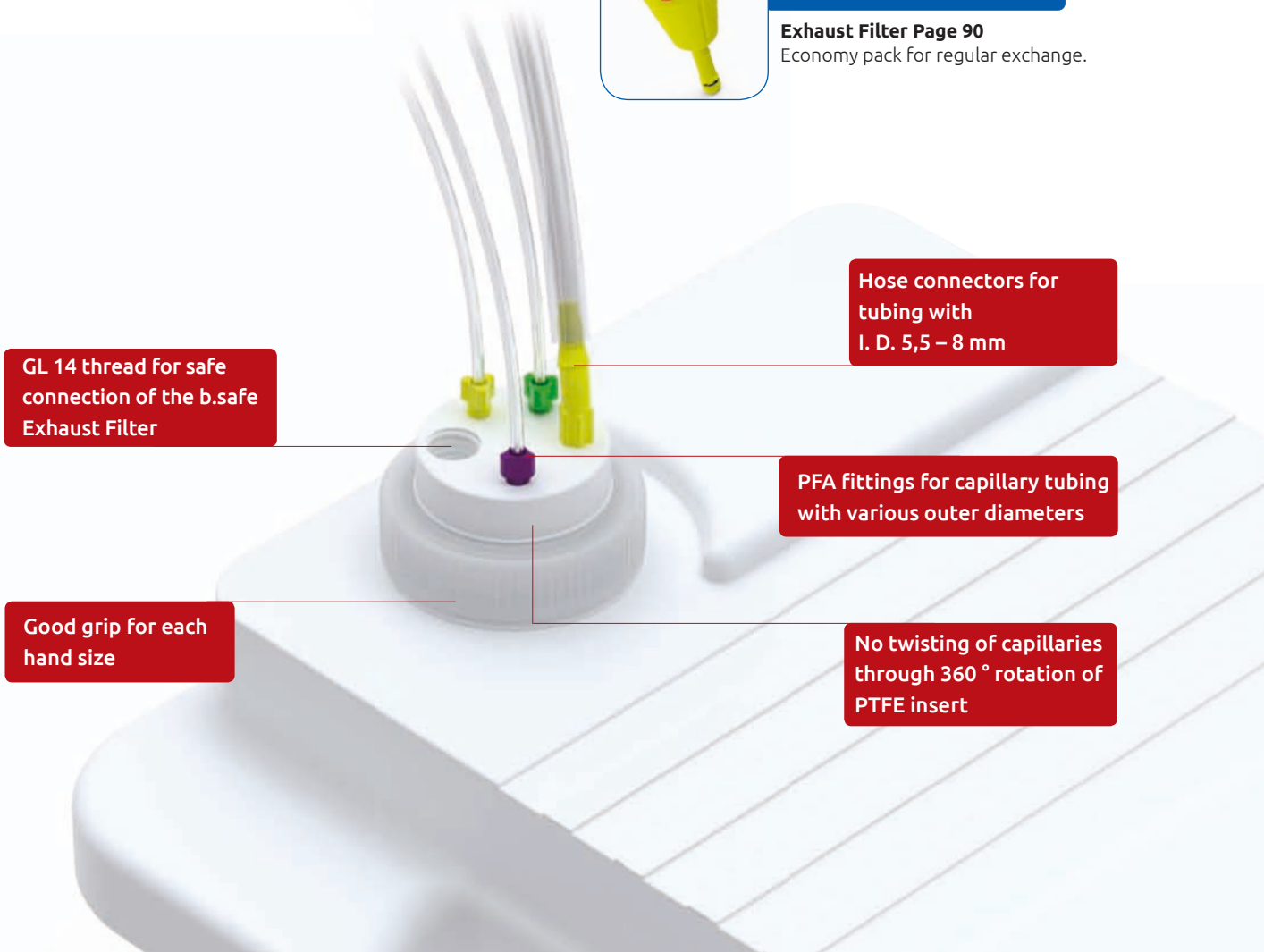
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

Using the available space in a lab is rather challenging. b.safe offers a solution for this task: use b.safe Adapters for Exhaust Filters for a space-saving installation of the Exhaust Filter (see page 64).

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps B63 are the perfect protection for the disposal of solvent waste.

b.safe Order directly

Exhaust Filter Page 90
Economy pack for regular exchange.



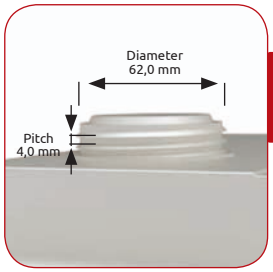
b.safe Waste Caps B63

Material: **PTFE, PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **++ very good**

Screw cap made of PE for thread B63 (NALGENE®-thread), free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF 1/4"), Blind Fittings made of PFA to close unused connections, 1 hose connector for tubing I. D. 5,5 - 8 mm (thread NPT 1/8") and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky white)	-	M 363-01
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1 (milky white)	1 x Ø 5,5 - 8 mm	M 363-03
C	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky white)	1 x Ø 5,5 - 8 mm	M 363-30

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with OD 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. PFA Fittings in other colours and hose connectors for many inner diameters can be found from page 97.



Canister thread B63

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps B83

b.safe Waste Caps B83 are especially adapted to the requirements on the collection of solvent waste in HPLC. The PTFE-insert is equipped with several threads (UNF 1/4“, NPT 1/8”) for a direct connection of different tubing diameters by means of Fittings or Hose Connectors. The HPLC waste can be lead directly into a collection container with thread B83. The freely turnable PTFE insert allows a simple container exchange without disarranging the installed capillary tubing and tubes.

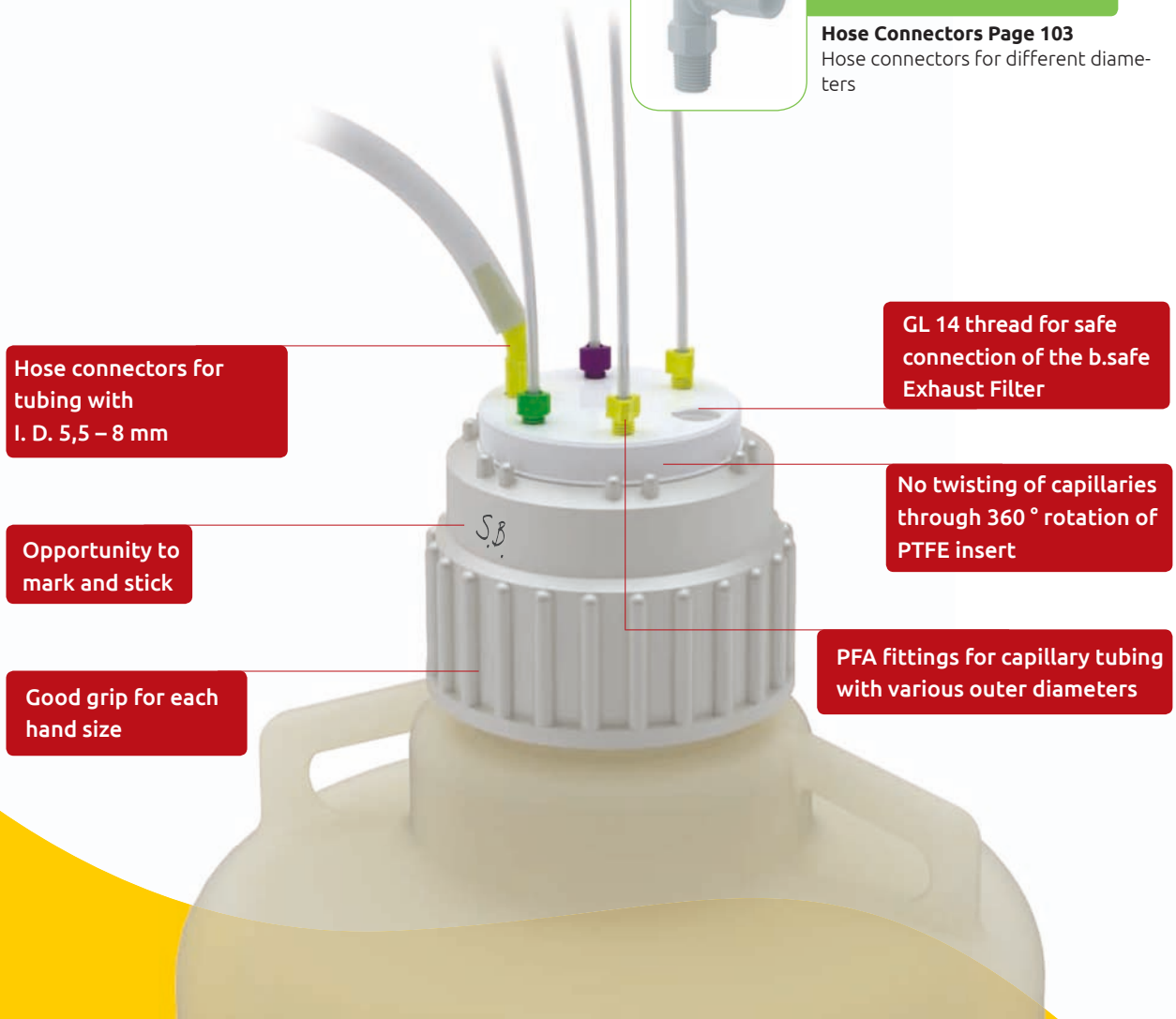
The connector GL14 is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the collection container.

Using the available space in a lab is rather challenging. b.safe offers a solution for this task: use b.safe Adapters for Exhaust Filters for a space-saving installation of the Exhaust Filter (see page 94).

A Viton® flat sealing provides tight closure of the collection container as it compensates possible production tolerances on the threaded neck. A special sealing lip made of PTFE isolates it from the vapour space. Combined with an Exhaust Filter, b.safe Waste Caps B83 are the perfect protection for the disposal of solvent waste.

b.safe APPROPRIATE

Hose Connectors Page 103
Hose connectors for different diameters



b.safe Waste Caps B83

Material: **PTFE, PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **++ very good**

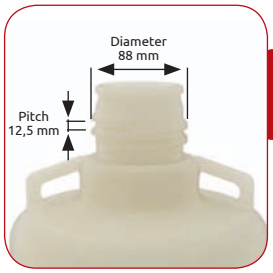
Screw cap made of PE for thread B83 (NALGENE®-thread), free movable insert made of PTFE. With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm thread UNF 1/4“), Blind Fittings made of PFA to close unused connections, 1 hose connector for tubing I. D. 5, 5- 8 mm (thread NPT 1/8“) and 1 connector to screw in a b.safe Exhaust Filter (thread GL14, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky white)	1 x Ø 5,5 - 8 mm	M 383-01

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. With b.safe Fittings made of PFA, tubes can be easily inserted in the waste container, the conical seal cone clamps the tubing and seals the connection safely. Large amounts of liquids can be collected by connecting tubing with OD 5,5 - 8 mm. Solvent vapours from the escaping air during filling are restrained by the Exhaust Filter containing activated carbon. The service life of the filter can be easily monitored through either activating the display on the lid and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand. PFA Fittings in other colours and hose connectors for many inner diameters can be found from page 97.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread B83

Not sure if this cap fits?

Help for thread determination from page 168.

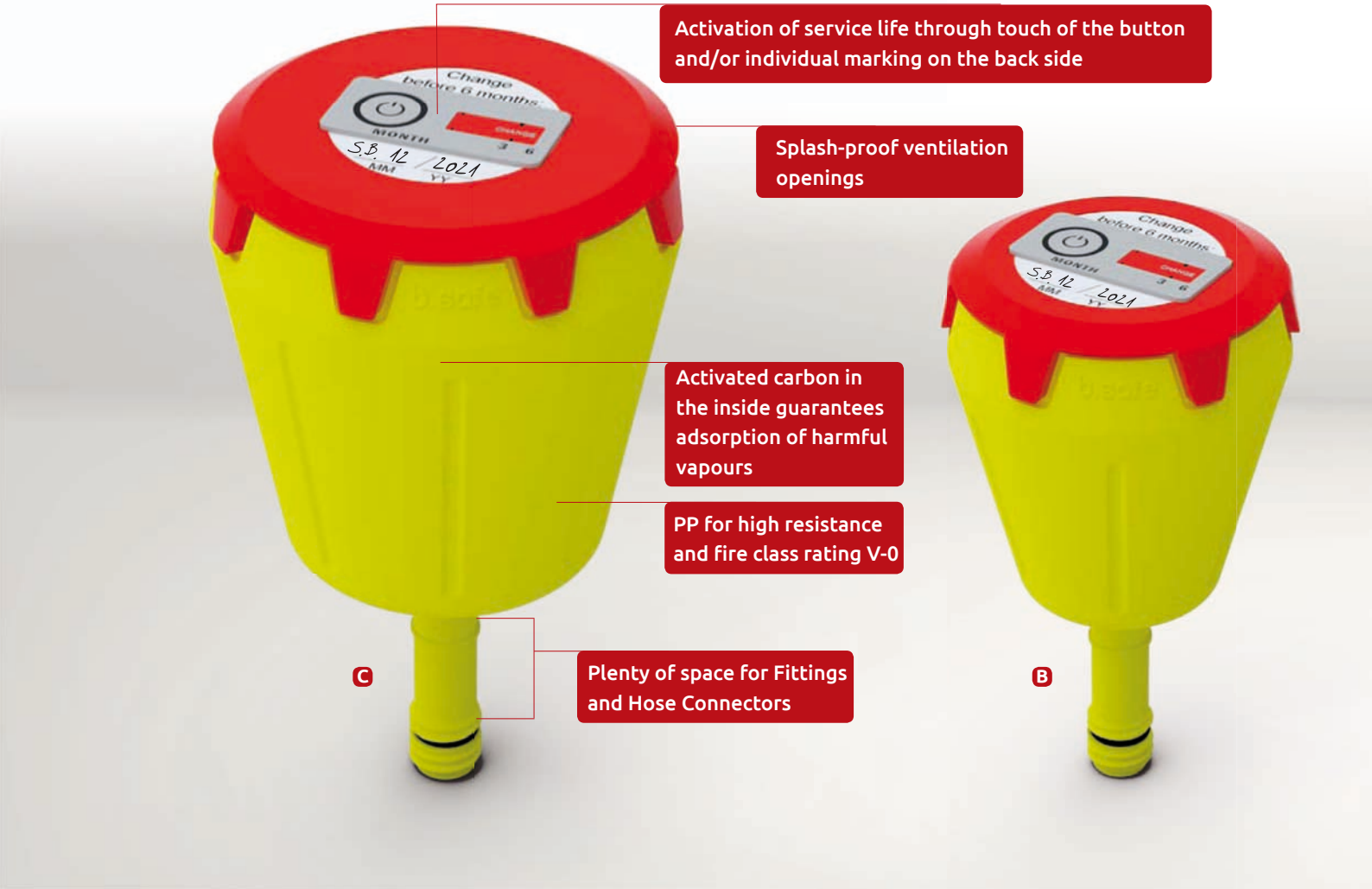
b.safe Exhaust Filters

If different solvent residues come into one waste container, harmful vapours arise. In this case, b.safe Exhaust Filters with integrated activated carbon and optimized flow behaviour have to be chosen.

With a large inner adsorption surface and low dust formation, the activated carbon binds all toxic substances reliably without clumping and only releases pure air into the environment. Depending on the filter size with a service life of up to six months! The practical service life indicator on the lid shows the necessary exchange date.

b.safe Exhaust Filters are made of PP and, thus, withstand high temperatures and have a fire class rating V-0 as per UL 94. Furthermore, they are dimensionally stable and can be easily screwed due to their rough surface and the optimized design with gripping grooves.

The cylindrical screw-in support at the beginning of the thread as well as the O-ring position and the inclined filtering body help to install the Exhaust Filter quickly. Through the inclined filtering body, many fittings and capillaries can be connected. The O-ring guarantees tight connection to b.safe Waste Caps.



Exhaust Filter with connection thread for Barrels

Exhaust Filters for vessels larger than 60l from **page 92**

b.safe Exhaust Filters

Material: **PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

Filter body made of PP with connector (thread GL14) for b.safe Waste Caps. Cap with aeration openings and service life indicator having a title block to monitor service life. Filling made of activated carbon for adsorption of solvents.

	Size	Service life	Packing unit	Cat. No.
A	Small	3 months	2 pcs.	M 506-01
B	Medium	6 months	2 pcs.	M 506-02
C	Large	6 months	2 pcs.	M 506-03

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. The activated carbon in the b.safe Exhaust Filter restrains solvent vapours from the escaping air during filling. The service life of the filter can be easily monitored through either activating the display on the cap and exchanging the filter in case of completely red colouring or documentation of the exchange date by hand.
We recommend the following filter sizes: Size Small for up to 5 litres, size Medium for 5-10 litres, and size Large for more than 10 litres.

A

Ergonomic design and grooves for better grip

Optimized position of the O-ring for easy screwing

Better **b.safe**

No disarranging or additional installation: Filtering body and lid are tightly connected

b.safe Exhaust Filters for Barrels

Protect yourself from harmful vapours that escape from waste barrels by using b.safe Exhaust Filters for Barrels. With a big inner adsorption surface and low dust formation, the activated carbon binds all toxic substances reliably without clumping and releases only pure air to the environment.
Depending on the barrel capacity, you can choose between to exhaust filter sizes: Size XL for barrels with a capacity of 60 up to 100 litres and size XXL for barrels bigger than 100 litres. The service life of 9 to 12 months depends on the filter size. Just use the big label field on the lid to note the exchange date individually.
The filter housing in PE provides good chemical resistance and stability. Besides the ventilation openings, the lid is equipped with functional gripping grooves for an easy installation of the filter.

b.safe Exhaust Filters for Barrels

Material: **PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **+ good**

Filter body made of PE with connection thread for direct installation on barrels. Lid with aeration openings and label field to monitor service life. Filling made of activated carbon for adsorption of solvents.

	Size	Thread for barrel connection	Service life	Packing unit	Cat. No.
A	XL	G 3/4“	9 months	1 pcs.	M 506-21
B	XXL	Mauser 2“ (BCS 70x6)	12 months	1 pcs.	M 506-23
C	XXL	Combined thread G 2“ + Tri-Sure 2“	12 months	1 pcs.	M 506-25

Application:
Safe disposal of solvents without leakage of harmful solvent vapours. The activated carbon in the b.safe Exhaust Filter restrains solvent vapours from the escaping air during filling. The service life of the filter can be easily monitored through documentation of the exchange date by hand in the label field on the lid upon installation. We recommend the following filter sizes: Size XL for 60-100 litres, size XXL for barrels having 100 litres and more.

Better **b.safe**

Exhaust Filter XXL with combined thread

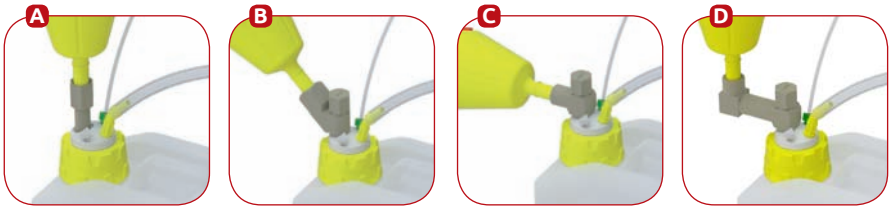
b.safe Adaptors for Exhaust Filter

Material: **PP** | Temperature resistance: **-0 °C to +110 °C** |
Chemical resistance: **++ very good**

Adaptor for space saving installation of the b.safe Exhaust Filter on b.safe Waste Caps.

	Version	Suitable for	Cat. No.
A	Straight	Exhaust filter connection (GL 14 thread)	M 502-01
B	1x angle 45°	Exhaust filter connection (GL 14 thread)	M 502-02
C	1x angle 90°	Exhaust filter connection (GL 14 thread)	M 502-03
D	2x angle 90°	Exhaust filter connection (GL 14 thread)	M 502-04

Application:
Enlarge the space on b.safe Waste Caps with b.safe Adaptors for Exhaust Filters and facilitate the installation of capillaries and tubing. With an adapter 1x 90°, cat. no. M 502-03, you reduce the installation height of the Waste Cap with mounted Exhaust Filter on your canister.



b.safe Adaptors for capillary connection

Adaptor for assembly of an Exhaust Filter (GL 14 thread) on a capillary connection (UNF 1/4" thread) of threads of b.safe Caps and Waste Caps.

	Suitable for	Transition to	Material	Cat. No.
A	Capillary connection (UNF 1/4" thread)	Exhaust Filter (GL 14 thread)	PP	M 615-20

Application:
Extension of b.safe Caps by a connector for Exhaust Filter and use as Waste Caps.

b.safe Adaptors for Exhaust Filter Connection

Adaptor for installation of capillaries with b.safe Fittings at the exhaust filter connection of the b.safe Waste Caps.

	Suitable for	Transition to	Material	Cat. No.
A	Exhaust filter connection (GL 14)	Capillary connection (UNF 1/4“ thread)	PTFE	M 516-01
B	Exhaust filter connection (GL 14)	Capillary connection (UNF 1/4“ thread)	PE-conductive	M 516-05
C	Exhaust filter connection (GL 14)	closed	PTFE	M 501-45

Application:
Suitable b.safe Fittings for different capillary diameters are separately available (see Cat. No. M 501-.. on page 97).

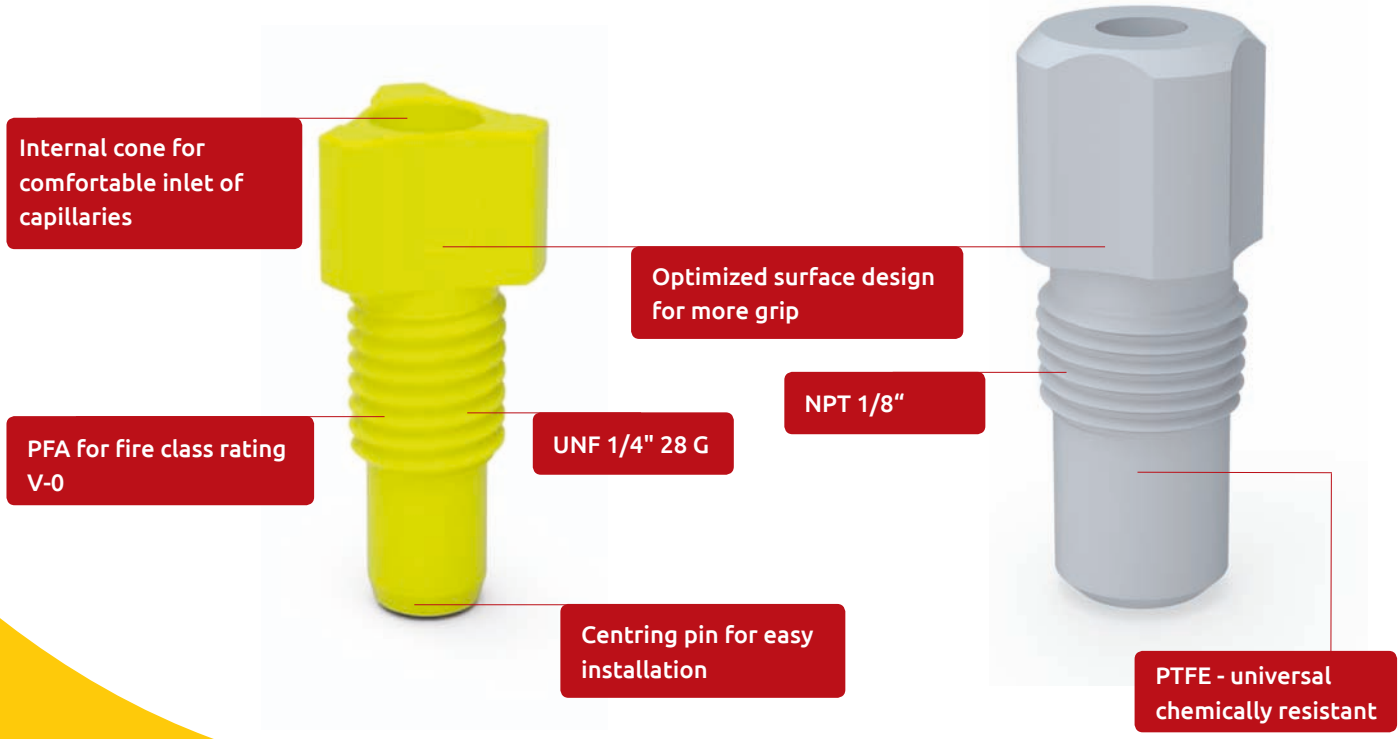
b.safe Fittings und Blind Fittings

Either if you extract solvents or collect waste: In order to connect capillaries perfectly respectively close unused connectors, b.safe Fittings, b.safe Fittings Preparative and b.safe Blind fittings have to be used. They are made of fluoroplastics (PFA and PTFE) and have high chemical and thermal resistance. Their male threads exactly fit onto b.safe Caps and b.safe Waste Caps. Their ergonomic head form with internal cone simplifies gripping and turning to lead in tubes and capillaries into a bottle and hold them safely.

b.safe Fittings made of PFA are available in different colours for a clear and simple application.

When choosing the fittings, please consider the thread on your cap besides the outer diameter of your tubing: Capillaries with O. D. up to 3,2 mm can be lead into the bottle through the capillary connection with b.safe Fittings with UNF 1/4“ thread. Tubing with O. D. 4,0 to 6,35 mm require a b.safe Fitting Preparative with NPT 1/8“ thread.

b.safe Blind fittings are neutral in colour but have an important reason as unused connectors on your b.safe Caps and b.safe Waste Caps can be closed tightly. Thus, expensive eluents cannot escape and foreign particles cannot reach the solvent. If you have a waste collection container, solvent vapours cannot escape.



b.safe Fittings

Material: **PFA** | Temperature resistance: **-200 °C to +260 °C** |
Chemical resistance: **+++ universal**

Fittings made of PFA to fix tubing in the capillary connectors (thread UNF 1/4“ 28G) of b.safe Caps and b.safe Waste Caps. The conical seal cone clamps the tubing and seals the connection safely.

For Tubing O. D.	Colour	Packing unit	Cat. No.
1,6 mm (1/16")	green	10 pcs.	M 501-06
2,2 mm (7/8")	purple	10 pcs.	M 501-11
2,2 mm (7/8")	grey	10 pcs.	M 501-12
3,2 mm (1/8")	milky-white	10 Stück	M 501-15
3,2 mm (1/8")	blue	10 pcs.	M 501-16
3,2 mm (1/8")	red	10 pcs.	M 501-17
3,2 mm (1/8")	yellow	10 pcs.	M 501-18

b.safe Fittings Preparative

Material: **PTFE** | Temperature resistance: **-200 °C to +250 °C** |
Chemical resistance: **+++ universal**

Fittings made of PTFE to fix tubing in the tubing connectors (thread NPT 1/8“) of b.safe Caps. The conical seal cone clamps the tubing and tightens at the connector.

For tubing O. D. mm	Packing unit		Cat. No.
4,0	10 pcs.		M 510-01
4,76 (3/16“)	10 pcs.		M 510-02
6,0	10 pcs.		M 510-03
6,35 (1/4“)	10 pcs.		M 510-04

Application:
For connection of tubing O. D. 4,0 to 6,35 mm to the tubing connectors of b.safe Preparative Caps (see Cat. No. M 144-.. on page 15), suitable for throughput in preparative HPLC. Compatible with the tubing connector on b.safe Waste Caps (from page 48) to collect solvent waste.

b.safe Blind Fittings

Material: **PFA, PTFE** | Temperature resistance: **-200 °C to +250 °C** |
Chemical resistance: **+++ universal**

For tight closure of unused connectors on b.safe Caps and b.safe Waste Caps. With ergonomic gripping surface or knurl for easy assembly. The version with ground joint has an integrated nut to loosen stuck ground joints.

	Suitable for	Material	Packing unit	Cat. No.
A	Capillary Connector (thread UNF 1/4“)	PFA milky white	10 pieces	M 501-01
B	Exhaust Filter (thread GL 14)	PTFE white	1 piece	M 501-45
C	Hose Connector (thread NPT 1/8“)	PTFE white	1 piece	M 501-50
D	Ground Joint (NS 29/32)	PTFE white	1 piece	M 501-55

Application:
For tight closure of unused connectors on b.safe Caps and b.safe Waste Caps. With ergonomic gripping surface or knurl for easy assembly. The version with ground joint has an integrated nut to loosen stuck ground joints.

b.safe Mounting Key

Material: **POM** I Temperature resistance: **-30 °C to +100 °C** I
Chemical resistance: **++ very good**

Inner shape fits the outer shape of b.safe Fittings for capillary tubing. Lateral slot to lead through tubing, gripping surface to tighten or loosen b.safe Fittings on b.safe Caps and Waste Caps. Packing unit: 1 piece.

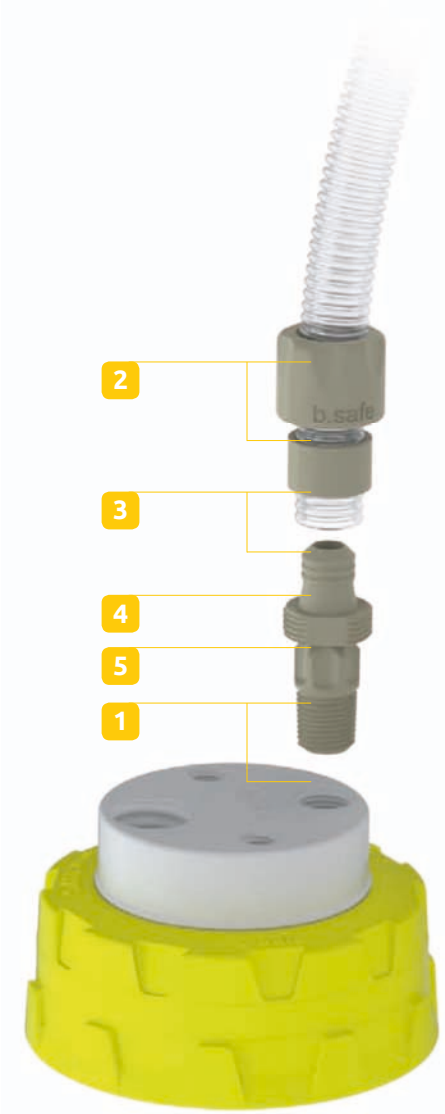
	For b.safe Fittings O. D. mm		Cat. No.
	1,6 / 2,2 / 3,2		M 542-01

Application:
Tightening: Put the fitting onto the tubing and position it in the requested connector. Lead in the tubing on the requested height. Put the Mounting Key and tighten the fitting. For disassembly, just put the Mounting Key onto the tubing and the fitting that is to be loosened, turn and you are ready.

b.safe Corrugated Tubing Coupling

b.safe products provide solutions for many demands, also for tight and leak-free connections of corrugated tubing as supplied e.g. with HPLC devices of the manufacturers Agilent or Thermo Scientific. It is not possible to get a tight connection on waste caps if you use standard hose connectors with these hard-walled, inflexible tubes.

You cope perfectly with this challenge by using b.safe Corrugated Tubing Couplings. With this special screw joint you get a tight connection between corrugated tubing and the hose connection (thread NPT 1/8") on b.safe Waste Caps.

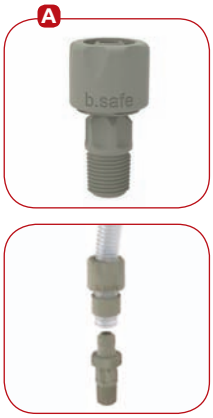


Assembly instructions:

1. Screw the b.safe Corrugated Tubing Coupling into the hose connection (thread NPT 1/8") of your Waste Cap.
2. Push the locking nut and the clamp ring on the tube end.
3. Put the tubing on the tapered end of the coupling and push the tubing to the stop.
4. Push also the clamp ring and the locking nut to the stop. Secure the connection by screwing the locking nut onto the coupling.
5. Put a fork wrench (wrench size 10 mm) on the recessed grips on the coupling. Use the fork wrench to prevent the coupling from turning while the locking nut is tightened firmly for a leak-free connection.

b.safe Corrugated Tubing Coupling

Material: **PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**



Three-part coupling consisting of coupling, locking nut made of PP and clamp ring made of FEP. To connect hard-walled corrugated tubing with the hose connection (NPT 1/8" thread) on b.safe Waste Caps. Locking nut with ergonomic gripping surface, additional grip hollows with SW10 on the coupling.

	Suitable for	I. D. of corrugated tubing mm	Cat. No.
A	Hose connection (thread NPT 1/8")	6,5	M 514-03
A	Hose connection (thread NPT 1/8")	8,5	M 514-05

Application:
Choose the b.safe Corrugated Tubing Coupling as per your HPLC tubing. Devices of Agilent Technologies for example contain corrugated tubing with I. D. 6,5 mm. Devices of Thermo Scientific contain corrugated tubing with I. D. 8,5 mm.

b.safe APPROPRIATE

Corrugated Tubing page 155
Flexible connection to the waste container.

b.safe Hose Connectors

b.safe Hose connectors are the best choice for connecting tubes with b.safe Waste Caps or for joining single hoses. For a tight connection, especially with elastic tubing (e. g. silicone), all hose connectors have a conical shape. Choose a hose connector with a slightly bigger outer diameter than the inner diameter of your tubing. Upon pushing the tubing on the hose connector, its conical shape widens the tubing automatically. The tubing tightly fits the hose connector for a leak-free connection.

Choose a suitable b.safe Hose Connector for your tubing I.D. and the planned use:

b.safe Hose Connectors
with screw-in thread NPT 1/8“ compatible with the hose connections on b.safe Waste Caps e. g. M 503-01 Hose Connector, graduated for tubing I. D. from 5,5 to 8,0 mm

b.safe Hose Connectors
with Luer Lock for venting extraction bottles with inert gas instead of ambient air. M 519-10 for tubing I. D. 4 - 5 mm

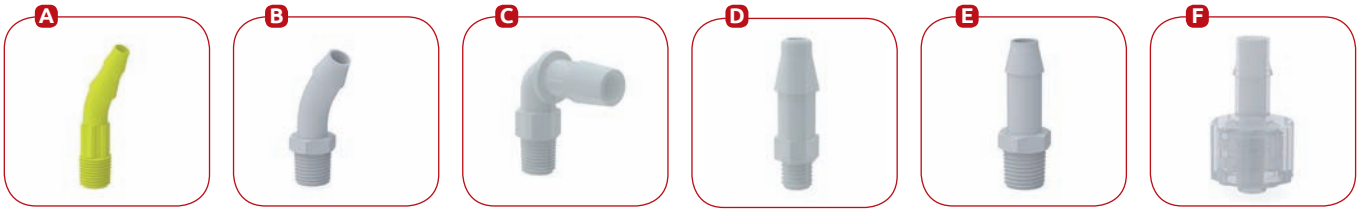
b.safe Tubing Connectors
for joining single elastic tubing with the same inner diameter e. g. M 590-05 for tubing I. D. 4,0 - 7,0 mm

b.safe Tubing Connectors Y
for joining two inlet tubing to one outlet, only suitable for tubing with the same I. D. e.g. M 580-04 for three tubings with I. D. 4 mm

b.safe Reducing Tubing Connectors
for joining single elastic tubing with different inner diameters e. g. M 595-05 for transition from tubing I. D. 4-7 mm to tubing I. D. 8-11 mm

b.safe Hose Connectors

For the connection of elastic tubing (e. g. Viton®, Tygon, silicone) on b.safe Waste Caps. Packing Unit: 1 piece.



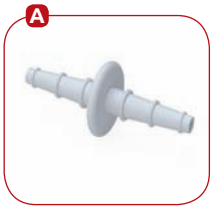
	Connecting thread	Version	For tubing I. D.	Length mm	Bore dia. mm	Material	Cat. No.
A	Hose connection (NPT 1/8" thread)	bent	5,5-8	45	4	PP yellow	M 503-01
B	Hose connection (NPT 1/8" thread)	bent	6-8	45	4	PTFE white	M 503-05
C	Hose connection (NPT 1/8" thread)	elbow 90°	6,5-8	30	5	PP milky white	M 503-08
C	Hose connection (NPT 1/8" thread)	elbow 90°	9,5-10,5	32	7	PP milky white	M 503-09
D	Hose connection (NPT 1/8" thread)	straight	2-3	23	1,8	PP milky white	M 503-10
D	Hose connection (NPT 1/8" thread)	straight	3-4	26	2,3	PP milky white	M 503-11
D	Hose connection (NPT 1/8" thread)	straight	4-5	26	2,8	PP milky white	M 503-12
D	Hose connection (NPT 1/8" thread)	straight	5-6	30	3,5	PP milky white	M 503-13
D	Hose connection (NPT 1/8" thread)	straight	6,5-8	36	4,8	PP milky white	M 503-14
E	Hose connection (NPT 1/8" thread)	straight	6-8	45	4	PTFE white	M 503-15
D	Hose connection (NPT 1/8" thread)	straight	9-10,5	40	7	PP milky white	M 503-16
D	NPT 1/4" thread	straight	12-13,5	48	10	PP milky white	M 513-01
C	NPT 1/4" thread	elbow 90°	12-13,5	41	10	PP milky white	M 513-02
D	Capillary connection (UNF 1/4" thread)	straight	6-8	30	3,6	PP milky white	M 518-01
F	Male Luerlock	straight	4-5	21	3,2	PP milky white	M 519-01

Application:
For direct connection of waste tubing on b.safe Waste Caps.

b.safe Tubing Connectors

Material: **PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

Straight fitting made of PP, with two hose connectors for elastic tubing (e. g. Viton®, Tygon®, silicone). Packing unit: 1 piece

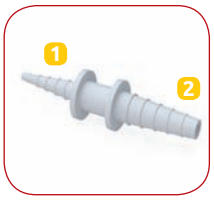


	For tubing I. D. mm	Length mm	Bore dia. mm	Cat. No.
A	3,0 – 5,0	37	3,0	M 590-03
B	4,0 – 7,0	52	4,0	M 590-05
B	7,0 – 9,0	58,5	6,5	M 590-07

b.safe Reducing Tubing Connectors

Material: **PP** | Temperature resistance: **0 °C ro +110 °C** |
Chemical resistance: **++ very good**

Straight fitting made of PP, with two hose connectors of elastic tubing (e. g. Viton®, Tygon®, silicone) with different inner diameters. Packing unit: 1 piece



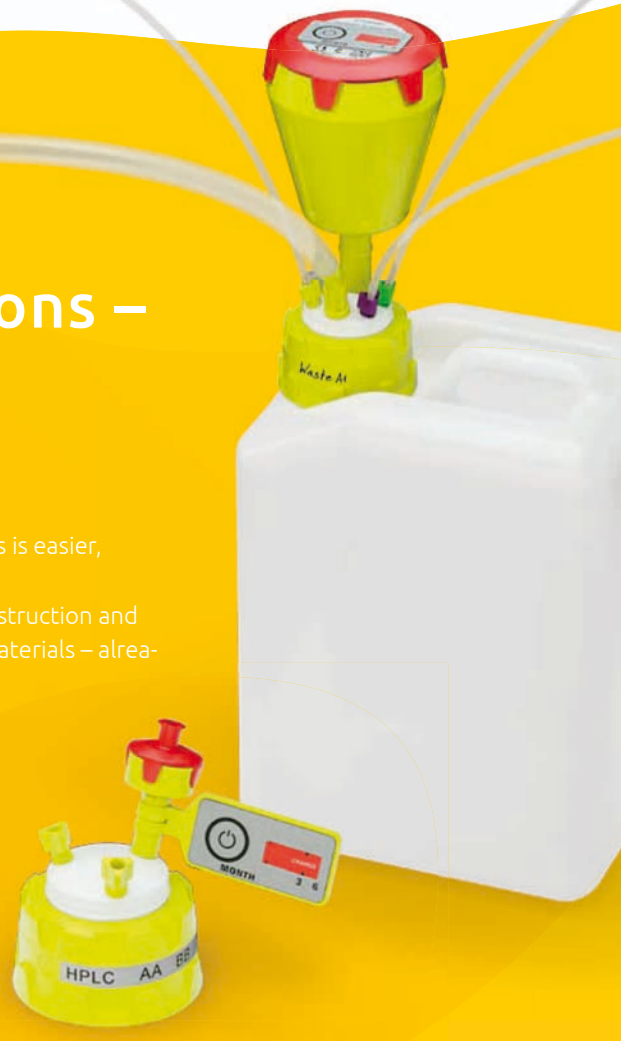
	Tubing I. D. (1) mm 1	Tubing I. D. (2) mm 2	Length mm	Bore dia. mm	Cat. No.
	4,0 – 7,0	8,0 – 11,0	85,5	3,0	M 595-05
	4,0 – 7,0	12,0 – 16,0	85,5	3,0	M 595-10

b.safe Tubing Connectors Y

Material: **PP** | Temperature resistance: **0 °C to +110 °C** |
Chemical resistance: **++ very good**

Y-shaped fitting made of PP, with three hose connectors for elastic tubing (e. g. Viton®, Tygon®, silicone). Packing unit: 1 piece

For tubing I. D. mm	Length x Width mm	Bore dia. mm	Cat. No.
3,0	19 x 15	1,8	M 580-02
4,0	25 x 19	2,3	M 580-04
5,0	31 x 22,5	2,8	M 580-06
6,0	48,5 x 35	4,8	M 580-08
9,0	59 x 54,5	7,5	M 580-10
11,0	68 x 53	10	M 580-12



Sophisticated Safety Solutions – custom made!

You are looking for a solution exactly adapted to your application?

As a manufacturing company, we can make products to your specifications. This is easier, quicker and often more economic than you may expect.
Contact our experts – we give advice and support already starting with the construction and production as per your requirements and in compliance with the chosen raw materials – already from 1 piece.

We only need a drawing (a sketch is sufficient) and some further information.

You have a special request?
www.bsafe.de or **+49 (0) 93 46-92 86-0**

b.safe Multiports and Distributors

Enlarge the number of the connections on a b.safe Waste Cap by means of b.safe Multiports. Equipped with a screw-in thread compatible with the hose connection of b.safe Waste Caps, you can join a various number of different tubes and/or capillary tubing on the same connection. All essential fittings and hose connectors are included in delivery.

Also capillaries can easily be connected: Just use a b.safe Capillary Connection or a b.safe Distributor for Capillaries. The delivery of this products includes as well all essential fittings.

Some examples of use:

b.safe Multiport M 509-28
with 8 capillary connections and screw-in thread NPT 1/8" for connecting 8 capillaries on the hose connection of a b.safe waste cap.

b.safe Multiport M 509-36
with 3 hose connectors for tubing I. D. from 5,5 to 8 mm, extension of the hose connection of a b.safe waste cap from one to three tubes.

b.safe Capillary Connection M 512-01
For joining two single capillary tubes with O. D. 1,6/2,2 or 3,2 mm.

b.safe Distributor for capillaries M 511-01
transition from two inlets to one outlet or vice versa.

b.safe Multiports

Material: **PTFE** | Temperature resistance: **-200 °C to +250 °C** |
Chemical resistance: **+++ universal**

For enlarging the number of capillary and / or hose connections on b.safe Waste Caps (thread NPT 1/8"). With PFA Fittings for capillaries with O. D. 1,6/2,2/3,2 mm (thread UNF 1/4"), hose connectors for tubing I. D. 5,5 - 8 mm (thread NPT 1/8"). Version and scope of delivery as per below chart.

	Suitable for	Number of capillary connectors	Number of Fittings	Hose Connector	Cat. No.
A	Hose connection (thread NPT 1/8")	2	2x Ø 1,6 mm (green) 2x Ø 2,2 mm (purple) 2x Ø 3,2 mm (yellow)	-	M 509-25
B	Hose connection (thread NPT 1/8")	3	3x Ø 1,6 mm (green) 3x Ø 2,2 mm (purple) 3x Ø 3,2 mm (yellow)	-	M 509-26
C	Hose connection (thread NPT 1/8")	8	8x Ø 1,6 mm (green) 8x Ø 2,2 mm (purple) 8x Ø 3,2 mm (yellow)	-	M 509-28
D	Hose connection (thread NPT 1/8")	7	7x Ø 1,6 mm (green) 7x Ø 2,2 mm (purple) 7x Ø 3,2 mm (yellow)	1x Ø 5,5 - 8	M 509-29
E	Hose connection (thread NPT 1/8")	3	3x Ø 1,6 mm (green) 3x Ø 2,2 mm (purple) 3x Ø 3,2 mm (yellow)	-	M 509-32
F	Hose connection (thread NPT 1/8")	2	2x Ø 1,6 mm (green) 2x Ø 2,2 mm (purple) 2x Ø 3,2 mm (yellow)	1x Ø 5,5 - 8	M 509-33
G	Hose connection (thread NPT 1/8")	-	-	3x Ø 5,5 - 8	M 509-34
H	Hose connection (thread NPT 1/8")	-	-	3x Ø 5,5 - 8	M 509-36

b.safe Distributor for Capillaries

Material: **PTFE** | Temperature resistance: **-200 °C to +250 °C** |
Chemical resistance: **+++ universal**

Adaptor to enlarge the number of capillary connectors on b.safe Caps. With PFA Fittings for capillaries with O. D. 3,2 mm (thread UNF 1/4“). Version and scope of delivery as per below chart.

	Suitable for	Number of capillary Connectors	Number of Fittings	Cat. No.
A	Capillary connector (thread UNF 1/4“)	3	3x Ø 3,2 mm (yellow)	M 511-01

Application:
Adaptor to enlarge the number of capillary connectors on b.safe Caps.

b.safe Capillary Connection

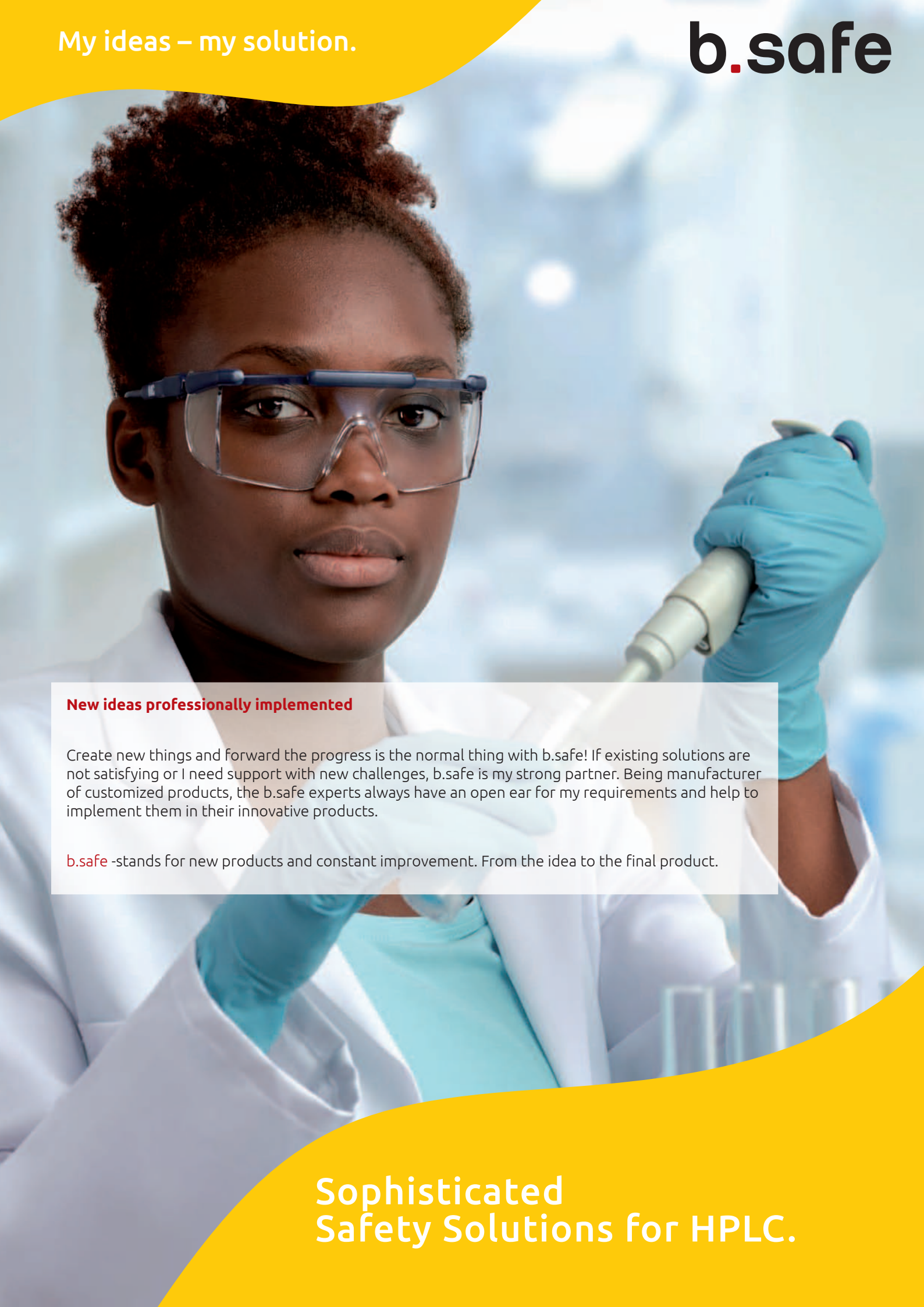
Material: **PTFE** | Temperature resistance: **-200 °C to +250 °C** |
Chemical resistance: **+++ universal**

Straight fitting made of PTFE, capillary connection on both sides (UNF ¼” thread), with 2 PFA fittings each for tubing O. D. 1,6 / 2,2 / 3,2 mm. Packing unit: 1 piece

	Number of Fittings	Length mm	Bore dia. mm	Cat. No.
A	2x Ø 1,6/2,2/3,2 mm each	35	3,3	M 512-01

My ideas – my solution.

b.safe



New ideas professionally implemented

Create new things and forward the progress is the normal thing with b.safe! If existing solutions are not satisfying or I need support with new challenges, b.safe is my strong partner. Being manufacturer of customized products, the b.safe experts always have an open ear for my requirements and help to implement them in their innovative products.

b.safe -stands for new products and constant improvement. From the idea to the final product.

Sophisticated Safety Solutions for HPLC.

b.safe Flasks, Canisters and Containers

b.safe offers also suitable containers like flasks and canisters in addition to the wide range of Caps for the extraction of solvents and Waste Caps or Funnels for the collection of liquid waste.
Unless otherwise indicated, all b.safe Canisters are supplied with UN-approval and can be used for the transport of hazardous goods.

In addition, we offer also accessories such as collecting trays, spouts and grounding cables, for dissipative canisters.

Just contact us for comprehensive advice: +49 9343 9286-0.

A selection of our range:

UN

b.safe Information

All canisters with this marking are with UN-approval

b.safe Canister GL45,
2,5 liters, PE
see page 111

b.safe Canister S60,
10 liters, static dissipative PE-EX
see page 113

b.safe Collecting Tray,
static-dissipative PE-EX
see page 117

b.safe Canister S90,
10 liters, static-dissipative PE-EX
see page 113

b.safe Laboratory Flasks

Material: **Borosilicate glass** | Chemical resistance: **+++ universal**

Laboratory flask made of Borosilicate glass including screw cap and spout made of PP.
Packing unit: 1 piece.

	Volume ml	Thread	Cat. No.
A	1000	GL45	R 100-45
B	1000	GLS80	R 105-80

b.safe Canisters GL45 UN

Canister with GL45 thread (DIN45) for the collection of liquid waste. Version as per below chart.

Volume liters	Dimensions Length x Width x Height mm	Material	Cat. No.
2,5	150 x 110 x 210	PE	R 205-02
5,0	195 x 150 x 270	PE	R 205-05
10,0	225 x 190 x 300	PE	R 205-10

b.safe APPROPRIATE

Collecting Trays **page 117**
For protection in case of leaks or container exchange.

b.safe Canisters S50

Space-saving canister with S50 thread (KS50) for the collection of liquid waste. Version as per below chart.

	Volume liters	Dimensions Length x Width x Height mm	Material	Cat. No.
	5	335 x 66 x 335	PE	R 210-05

	Accessories	Description	Material	Cat. No.
	Stand	for 2 space-saving canisters (R 210-05), dimensions: l 250 x w 138 x h 100 mm	Stainless steel	R 505-02

A

B

b.safe Canisters S55 UN

Canister with S55 thread (DIN51) for the collection of liquid waste. Version as per below chart.

	Volume liters	Dimensions Length x Width x Height mm	Material	Cat. No.
	5	190 x 150 x 235	PE	R 225-05
	10	230 x 195 x 235	PE	R 225-10

b.safe APPROPRIATE

Collecting Trays page 117
For protection in case of leaks or container exchange.

b.safe Canisters S60 UN

Canister with S60/61 thread (DIN60/61) for the collection of liquid waste. Version as per below chart.

	Volume liters	Neck	Dimensions Length x Width x Height mm	Material	Cat. No.
A	5	straight	190 x 150 x 255	PE	R 230-05
A	10	straight	220 x 190 x 340	PE	R 230-10
A	20	straight	300 x 230 x 450	PE	R 230-20
B	10	straight	220 x 190 x 340	PE-EX	R 231-10
B	30	straight	360 x 235 x 450	PE-EX	R 231-30
C	10	inclined	295 x 200 x 255	PE-EX	R 236-10
C	20	inclined	295 x 200 x 495	PE-EX	R 236-20

b.safe Order directly

Angled Adaptor page 121
For verticel installation of b.safe Funnels on inclined canister neck.

b.safe APPROPRIATE

Canister with Level Indicator page 150
For easy fill level control.

b.safe Canister S90 UN

Canister with thread S90 (DIN90) for the collection of liquid waste. Version as per below chart, canister S90 in PE-EX (handle not dissipative) with transparent stripe for observing the fill level.

	Volume l	Dimensions Length x Width x Height mm	Material	Cat. No.
A	10	195 x 195 x 370	PE	R 265-10
B	10	195 x 195 x 370	PE-EX	R 268-10

	Accessories	Description	Cat. No.
C	Grounding Strap for canister R 268-10	Stainless steel strap with tension lock for circumference 195 x 195 mm, grounding-cable 1,5 m and clamp.	R 265-10

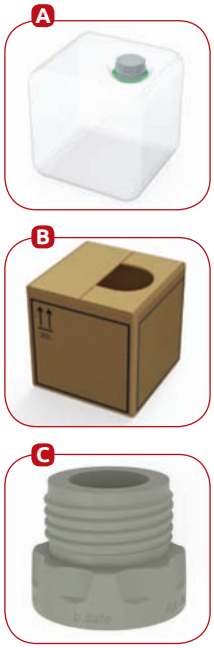
b.safe Information

All canisters with this marking are with UN-approval

b.safe Politainer

Foldable canister for the collection of liquid waste. Version as per below chart. Please order additional accessories like the carton box or the adaptor for Waste Caps GL 45 separately.

	Description	Thread	Dimensions Length x Width x Height mm	Material	Cat. No.
A	Politainer 5L	38x3	outer: 181 x 181 x 195	PE	R 295-05
A	Politainer 10L	38x3	outer: 228 x 228 x 228	PE	R 295-10
A	Politainer 20L	S60	outer: 285 x 285 x 295	PE	R 297-20
B	Carton 5L	-	inner: 181 x 181 x 181		R 299-05
B	Carton 10L	-	inner: 228 x 228 x 228		R 299-10
B	Carton 20L	-	inner: 285 x 285 x 285		R 299-20
C	Adapter GL45	Female thread 38x3 / male thread GL45		PP	M 615-29



Application:
Folded to save space during delivery and storage, unfolds automatically during filling. UN-approval only if used with the appropriate carton box (cat. no. R 299-xx).

b.safe Spouts

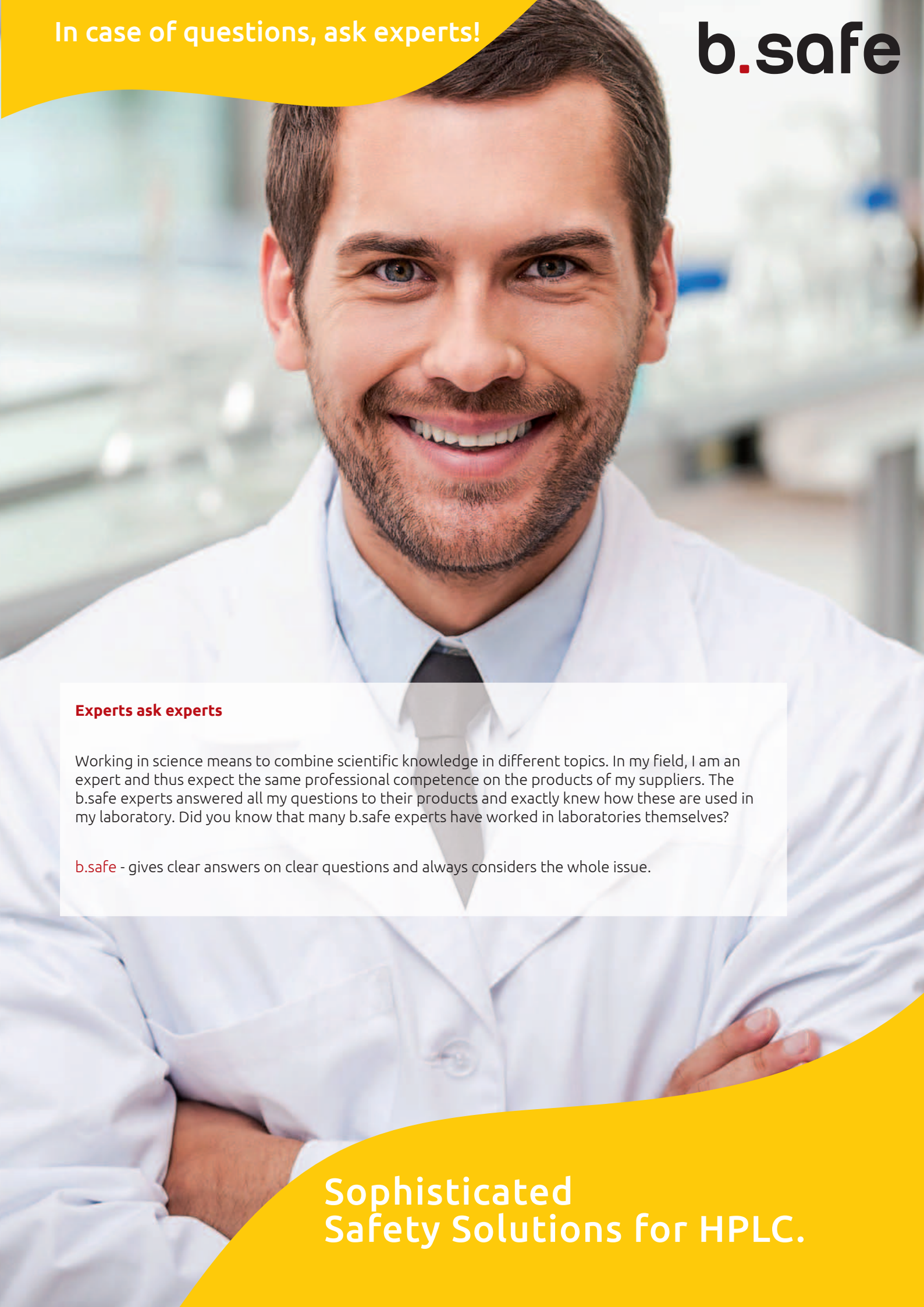
Screw cap for canister thread, freely turnable spout tube, rigid or flexible design with integrated safety aeration for constant flow. Version as per below chart.

	Canister thread	Spout tube	Material	Cat. No.
A	GL45	flexible	PE	R 530-04
A	S 55	flexible	PE	R 530-05
B	S 55	rigid	PE	R 532-05
A	S 60/61	flexible	PE	R 530-07
B	S 60/61	rigid	PE	R 532-07
C	S 60/61	rigid	PE-EX (dissipative)	R 535-07
A	S 70/71	flexible	PE	R 530-09

Application:
Quick refilling of liquids without dripping directly from canister.

In case of questions, ask experts!

b.safe



Experts ask experts

Working in science means to combine scientific knowledge in different topics. In my field, I am an expert and thus expect the same professional competence on the products of my suppliers. The b.safe experts answered all my questions to their products and exactly knew how these are used in my laboratory. Did you know that many b.safe experts have worked in laboratories themselves?

b.safe - gives clear answers on clear questions and always considers the whole issue.

Sophisticated Safety Solutions for HPLC.

b.safe Collecting Trays

Collecting trays help to put aside e. g. Waste Caps or Funnels during container exchange without contaminating floor or working area through dripping liquids. In a worst-case scenario they collect escaping liquids from a damaged or spilling waste container and thus increase your own safety.
Corresponding to their installation site, you get b.safe Collecting Trays in PE or static dissipative PE-EX.

Depending of the displacement volume of the canister, we recommend the following maximum number of b.safe Canisters per b.safe Collecting Tray:

Recommended maximum number of canisters for Collecting Tray R 540-01:
- 2x Canister 2,5 l / R 205-02
- 2x Canister 5 l / R 205-05, R 210-05, R 225-05, R 230-05
- 1x Canister 10 l / R 205-10, R 225-10, R 230-10, R 265-10

Recommended maximum number of canisters for Collecting Tray R 540-02:
- 5x Canister 2,5 l / R 205-02
- 3x Canister 5 l / R 210-05
- 2x Canister 5 l / R 205-05, R 225-05, R 230-05
- 2x Canister 10 l / R 205-10, R 225-10, R 230-10, R 265-10
- 1x Canister 20 l / R 230-20

Recommended maximum number of canisters for Collecting Tray R 548-05:
- 1x Canister 10 l / R 231-10, R 236-10, R 268-10(as leakage tray)
- 1x Canister 20 l / R 236-20 (as splash guardtray)

Recommended maximum number of canisters for Collecting Tray R 548-10:
- 2x Canister 10 l / R 231-10, R 236-10, R 268-10
- 2x Canister 20 l / R 236-20 (as splash guard tray)
- 1x Canister 20 l / R 236-20 (as leakage tray)
- 1x Canister 30 l / R 231-30 (as splash guard tray)

b.safe Collecting Trays

Material: **PE, PE-EX** | Temperature resistance: **-50 °C bis +80 °C** |
Chemical resistance: **++ very good**

Practical collecting tray made of PE or static dissipative PE-EX. Place your waste canister in a collecting tray. Escaping liquids are collected in case of container exchange or leakages. Version and scope of delivery as per below chart.

b.safe Order directly

Grounding cable page 131
With ring cable lug

	Dimensions L x W x H, mm inside	outside	Volume Litres	Material	With drip tray and grounding connection	Cat. No.
A	335 x 235 x 160	390 x 290 x 165	12	PE	No	R 540-01
A	385 x 290 x 200	460 x 340 x 220	25	PE	No	R 540-02
B	315 x 215 x 156	323 x 233 x 175	10	PE-EX	Yes	R 548-05
B	435 x 315 x 156	443 x 333 x 175	20	PE-EX	Yes	R 548-10

b.safe Thread Adaptors for Caps and Waste Caps

Your existing Caps and Waste Caps do not fit with the flasks and canisters which you would like to use or vice versa? Simply use b.safe Thread Adaptors for a flexible combination of Caps and Waste Caps independently from the thread on the flask and/or container.

Ordering example
b.safe Thread Adaptor Cat. No. M 615-03

Transition from Waste Cap GL45 to female barrel thread Tri-Sure 2”

Ordering example
b.safe Thread Adaptor Cat. No. M 615-34

Transition from Waste Cap GL45 to male canister thread S60/61.

b.safe Thread Adaptors for Caps and Waste Caps

Thread Adaptors TYPE A

All adaptors of this type are supplied with a male thread, a female thread and recessed grips for an easy assembly.

	Male thread 1	Female thread 2	Material	Cat. No.
A	S40	GL45	PTFE	M 600-22
B	GL 45	GL 32	PP	M 615-25
A	GL 45	GL 32	PTFE	M 600-26
B	GL 45	GPI38-430	PP	M 615-27
A	GL 45	GPI38-430	PTFE	M 600-28
A	GL 45	GPI38-400	PTFE	M 600-29
B	GL 45	38x3	PP	M 615-29
B	GL 45	S 40 / GL 40	PP	M 615-30
A	GL 45	S 40 / GL 40	PTFE	M 600-31
B	GL 45	S 51	PP	M 615-32
B	GL 45	S 55	PP	M 615-33
B	GL 45	S 60/61	PP	M 615-34
B	GL 45	S 70/71	PP	M 615-35
V	GL 45	G 1 ½“	PP	M 615-36
B	S 51	S 55	PP	M 615-40
B	S 51	S 60/61	PP	M 615-41
A	S 55	S 40/GL 40	PTFE	M 600-46
B	S 55	S 50	PP	M 615-47
B	S 55	S 51	PP	M 615-48
A	S 55	S 51	PTFE	M 600-49
A	S 55	GL 45	PP	M 615-50
A	S 55	GL 45	PTFE	M 600-51
B	S 55	S 60/61	PP	M 615-52
C	S 60/61	S 50	PE-EX	M 630-60
B	S 60/61	S 51	PP	M 615-61
C	S 60/61	S 51	PE-EX	M 630-62
B	S 60/61	S 55	PP	M 615-63
B	S 60/61	B 63	PP	M 615-64
B	S 60/61	S 65	PP	M 615-65
C	S 60/61	S 71	PE-EX	M 630-66
B	Tri-Sure 2“	G 2“/BSP 2“	PP	M 615-75

Material PTFE

Material PP

Material PE-EX

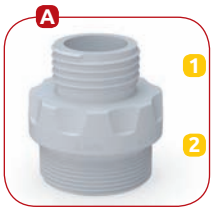
Helpful tips for determing the thread of your canisters,
page 168

b.safe Thread Adaptors for Caps and Waste Caps

Thread Adaptors TYPE B

All adaptors of this type are supplied with two male threads and recessed grips for an easy assembly.

	Male thread 1	Female thread 2	Material	Cat. No.
B	GL 45	G 2"/BSP 2"	PP	M 615-01
A	GL 45	G 2"/BSP 2"	PTFE	M 600-02
B	GL 45	Tri-Sure 2"	PP	M 615-03
A	GL 45	Tri-Sure 2"	PTFE	M 600-04
B	S 60/61	G 2"/BSP 2"	PP	M 615-11
B	S 60/61	Tri-Sure 2"	PP	M 615-12



Material PTFE

Material PP

Thread Adaptors TYPE C

All adaptors of this type are supplied with two female threads and recessed grips for an easy assembly.

	Male thread 1	Female thread 2	Material	Cat. No.
A	G 1 ½"	GL 45	PP	M 615-73
B	Tri-Sure-2"	S 60/61	PE-EX	M 630-83
A	G 2"/BSP 2"	S 55	PP	M 615-80
A	G 2"/BSP 2"	S 60/61	PP	M 615-84
A	G 2"/BSP 2"	S 65	PP	M 615-87
A	G 2"/BSP 2"	S 70/71	PP	M 615-89

Material PP

Material PE-EX

Helpful tips for determing the thread of your canisters, **page 168**

b.safe Thread Adaptors for Caps and Waste Caps

Thread Adaptors TYPE D

All adaptors of this type are for the transition from ground joint NS 29/32 to thread GL 45.

	Ground joint socket 1	Female-thread 2	male-thread 3	Material	Cat. No.
A	Socket 29/32	GL 45		PTFE/PPS	M 520-01
B	Cone 29/32		GL 45	PTFE/PP	M 521-01

	Accessoires	Description	Cat. No.
C	Loosening Nut for M 521-01	For loosening of stuck ground joint connections. By turning the nut, the cone in the socket can be lifted and loosend with small effort.	M 529-90

Material PTFE/PPS

Material PTFE/PP

b.safe Angled Adaptors for Canisters

For vertical installation of b.safe Funnels 130 / 180 on canisters with inclined connectors and S60 thread. The insert made of static dissipative PE-EX is freely turnable inside the S60 screw cap (PPS) and thus allows vertical alignment of the funnel on the canister. Packing unit: 1 piece.

	Male thread 1	Female thread 2		Cat. No.
A	S60	S60		R 560-01

b.safe Funnels

There is more liquid waste that needs to be collected and disposed of than only the liquid waste that is lead from the HPLC device into a canister. b.safe offers many sophisticated products for the safe collection and disposal of liquid waste in your lab.

The best help for collecting liquid waste are b.safe Funnels. The combination of the single features of the b.safe Funnels reliably protects you during and after filling of the collecting container.

b.safe Funnels 130
Its compact design allows an easy integration in a safety cabinet. An automatic closing of the hinged lid is prevented by the big opening angle even when the funnel is assembled on a canister with inclined neck. With the free turnable cap you can perfectly adjust the funnel on the waste container.

Smooth-running hinged lid protects from harmful vapours.

Removable sieve restrains e. g. magnetic stirring bars or other solids.

Small installation height ideal for integration into safety cabinets.

Free turnable cap for easy assembly on collecting container.

Neck with plastic nibs to fix attachable filling tubes for under level filling.

All static-dissipative Funnels of PE-EX are supplied with assembled grounding cable (length: 1,5 m).

b.safe Funnels 180

Easy and safe handling: you do not need to open a lid before pouring. With starting the filling process, the integrated ball valve opens automatically and is closed as soon as the liquid is drained off completely.

Removable sieve restrains e. g. magnetic stirring bars or other solids.

Splash guard for a smooth flow without splashing.

Ball valve protects from harmful vapours. It floats up during filling and opens the drain.

Free turnable cap for easy assembly on collecting container

Neck with plastic nibs to fix attachable filling tubes for under level filling.

All static-dissipative Funnels of PE-EX are supplied with assembled grounding cable (length: 1,5 m).

b.safe Funnels in detail

Hinged lid
With grip for easy opening and closing.

Sieve
To be fixed in the funnel or the splash guard. Big grip for safe grapping and removal of the sieve.

Ball Valve
The hollow ball floats up once the filling process starts and opens the drain into the waste container. As soon as the liquid is drained off completely, the ball falls down and the passage is closed. Harmful vapours from the waste container are restrained.

Plug-in connection for Filling Tube
An additional Filling Tube can be plugged-in the funnel neck. By means of two plastic nibs on the outside of the neck, the filling tube is permanently fixed on funnel neck.
Please note: Assembled filling tubes cannot be removed anymore!

Filling Tube
The b.safe Filling Tube is supplied in segments. With additional segments, the filling tube can be extended to any desired length. Furthermore, the filling tube can be shortened to the exact needed length with an appropriate saw.
Please note: Assembled filling tubes cannot be removed anymore!

Angled Adaptor for Canisters
Optional Angled Adaptor for vertical adjustment of b.safe Funnels on caniters with inclined neck (e. g. b.safe Canister S60, R236-.. on page 113). The free turnable caps on the funnel as well as on the adaptor make the installation quite easy. Empty bottles and containers can e. g. be put on the sieve in order to drain completely.

b.safe Funnels 130

Material: **PE / PE-EX** I Temperature resistance: **-50 °C to +80 °C** I
Chemical resistance: **++ very good**

Funnel made of PE / static dissipative PE-EX for liquid waste disposal. The funnel can be safely mounted on the waste container with its freely turnable cap that is safely fixed with filling neck. The sieve restrains magnetic stirrer bars and other solid materials and can be easily removed for cleaning. The hinged lid reliably withholds vapours from the container.
The static dissipative PE-EX version includes two attachable filling tubes (Ø 28 x usable length 97 mm per tube) as well as an 1.5 m long grounding cable. Safe earthing of the funnel can be made via the grounding cable by qualified personnel. The mounted filling tube allows an under level filling to avoid static charging.
Version and scope of delivery as per below chart.

	For thread	Material	Number of filling tubes	Number of grounding cable	Cat. No.
A	GL45	PE	-	-	R 801-40
A	S50	PE	-	-	R 811-40
A	S51	PE	-	-	R 821-40
A	S55	PE	-	-	R 831-40
A	S60	PE	-	-	R 841-40
A	S65	PE	-	-	R 851-40
A	S70	PE	-	-	R 861-40
B	GL45	PE-EX	-	1	R 800-20
B	S51	PE-EX	-	1	R 820-20
B	S55	PE-EX	-	1	R 830-20
B	S60	PE-EX	-	1	R 840-20
B	S65	PE-EX	-	1	R 850-20
C	S50	PE-EX	2	1	R 810-23
C	S51	PE-EX	2	1	R 820-23
C	S55	PE-EX	2	1	R 830-23
C	S60	PE-EX	2	1	R 840-23
C	S65	PE-EX	2	1	R 850-23
C	S70	PE-EX	2	1	R 860-23

b.safe Funnels 180

Material: **PE / PE-EX** I Temperature resistance: **-50 °C to +80 °C** I
Chemical resistance: **++ very good**

Funnel made of PE / static dissipative PE-EX for liquid waste disposal. The funnel can be safely mounted on the waste container with its freely turnable cap that is safely fixed with the filling neck. b.safe Funnels 180 are available in many versions. Choose the right one for your application: The sieve restrains magnetic stirrer bars and other solid materials and can be easily removed for cleaning. The hinged lid respectively the ball valve reliably withhold vapours from the container. The splash guard avoids spillover and splashing during funnel filling.
The static dissipative PE-EX version includes two attachable filling tubes (Ø 36 x usable length 97 mm per tube) as well as a 1.5 m long grounding cable. Safe earthing of the funnel can be made via the grounding cable by qualified personnel. The mounted filling tube allows an under level filling to avoid static charging.
Version and scope of delivery as per below chart.

	For thread	Material	With sieve, splash guard, ball valve	With sieve and lid	Number of filling tubes	Number of grounding cable	Cat. No.
A	GL45	PE	•	-	2	0	R 801-30
A	S50	PE	•	-	2	0	R 811-30
A	S51	PE	•	-	2	0	R 821-30
A	S55	PE	•	-	2	0	R 831-30
A	S60	PE	•	-	2	0	R 841-30
A	S65	PE	•	-	2	0	R 851-30
A	S70	PE	•	-	2	0	R 861-30
A	S90	PE	•	-	2	0	R 871-30
B	GL45	PE-EX	•	-	0	1	R 800-02
B	GL45	PE-EX	•	-	2	1	R 800-05
B	S50	PE-EX	•	-	2	1	R 810-05
B	S51	PE-EX	•	-	2	1	R 820-05
B	S55	PE-EX	•	-	2	1	R 830-05
B	S60	PE-EX	•	-	2	1	R 840-05
B	S65	PE-EX	•	-	2	1	R 850-05
B	S70	PE-EX	•	-	2	1	R 860-05
B	S90	PE-EX	•	-	2	1	R 870-05

	For thread	Material	With sieve, splash guard, ball valve	With sieve and lid	Number of filling tubes	Number of grounding cable	Cat. No.
C	G2“+TriSure2“	PE-EX	•	-	2	1	R 880-05
C	Mauser 2“	PE-EX	•	-	2	1	R 890-05
D	GL45	PE-EX	-	•	0	1	R 800-10
D	S55	PE-EX	-	•	0	1	R 830-10
D	S60	PE-EX	-	•	0	1	R 840-10
E	G2“+TriSure2“	PE-EX	-	•	0	1	R 880-10
E	Mauser 2“	PE-EX	-	•	0	1	R 890-10

b.safe Funnels 250

Material: **PE** I Temperature resistance: **-50 °C to +80 °C** I
Chemical resistance: **++ very good**

Funnel made of PE for liquid waste disposal. The funnel can be safely mounted on the waste container with its threaded connection that is safely fixed with the filling neck. A stainless steel sieve on the outlet restrains magnetic stirrer bars and other solid materials. The hinged lid reliably withholds vapours from the container. Version and scope of delivery as per below chart.

	For thread	Material	Number of filling necks	Cat. No.
A	S60	PE	0	R 841-50
B	G2“/TriSure2“	PE	0	R 881-50
B	Mauser 2“	PE	0	R 891-50

Detail view double thread G2“ + TriSure2“

Accessories and Spare Parts for b.safe Funnels

Here you will find all accessories and spare parts to reorder.

Description		Material	Funnel 130	Funnel 180	Funnel 250	Cat. No.
Filling Tubes for Funnel 130. O. D. 28 mm, usable length 97 mm. The single segments are permanently fixed by two clip-in nibs and can be shortened with an appropriate saw. Packing unit: 5 pieces.	A	PE	•			R 430-05
	B	PE-EX	•			R 430-01
Filling Tubes for Funnel 180. O. D. 36 mm, usable length 97 mm. The single segments are permanently fixed by two clip-in nibs and can be shortened with an appropriate saw. Packing unit: 5 pieces.	A	PE		•	•	R 432-05
	B	PE-EX		•		R 432-01
Sieve for Funnel 130. With grip for easy removal, restrains solids like magnetic stirring bars. Packing unit: 1 piece.	C	PE	•			R 405-05
	D	PE-EX	•			R 405-01
Sieve for Funnel 180. With grip for easy removal, restrains solids like magnetic stirring bars. Packing unit: 1 piece.	C	PE		•		R 400-05
	D	PE-EX		•		R 400-01
Splash Guard for Funnel 180. Protects the surrounding of the waste container from splashes. With several elongated openings for a smooth flow. Only suitable for b.safe Funnels 180 without hinged lid. Packing unit: 1 piece.	E	PE		•		R 410-05
	F	PE-EX		•		R 410-01
Angled Adaptor for Canisters. For vertical adjustment of b.safe Funnels 130 / b.safe Funnels 180 with thread S60 on b.safe canisters S60 with inclined neck (cat. no.: R236-..).	G	PE-EX				R 560-01

b.safe Grounding Accessories

For the handling of highly flammable liquids, the prevention of static charging is fundamental. Therefore a consistent grounding of all components of your system like funnels, canisters or barrels has to be ensured.

At b.safe we offer suitable grounding accessories in order to connect the used containers and components correctly to earth. Please check the product description whether the b.safe scope of delivery includes a grounding cable.

If not, just choose the suitable connection to earth that we offer in our range of grounding cables with different connectors.

Just contact us if you need a grounding cable in a different length or with another combination of connectors. Customized versions can be offered on request.

Grounding Cable (cat. no. R 615-03) with clip and stainless steel strap with tension lock for grounding of Canisters S90 made of static dissipative PE-EX (cat. no. R 265-10)

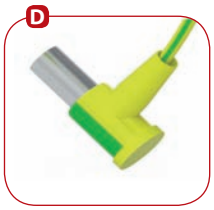
Grounding Cable (cat. no. R 606-01) with clip and spring clip for grounding of tubes with O. D. 32 mm

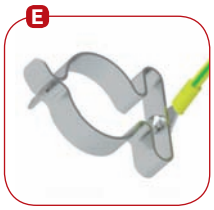
Grounding Cable (cat. no. R 612-01) with two ring cable lugs including screw, nut and washer for connection to earth on grounding lugs like e. g. on b.safe Funnels.

b.safe Grounding Cables

For earth connection of vessels and components made of static dissipative materials. Version as per below chart, the scope of delivery of the ring cable lug includes screw, nut and washer.

	Connection 1		Connection 2	Cable length, m	Cat. No.
A	clip	A	clip	1,5	R 601-01
A	clip	B	ring cable lug M6	1,5	R 603-01
A	clip	B	ring cable lug M6	3,0	R 603-03
A	clip	C	banana plug	1,5	R 604-01
D	MC plug	B	ring cable lug M6	1,5	R 605-01
A	clip	E	clip for tube dia. 32 mm	3,0	R 606-01
B	ring cable lug M6	B	ring cable lug M6	1,5	R 612-01
B	ring cable lug M6	B	ring cable lug M6	3,0	R 612-03
F	Stainless steel strap with tension lock for circumference 195 x 195 mm	A	clip	1,5	R 615-03





b.safe Antistatic Mats

Mat made of static dissipative material with permanently mounted grounding cable including clip for earthing connection.

Dimensions L x W mm	Connection	Cable length m	Cat. No.
1200 x 600	clip	1,5	R 630-01

Application:
For grounding vessels made of static dissipative materials or persons before handling with easy flammable liquids.

b.safe Fill Level Control

b.safe Waste Caps S60 with electronic Level Indicator

„Long absent, soon forgotten“ is not the motto for b.safe electronic Level Indicators. b.safe Waste Caps S60 with electronic Level Indicator are delivered with a permanently mounted cable to connect the b.safe Display for Level Control.

The way of function is quite simple: Connect your b.safe Waste Cap with the b.safe Display by means of a suitable cable. With increasing level, the integrated float gauge in the cap rises. As soon as the “canister is full”, a contact is closed between the cap and the float gauge and an appropriate signal is transferred to the b.safe Display through the cable. You can easily recognize which container has to be exchanged through visual signs on the b.safe Display. Additionally, an acoustic alarm sounds if the filling level is critical.

In order to avoid a spill over of the full waste container during exchange, the alert already rings before the container is completely filled to have a little safety buffer.

The red pin on the Waste Caps additionally shows when the canister is full.

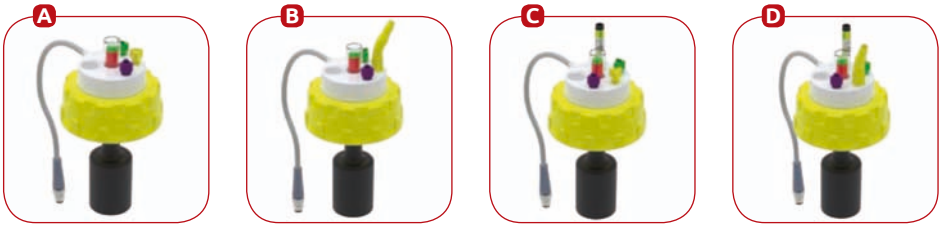
Even on b.safe Waste Caps S60 with electronic Level Indicator, tubing and capillaries are easily connected through the PTFE insert that disposes of thread connections UNF ¼” and NPT 1/8” as standard to connect capillaries and tubing with different diameters by means of Fittings and Hose Connectors. HPLC waste thus directly run into the canister with S60 thread.

The GL14 connector is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the waste container. The screw cap made of PP and the insert made of PTFE are extremely robust and resistant to chemical and thermal load.

b.safe Waste Caps S60 with electronic Level Indicator

Material: **PTFE, PP** | Temperature resistance: **0°C to +80 °C** |
Chemical resistance: **++ very good**

Screw cap made of PP for S60 canister thread, free movable insert made of PTFE with permanently fixed cable (length 400 mm) to connect an electronic Level Indicator (b.safe Display) as well as sight glass and visual pin for additional optic control of the filling level. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (UNF 1/4" thread), Blind Fittings to close unused connections, 1 hose connector for tube I. D. 5,5 - 8 mm (NPT 1/8" thread) and 1 connector to screw in a b.safe Exhaust Filter (GL14 thread, not included in the scope of delivery). An optional grounding connection can be used to derive static charge by means of a grounding cable (Cat. No. R 604-01 on page 131). Version and scope of delivery as per below chart.



	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Ground-ing con-nection	Cat. No.
A	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky white)	0	-	M 206-41
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1 (milky white)	1 x Ø 5,5 - 8 mm	-	M 206-42
C	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky white)	0	•	M 206-60
D	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1 (milky white)	1 x Ø 5,5 - 8 mm	•	M 206-61

Application:
To avoid spill over of canisters through the connection of a Waste Cap to a b.safe Display for electronic level control. The filling levels of waste containers in laboratory cupboards and workbenches can be reliably monitored. Additionally, you can use all benefits of b.safe Caps such as the connection of capillaries through b.safe Fittings and tubing with the appropriate hose connectors. Solvent vapours from the escaping air during filling are restrained from the Exhaust Filter with active carbon filling. PFA Fittings in other colours and hose connectors for many other inner diameters can be found from page 97.

b.safe Waste Caps S60 with electronic Level Indicator and Filling Funnel

„Long absent, soon forgotten“ is not the motto for b.safe electronic Level Indicators. b.safe Waste Caps S60 with electronic Level Indicator are delivered with a permanently mounted cable to connect the b.safe Display for Level Control.

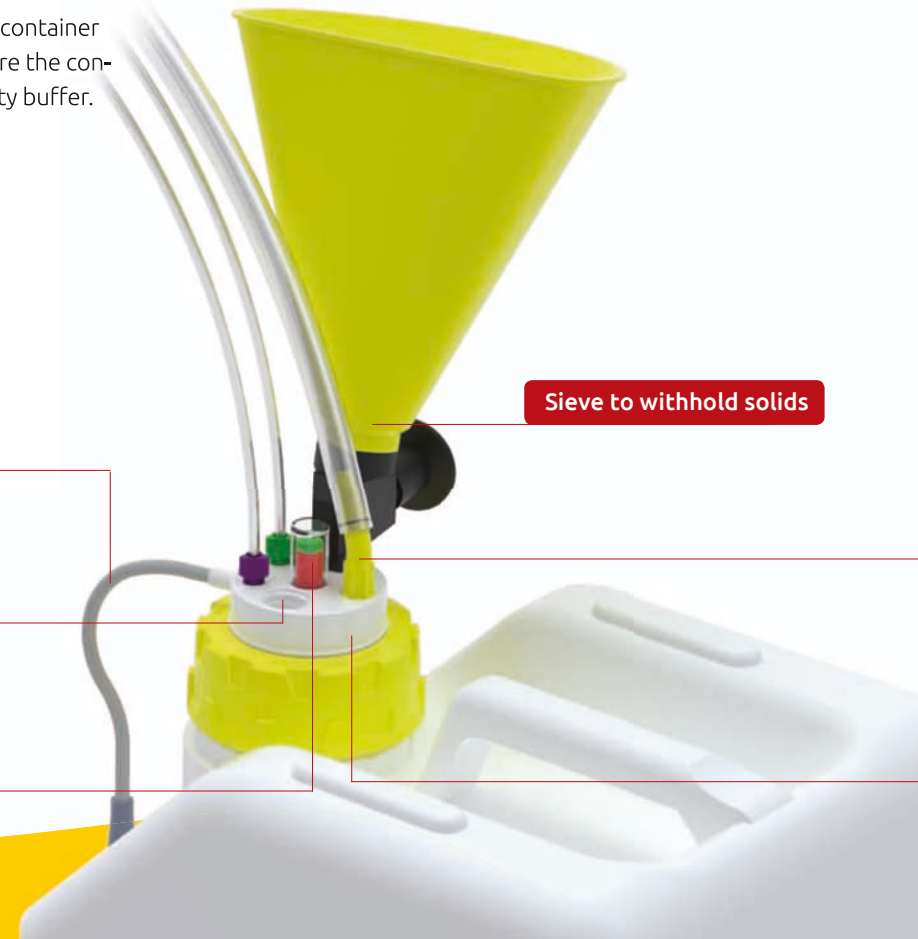
The way of function is quite simple: Connect your b.safe Waste Cap with the b.safe Display by means of a suitable cable. With increasing level, the integrated float gauge in the cap rises. As soon as the “canister is full”, a contact is closed between the cap and the float gauge and an appropriate signal is transferred to the b.safe Display through the cable. You can easily recognize which container has to be exchanged through visual signs on the b.safe Display. Additionally, an acoustic alarm sounds if the filling level is critical.

In order to avoid a spill over of the full waste container during exchange, the alert already rings before the container is completely filled to have a little safety buffer.

The red pin on the Waste Caps additionally shows when the canister is full.

Even waste from the sample preparation can be directly poured into the waste container via the permanently mounted funnel. The integrated stopcock in the funnel reliably closes the passage to protect yourself from escaping vapours.

The GL14 connector is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the waste container. The screw cap made of PP and the insert made of PTFE are extremely robust and resistant to chemical and thermal load.



b.safe Waste Caps S60 with electronic Level Indicator and Funnel

Material: **PTFE, PP** | Temperature resistance: **0°C to +110 °C** |
Chemical resistance: **++ very good**

Screw cap made of PP for S60 canister thread, free movable insert made of PTFE with permanently fixed cable (length 400 mm) to connect an electronic Level Indicator (b.safe Display) as well as sight glass and visual pin for additional optic control of the filling level. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (UNF 1/4" thread), Blind Fittings to close unused connections, 1 hose connector for tube I. D. 5,5 - 8 mm (NPT 1/8" thread), 1 Funnel made of PP with integrated automatic stopcock (the passage opens through pushing the grip and closes automatically if the grip is loosened) and 1 connector to screw in a b.safe Exhaust Filter (GL14 thread, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1 (milky white)	1 x Ø 5,5 - 8 mm	M 206-51

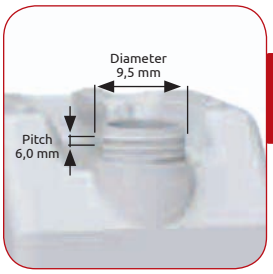
Application:
To avoid spill over of canisters through the connection of a Waste Cap to a b.safe Display for electronic level control. The filling levels of waste containers in laboratory cupboards and workbenches can be reliably monitored. The correct function (spill over protection) is only given if you use canisters with straight neck and without upstream thread adaptor. Additionally, you can use all benefits of b.safe Caps such as the connection of capillaries through b.safe Fittings and tubing with the appropriate hose connectors. Solvent vapours from the escaping air during filling are restrained from the Exhaust Filter with active carbon filling. To connect corrugated tubing with I. D. 6,5 or 8,5 mm at the tubing connector (NPT 1/8" thread), just use the appropriate b.safe Corrugated Tubing Coupling M 514 on page 100.

Hose connectors for tubing with I. D. 5,5 – 8 mm

No twisting of capillaries through 360 ° rotation of PTFE insert

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread S60 (DIN60/61)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps S55 with electronic Level Indicator

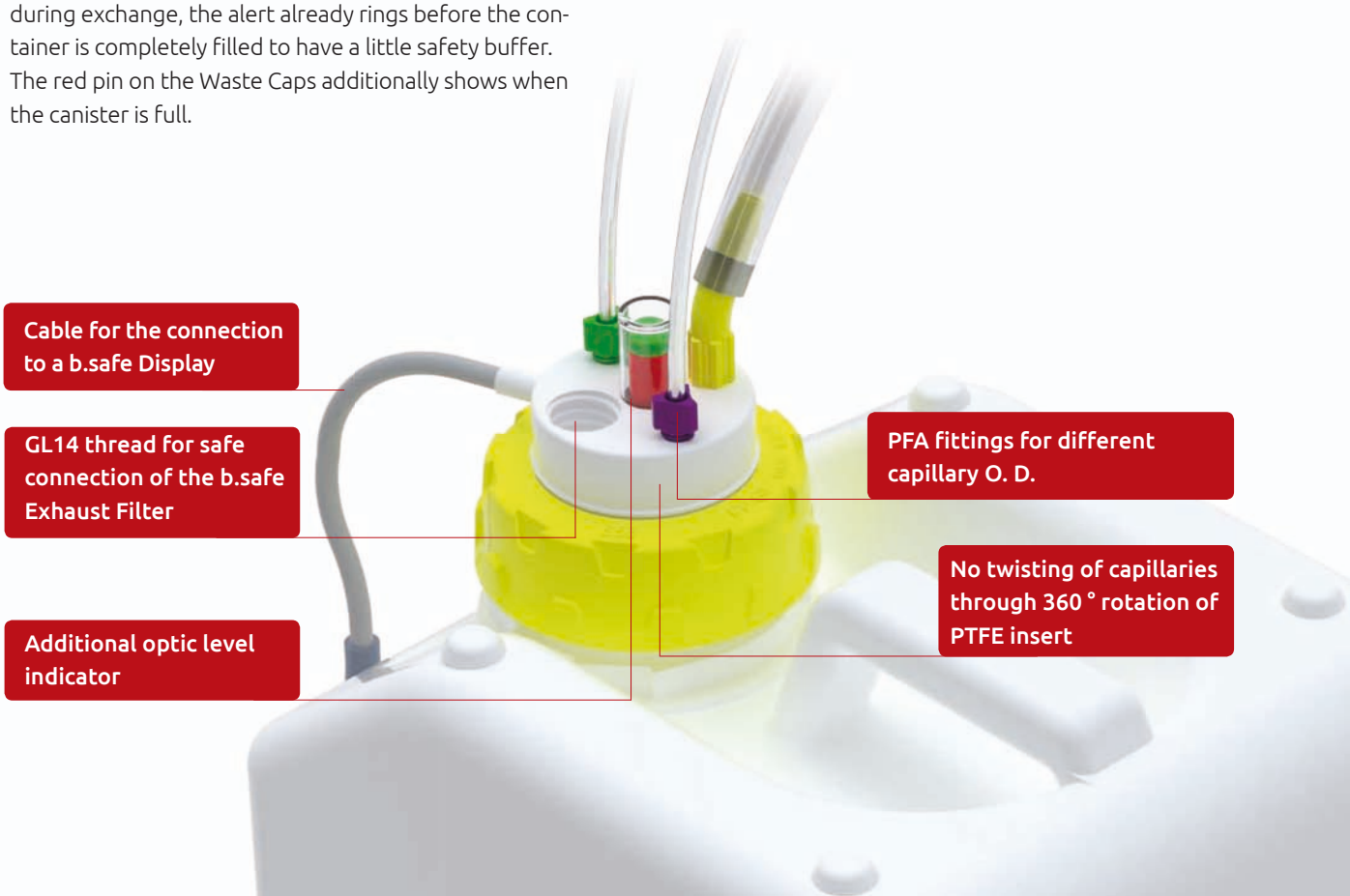
„Long absent, soon forgotten“ is not the motto for b.safe electronic Level Indicators. b.safe Waste Caps S55 with electronic Level Indicator are delivered with a permanently mounted cable to connect the b.safe Display for Level Control.

The way of function is quite simple: Connect your b.safe Waste Cap with the b.safe Display by means of a suitable cable. With increasing level, the integrated float gauge in the cap rises. As soon as the “canister is full”, a contact is closed between the cap and the float gauge and an appropriate signal is transferred to the b.safe Display through the cable. You can easily recognize which container has to be exchanged through visual signs on the b.safe Display. Additionally, an acoustic alarm sounds if the filling level is critical.

In order to avoid a spill over of the full waste container during exchange, the alert already rings before the container is completely filled to have a little safety buffer. The red pin on the Waste Caps additionally shows when the canister is full.

Even on b.safe Waste Caps S55 with electronic Level Indicator, tubing and capillaries are easily connected through the PTFE insert that disposes of thread connections UNF 1/4” and NPT 1/8” as standard to connect capillaries and tubing with different diameters by means of Fittings and Hose Connectors. HPLC waste thus directly runs into the canister with S55 thread.

The GL14 connector is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the waste container. The screw cap made of PP and the insert made of PTFE are extremely robust and resistant to chemical and thermal load.



b.safe Waste Caps S55 with electronic Level Indicator

Material: **PTFE, PP** | Temperature resistance: **0 °C to +80 °C** |
Chemical resistance: **++ very good**

Screw cap made of PP for S55 canister thread, free movable insert made of PTFE with permanently fixed cable (length 400 mm) to connect an electronic Level Indicator (b.safe Display) as well as sight glass and visual pin for additional optic control of the filling level. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (UNF 1/4" thread), Blind Fittings to close unused connections, 1 hose connector for tube I. D. 5,5 - 8 mm (NPT 1/8" thread) and 1 connector to screw in a b.safe Exhaust Filter (GL14 thread, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	3	3 x Ø 1,6 (green) 3 x Ø 2,2 (purple) 3 x Ø 3,2 (yellow)	2 (milky white)	0	M 205-40
B	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1 (milky white)	1 x Ø 5,5 - 8 mm	M 205-41

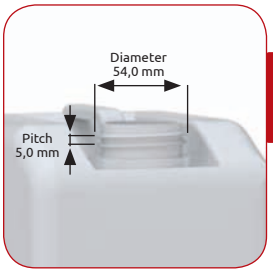
Application:
To avoid spill over of canisters through the connection of a Waste Cap to a b.safe Display for electronic level control. The filling levels of waste containers in laboratory cupboards and workbenches can be reliably monitored. The correct function (spill over protection) is only given if you use canisters with straight neck and without upstream thread adaptor. Additionally, you can use all benefits of b.safe Caps such as the connection of capillaries through b.safe Fittings and tubing with the appropriate hose connectors. Solvent vapours from the escaping air during filling are restrained from the Exhaust Filter with active carbon filling. PFA Fittings in other colours and hose connectors for many other inner diameters can be found from page 97.

b.safe APPROPRIATE

Canisters Page 112
Appropriate canisters for waste disposal

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread S55 (DIN 51)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps S51 with electronic Level Indicator

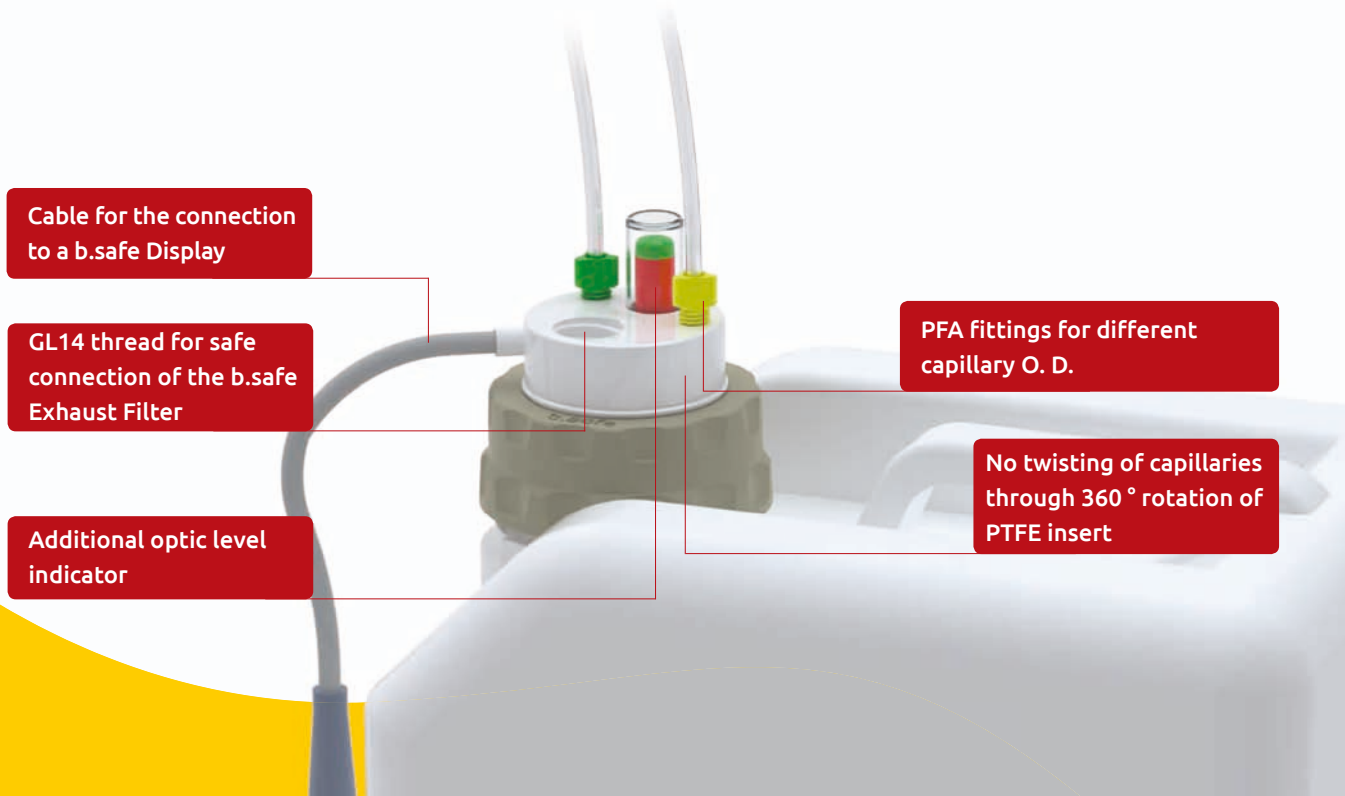
„Long absent, soon forgotten“ is not the motto for b.safe electronic Level Indicators. b.safe Waste Caps S51 with electronic Level Indicator are delivered with a permanently mounted cable to connect the b.safe Display for Level Control.

The way of function is quite simple: Connect your b.safe Waste Cap with the b.safe Display by means of a suitable cable. With increasing level, the integrated float gauge in the cap rises. As soon as the “canister is full”, a contact is closed between the cap and the float gauge and an appropriate signal is transferred to the b.safe Display through the cable. You can easily recognize which container has to be exchanged through visual signs on the b.safe Display. Additionally, an acoustic alarm sounds if the filling level is critical.

In order to avoid a spill over of the full waste container during exchange, the alert already rings before the container is completely filled to have a little safety buffer. The red pin on the Waste Caps additionally shows when the canister is full.

Even on b.safe Waste Caps S51 with electronic Level Indicator, tubing and capillaries are easily connected through the PTFE insert that disposes of thread connections UNF 1/4” and NPT 1/8” as standard to connect capillaries and tubing with different diameters by means of Fittings and Hose Connectors. HPLC waste thus directly runs into the canister with S51 thread.

The GL14 connector is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the waste container. The screw cap made of PP and the insert made of PTFE are extremely robust and resistant to chemical and thermal load.



b.safe Waste Caps S51 with electronic Level Indicator

Material: **PTFE, PP** | Temperature resistance: **0 °C to +80 °C** |
Chemical resistance: **++ very good**

Screw cap made of PP for S51 canister thread, free movable insert made of PTFE with permanently fixed cable (length 400 mm) to connect an electronic Level Indicator (b.safe Display) as well as sight glass and visual pin for additional optic control of the filling level. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (UNF 1/4" thread), Blind Fittings to close unused connections, 1 hose connector for tube I. D. 5,5 - 8 mm (NPT 1/8" thread) and 1 connector to screw in a b.safe Exhaust Filter (GL14 thread, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	2	2 x Ø 1,6 (green) 2 x Ø 2,2 (purple) 2 x Ø 3,2 (yellow)	1 (milky white)	0	M 202-40

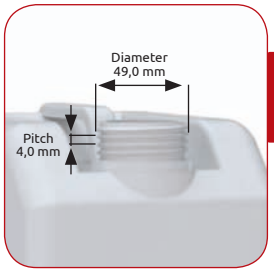
Application:
To avoid spill over of canisters through the connection of a Waste Cap to a b.safe Display for electronic level control. The filling levels of waste containers in laboratory cupboards and workbenches can be reliably monitored. The correct function (spill over protection) is only given if you use canisters with straight neck and without upstream thread adaptor. Additionally, you can use all benefits of b.safe Caps such as the connection of capillaries through b.safe Fittings and tubing with the appropriate hose connectors. Solvent vapours from the escaping air during filling are restrained from the exhaust Filter with active carbon filling. PFA Fittings in other colours and hose connectors for many other inner diameters can be found from page 97.

b.safe APPROPRIATE

Corrugated Tubing Coupling Page 100
For the connection of Corrugated Tubing to b.safe Waste Caps

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread S51 (DIN 50)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps S95 with electronic Level Indicator

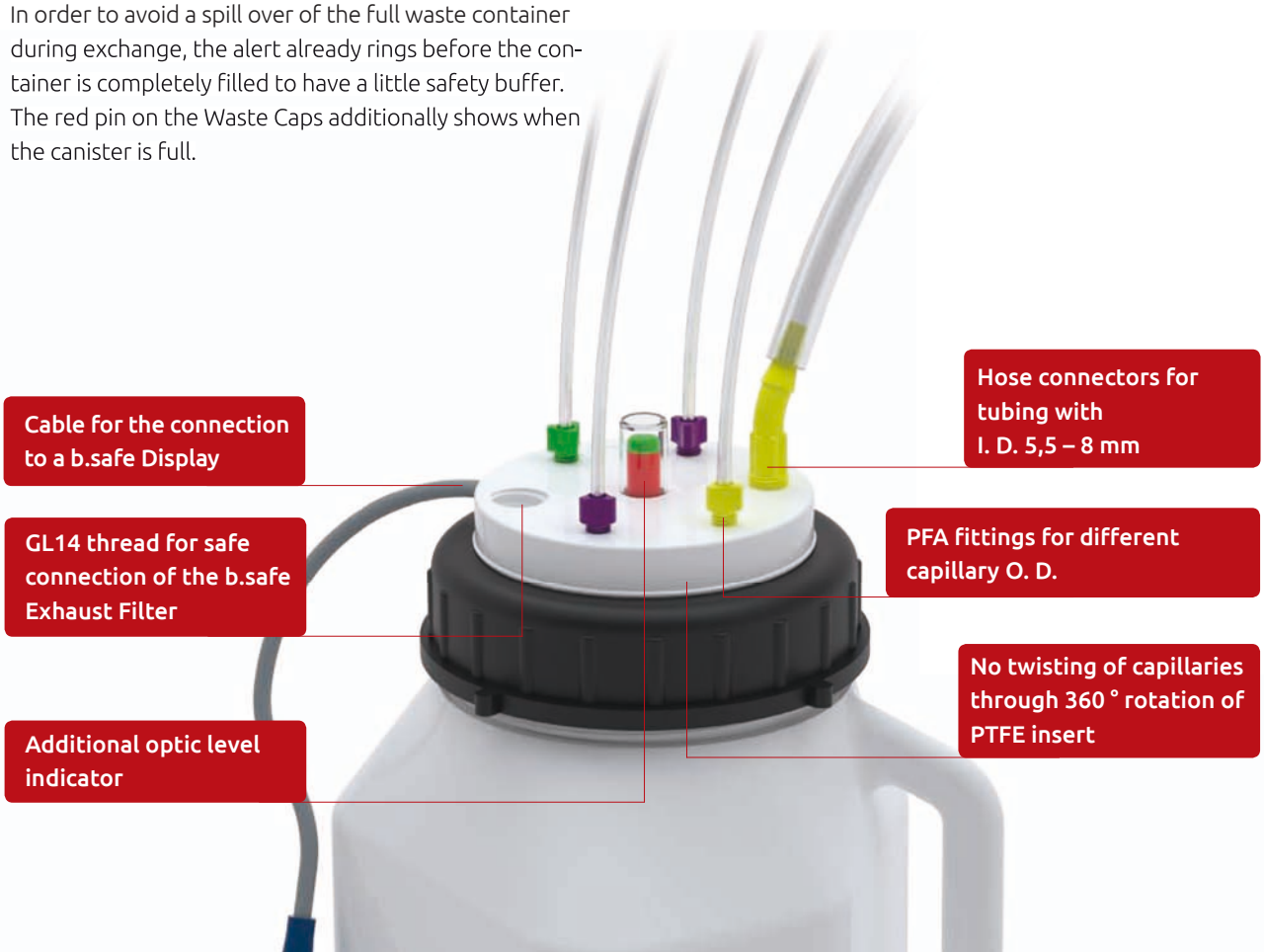
„Long absent, soon forgotten“ is not the motto for b.safe electronic Level Indicators. b.safe Waste Caps S95 with electronic Level Indicator are delivered with a permanently mounted cable to connect the b.safe Display for Level Control.

The way of function is quite simple: Connect your b.safe Waste Cap with the b.safe Display by means of a suitable cable. With increasing level, the integrated float gauge in the cap rises. As soon as the “canister is full”, a contact is closed between the cap and the float gauge and an appropriate signal is transferred to the b.safe Display through the cable. You can easily recognize which container has to be exchanged through visual signs on the b.safe Display. Additionally, an acoustic alarm sounds if the filling level is critical.

In order to avoid a spill over of the full waste container during exchange, the alert already rings before the container is completely filled to have a little safety buffer. The red pin on the Waste Caps additionally shows when the canister is full.

Even on b.safe Waste Caps S95 with electronic Level Indicator, tubing and capillaries are easily connected through the PTFE insert that disposes of thread connections UNF 1/4” and NPT 1/8” as standard to connect capillaries and tubing with different diameters by means of Fittings and Hose Connectors. HPLC waste thus directly runs into the canister with S95 thread.

The GL14 connector is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the waste container. The screw cap made of PP and the insert made of PTFE are extremely robust and resistant to chemical and thermal load.



b.safe Waste Caps S95 with electronic Level Indicator

Material: **PTFE, PE** | Temperature resistance: **-50°C to +80 °C** |
Chemical resistance **++ very good**

Screw cap made of PE for S95 canister thread, free movable insert made of PTFE with permanently fixed cable (length 400 mm) to connect an electronic Level Indicator (b.safe Display) as well as sight glass and visual pin for additional optic control of the filling level. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (UNF 1/4" thread), Blind Fittings to close unused connections, 1 hose connector for tube I. D. 5,5 - 8 mm (NPT 1/8" thread) and 1 connector to screw in a b.safe Exhaust Filter (GL14 thread, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky white)	1 x Ø 5,5 - 8 mm	M 210-41

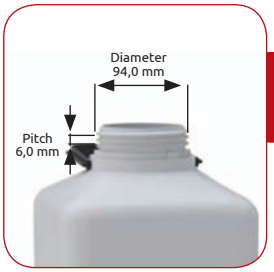
Application:
To avoid spill over of canisters through the connection of a Waste Cap to a b.safe Display for electronic level control. The filling levels of waste containers in laboratory cupboards and workbenches can be reliably monitored. The correct function (spill over protection) is only given if you use canisters with straight neck and without upstream thread adaptor. Additionally, you can use all benefits of b.safe Caps such as the connection of capillaries through b.safe Fittings and tubing with the appropriate hose connectors. Solvent vapours from the escaping air during filling are restrained from the Exhaust Filter with active carbon filling. PFA Fittings in other colours and hose connectors for many other inner diameters can be found from page 97.

b.safe Order directly

Exhaust Filter Page 90
Economy pack for regular exchange.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread
S95

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps S90 with electronic Level Indicator

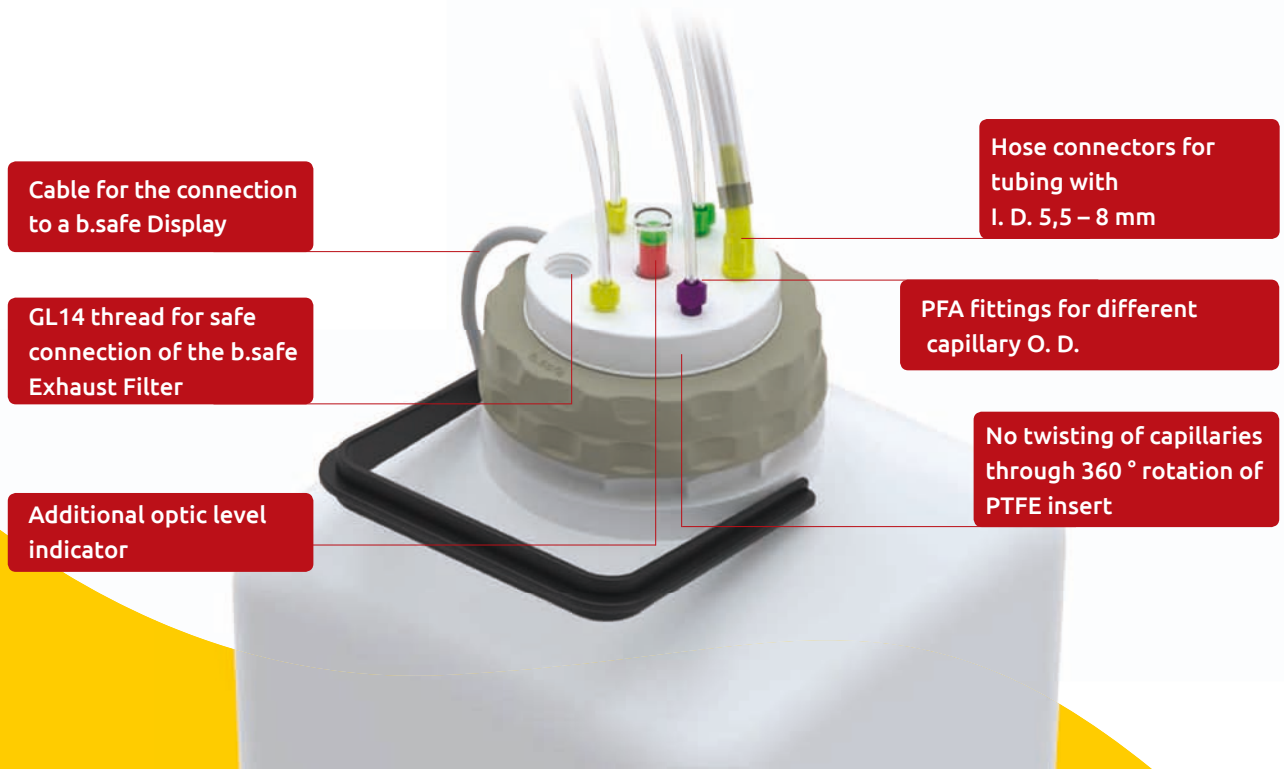
„Long absent, soon forgotten“ is not the motto for b.safe electronic Level Indicators. b.safe Waste Caps S90 with electronic Level Indicator are delivered with a permanently mounted cable to connect the b.safe Display for Level Control.

The way of function is quite simple: Connect your b.safe Waste Cap with the b.safe Display by means of a suitable cable. With increasing level, the integrated float gauge in the cap rises. As soon as the “canister is full”, a contact is closed between the cap and the float gauge and an appropriate signal is transferred to the b.safe Display through the cable. You can easily recognize which container has to be exchanged through visual signs on the b.safe Display. Additionally, an acoustic alarm sounds if the filling level is critical.

In order to avoid a spill over of the full waste container during exchange, the alert already rings before the container is completely filled to have a little safety buffer. The red pin on the Waste Caps additionally shows when the canister is full.

Even on b.safe Waste Caps S90 with electronic Level Indicator, tubing and capillaries are easily connected through the PTFE insert that disposes of thread connections UNF 1/4” and NPT 1/8” as standard to connect capillaries and tubing with different diameters by means of Fittings and Hose Connectors. HPLC waste thus directly runs into the canister with S90 thread.

The GL14 connector is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the waste container. The screw cap made of PP and the insert made of PTFE are extremely robust and resistant to chemical and thermal load.



b.safe Waste Caps S90 with electronic Level Indicator

Material: **PTFE, PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **++ very good**

Screw cap made of PE for S90 canister thread, free movable insert made of PTFE with permanently fixed cable (length 400 mm) to connect an electronic Level Indicator (b.safe Display) as well as sight glass and visual pin for additional optic control of the filling level. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (UNF ¼" thread), Blind Fittings to close unused connections, 1 hose connector for tube I. D. 5,5-8 mm (NPT 1/8" thread) and 1 connector to screw in a b.safe Exhaust Filter (GL14 thread, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky white)	1 x Ø 5,5 - 8 mm	M 209-41

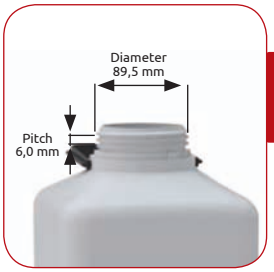
Application:
To avoid spill over of canisters through the connection of a Waste Cap to a b.safe Display for electronic level control. The filling levels of waste containers in laboratory cupboards and workbenches can be reliably monitored. The correct function (spill over protection) is only given if you use canisters with straight neck and without upstream thread adaptor. Additionally, you can use all benefits of b.safe Caps such as the connection of capillaries through b.safe Fittings and tubing with the appropriate hose connectors. Solvent vapours from the escaping air during filling are restrained from the Exhaust Filter with active carbon filling. PFA Fittings in other colours and hose connectors for many other inner diameters can be found from page 97.

b.safe APPROPRIATE

Hose Connectors Page 103
Hose connectors for different diameters

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread S90 (DIN 90)

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps B53 with electronic Level Indicator

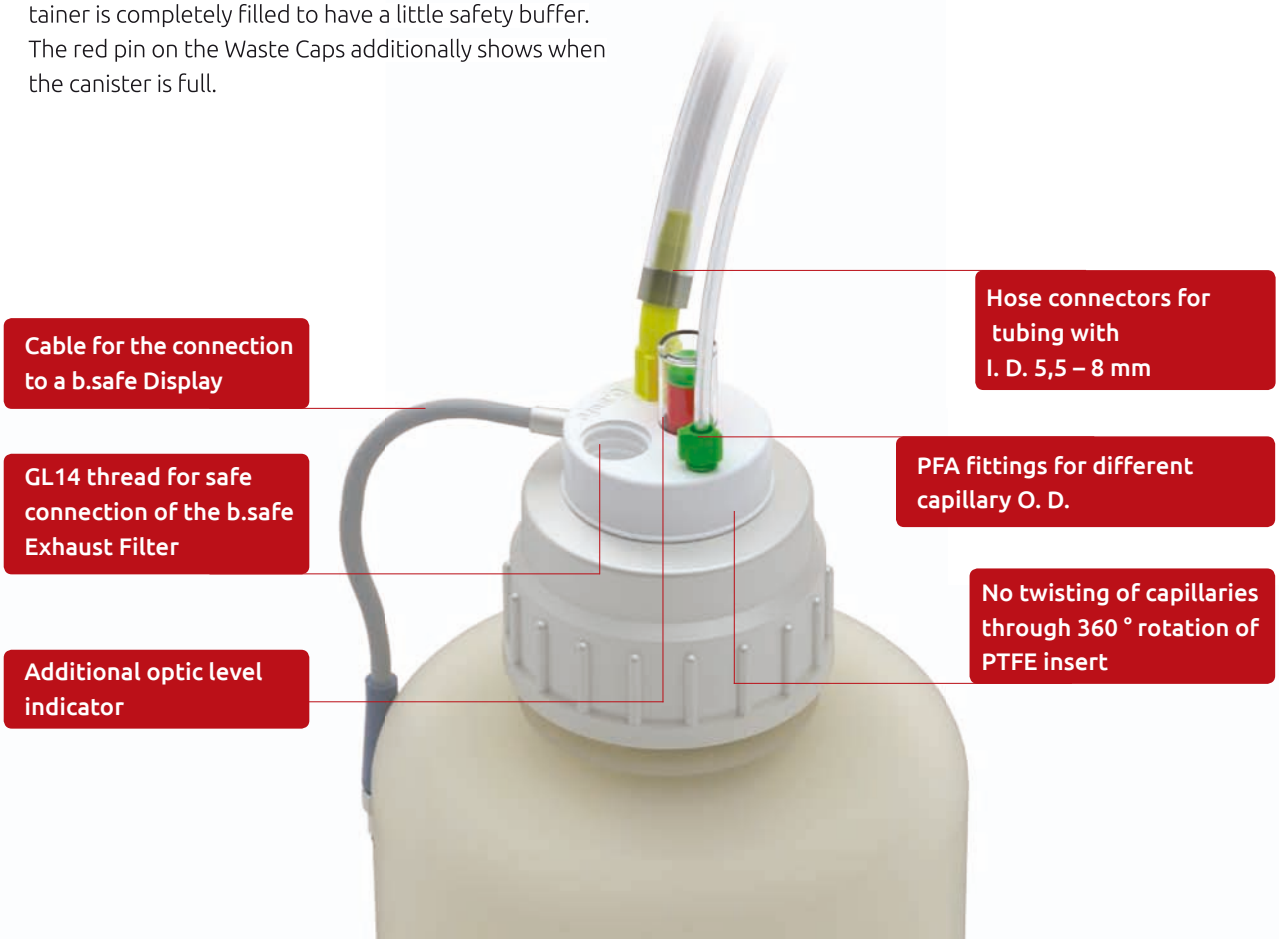
„Long absent, soon forgotten“ is not the motto for b.safe electronic Level Indicators. b.safe Waste Caps B53 with electronic Level Indicator are delivered with a permanently mounted cable to connect the b.safe Display for Level Control.

The way of function is quite simple: Connect your b.safe Waste Cap with the b.safe Display by means of a suitable cable. With increasing level, the integrated float gauge in the cap rises. As soon as the “canister is full”, a contact is closed between the cap and the float gauge and an appropriate signal is transferred to the b.safe Display through the cable. You can easily recognize which container has to be exchanged through visual signs on the b.safe Display. Additionally, an acoustic alarm sounds if the filling level is critical.

In order to avoid a spill over of the full waste container during exchange, the alert already rings before the container is completely filled to have a little safety buffer. The red pin on the Waste Caps additionally shows when the canister is full.

Even on b.safe Waste Caps B53 with electronic Level Indicator, tubing and capillaries are easily connected through the PTFE insert that disposes of thread connections UNF 1/4” and NPT 1/8” as standard to connect capillaries and tubing with different diameters by means of Fittings and Hose Connectors. HPLC waste thus directly runs into the canister with B83 thread.

The GL14 connector is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the waste container. The screw cap made of PP and the insert made of PTFE are extremely robust and resistant to chemical and thermal load.



b.safe Waste Caps B53 with electronic Level Indicator

Material: **PTFE, PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **++ very good**

Screw cap made of PE for B53 canister thread, free movable insert made of PTFE with permanently fixed cable (length 400 mm) to connect an electronic Level Indicator (b.safe Display) as well as sight glass and visual pin for additional optic control of the filling level. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (UNF 1/4" thread), Blind Fittings to close unused connections, 1 hose connector for tube I. D. 5,5-8 mm (NPT 1/8" thread) and 1 connector to screw in a b.safe Exhaust Filter (GL14 thread, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	1	1 x Ø 1,6 (green) 1 x Ø 2,2 (purple) 1 x Ø 3,2 (yellow)	1 (milky white)	1 x Ø 5,5 - 8 mm	M 203-41

Application:
To avoid spill over of canisters through the connection of a Waste Cap to a b.safe Display for electronic level control. The filling levels of waste containers in laboratory cupboards and workbenches can be reliably monitored. The correct function (spill over protection) is only given if you use canisters with straight neck and without upstream thread adaptor. Additionally, you can use all benefits of b.safe Caps such as the connection of capillaries through b.safe Fittings and tubing with the appropriate hose connectors. Solvent vapours from the escaping air during filling are restrained from the Exhaust Filter with active carbon filling. PFA Fittings in other colours and hose connectors for many other inner diameters can be found from page 97.

b.safe APPROPRIATE

Corrugated Tubing Coupling Page 100
For the connection of Corrugated Tubing to b.safe Waste Caps

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.

Canister thread B53

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Waste Caps B83 with electronic Level Indicator

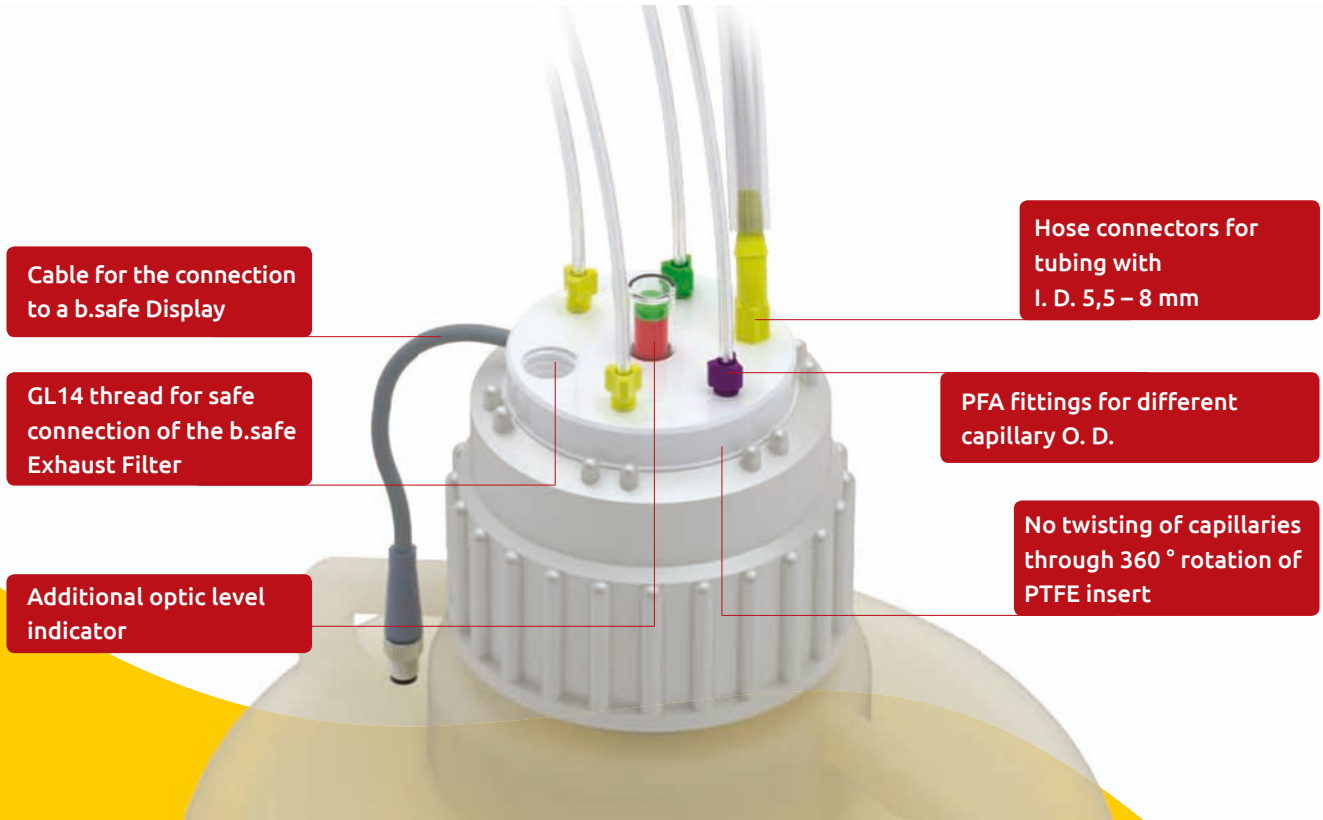
„Long absent, soon forgotten“ is not the motto for b.safe electronic Level Indicators. b.safe Waste Caps B83 with electronic Level Indicator are delivered with a permanently mounted cable to connect the b.safe Display for Level Control.

The way of function is quite simple: Connect your b.safe Waste Cap with the b.safe Display by means of a suitable cable. With increasing level, the integrated float gauge in the cap rises. As soon as the “canister is full”, a contact is closed between the cap and the float gauge and an appropriate signal is transferred to the b.safe Display through the cable. You can easily recognize which container has to be exchanged through visual signs on the b.safe Display. Additionally, an acoustic alarm sounds if the filling level is critical.

In order to avoid a spill over of the full waste container during exchange, the alert already rings before the container is completely filled to have a little safety buffer. The red pin on the Waste Caps additionally shows when the canister is full.

Even on b.safe Waste Caps B83 with electronic Level Indicator, tubing and capillaries are easily connected through the PTFE insert that disposes of thread connections UNF 1/4” and NPT 1/8” as standard to connect capillaries and tubing with different diameters by means of Fittings and Hose Connectors. HPLC waste thus directly runs into the canister with B83 thread.

The GL14 connector is reserved for the separately available Exhaust Filter. Its activated carbon filling adsorbs solvent vapours which are produced during filling so that no harmful vapours can escape from the waste container. The screw cap made of PP and the insert made of PTFE are extremely robust and resistant to chemical and thermal load.



b.safe Waste Caps B83 with electronic Level Indicator

Material: **PTFE, PE** | Temperature resistance: **-50 °C to +80 °C** |
Chemical resistance: **++ very good**

Screw cap made of PE for B83 canister thread, free movable insert made of PTFE with permanently fixed cable (length 400 mm) to connect an electronic Level Indicator (b.safe Display) as well as sight glass and visual pin for additional optic control of the filling level. With PFA Fittings for capillaries with O. D. 1,6 / 2,2 / 3,2 mm (UNF ¼" thread), Blind Fittings to close unused connections, 1 hose connector for tube I. D. 5,5-8 mm (NPT 1/8" thread) and 1 connector to screw in a b.safe Exhaust Filter (GL14 thread, not included in the scope of delivery). Version and scope of delivery as per below chart.

	Number of capillary connectors	Number of Fittings mm	Number of Blind Fittings	Hose Connectors	Cat. No.
A	4	4 x Ø 1,6 (green) 4 x Ø 2,2 (purple) 4 x Ø 3,2 (yellow)	3 (milky white)	1 x Ø 5,5 - 8 mm	M 208-41

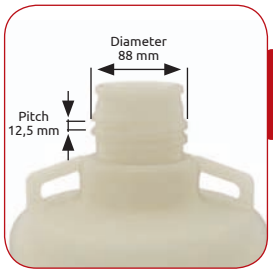
Application:
To avoid spill over of canisters through the connection of a Waste Cap to a b.safe Display for electronic level control. The filling levels of waste containers in laboratory cupboards and workbenches can be reliably monitored. The correct function (spill over protection) is only given if you use canisters with straight neck and without upstream thread adaptor. Additionally, you can use all benefits of b.safe Caps such as the connection of capillaries through b.safe Fittings and tubing with the appropriate hose connectors. Solvent vapours from the escaping air during filling are restrained from the Exhaust Filter with active carbon filling. PFA Fittings in other colours and hose connectors for many other inner diameters can be found from page 97.

b.safe Order directly

Exhaust Filter Page 90
Economy pack for regular exchange.

b.safe INFORMATIVE

Operating Principle Page 164
This is how pressure compensation is made during filling.



Canister thread B83

Not sure if this cap fits?

Help for thread determination from page 168.

b.safe Fill Level Control

To protect your own health, you have closed your waste containers with Waste Caps or Funnels. But how can you avoid a spill over of the canister or a return flow into your HPLC if you cannot see the filling level from outside? b.safe offers different options for fill level control. We will find solutions and products perfectly adapted to your workflows. Ask our experts, we will be glad to assist you!

At our products with optic fill level control, a red pin connected to a float gauge rises with increasing filling level. As soon as the red pin fills the window completely, the waste container has to be exchanged.

b.safe Canisters S60 with Fill Level Indicator (Cat. No. R 237-10). Optic Fill Level Control that is permanently mounted on the canister.

b.safe Funnels 180 with Level Indicator (Cat. No. R 840-16). Optic Level Indicator that is permanently mounted in the funnel. As soon as the red pin fills the inspection glass completely, the canister is full and has to be exchanged.

b.safe Funnels 130 with Level Indicator

Material: **PE-EX** I Temperature resistance: **-50 °C to +80 °C** I
Chemical resistance: **++ very good**

Funnel made of static dissipative PE-EX for liquid waste disposal. The funnel can be safely mounted on the waste container with its freely turnable cap that is safely fixed with the filling neck. The sieve restrains magnetic stirrer bars and other solid materials and can be easily removed for cleaning. The hinged lid reliably withholds hazardous vapours from the container. With integrated Level Indicator to monitor the filling level in opaque containers. As soon as the red indicator pin is visible from up above the top edge of the sieve, the waste container has to be exchanged to avoid spillover.
The version with inclined neck allows a horizontal installation of the funnel on canisters with inclined filling neck without the need of an additional adaptor. Version and scope of delivery as per below chart.

	For thread	Material	Direction of connector	Number of grounding cable	Cat. No.
A	S60	PE-EX	vertical	1	R 840-25
B	S60	PE-EX	inclined	1	R 840-26

b.safe Funnels 180 with Level Indicator

Material: **PE-EX** I Temperature resistance: **-50 °C to +80 °C** I
Chemical resistance: **++ very good**

Funnel made of static dissipative PE-EX for liquid waste disposal. The funnel can be safely mounted on the waste container with its freely turnable cap that is safely fixed with the filling neck. The sieve restrains magnetic stirrer bars and other solid materials and can be easily removed for cleaning. The splash guard avoids spillover and splashing during funnel filling. With integrated Level Indicator to monitor the filling level in opaque containers. As soon as the red indicator pin is visible from up above the top edge of the sieve, the waste container has to be exchanged to avoid spillover.
The version with inclined neck allows a horizontal installation of the funnel on canisters with inclined filling neck without the need of an additional adaptor. Version and scope of delivery as per below chart.

	For thread	Material	Direction of connector	Number of grounding cable	Cat. No.
A	S60	PE-EX	vertical	1	R 840-15
B	S60	PE-EX	inclined	1	R 840-16
C	G2"+TriSure 2"	PE-EX	vertical	1	R 880-15
C	Mauser 2"	PE-EX	vertical	1	R 890-15

b.safe Canister with Level Indicator S60

Canister with S60/61 thread (DIN 60/61) for the collection of liquid waste with integrated indicator to monitor the level. The red visual pin goes up with increasing filling level. As soon as the visual pin fills the inspection glass completely, the canister is full and has to be exchanged. Version as per below chart.

	Volume liters	Neck	Dimensions Length x Width x Height mm	Material	Cat. No.
	10	inclined	295 x 200 x 255	PE-EX	R 237-10
	20	inclined	295 x 200 x 495	PE-EX	R 237-20

	Accessories	Version	Cat. No.
	Protection Cage for sight glass	Attachable break protection for the sight glass on the canister with integrated Level Indicator R 237-.., Packing Unit: 1 piece	R 247-10

Empty Canister

Full Canister

Sophisticated Safety Solutions – custom made!

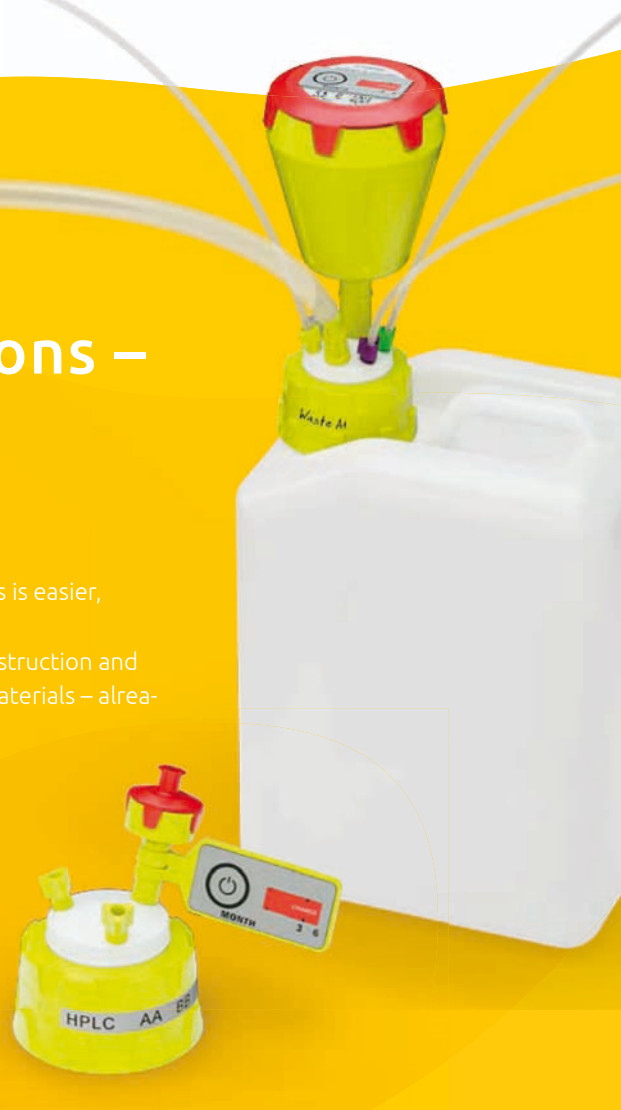
You are looking for a solution exactly adapted to your application?

As a manufacturing company, we can make products to your specifications. This is easier, quicker and often more economic than you may expect.
Contact our experts – we give advice and support already starting with the construction and production as per your requirements and in compliance with the chosen raw materials – already from 1 piece.

We only need a drawing (a sketch is sufficient) and some further information.

You have a special request?

www.bsafe.de or **+49 (0) 93 46-92 86-0**



b.safe Fill Level Control

To protect your own health, you have closed your waste containers with Waste Caps or Funnels. But how can you avoid a spill over of the canister or a return flow into your HPLC if you cannot see the filling level from outside? b.safe offers different options for fill level control. We will find solutions and products perfectly adapted to your workflows. Ask our experts, we will be glad to assist you!

At our products with optic fill level control, a red pin connected to a float gauge rises with increasing filling level. As soon as the red pin fills the window completely, the waste container has to be exchanged.

Barrel with mounted Level Indicator with Funnel connection GL45 (Cat. No. M 710-01)
Combined with a Funnel 180 (Cat. No. R 800-10) with connecting thread GL45, you can fill liquid waste directly into the barrel. At the same time, you can keep an eye on the fill level through the integrated optic Level Indicator during filling.

b.safe Level Indicator for Barrels (Cat. No. M 730-01) for the assembly on female threads G3/4". Liquid waste is filled into a barrel via a b.safe Funnel 180 (Cat. No. R 880-10) for barrel thread G2". At the same time, you can keep an eye on the fill level through the integrated optic Level Indicator during filling.

b.safe Level Indicator with Funnel connection

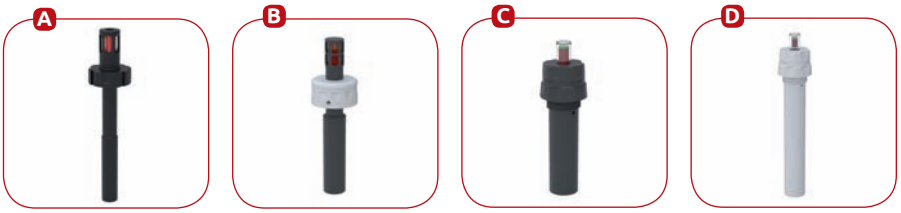
Insert with screw-in thread for barrels or screw cap for canisters. With integrated level indicator to monitor the liquid level during filling as well as a neck with GL45 thread for the assembly of a b.safe funnel with GL45 thread. The red visual pin goes up with increasing filling level. As soon as the visual pin fills the inspection glass completely, the canister is full and has to be exchanged. Version as per below chart.

	Suitable for	Funnel connection mm	Material	Cat. No.
A	Female thread G2" + TriSure 2"	GL45	PE-EX	M 710-01
B	Female thread Mauser 2"	GL45	PE-EX	M 712-01
C	Male thread S60	GL45	PE-EX	M 801-01

Application:
Use of a b.safe funnel for filling of liquids and monitoring of the filling level at the same time to avoid run over.

b.safe Level Indicator for Barrels

Level indicator to monitor the liquid level during filling of barrels. The red visual pin goes up with increasing filling level. As soon as the visual pin fills the inspection glass completely, the canister is full and has to be exchanged. Version as per below chart.



	Suitable for	Length of filling tube mm	Dia. of filling tube mm	Material	Cat. No.
A	Dairy pipe thread	250	31	PE	M 715-01
B	Opening dia. 50-100 mm	238	50	PE	M 720-01
C	Female thread G3/4"	86	23	PE-EX	M 730-01
C	Female thread G3/4"	86	23	PE	M 732-01
D	Female thread G3/4"	86	23	PTFE / PFA	M 734-01

Application:
Protection of run over during liquid filling.

b.safe Tubing

Your benefits – when purchasing b.safe Tubing

» No fixed roll sizes but availability of tubing by metres
Free choice of sizes between minimum and manufacturing maximum length

» Longer lengths in one piece
Requested quantities of up to 100 metres in one length are possible for tubing O. D. up to 10 mm without surcharge. Lengths of more than 100 metres are only available on a case-by-case basis. Please send us an enquiry.

» Ordered quantity is always delivered in one piece if possible
If current stocks or the ordered quantity do not allow other options, the tubing will be delivered in partial lengths without further consultation. Ordered quantity: 90 m = 60 m + 30 m for example.

» Easy to handle
Tubing up to an O. D. of 3 mm and a purchasing quantity of at least 30 m are supplied on reels which avoids twisting and bending. Stocking and removal become more simple.

» Excellent quality at fair prices
Stricter tolerances than the gerneral industry standard GKV allow perfect interaction with our b.safe Fittings.

b.safe PTFE-Tubing

Material: **PTFE** | Temperature resistance: **-200 °C to +250 °C** |
Chemical resistance: **+++ universal**

Translucent to milky white tubing. Order quantities smaller than the maximum production length are supplied in rolls with continuous length.

	I.D. mm	O.D. mm	Wall thickness mm	Cat. No.
	0,8 (1/32“)	1,6 (1/16“)	0,4	R 750-02
	1,0	1,6 (1/16“)	0,3	R 750-04
	1,4	2,2	0,4	R 750-06
	1,6 (1/16“)	3,2 (1/8“)	0,8	R 750-08

Application:
Perfectly suitable as tubing for aggressive liquids.

b.safe EX Tubing

Material: **PTFE-EX** | Temperature resistance: **-200 °C to +250 °C** |
Chemical resistance: **+++ universal** | Conductivity: **10^6 Ohm**

Made of static dissipative PTFE-EX, special compound made of PTFE and finest, highly pure carbon dust (less than 2,5 %). Colour: black. Order quantities smaller than the maximum production length are supplied in rolls with continuous length.

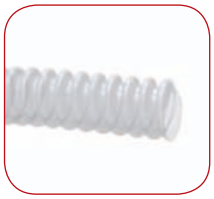
	I.D. mm	O.D. mm	Wall thickness mm	Cat. No.
	0,8 (1/32")	1,6 (1/16")	0,4	R 770-02
	1,6 (1/16")	3,2 (1/8")	0,8	R 770-08
	4,0	6,0	1,0	R 770-10
	6,0	8,0	1,0	R 770-12
	8,0	10,0	1,0	R 770-14
	10,0	12,0	1,0	R 770-16

Application:
Application: For Transport of solvents or easily flammable liquids.

b.safe Corrugated Tubing

Material: **PE** | Temperature resistance: **-50 °C to +250 °C** |
Chemical resistance: **++ very good**

Translucent to milky white tubing. Order quantities smaller than the maximum production length are supplied in rolls with continuous length.



	I.D. mm	O.D. mm	Wall thickness mm	Cat. No.
	approx 6,5	approx. 10,0	approx. 1,75	R 753-05

Application:
Perfectly suitable as tubing for aggressive liquids.

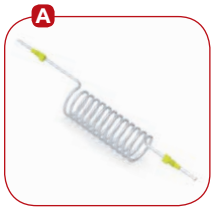
b.safe APPROPRIATE

Corrugated Tubing Coupling Page XXX
For the connection of Corrugated Tubing to b.safe Waste Caps

b.safe Spiral Tubing

Material: **PFA** I Temperature resistance: **-200 °C to +260 °C** I
Chemical resistance: **+++ universal**

Spiral tubing with tubing ends (length: 1x 300 mm, 1x 150 mm), extendible to maximum 1,5 m. With PFA Fittings for tubing O. D. 3,2 mm for assembly on b.safe Caps.

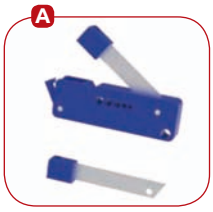


	Inner diameter mm	Outer diameter mm		Cat. No.
A	1,6	3,2		M 545-01

Application:
Bottles connected can be moved within a radius of 1,5 m without disarranging or removing the tubing.

b.safe Capillary Cutters

Ideal for cutting capillaries and elastic tubes without reinforcement.



	Up to tubing O.D. mm	Guide dia. mm	Cat. No.
A	8	1,6 / 2,3 / 3,2 / 3,8 / 4,2 mm including replacement blades	R 570-01
B	28		R 572-05

	Accessories	Cat. No.
C	Replacement blades for Cat-no. R 572-05	R 573-05

Application:
The guide bores at Cat. No. R 570-01 help to get a clean cut of the capillaries.

b.safe Label Printer

Portable Label Printer with computer-style keyboard, large LCD display and 20 methods to format text. Incl. 1 label cassette black on white, width 12 mm / length 3 m. Labels up to a width of 12 mm can be printed. Powered by 6 batteries AAA or optional AC-adapter (both not included).

	Version		Cat. No.
A	Portable label printer		M 550-01

b.safe Label Cassette

Label cassette suitable for b.safe Label Printer. Label width matches with the label field on b.safe Caps and Waste Caps.

	Dimensions	Print colour	Packing unit	Cat. No.
A	Width 6,0 mm x length 7 m	Black on white	1 piece	M 550-02

Application:
For clear and easy to read marking of b.safe Caps and Waste Caps respectively capillaries and tubes. We recommend a width of max. 6 mm to mark b.safe Caps.

b.safe Tube Tag

Material: **PP**

Flexible tube tag to stick on capillaries and tubes with O. D. 0,4 to 6,35 mm, assorted colours (5 colours per pack).

	Length mm	Width mm	Packing unit	Cat. No.
A	60	13	Pack with 20 pieces	M 560-01

Application:
Coloured tags to identify capillaries and tubes. Markable with ball pens (removable) and permanent markers, or self-adhesive labels.

b.safe Tubing Holders

Material: **ABS** I Chemical resistance: **+ good**

For fixation of capillaries and tubing to avoid disarranging or bending of tubes. Self-adhesive bottom side. A b.safe Tubing Holder can arrange at once up to 8x O. D. 1,6 mm / 3x O. D. 3,2 mm or 1x O. D. 5 mm.
Packing unit: pack with 10 pieces.

	Length mm	Width mm	Height mm	Cat. No.
A	30	11	10	M 562-01

Application:
To lead and fix tubing and capillaries without being disarranged or bent.

b.safe Protect health and save costs

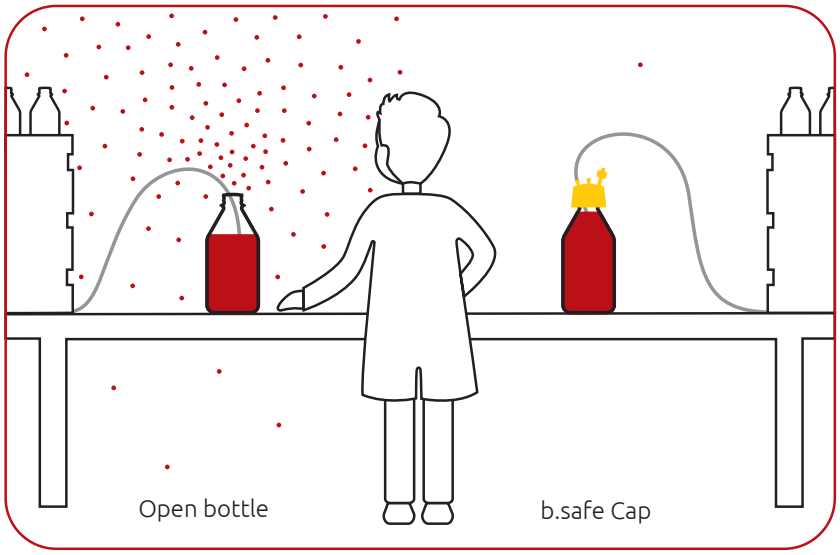
Avoid emissions

A typical situation in laboratory using solvents was tested for 10 days. Different forms of sealing using acetonitrile show big differences in the emission which lead to unnecessary costs and hazardous concentrations in the ambient air. We tested the following sealing forms: “open”, “aluminium foil”, “closure with bore and b.safe Caps.

Test conditions

Temperature in test room	20°C	Connection	2 PTFE tubing
Air exchange	8-fold / hour	Test medium	Acetonitrile
Bottle volume	1 liter	Costs Acetonitrile	50 €/ liter
Bottle thread size	GL 45	Period	10 days

Contamination



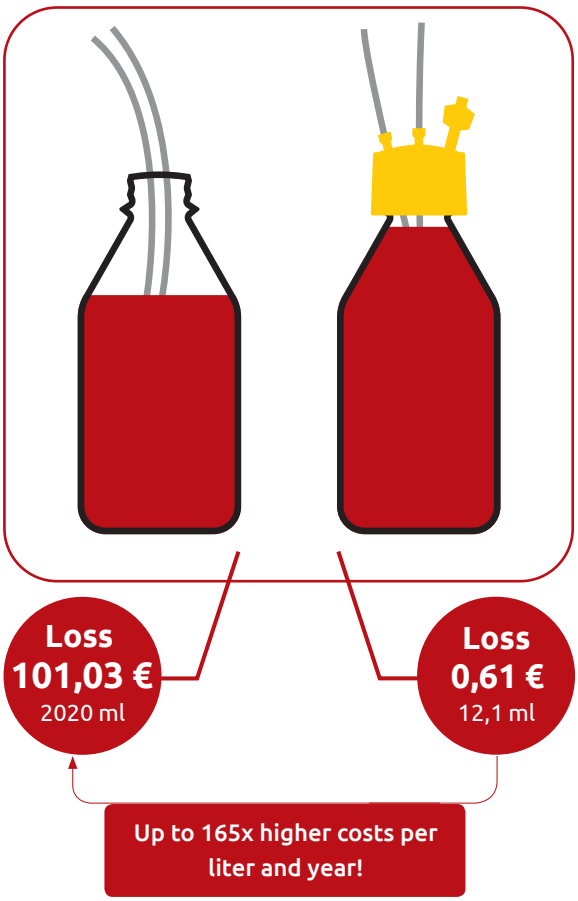
The daily situation in laboratories regarding costs and ambient air contamination can be improved immediately with little effort. With b.safe Caps, you can save up to 165x of the costs and reduce the solvents in the ambient air at the same time. Save costs and protect health with b.safe Caps!

Measured values per liter

The measured values show significantly the large saving potential, already after 10 days. Furthermore, emissions in the ambient air can be reduced to a minimum.

	Weight loss	Evaporation	Costs
A Open bottle	43,51 g	55,36 ml	2,77 €
B Aluminium foil	22,10 g	28,12 ml	1,41 €
C Lid with bore	18,89 g	24,03 ml	1,20 €
D b.safe Cap	0,26 g	0,33 ml	0,02 €

Projected loss within one year



A bottle equipped with our Cap just loses 12,1 ml solvent, projected on one year. An open bottle loses 2020 ml in the same period of time which is **165x** as much! You can be sure to **save up to 200 € per year** per b.safe Cap.

You like our b.safe Caps?
We are looking forward
to your feedback!
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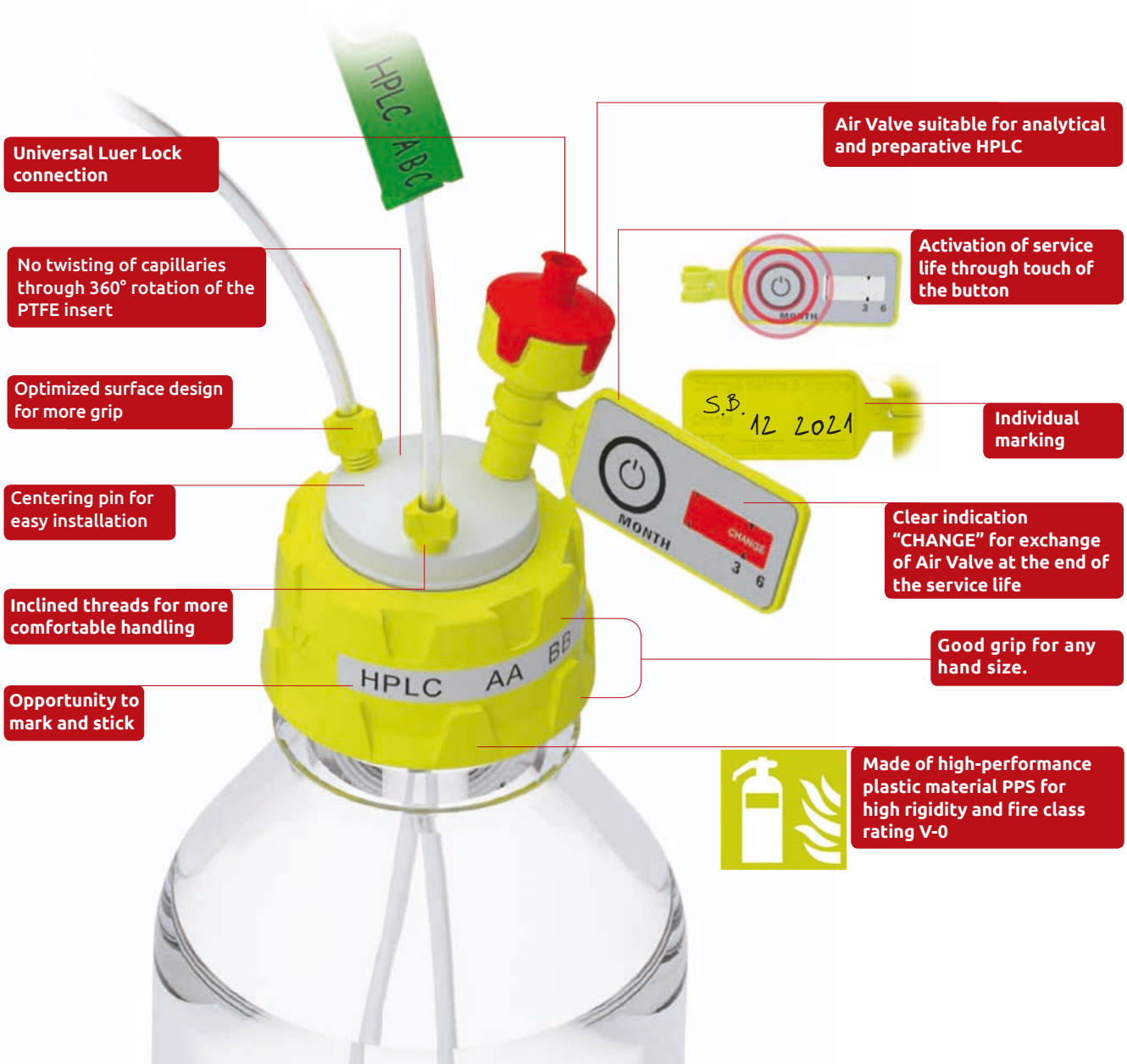
b.safe Caps - Operating Principle

b.safe Caps together with Fittings, Tubing and Air Valves form a perfect unit for solvent extraction from bottles and canisters.



Universal Luer Lock connection

No twisting of capillaries through 360° rotation of the PTFE insert

Optimized surface design for more grip

Centering pin for easy installation

Inclined threads for more comfortable handling

Opportunity to mark and stick

Air Valve suitable for analytical and preparative HPLC

Activation of service life through touch of the button

Individual marking

Clear indication "CHANGE" for exchange of Air Valve at the end of the service life

Good grip for any hand size.

Made of high-performance plastic material PPS for high rigidity and fire class rating V-0

Solvents are sucked out of the bottle through the capillaries.

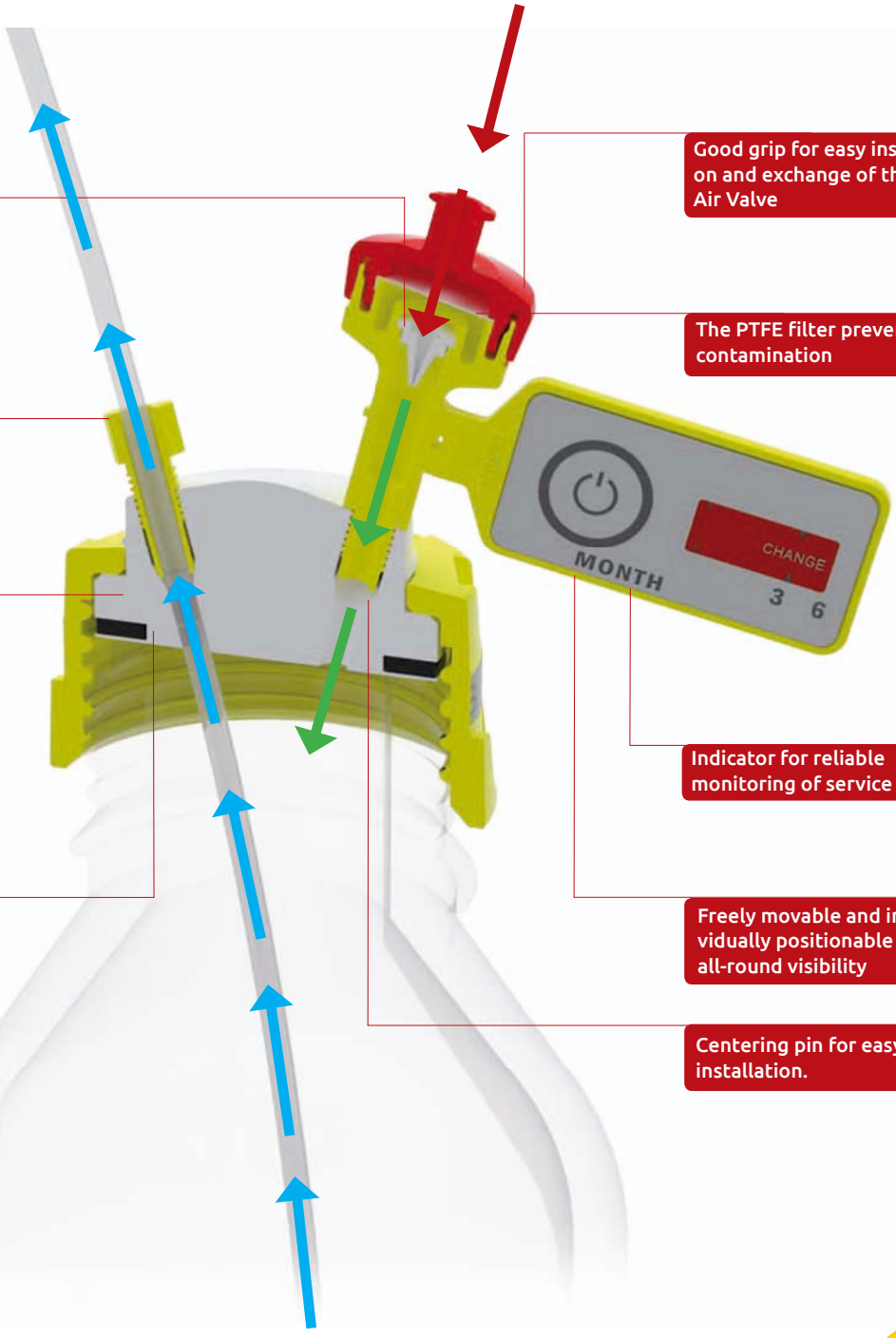
The b.safe Air Valve lets flow into the bottle as much ambient air as necessary for pressure compensation. Solvent vapours are restrained and the evaporation loss of solvents is reduced.

Good grip for easy installation and exchange of the Air Valve

The valve restrains solvent vapours and opens in case of vacuum

The PTFE filter prevents contamination

With their opitmized design, b.safe Fittings can easiliy be connected to b.safe Caps



No twisting of capillaries through 360° rotation of PTFE insert

Indicator for reliable monitoring of service life

PTFE-insert with integrated flat sealing for improved tightness

Freely movable and individually positionable for all-round visibility

Centering pin for easy installation.

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b.safe Exhaust Filter - Operating Principle

Activation of service life through touch of the button and/or mark individually on the back side

Activated carbon in the inside guarantees adsorption of harmful vapours

PP for high rigidity and fire class rating V-0

Optimized postion of the O-ring for easy installation

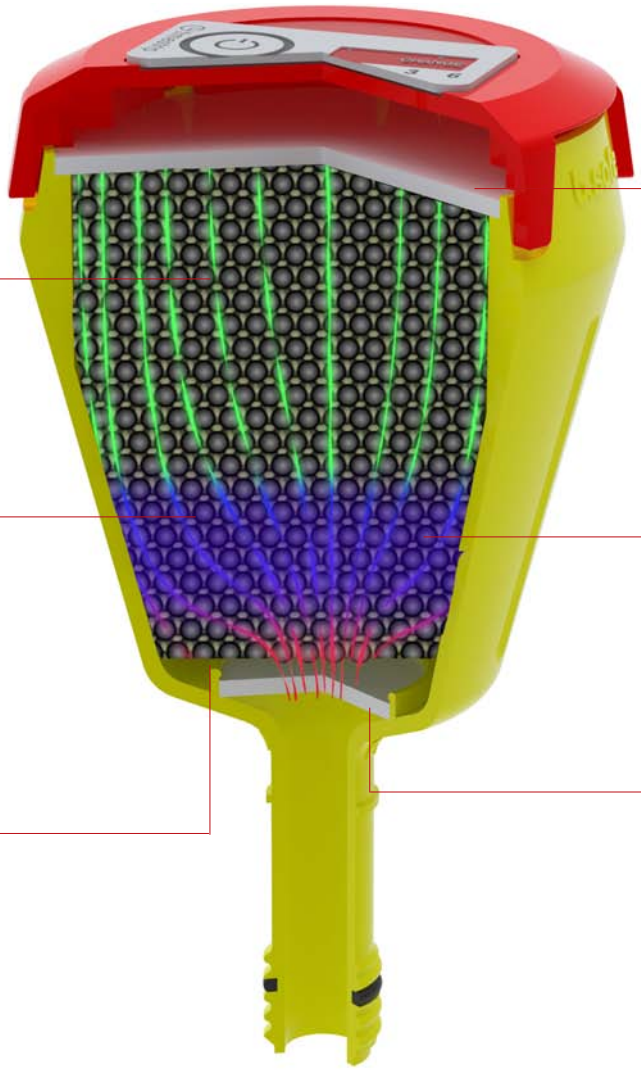
Splash-proof ventilation openings

No twisting, lid and filter body are inseparably linked

Good grip for easy installation of the Exhaust Filter on Waste Caps

Sophisticated design - plenty of space for Fittings and Hose Connectors

The activated carbon filling in the b.safe Exhaust Filters adsorbs harmful vapours that escape from the collected solvent waste. Only filtered air is emitted through the ventilation openings to the ambience.



Filter made of FDA conform PE to stabilize the activated carbon filling. Perfect air permeability of 300-1500 ml/min cm²

Supply Zone (green): proportion of the non-saturated activated carbon. The end of the Exhaust Filter's life cycle is reached as soon as this proportion is also saturated with solvents.

Active Zone (blue): also called adsorption zone. This part of the activated carbon is adsorbing the solvents in the air that is just flowing through the filter. It migrates upwards the more the saturated area grows.

Activated carbon with a surface of 1100 m²/g for reliable adsorption of harmful solvents during the entire service life of the b.safe Exhaust Filter

Prefilter for optimized flow behaviour (air permeability of 300-1500 ml/min cm²)

Saturated Zone (red): proportion of the activated carbon that is already saturared with solvents. During the expiration of the service life, the saturated zone migrates upwards until the Exhaust Filter is completely saturated at the end of its service life.

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b.safe Activated Carbon

worth knowing

b.safe Activated Carbon sets new standards in the lab with a ball-pan hardness of 98-99 % and an inner surface of 1.100 m²/g. It is used for exhaust air purification by adsorption of organic solvents.

Low Edge Attraction

- Vibration density: 410 +/- 30 kg/m³
- The optimized particle size prevents clumping and sticking of the particles. This prevents the edge attraction effect, i. e. the flow through of exhaust air without any contact to the activated carbon.

Reduced Abrasion

- -Ball-pan hardness: 98-99 Weight %
- In movement, activated carbon particles can abride. The resulting abrasion of smallest carbon particles can clog the passages.
- The high ball-pan hardness protects the single particles from abrasion and thus the consistency and filter performance of the activated carbon are not affected.

High Purity

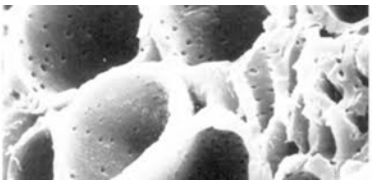
- Ash content (proportion of foreign particels in the activated carbon): < 10 Weight %
- The smaller the ash content, the more reliable the filter performance

Low Water Content

- Water content: < 5 Weight % (at time of delivery)
- Beside solvent vapours, also humidity e. g. in ambient air, is adsorbed by activated carbon. A small water content increases the adsorption capacity for solvents.

Particle size and Grain Diameter

- Grain diameter: 4 mm
- Particle size and thus flow resistance are especially adapted to the filtration and the flow behaviour of solvent vapours.



All stated data base on examination of the b.safe Activated Carbon in the state as delivered and analysis methods according to ASTM.

CCl4-Adsorption / Butane Activity

- CCl4-Adsorption: 70 Weight %
- CCl4-Adsorption respectively carbon tetrachloride activity stands for the loading of activated carbon with carbon tetrachloride and is a method to determine the pore volume.
- Due to the toxicity of carbon tetrachloride, this method has been replaced by the butane activity.
- Formule to calculate the butane activity: divide the CCl4-activity by 2,55

Large benefits often hide in small details. Should you require any detail, please contact us personally to talk about your individual requirements for safe HPLC.

Better b.safe

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b.safe Determination of Thread Types

Choosing a suitable fitting, screw cap or multiple distributor with the correct thread type and size is not as easy as it might seem.

Please use a sliding calliper for the determination of a thread type. Use it for the determination of the thread O. D. and the thread pitch. The pitch is the distance from one thread crest to the other as shown on our schematic drawings. Now the thread type can be determined by comparing the original thread with our figures. Once you have found a similar type, the actual thread size is identified by comparing the measured dimensions with the typical dimensions stated in the related chart.

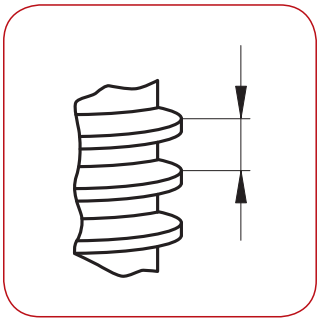
Of course, we will help you if you still have problems in determining your thread. Just send us a sample or counterpiece, we will be glad to help you with your choice. But please understand that we are not able to determine threads on faxed or scanned copies or pictures.

Important: Due to tolerances in production of different manufacturers, the dimensions of vessels can vary of up to 0.5 mm.

Measuring of canister thread

Measuring of bottle thread

Sample for canister thread



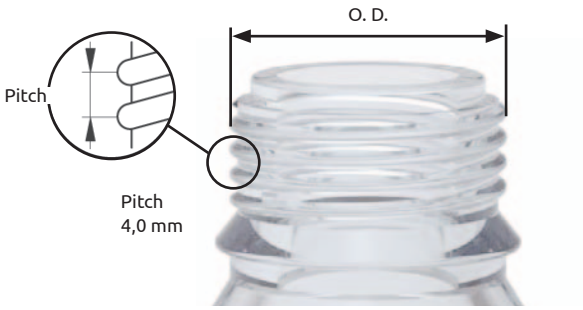
Thread pitch

Bottle Threads

GL Threads

- round threads at the flanks
- high pitch
- large flanks for important carrying power
- GL thread one-start thread
- GLS 80 thread three-start thread

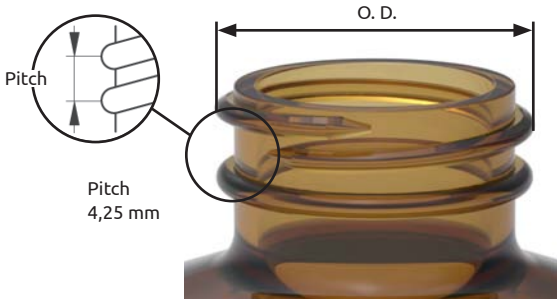
Example:
GL 45 – O. D. = 45 mm



GPI

- GPI = Glass Packaging Institute, trade association representing the North American glass container industry
- voluntary standards for compatibility of glass containers and closures

Example:
GPI 38-400 – O. D. = 37 mm



Measurement chart

O. D. mm	2,0	2,5	3,0	3,2	3,5	4,0	4,25	15,0
80,0								GLS 80
45,0						GL 45		
37,0							GPI 38/430*	
37,0							GPI 38/400**	
32,0						GL 32		
31,8							GPI 33/430*	
31,8							GPI 33/400**	
27,3							GPI 28/400**	
25,0					GL 25			
19,7				GPI 20/400**				
18,0			GL 18					
14,0		GL 14						
12,0	GL 12							

* high form of cap
** low form of cap

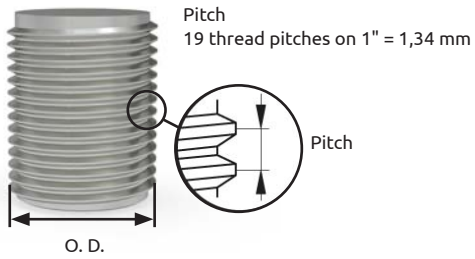
Pitch in mm

Connection Threads

G or R (Whitworth Pipe Thread) and BSP (British Standard Pipe)

- Main use in countries with imperial system
- G-threads: cylindrical O. D. and I. D.
- R-threads: tapered O. D. and cylindrical I. D.

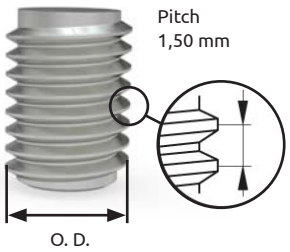
Example:
G 3/8" – O. D. = 16,5 mm



M (metric ISO thread) – Standard in Europe

- Cylindrical O. D. respectively I. D.
- Fine taper through metric thread
- best possible force transmission
- capital "M" plus an indication of nominal O. D., e. g. M 10
- deviating pitch from the standard is marked with an appendix, e. g. M 10 x 0,75.

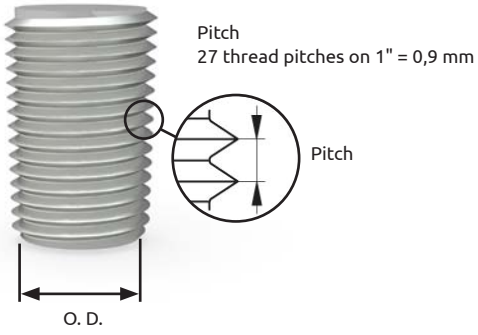
Example:
M 10 – O. D. = 10 mm



NPT (National Pipe Thread) Tapered American Pipe Thread

- tapered O. D. respectively I. D.
- self-sealing

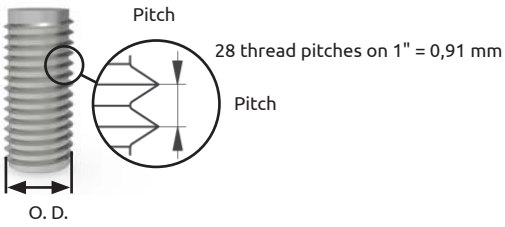
Example:
NPT 1/8" – O. D. = 9,9 mm



UNF 1/4" 28G

- Mainly used in chromatography / HPLC applications in the USA
- Digits 28 G and 32 G stand for the number of thread pitches at a length of one inch (25,4 mm)

Example:
UNF 1/4" 28G – O. D. = 6,2 mm



UNF ¼" 28G versus M 6

b.safe Fittings come with the most common HPLC thread UNF ¼" 28 G without exception. In addition, fittings and distributors with the very similar thread M 6 exist. These threads can only be distinguished by exact determination of their outer diameter or by using a test mandrel (it is possible to screw in a tube end fitting in the counterpart of the other thread for at least 2-3 rotations). The UNF ¼" thread has an outer diameter of 6.35 mm, the M 6 thread has exactly 6 mm (work tolerances are possible). We recommend to use only the UNF ¼" 28G thread to avoid confusion and double inventory.

Measurement chart

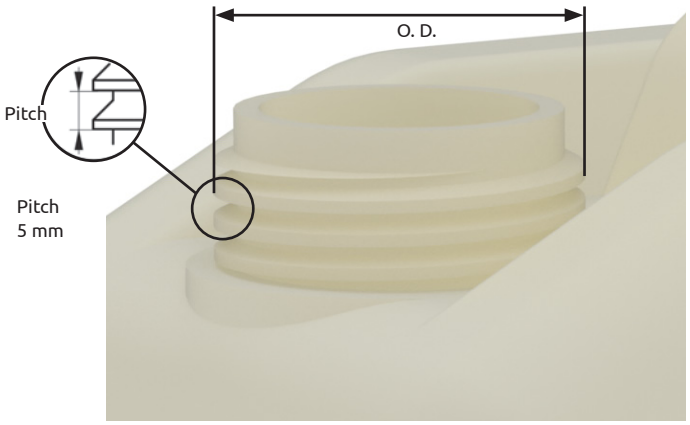
O. D. mm									
47,8									G/R 11/2"
20,8								G/R 1/2"	
16,5						G/R 3/8"			
13,2							NPT 1/4"		
13,0						G/R 1/4"			
10,0				M 10					
9,9	NPT 1/8"								
9,6		G/R 1/8"							
7,9					UNF 5/16"				
6,2		UNF 1/4"							
6,0			M 6						
	0,9	0,91	1,0	1,5	1,06	1,34	1,4	1,81	2,3
									Pitch mm

Canister Threads

Canister Thread S

- coarse buttress thread commonly used for many plastic vessels
- with known standardized threads as well as special manufacturers´ specifications
- In case of problems, please contact us

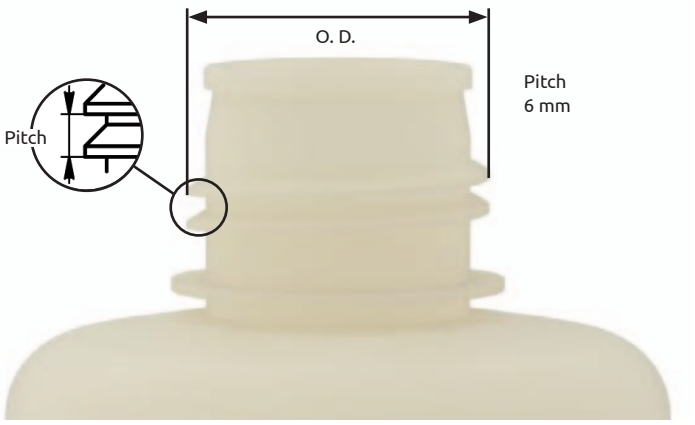
Example:
S 55 – O. D. = 54,0 mm



Nalgene®

- Carboys of the US-based company Nalgene are widely used in laboratories.

Example:
Nalgene® B 53 – O. D. = 54,0 mm



Measurement chart

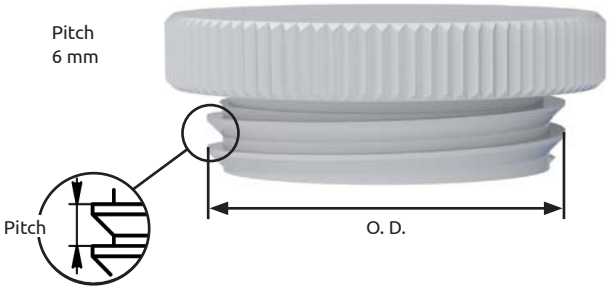
O. D. mm					
94,0				S 95	
89,5				S 90	
88,0					B 83
70,5				S 70/71	
65,0				S 65	
62,0		B 63			
59,5				S 60/61	
54,0			S 55	B 53	
50,0		S50			
49,0		S 51			
39,5	S 40				
	3,5	4,0	5,0	6,0	12,7
					Pitch mm

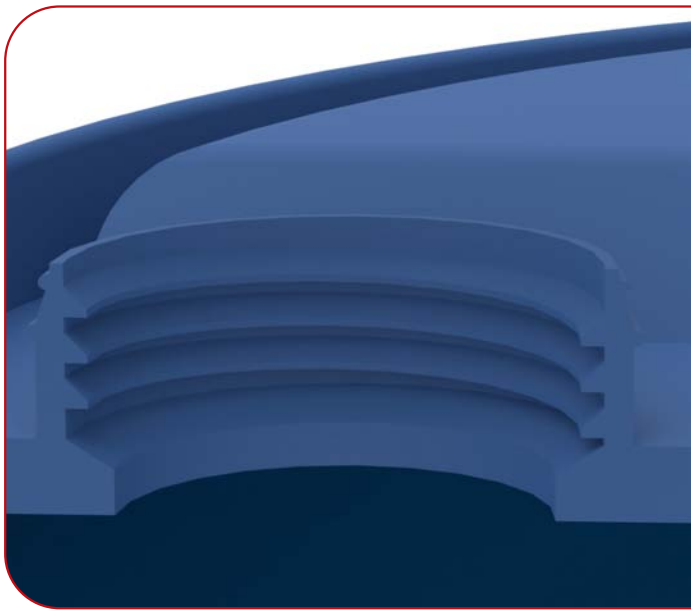
Barrel Threads

Barrel Threads

- Buttress threads
- Mauser 2” and Trisure 2” with coarse threads
- BSP 2” with much smaller thread pitch
- In case of problems, please contact us

Example:
BCS 70 x 6 MAUSER® 2" – O. D. = 69,5 mm





Measurement chart

O. D. mm			
69,5			Mauser 2“
59,6	G2“/BSP2“		
56,6		Tri Sure 2“	
	2,3	4,0	6,0
			Pitch mm

Thread overview

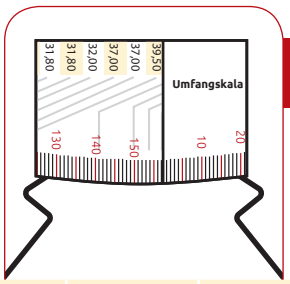
Instruction

- Measure the O. D.
- Measure the pitch
- Determine your thread by means of the chart

O. D. mm	0,90	0,91	1,00	1,06	1,34	1,40	1,5	1,81	2,00	2,30
94,00										
89,50										
88,00										
80,00										
70,50										
69,50										
65,00										
62,00										
59,60										G2"/BSP2"
59,50										
56,60										
54,00										
50,00										
49,00										
47,80										G/R 11/2"
45,00										
39,50										
37,00										
37,00										
32,00										
31,80										
31,80										
27,30										
25,00										
20,80								G/R 1/2"		
19,70										
18,00										
16,50					G/R 3/8"					
14,00										
13,20						NPT 1/4"				
13,00					G/R 1/4"					
12,00									GL 12	
10,00							M 10			
9,90	NPT 1/8"									
9,60		G/R 1/8"								
7,90				UNF 5/16"						
6,20		UNF 1/4"								
6,00			M 6							
				Connection thread				Bottle thread		

* high form of cap
** low form of cap

Important note for printing:
Print this page in its original size



Instruction

- Wind the tape measure around the thread
- Read the dimensions
- Determine your thread by means of the chart

2,50	3,00	3,20	3,50	4,00	4,25	5,00	6,00	12,70	15,00	Pitch mm	Perimeter scale
	Barrel thread				Canister thread						
							S 95			94,00	290
							S 90			89,50	280
								B 83		88,00	270
									GLS 80	80,00	260
							S 70/71			70,50	250
							Mauser 2"			69,50	240
							S 65			65,00	230
				B 63						62,00	220
										59,60	210
							S 60/61			59,50	200
				Tri Sure 2"						56,60	190
						S 55	B 53			54,00	180
				S 50						50,00	170
				S 51						49,00	160
										47,80	150
				GL 45						45,00	140
			S 40							39,50	130
					GPI 38/430*					37,00	120
					GPI 38/400**					37,00	110
				GL 32						32,00	100
					GPI 33/430*					31,80	90
					GPI 33/400**					31,80	80
					GPI 28/400**					27,30	70
			GL 25							25,00	60
										20,80	50
		GPI 20/400*								19,70	40
	GL 18									18,00	30
										16,50	20
GL 14										14,00	10
										13,20	
										13,00	
										12,00	
										10,00	
										9,90	
										9,60	
										7,90	
										6,20	
										6,00	

b.safe Materials

General information

Fluoroplastics belong to the family of thermoplastics. Due to their high molecular weight, polytetrafluorethylene cannot be processed with the classic thermoplast methods like injection moulding or extrusion. Both materials are transferred from powder form to semi-finished products by using special press-sintering techniques or the so called paste extrusion. All other fluoropolymers like PFA, FEP, ETFE, ECTFE, PVDF, THV or PVF are processed using the known production methods for thermoplastics.
The fully fluorinated materials PFA and FEP in particular require a corrosion resistant construction of the processing machines. With increasing the content of fluorine, the fluoropolymers offer a better chemical and higher thermal load.

Especially PTFE, PFA and FEP have the following unique properties:

» almost universal chemical resistance
» high thermal load capacity (–200 °C up to +250 °C)
» non-flammable
» resistant to environmental changes (weather, light)
» non-adhesive
» ultra low friction coefficient
» unbreakable
» physiologically safe
» inert, tasteless, odourless
» UV-resistant
» not ageing, the properties do not change even during long-term storage
» without any aggregates like plasticizers or antioxidants
» unlimited sterilization with steam or ethylene oxide possible. A sterilization using high-energy radiation is not recommended.

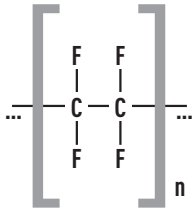
All other fluorinated thermoplastics include beside the fully fluorinated monomer block tetrafluorethylene additional, non-fluorinated components. This allows to adapt systematically the properties and thus to facilitate the processing and to enlarge the range of applications.The chart below gives some general advice on the choice of the best suitable fluoropolymers:

Properties	PTFE	PFA	FEP	ETFE
Continuous operating temperature (°C)	250	250	205	150
Tear strength (MPa)	30	28	25	40
Permeation (Helium)	-	o	o	+
Sterilisable with Y-radiation	-	-	-	o
Chemical resistance	+++	+++	+++	+

Definition:
- \- not suitable, not recommended
- o possible, moderate to good
- \+ good
- +++ very good, best choice

PTFE – Polytetrafluorethylene

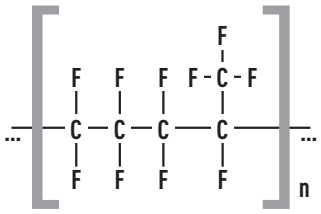
Discovered in 1938 by research-chemists of the DuPont (USA) it was not introduced to the market until 1946. A partly crystalline fluoroplastic that belongs to the family of thermoplastics (but not suitable for injection moulding). The strong bond of the fluorine atom to the carbon atom as well as the almost complete shielding of the unbranched carbon chain by fluorine atoms result in a remarkably high chemical and thermal load.
PTFE has a thermal resistance ranging from -260 °C up to +250 °C, at short term up to +300 °C (e. g. no brittleness in boiling helium at -269 °C). This temperature range is not reached by any other plastic material.
The continuous operating temperature depends on the load. This means that PTFE can be used from -200 °C to +250 °C at moderate mechanical load. PTFE labware has a white appearance and a non-adhesive surface which is easy to clean. Furthermore, this material has excellent slip characteristics. A lubrication of turning steel or glass shafts is not necessary. Semi-finished PTFE rods are fabricated by isostatic pressing processes or extrusion. The final products are produced by machining the semi-finished materials.



Trade names
3M™ DyneonTM PTFE
by Dyneon
Teflon® by Chemours
Fluon® by AGC
Chemicals Europe

FEP – Tetrafluorethylene-Perfluoropropylene

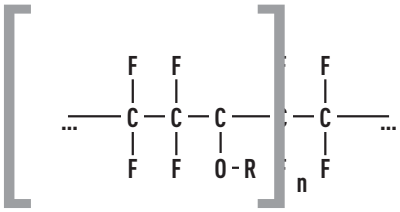
A molten copolymer of tetrafluorethylene and perfluoropropylene with a high-molecular, partly crystalline structure which had been introduced on the market in 1960. Its mechanical and chemical properties are comparable with those of PTFE, however, the upper limit of the permanent working temperature is 50 °C lower (max. +205 °C). FEP is a typical thermoplastic material, which can be processed with the known production methods for this kind of material. New types with lower melting viscosity (= high melt flow index MFR) allow the processing at higher speed. FEP labware is translucent to transparent and non-porous.



Trade names
Teflon® FEP by Chemours
Dyneon™ Fluorothermoplastics
FEP by Dyneon
Neoflon® by Daikin

PFA – Perfluoralkoxy Copolymer

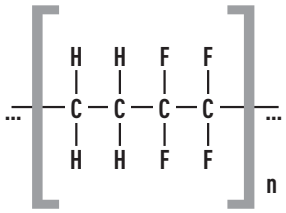
Fluorinated hydrocarbon with a high-molecular, partly crystalline structure. Compared to PTFE, it has additional side chains consisting of perfluorated alkoxy groups.
PFA can be processed using thermoplastic production methods and offers chemical and thermal properties equal to those of PTFE. PFA labware is translucent to transparent, non-porous and particularly useful in high-purity work. Big components with a total weight of several kilograms can be fabricated in a „single shot“ by using transfer moulding.



Trade names
Teflon® PFA by Chemours
Dyneon™ Fluorothermoplastics
PFA by Dyneon

ETFE – Ethylen-Tetrafluorethylene Copolymer

Partly fluorinated ethylene-tetrafluorethylene copolymer. Unlike the high-molecular PTFE which can be processed only by means of pressing or sintering, ETFE can be thermoplastic processed as already described before for PFA and FEP. I. e. this plastic material can be injection moulded or extruded with appropriate machines. In laboratories, this material is mainly used as compound with glass fibres for e. g. screw caps or screw joints. ETFE films have an excellent tear resistance. They are pervious to UV-rays and are therefore used for laboratory green houses as the VIS as well as the UV spectrum of the sun light can pass.



Trade names
Fluon® ETFE Resins by AGC Chemicals Europe
Tefzel® by Chemours
Dyneon™ Fluorothermoplastics ETFE by Dyneon

Standard Plastics – Technical Plastics - High-performance Plastics

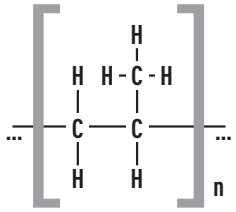
General Information

The permanent operating temperature is the most common characteristic to distinguish between standard plastics, technical plastics and high-performance plastics: for standard plastics, the limit is 90 to max. 100 °C, technical plastics can be operated within a range of 90 up to 140/150 °C. All high-performance plastics have a permanent operating temperature of more than 140/150 °C. The permanent operating temperature is defined as the maximum temperature with which the material can be operated for 20.000 hours but without loosing more than 50 % of its original rigidity and ductility. This means, a plastic material having a rigidity of 40 MPa in new condition has to show a rigidity of minimum 20 MPa after having been stored at its maximum permanent operating temperature for 20.000 hours.

Standard-Plastics

PP – Polypropylene

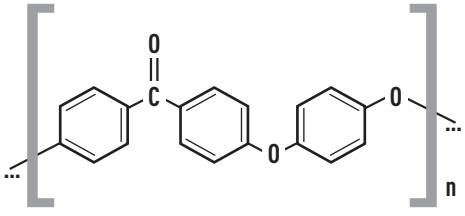
A polymer of ethylene with isostatic arrangement of methyl groups. It does not belong to the family of fluoroplastics. PP can be autoclaved (at +121 °C) and is distinguished by good mechanical and chemical properties almost up to its softening point. PP labware is unbreakable and an economical alternative with, however, restricted chemical and thermal resistance.



Trade names
Norolen® by BASF
Hostalen® by BASF

PEEK – Polyetheretherketone

Partly crystalline thermoplastic that withstands high temperatures. Due to its unique properties, PEEK is mainly used for high-value and highly stressable components. The high upper working temperature (+250 °C), the good chemical stability and resistance to hydrolysis as well as the high mechanical values of this material will allow PEEK to become the material of the future. PEEK components are commonly used as HPLC fittings, screw joints or as tubing. Its natural colour is brown, its price is considerably higher than that of PTFE or PFA. PEEK is available in many different types, e. g. modified for self-lubricating bearings.

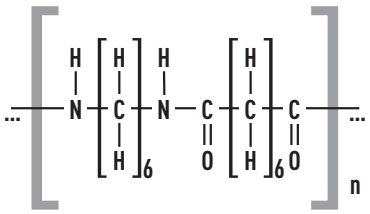


Trade names
Victrex® by Victrex
VESTAKEEP® PEEK by Evonik

Technical Plastics

PA – Polyamides

Condensation polymers obtained either from amino acids respectively from their lactams (e. g. caproic lactam) or diamine and dicarboxylic acid (e. g. adipic acid and hexamethylene-diamine). In general, polyamides are defined according to the number of carbon atoms of their monomers, e. g. PA 6 = polycarbonic lactam or PA 12 = polylauric lactam. PA 6 is the most commonly used polyamide. All polyamides are characterised by high strength and scuff resistance. The application range varies from simple turned parts such as screws or nuts to plain bearings or toothed wheels.

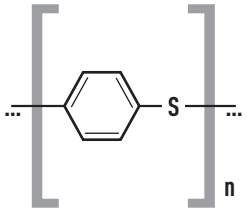


Trade names
Ultramid® by BASF
Durethan® by Bayer
Grilon® by Ems Chemie

High-performance Plastics

PPS – Polyphenylsiloxan

Technical high-performance plastic. This macromolecule consists of phenylene rings and one S-atom which provide a good chemical resistance even at high working temperatures. PPS is particularly suitable for the production of moulded pieces which are exposed to high mechanical and thermal stresses. Injection moulding is the most common processing technology for this material, in addition, single components can be made of semi-finished products by cutting. Special glass-fibre reinforced compounds offer an improved rigidity, sturdiness and dimensional stability under heat compared to non-reinforced compounds.



Trade names
Fortron® by Celanese
Ryton® by Phillips Petroleum Chemicals
Alton® Intern. Polymer Corp.

b.safe Materials - Chemical Resistance

Please note:

All information in our catalogue is based on current technical knowledge, experience and manufacturers' data. Users should check the suitability of parts and materials described in the catalogue before purchase.

BOHLENDER does not accept any warranty claims as to suitability and fitness of purpose of the materials and products described in this catalogue. Users should avoid making any assumptions on, or interpretation of, the data herein. **Therefore we cannot provide warranty and cannot accept responsibility for any damage.**

Additionally, an overview stating the chemical resistance of all b.safe materials against many different substances from A like Accumulator Acid up to Z link Zinc Nitrates is available for download on our website in pdf-format:

http://www.bsafe.de/materials

Categories of substances

Classes of substances at +20 °C	PTFE	PFA	FEP	PVDF	PP	PA
Aldehydes	+	+	+	+	◦	◦
Alcohols	+	+	+	+	+	–
Amines	+	+	+	◦	◦	◦
Bases/Caustic solutions	+	+	+	+	+	◦
Esters	+	+	+	◦	+	+
Ether	+	+	+	◦	◦	◦
Glycols	+	+	+	+	+	+
Ketones	+	+	+	◦	◦	+
Hydrocarbons, aliphatic	+	+	+	+	◦	+
Hydrocarbons, aromatic	+	+	+	+	◦	+
Hydrocarbons, halogenated	◦	+	+	+	◦	◦
Mineral oils	+	+	+	+	–	+
Oxidizing agents, strong	+	+	+	+	◦	–
Vegetable oils	+	+	+	+	◦	+
Acids inorganic	+	+	+	+	+	–
Acids organic	+	+	+	+	+	–
Lubricating oils	+	+	+	+	+	+

Definitions and abbreviations:
+ Excellent chemical resistance – continuous exposure for more than 30 days does not cause any damage or only minor damages.
◦ Limited chemical resistance – depending on the plastic material, a continuous exposure for a longer period of time may cause damages such as cracks, decrease of mechanical strength, discoloration, etc.
– Poor resistance – the plastic material can be deformed or destroyed.

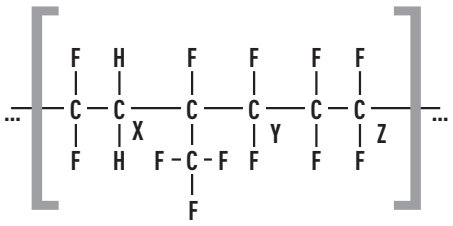
b.safe Elastomers

Their main characteristic is their elasticity: Elastomers can easily be stretched and bent and return to their original shape and size after being released. These synthetic materials are most commonly used for o-rings, flat gaskets or resilient elements.

NBR – Acrylonitrile-Butadiene-Caoutchouc

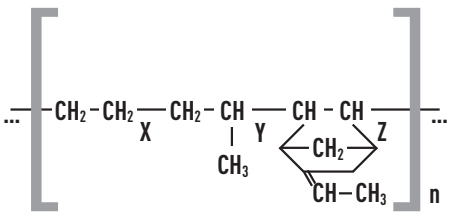
NBR is an elastomer on the base of acrylonitrite-butadiene-caoutchouc which is used as budget-priced sealing material (e. g. O-rings for stopcocks). This material has a good resistance in mineral oils and fats and is also resistant to HFA, HFB and HFC-hydraulic fluids. It has a very good elasticity. PERBUNAN® (trade name of company BAYER AG) is not resistant to brake fluids on the base of glycol, HFD liquids, aromatic compounds (e. g. benzole), ester, ketone and amines as well as in concentrated acids and caustic solutions. That is why it is not the ideal material for the chemistry.

FKM – Fluorocaoutchouc



Elastomer on the base of fluorocaoutchouc, more familiar as VITON®(DuPont). Many O-rings, lip seals and sleeves are made of FPM. It has a very good resistance to heat, chemicals, weather and ozone. Furthermore, it is resistant to sulphurated mineral oils and fats and to hardly inflammable HFD liquids (basis phosphor ester or chlorinated hydrocarbon). It is not resistant to anhydrous ammonia, caustic soda, potassium, ketones, ether, dioxane, as well as some amines and organic acids. For b.safe products, FPM is mainly used as sealing material, mostly protected from the medium by a PTFE sealing lip.

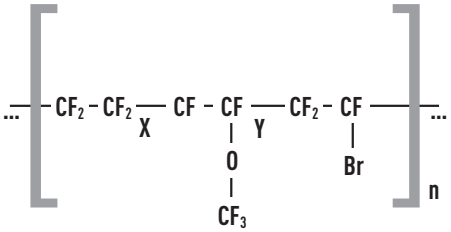
EPDM



EPDM 3 is an elastomer on the base of ethylene-propylene-diene-caoutchouc which is mostly used for gaskets and O-rings. The main applications are in the area of hot water, steam and suds. It is not resistant to hydraulic fluids on the base of mineral oil but it is weather-proof, non-ageing and resistant to ozone. At BOHLENDER, EPDM O-rings are mainly used for applications where VITON® O-rings are not sufficient.

FFKM – Perfluoro-Caoutchouc

An elastic sealing material with natural recovery and good accommodation to the sealing surfaces and a chemical resistance comparable with PTFE. FFKM O-rings have a very high chemical and thermal resistance. Such seals can withstand virtually all kinds of chemicals and can be used at long duration conditions with temperatures up to +260 °C. Perfluoro-caoutchouc is better known under the trade names KALREZ® by DuPont, CHEMRAZ® by Greene Tweed.

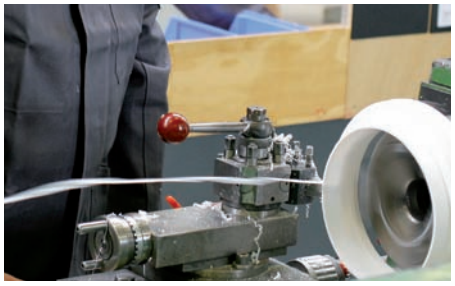


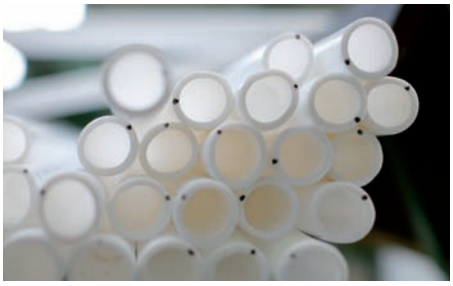
Elastomers - Chemical Resistance

Classes of substances at 20°C	NBR	FKM	FFKM	EPDM
Water	++	++	++	++
Acids	+	+	++	++
Lyes	+	+	o	++
Oils and fats	+	++	++	-
Fuels	+	++	++	-
Ozone	o	++	++	++
Hydrocarbon, aliphatic	++	++	++	-
Hydrocarbon, aromatic	-	++	++	-
Hydrocarbon, chlorinated	-	++	++	-
Temperature range, °C	-40 to +130	-20 to +200	-20 to +250	-30 to +140

Definition:
- \- not suitable, not recommended
- o possible, moderate to good
- \+ good
- +++ very good, best choice

BOHLENDER´s Commitment





For the environment

BOHLENDER takes its responsibility for the environment seriously. Our responsibility is not only a respectful handling of natural resources but also avoiding waste and integration of recycling in the production process.

» Even during the machining of PTFE (e. g. drilling, turning or milling) all cuttings are collected by means of suction through a special tube system directly on our machines. All chips as well as remnants of semi-finished items are sorted according to their purity and stored contamination-free in large containers before later being recycled. During recycling, all chips and remnants are converted by a specially developed process into usable semi-finished items.

» With regard to the environment, disposable products are no longer in our mind. Therefore all our products are designed for long-time use.

» Generation of chips can be avoided by using moulded parts. In addition, moulding reduces the consumption of PTFE powder and energy.

» Products made of the most common fluoroplastics are free of plasticizers and solvents. Thus, they are not harmful for the environment.

No PFOA / APFO use in production

Formerly, perfluorooctanoic acid (PFOA) respectively sal ammoniac (APFO) have been used as additives in the polymerisation process during the production of polytetrafluorethylene (PTFE).

The use of these additives was obligatory in the emission polymerization process but has also partly been used in the suspension polymerisation process.

Although PFOA respectively APFO are almost completely removed from the final product and can mostly be regained during the production process, the well-known manufacturers of PTFE have committed themselves by self-declaration to waive the use of PFOA and APFO in any production process as of the production year 2015. With the renunciation of PFOA and APFO it is ensured that these chemicals, which have not been classified as toxical so far, do not accumulate in the environment.

By supplier agreements, BOHLENDER GmbH ensures that all fluoroplastic materials used for our products have been manufactured without the use of the additives PFOA and/or APFO. Besides PTFE and PTFE-TFM, this includes also all fluoro-thermoplastics such as PFA, FEP ETFE or PVDF.

Bürgerstiftung Lauda-Königshofen

For the German Stem Cell Donor File

BOHLENDER does not only support the activities of the German Stem Cell Donor File for the typing of stem cells financially. Through the personal typing and registration as a stem cell donor, we would like to give hope to people suffering from leukemia or other disfunctions of haematosis. Nowadays, we can help concerned people through a stem cell donation. If a suitable donor cannot be found within the own family, patients have to rely on an unknown donor. The more typings and registrations, the higher the chance for the patients to get a suitable donation. Saving life through a little blood donation – BOHLENDER supports this activity from the bottom of the heart!

For promotion of sports and youth

The work with children and the youth in local sports clubs contributes to the advancement of physical, personal and social competences of the children and young adults and supports the competence to take actively part in the social life. As a matter of course, BOHLENDER has supported the local clubs (amongst them soccer and handball clubs) through the sponsoring of their sportswear for several years now. Only the ones who are healthy and fit can cope with the daily challenges in private and professional life.

For the Civic Foundation Lauda-Koenigshofen

The Civic Foundation Lauda-Koenigshofen was found end of 2013 by dedicated citizens and companies. The targets of this foundation are the development, advancement and appreciation of sustainable and innovative ideas and concepts in Lauda-Koenigshofen and its districts. These targets are reached by the strengthening of the civic engagement and the advancement of a sustainable development of the local community in the fields of family, education, sciences, environmental protection, health, heritage and international understanding. The family company BOHLENDER has its roots in Lauda and has had a deep connection to the city of Lauda-Koenigshofen for a long time now. We at BOHLENDER perfectly identify with the idea and targets of the civic foundation. As an initial founder we respectively engage ourselves.

Numerical Index

Cat. No.	Page
M 128	27
M 138	29
M 139	31
M 140	17
M 141	19
M 143	13
M 144	15
M 145	9
M 146	37
M 147	11
M 180	21
M 183	33
M 181	25
M 202	139
M 203	145
M 205	137
M 206	133-135
M 208	147
M 209	143
M 210	141
M 340	55
M 345	51, 53
M 350	57
M 351	61, 63
M 353	83/85
M 355	65/67
M 360	69/71
M 363	87
M 365	75
M 371	77/79
M 383	89
M 390	81
M 501	43,44,97,98
M 502	94
M 503	103
M 505	39
M 506	91, 93
M 508	47
M 509	107
M 510	43,97
M 511	110
M 512	108
M 513	103
M 514	101
M 515	45
M 516	95
M 518	103
M 519	103
M 520	121
M 521	121
M 529	35, 121
M 542	44, 99
M 545	156
M 550	157
M 560	121
M 560	158
M 562	158
M 570	45
M 580	105
M 590	104
M 595	104
M 600	119
M 615	94
M 615	114,119
M 630	119
M 710	153
M 712	153
M 715	153
M 720	153
M 730	153
M 732	153
M 734	153
M 801	153
R 100	111
R 105	111
R 205	111
R 210	112
R 225	112
R 247	150
R 230	113
R 231	113
R 236	113
R 237	150
R 265	113
R 268	113
R 295	114
R 297	114
R 299	114
R 400	129
R 405	129
R 410	129
R 430	129
R 432	129
R 505	112
R 530	114
R 532	114
R 535	114
R 540	117
R 548	117
R 560	129
R 570	156
R 572	156
R 573	156
R 601	131
R 603	131
R 604	131
R 605	131
R 606	131
R 612	131
R 615	113,131
R 630	131
R 750	154
R 753	155
R 770	155
R 800	125-127
R 801	125-126
R 810	125-126
R 811	125-126
R 820	125-126
R 820	125-126
R 821	125-126
R 830	125-126
R 830	125-126
R 831	125-126
R 840	125-126
R 840	129
R 841	125-128
R 850	125-126
R 851	125-126
R 860	125-126
R 861	125-126
R 870	126
R 871	126
R 880	127,129
R 881	128
R 890	127,149
R 891	128
M 710	153
M 712	153
R 841	128
R 881	128
R 890	127,149
R 891	128

Alphabetical Index

Description	Page
Accessories for funnels	129
Activated carbon	166
Activated carbon filter	90-93, 164
Adaptor for capillary connection	94
Adaptor for Exhaust Filter	94
Adaptor for Exhaust Filter Connection	95
Adaptor for threads	118-120
Adaptor with ground joint	121
Air Valves	38, 163
Angled adaptor	121
Angled adaptors	94, 121, 129
Antistatic mat	131
Ball-valve	126-127
Banana plug	131
Base insert	117
Bent hose connectors	103
Blindfittings	44
Bottles	111
Box for Politainer	114
Canister with transparent stripe	113
Canisters	110-117, 150
Canisters with level control	150
Cap with ground joint	35
Capillary Connection	108
Capillary Connectors	43, 108
Capillary Coupling	46
Capillary cutter	156
Capillary Quick Couplings	46
Caps	8-37
Caps Preparative	14
Caps with stopcocks	12, 18
Carton for Politainer	114
Chemical resistance	181
Clip	131
Clip for tube	131
Collecting Tray	116-117
Collector	106
Conical Connectors	104
Containers	110-117, 150
Corrugated Tubing	155
Corrugated Tubing Coupling	100
Coupling Pieces	47
Determination of thread size	168-175
Disposal Caps	50-89
Disposal Caps with Filling Funnel	52, 62, 66, 68, 76, 84
Disposal Caps with Level Control	132-148
Distributor for Capillaries	108
Distributor for Flushing Bottles	24
Drip tray	117
Economy pack	39
EX tubing	155
Exhaust Filter	90-93, 164
Exhaust Filters for Barrels	92
Extraction Cap with ground joint	35
Extraction Caps	8-37
Extraction Caps Preparative	14
Extraction Caps with stopcock	12, 18
Filling Funnel with stopcock	52, 62, 66, 68, 76, 84
Filling tube	129
Filling tube segment	129
Fittings	43
Fittings Preparative	43
Flasks	111
Flexible spout	114
Funnels	122-129, 149

Description	Page
Funnels with ball-valve	126-127
Funnels with hinged lid	122-129, 149
Funnels with level control	149
Glass bottles	111
Grounding accessories	131
Grounding cables	130
Grounding clip	131
Grounding clip for tube	131
Grounding strap	131
Hose Connectors	102-105
HPLC Starter Kit	36
Integrated floater	132-153
Label cassette	157
Label field	163, 164
Label printer	157
Laboratory flasks	111
Lance	129
Leakage Tray	116-117
Level control	132-153
Level control, electronical	132-147
Level control, mechanical	148-153
Level indicator	132-153
Level indicator for barrels	153
Level indicator with funnel connection	153
L-Filter	90
Loosening Nut	35, 121
Luer Lock	38, 103
Materials	176-181
MC plug	131
M-Filter	90
Mounting Key	44
Multiports	106
Needle seat irrigation	24
Operation principles	162-165
Optical level control	149-153
Piston back flushing	24
Politainer	114
Quick Coupling	46
Reducing Tubing Connectors	104
Rigid spout	114
Ring cable lug	131
Safety Cap with ground joint	35
Safety Caps	8-37
Safety Caps Preparative	14
Safety Caps with stopcocks	12, 18
Safety Funnels	122-129
Safety Funnels with ball valve	122-129
Safety Funnels with hinged lid	122-129, 149
Safety Funnels with level control	149
Safety lance	129
Safety Waste Caps with Filling Funnel	52, 62, 66, 68, 76, 84
Safety Waste Caps with Level Control	132-148
Saftey Waste Caps	50-89
Septum Adaptor	45
S-Filter	90
Sieve	129
Solvent Caps	8-37
Space-saving canister	112
Space-saving Caps	10
Spiral tubing	156
Splash guard	129
Splash guard tray	116-117
Spouts	114
Stand for canister	112
Starter Box	37

Alphabetical Index

Description	Page
Static dissipative tubing	155
Suction Filter	45
Technical information	160-180
Thread adaptor for Politainer	114, 124
Thread adaptors	118-121
Tube Fitting with sealing nut	100
Tube Fittings	102-105
Tube fittings	43
Tube tag	158
Tubing	154-156
Tubing Connectors	43, 102-108
Tubing cutter	156
Tubing holder	158
Waste Caps	50-89
Waste Caps with Filling Funnel	52, 62, 66, 68, 76, 84
Waste Caps with grounding connection	132
Waste Caps with Level Indicator	132-148
XL-Filter	92
XXL-Filter	92
Y-Connectors	105

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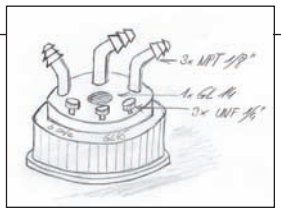
» Please state quantities. _____



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