Previously known as UPCHURCH

FILTERS & FRITS

Our Filters offer an optimal way to filter your solvents, preventing pump cavitation and system damage. We offer different style filters for specific system specifications. Our filters protect your system from particulate matter from the solvent that may otherwise damage expensive hardware.

We offer a complete line of Frits manufactured from two different materials: PEEK and stainless steel. Both materials offer a variety of sizes of frit discs, as well as being available in numerous porosities. All our frits are designed with exceptional uniform porosity and a long filtration life.

FLUIDICS

Stainless Steel Frits

Our Analytical-scale 316 Stainless Steel Frits are available in 0.5 µm or 2 µm porosity—the most common HPLC filtration ratings. Each frit includes a PCTFE or PEEK polymer sealing ring.

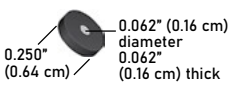
Many of the frits shown have the common 0.250" (0.64 cm) and 0.254" (0.64 cm) ODs, which allow them to be used in many of the Precolumn and Inline Filters found starting on page 103. Choose the larger diameter faces and/or larger porosity frits for faster flow rates. Choose frits with a smaller diameter face and/or smaller porosity for applications sensitive to extra flow path volume.

APPLICATION NOTE

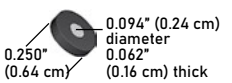
To Clean Or Not To Clean?

It is rarely worth the time and effort to clean frits, given the relatively low cost of replacements. Furthermore, cleaning may leave some debris embedded in the frit pores. If the washed frit is accidently returned to your instrument in a reverse orientation, any remaining debris could be flushed out and deposited further down the fluid path. If this frit is being used as a column head frit, the debris may be washed directly onto the column bed.

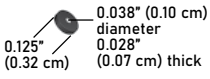
0.5 µm Stainless Steel Frits



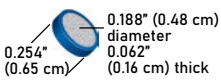
A-102



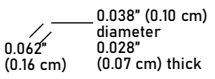
A-103



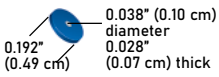
C-128-31



C-140-30

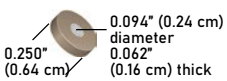


C-409

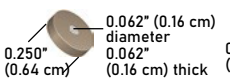


C-425

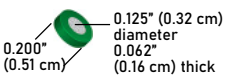
2 µm Stainless Steel Frits



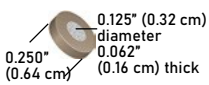
A-100



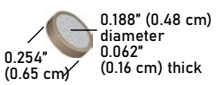
A-101



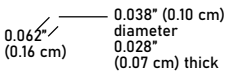
A-420



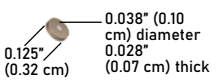
C-401



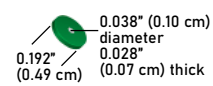
C-402



C-407



C-408



C-420

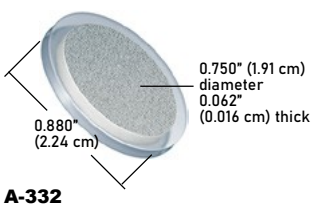
NOTE

Frits without the polymer rings cannot be used with our standard Precolumn and Inline Filter assemblies.

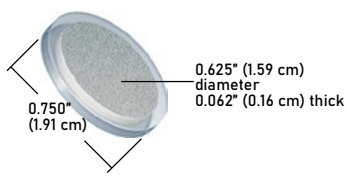
Semi-Prep Stainless Steel Frits

Many of these frits come complete with a PCTFE, ETFE, or PTFE sealing ring. Choose from 2 µm, 5 µm, 10 µm, and 20 µm filtration porosities and a range of diameters to match your intended flow rate and filtration requirements.

2 µm Semi-Prep Stainless Steel Frits



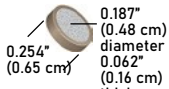
A-332



A-343

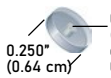
Stainless Steel Frits (Cont.)

5 µm Semi-Prep Stainless Steel Frits

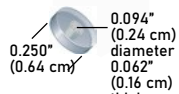


C-417

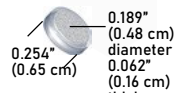
10 µm Semi-Prep Stainless Steel Frits



A-105



A-106

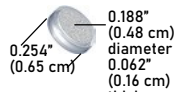


A-107

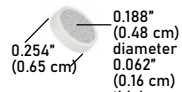
A-331

20 µm Semi-Prep Stainless Steel Frits

A-120



A-122

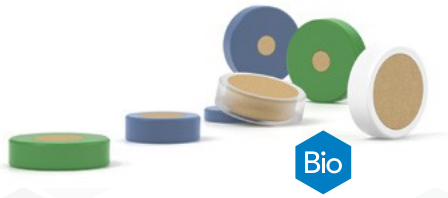


A-224

A-337

Stainless Steel Frits

Part No.	Porosity	Disc Diameter	Disc Thickness	Ring OD	Ring Material	Frit Volume	Qty.
STAINLESS STEEL FRITS							
A-100	2 µm	0.094" (0.24 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PEEK	1.7 µL	ea.
A-101	2 µm	0.062" (0.16 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PEEK	0.7 µL	ea.
A-102	0.5 µm	0.062" (0.16 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PEEK	0.6 µL	ea.
A-103	0.5 µm	0.094" (0.24 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PEEK	1.4 µL	ea.
A-420	2 µm	0.125" (0.32 cm)	0.062" (0.16 cm)	0.200" (0.51 cm)	PCTFE	3.0 µL	ea.
C-128-31	0.5 µm	0.038" (0.10 cm)	0.028" (0.07 cm)	0.125" (0.32 cm)	PEEK	0.1 µL	ea.
C-140-30	0.5 µm	0.188" (0.48 cm)	0.062" (0.16 cm)	0.254" (0.65 cm)	PCTFE	6.5 µL	ea.
C-401	2 µm	0.125" (0.32 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PEEK	3.0 µL	ea.
C-402	2 µm	0.188" (0.48 cm)	0.062" (0.16 cm)	0.254" (0.65 cm)	PEEK	7.8 µL	ea.
C-407	2 µm	0.038" (0.10 cm)	0.028" (0.07 cm)	0.062" (0.16 cm)	PCTFE	0.1 µL	ea.
C-408	2 µm	0.038" (0.10 cm)	0.028" (0.07 cm)	0.125" (0.32 cm)	PEEK	0.1 µL	ea.
C-409	0.5 µm	0.038" (0.10 cm)	0.028" (0.07 cm)	0.062" (0.16 cm)	PCTFE	0.1 µL	ea.
C-420	2 µm	0.038" (0.10 cm)	0.028" (0.07 cm)	0.192" (0.49 cm)	PCTFE	0.1 µL	ea.
C-425	0.5 µm	0.038" (0.10 cm)	0.028" (0.07 cm)	0.192" (0.49 cm)	PCTFE	0.1 µL	ea.
SEMI-PREP STAINLESS STEEL FRITS							
A-105	10 µm	0.062" (0.16 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PCTFE	0.9 µL	ea.
A-106	10 µm	0.094" (0.24 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PCTFE	2.0 µL	ea.
A-107	10 µm	0.189" (0.48 cm)	0.062" (0.16 cm)	0.254" (0.65 cm)	PCTFE	9.1 µL	ea.
A-120	20 µm	0.125" (0.32 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PCTFE	3.7 µL	ea.
A-122	20 µm	0.188" (0.48 cm)	0.062" (0.16 cm)	0.254" (0.65 cm)	PCTFE	9.7 µL	ea.
A-224	20 µm	0.188" (0.48 cm)	0.062" (0.16 cm)	0.254" (0.65 cm)	PTFE	9.7 µL	ea.
A-331	10 µm	0.750" (1.91 cm)	0.062" (0.16 cm)	0.880" (2.24 cm)	ETFE	141.9 µL	ea.
A-332	2 µm	0.750" (1.91 cm)	0.062" (0.16 cm)	0.880" (2.24 cm)	ETFE	141.9 µL	ea.
A-337	20 µm	0.750" (1.91 cm)	0.062" (0.16 cm)	0.880" (2.24 cm)	ETFE	152 µL	ea.
A-343	2 µm	0.625" (1.59 cm)	0.062" (0.16 cm)	0.750" (1.91 cm)	PCTFE	112.6 µL	ea.
C-417	5 µm	0.187" (0.48 cm)	0.062" (0.16 cm)	0.254" (0.65 cm)	PEEK	7.2 µL	ea.



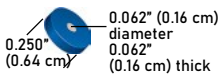
PEEK Frits

- Inert, biocompatible, and metal-free
- Uniform porosity, longer filtration life
- Sealing rings manufactured from PCTFE

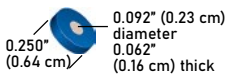
Patented IDEX Health & Science PEEK Frits offer exceptionally uniform porosity. This property ensures longer filtration life and consistent frit-to-frit swept volumes. The PEEK polymer frit discs are biocompatible and inert to most solvents, making them well-suited for bioanalytical applications. PEEK's robust properties make these products suitable for low and high pressure applications.

Disc rings, included on all PEEK frits, are made of PCTFE and are slightly thicker than the frit disc, providing enhanced sealing and excellent chemical resistance. PCTFE surrounded PEEK frits can be used up to 80 °C.

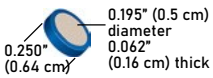
0.5 µm PEEK Frits



A-701

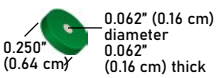


A-703

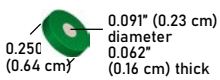


A-707

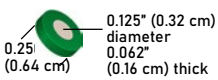
2 µm PEEK Frits



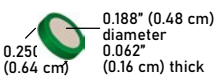
A-700



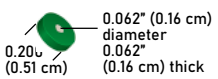
A-702



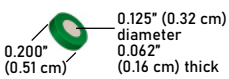
A-704



A-706

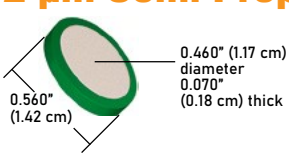


A-708



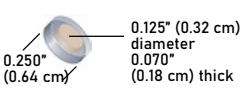
A-710

2 µm Semi-Prep PEEK Frits

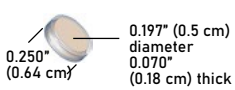


OC-802

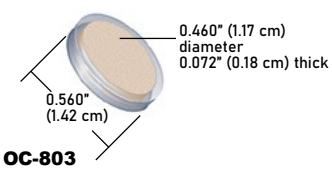
5 µm and 10 µm PEEK Frits



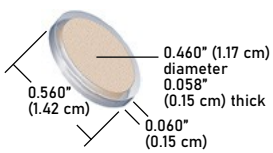
A-720



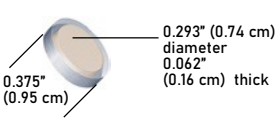
A-722



OC-803



OC-805



OC-815

PEEK Frits (Cont.)

NOTE

- The thickness dimension in the part drawings and the pricing tables represents the thickness of the frit disc not the frit ring. Frit rings are often slightly thicker to ensure a proper seal. When tightened into a filter holder the ring compresses to nearly match the thickness of the frit disc.
- The manufacturing process may cause some slight color variance in our PEEK frits. This does not affect their quality or performance. Frit dimensions are approximate. Actual batch-to-batch frit dimensions may vary slightly.

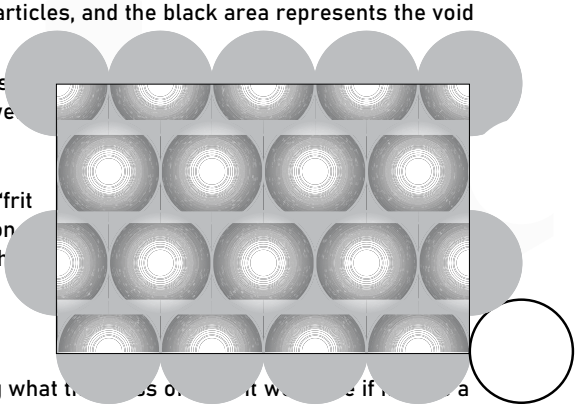
RELATED PRODUCTS

Any 0.247" to 0.254" diameter frit (including polymer ring) can be used with the Standard HPLC Inline Solvent Filters on page 102 and the Standard Precolumn Filters on page 105.

APPLICATION NOTE

Frit Volume

The term "frit volume" refers to the volume of the various fluid pathways that comprise the matrix of a frit. A standard frit is a mass of small particles fused together through a controlled process of compression and heat. Because of their shape, there are gaps between the fused particles. Fluid makes its way through these gaps, creating a pathway from one side of the frit to the other (see the diagram, below, where the white circles represent frit particles, and the black area represents the void between the particles.)



Generally, when the frit particles increas in size, the frit's porosity increases as we The larger the particles, the larger the gaps between particles. Cumulatively, these gaps comprise what is known as "frit volume." Using gravimetric determination it has been experimentally shown that th total volume of any given frit may range from 18%–30%, depending upon the porosity of the frit.

Frit volume is calculated by determining what t s o t w e if a solid block of material of equal size. Then the solid mass of the frit is multiplied by the percentage assigned to the porosity to determine the theoretical frit volume.

20% for 0.5 µm frits
24% for 2 µm frits
26% for 5 µm frits
28% for 10 µm frits
30% for 20 µm frits

From a chromatographic perspective, it's important to know the volume of the frit used in your system. It is possible for a frit to negatively impact your chromatography if the total frit volume is too large and if it is placed in an area through which the sample will pass. To avoid frit-related problems like band broadening and loss of resolution, most inline filters placed after the sample introduction point (e.g., between the injection valve and the column) are smaller in size and porosity than inline filters that are placed in areas before the sample is introduced into the flow path (e.g., between the pump and the injection valve).

PEEK Frits

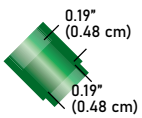
Part No.	Porosity	Disc Diameter	Disc Thickness	Ring OD	Ring Material	Frit Volume	Qty.
PEEK FRITS							
A-700	2 µm	0.062" (0.16 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PCTFE	0.7 µL	ea.
A-701	0.5 µm	0.062" (0.16 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PCTFE	0.6 µL	ea.
A-702	2 µm	0.091" (0.23 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PCTFE	1.7 µL	ea.
A-703	0.5 µm	0.092" (0.23 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PCTFE	1.4 µL	ea.
A-704	2 µm	0.125" (0.32 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PCTFE	3.0 µL	ea.
A-706	2 µm	0.188" (0.48 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PCTFE	7.1 µL	ea.
A-707	0.5 µm	0.195" (0.5 cm)	0.062" (0.16 cm)	0.250" (0.64 cm)	PCTFE	6.1 µL	ea.
A-708	2 µm	0.062" (0.16 cm)	0.062" (0.16 cm)	0.200" (0.51 cm)	PCTFE	0.7 µL	ea.
A-710	2 µm	0.125" (0.32 cm)	0.062" (0.16 cm)	0.200" (0.51 cm)	PCTFE	3.0 µL	ea.
SEMI-PREP PEEK FRITS							
A-720	10 µm	0.125" (0.32 cm)	0.070" (0.18 cm)	0.250" (0.64 cm)	PCTFE	4.2 µL	ea.
A-722	10 µm	0.197" (0.5 cm)	0.070" (0.18 cm)	0.250" (0.64 cm)	PCTFE	9.9 µL	ea.
OC-802	2 µm	0.460" (1.17 cm)	0.070" (0.18 cm)	0.560" (1.42 cm)	PCTFE	46.4 µL	ea.
OC-803	10 µm	0.460" (1.17 cm)	0.072" (0.18 cm)	0.560" (1.42 cm)	PCTFE	57.2 µL	ea.
OC-805	5 µm	0.460" (1.17 cm)	0.058" (0.15 cm)	0.560" (1.42 cm)	PCTFE	41.1 µL	ea.
OC-815	5 µm	0.293" (0.74 cm)	0.062" (0.16 cm)	0.375" (0.95 cm)	PCTFE	17.8 µL	ea.

Frit-in-a-Ferrule™

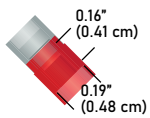
- Seals and filters simultaneously
- Less expensive and more convenient than traditional inline filter systems
- Available in both Flangeless and Super Flangeless™ versions

Now you can filter at any point in your system where 1/16" or 1/8" OD tubing is used in a flat-bottom 1/4-28, M6 or 5/16-24 connection.

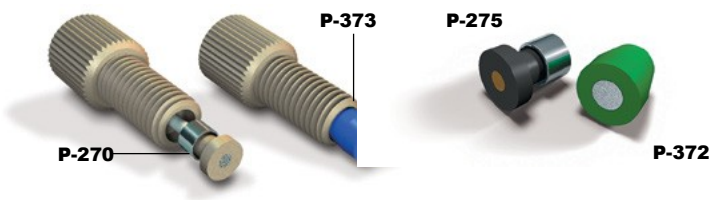
Our Frit-In-A-Ferrule product line is designed to seal and filter simultaneously by incorporating a frit into the body of a flat-bottom ferrule. This simple design allows you to eliminate traditional inline filters and reduce the number of additional connections in your system.



P-372
Flangeless Frit-In-A-Ferrule
for 1/8" OD tubing



P-276
Super Flangeless Frit-In-A-Ferrule
for 1/16" OD tubing



Part No.	Description	Porosity	Frit Material	Frit Diameter	Frit Thickness	Swept Volume	Maximum Pressure	Qty.
FRIT-IN-A-FERRULE FOR 1/16" OD TUBING								
P-270	Super Flangeless, Natural PEEK, SST lock ring	2 µm	SST	0.062"	0.062"	0.74 µL	2,500 psi (172 bar)	ea.
P-272	Flangeless, Green PCTFE	2 µm	SST	0.062"	0.062"	0.74 µL	2,000 psi (138 bar)	ea.
P-273	Flangeless, Blue PCTFE	0.5 µm	SST	0.062"	0.062"	0.61 µL	2,000 psi (138 bar)	ea.
P-274	Super Flangeless, Natural PEEK, SST lock ring	2 µm	PEEK	0.046"	0.030"	0.20 µL	2,500 psi (172 bar)	ea.
P-275	Super Flangeless, Black PEEK, SST lock ring	0.5 µm	PEEK	0.046"	0.030"	0.16 µL	2,500 psi (172 bar)	ea.
P-276	Super Flangeless, Stainless Steel, Natural ETFE, SST lock ring	10 µm	SST	0.062"	0.062"	0.90 µL	2,500 psi (172 bar)	ea.
FRIT-IN-A-FERRULE FOR 1/8" OD TUBING								
P-372	Flangeless, Green PCTFE	2 µm	SST	0.094"	0.062"	1.69 µL	500 psi (34 bar)	ea.
P-373	Flangeless, Blue PCTFE	0.5 µm	SST	0.094"	0.062"	1.41 µL	500 psi (34 bar)	ea.
P-374	Super Flangeless**, Natural PEEK, SST lock ring	2 µm	PEEK	0.094"	0.042"	1.15 µL	2,500 psi (172 bar)	ea.

** Swept volumes include/reflect theoretical frit volume values.*
*** The 1/8" Super Flangeless versions cannot be used in M6 ports.*

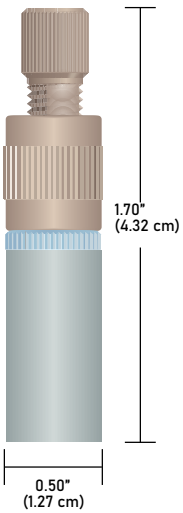
Bottom-of-the-Bottle® Filters

Our uniquely designed Bottom-of-the-Bottle® Filters effectively protect your system by filtering out particulate matter that my otherwise damage expensive hardware.

Stainless Steel Bottom-of-the-Bottle® Filters

- Draws solvent from within 1/8" of the bottom of the bottle
- Replaceable stainless steel filter cups
- Versions for 1/8" and 3/16" OD tubing
- Materials of construction: PEEK, ETFE, and 316 Stainless Steel

Patented Stainless Steel Bottom-of-the-Bottle Solvent Filter Assemblies feature a 2 µm or 10 µm replaceable stainless steel filter cup and a design that allows solvent to be drawn from within 1/8" of the bottom of your solvent bottle. The filter cups are inexpensive and easy to replace, making this an economical, trouble-free choice.



A-550
Bottom-of-the-Bottle
Inlet Solvent Filter

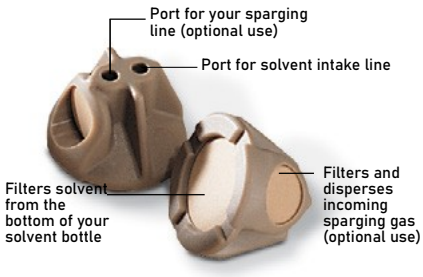
Maximum Flow Rates:
2 µm–up to 10 mL/min.
10 µm–up to 40 mL/min.

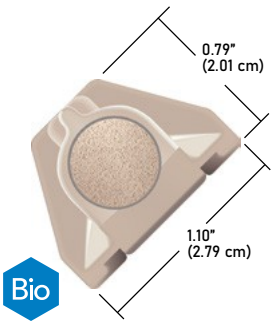
All-PEEK Bottom-of-the-Bottle Solvent Filters

- Most recommended filtering unit
- 100% PEEK polymer construction
- Easy operation — no fittings required

These biocompatible filters are made from 100% PEEK polymer, including the two built-in PEEK frits. The bottom frit (2 µm or 10 µm) will draw solvents from within 0.080" (2.0 mm) of the bottom of the solvent bottle. The 2 µm frit on the side may be used for a 1/8" OD helium sparging line.

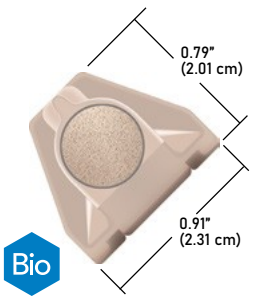
To use, simply press fit your appropriately sized fluoropolymer tubing firmly into the top holes. That's it!





A-435
Bottom-of the-Bottle Filter

Maximum Flow Rate: up to 30 mL/min



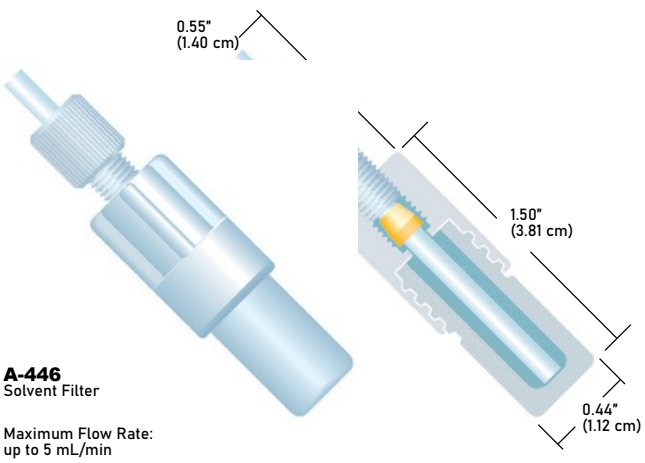
A-438
Bottom-of the-Bottle Filter
(for small neck bottles)

UHMWPE Bottom-of-the-Bottle Solvent Filters

- Replaceable filter cup
- Economical
- Materials of construction: UHMWPE, ETFE
- Versions for 1/16" and 1/8" OD tubing

The design of the UHMWPE solvent filters allows tubing to pass through to the bottom of the filter cup, enabling the filter to draw solvent from within 0.10" (2.5 mm) of the bottom of your solvent bottle.

Please Note: UHMWPE is a hydrophobic material. To establish proper surface wetting, you may need to prime the filter with methanol or acetonitrile.



A-446
Solvent Filter

Maximum Flow Rate:
up to 5 mL/min

Bottom-of-the-Bottle Filters

Part No.	Description	Porosity	For Tubing Size	Includes	Qty.
STAINLESS STEEL BOTTOM-OF-THE-BOTTLE SOLVENT FILTERS					
A-550	SST Filter Assembly, with A-520 filter cup	10 µm	1/8" OD	(1) XP-130	ea.
A-551	SST Filter Assembly, with A-522 filter cup	2 µm	1/8" OD	(1) XP-130	ea.
A-520x	SST Replacement Solvent Filter Cups, 10-pk	10 µm	—	—	ea.
A-522x	SST Replacement Solvent Filter Cups, 10-pk	2 µm	—	—	ea.
ALL-PEEK BIOCOMPATIBLE BOTTOM-OF-THE-BOTTLE SOLVENT FILTERS					
A-435	PEEK Filter	2 µm	1/8" OD	—	ea.
A-437	PEEK Filter, for small-neck (GL-38) bottles	2 µm	1/8" OD	—	ea.
A-438	PEEK Filter, for small-neck (GL-38) bottles	10 µm	1/8" OD	—	ea.
A-440	PEEK Filter	10 µm	1/8" OD	—	ea.
A-441	PEEK Filter	10 µm	3/16" OD	—	ea.
A-451	PEEK Filter	10 µm	1/16" OD	—	ea.
UHMWPE BIOCOMPATIBLE BOTTOM-OF-THE-BOTTLE SOLVENT FILTERS					
A-445	UHMWPE Filter Assembly	10 µm	1/16" OD	(1) XP-245	ea.
A-446	UHMWPE Filter Assembly	10 µm	1/8" OD	(1) XP-345	ea.
A-427	UHMWPE Replacement Solvent Filter Cups, 5-pk	10 µm	—	—	ea.

Inlet Solvent Filters

- Large surface areas prevent pump cavitation
- Disposable
- 2 µm, 10 µm, and 20 µm pore sizes available
- General use and prep filters for higher flow applications

It is good practice to filter your solvents to prevent pump damage. Our 316 stainless steel filters provide that protection.

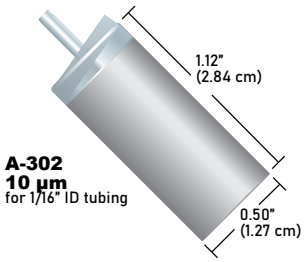
Because filters should be changed periodically, we make it easy to replace them without tools. For those filters using a plastic fitting, the tubing can be reconnected by finger tightening the fitting into the new filter. The filters with stems allow easy insertion into the inlet tubing.

APPLICATION NOTE

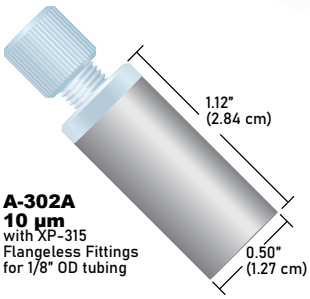
Why Use An Inlet Solvent Filter?

- To filter out particulate matter from the solvent that may otherwise damage expensive hardware. (Use a 10 µm or 20 µm version for this purpose. The A-309 and A-230A filters have an added "Bottom of the Bottle™" feature to help draw solvent to within 1/8" of the bottom of your solvent bottle.)
- To prevent particulates originating from the sparging system from entering the mobile phase reservoir and to help disperse the sparging gas efficiently. (Use a 2 µm filter for this purpose.)
- To hold your tubing in place at the bottom of the bottle. (Most stainless steel filter options work best for this purpose.)

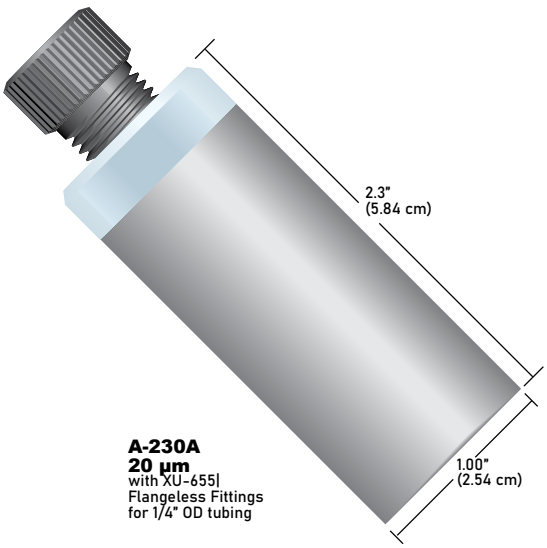
Note: It is usually a good idea to change the inlet filter as part of your semi-annual or annual preventative maintenance program.



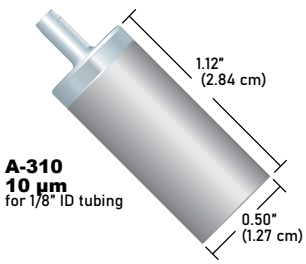
A-302
10 µm
for 1/16" ID tubing



A-302A
10 µm
with XP-315
Flangeless Fittings
for 1/8" OD tubing



A-230A
20 µm
with XU-655|
Flangeless Fittings
for 1/4" OD tubing



A-310
10 µm
for 1/8" ID tubing

Part No.	Description	Porosity	Material	For Tubing Size	Includes	Max. Suggested Flow Rate*	Qty.
INLET SOLVENT FILTERS FOR ANALYTICAL HPLC							
A-242	Inlet Solvent Filter with One-Piece Fitting	2 µm	PCTFE, SST	1/8" OD	(1) P-100	10 mL/min	ea.
A-243	A-242, 5-pack	2 µm	PCTFE, SST	1/8" OD	(5) P-100	10 mL/min	ea.
A-228	Inlet Solvent Filter with stem	2 µm	SST	1/8" ID	—	80 mL/min	ea.
A-302	Inlet Solvent Filter with stem	10 µm	SST	1/16" ID	—	40 mL/min	ea.
A-302A	Inlet Solvent Filter with Flangeless Fittings	10 µm	PCTFE, SST	1/8" OD	(1) XP-315	40 mL/min	ea.
A-309	Inlet Solvent Filter with stem	10 µm	SST	1/16" ID	—	40 mL/min	ea.
A-231A	Inlet Solvent Filter with Flangeless Fittings	20 µm	PCTFE, SST	3/16" OD	(1) XP-132	100 mL/min	ea.
A-310	Inlet Solvent Filter with stem	10 µm	SST	1/8" ID	—	40 mL/min	ea.
INLET SOLVENT FILTERS FOR PREPARATIVE HPLC SYSTEMS							
A-225	Inlet Solvent Filter with stem	20 µm	SST	1/16" ID	—	100 mL/min	ea.
A-225A	Inlet Solvent Filter with Flangeless Fittings	20 µm	PCTFE, SST	1/8" OD	(1) P-315, (1) P-300N	100 mL/min	ea.
A-227A	Inlet Solvent Filter with Flangeless Fittings	10 µm	PCTFE, SST	1/4" OD	(1) XU-655	100 mL/min	ea.
A-230A	Inlet Solvent Filter with Flangeless Fittings	20 µm	PCTFE, SST	1/4" OD	(1) XU-655	100 mL/min	ea.
A-311	Inlet Solvent Filter with stem	10 µm	SST	1/16" ID	—	100 mL/min	ea.
A-311A	Inlet Solvent Filter with Flangeless Fittings	10 µm	PCTFE, SST	1/8" OD	(1) XP-315	100 mL/min	ea.

** Maximum suggested flow rates are determined by porosity and surface area.*

Inline Filters

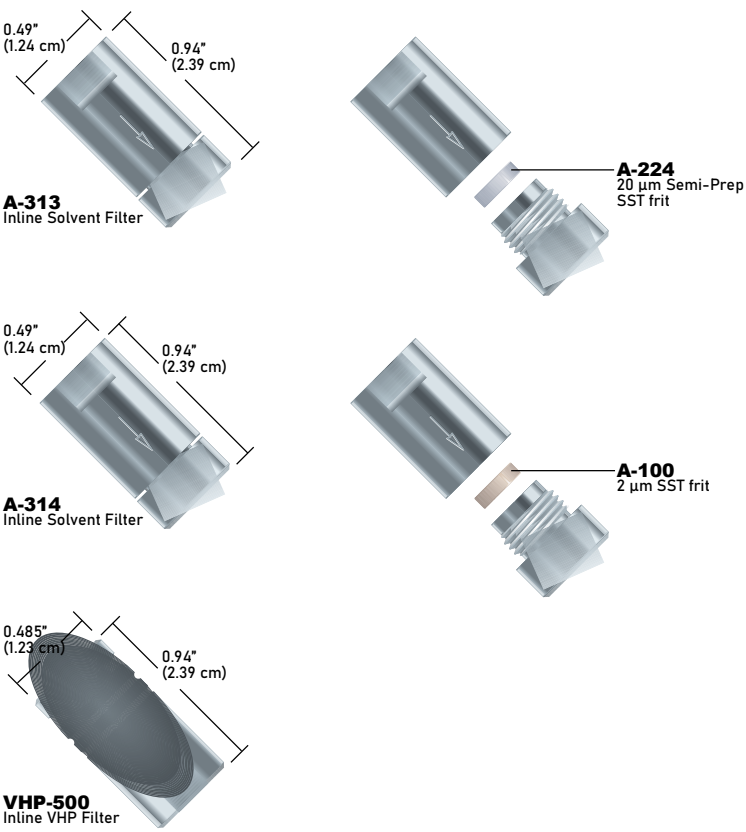
- Specially engineered for inline filtration
- Versions include Micro, Standard, and Semi-Preparative
- Bio-inert and stainless steel options offered
- Variety of porosities, application appropriate

Our Inline Filters are specially engineered for inline filtration. It is specifically designed to help prevent particulate contamination from clogging sensitive equipment. It is ideally suited for placement along the flow path line between the pump and injection valve/autosampler. We offer a variety of porosities for your application.

Standard Inline Solvent Filters

- For 1/16" OD tubing
- Versions for Standard HPLC (6,000 psi/414 bar) and UHPLC (25,000 psi/1,725 bar)
- Replacement frits availableVersions for Standard HPLC (6,000 psi/414 bar) and UHPLC (25,000 psi/1,725 bar)
- Help prevent particulate contamination from clogging sensitive equipment
- Ideally suited for placement along the flow path line between the pump and injection valve/autosampler

Inline filter assemblies that begin with the letter "A" are engineered for standard HPLC applications (up to 6,000 psi/414 bar). Inline Filter Assemblies that begin with the "VHP" prefix are suitable for use in UHPLC systems, where pressures can reach 25,000 psi (1,725 bar).



RELATED PRODUCTS

Fittings

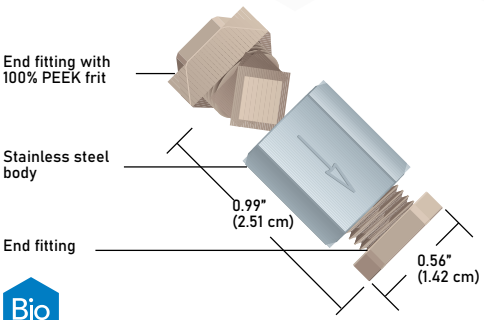
All Standard Inline Solvent Filters have 10-32 threads for 1/16" OD tubing, allowing the use of most standard chromatography high pressure fittings.

Inline Filters (Cont.)

Biocompatible Standard Inline Filters

- 0.5 µm and 2 µm versions available
- Features 100% PEEK flow path

Our A-430 and A-431 Inline Filters consist of a stainless steel body and two PEEK end fittings. Maximum recommended flow rate is 25 mL/min for the A-430 Filter and 10 mL/min for the A-431 Filter. And, you get the added benefit of biocompatibility since all wetted surfaces are PEEK. When you need to replace the frit, simply dispose of the end fitting that contains the frit and replace it with a new one.



Bio

A-430
Biocompatible
Analytical Inline Filter

Inline Filters

Part No.	Description	Porosity	For Tubing Size	Threads	Includes	Swept Volume	Pressure Rating	Qty.
STANDARD INLINE SOLVENT FILTERS								
A-313	Solvent Filter Assembly	20 µm	1/16" OD	10-32 Coned	(1) A-224	12.3 µL	6,000 psi (414 bar)	ea.
A-314	Solvent Filter Assembly	2 µm	1/16" OD	10-32 Coned	(1) A-100	4 µL	6,000 psi (414 bar)	ea.
A-100	Replacement Frits, Stainless Steel, ea.	2 µm	N/A	—	—	1.4 µL	N/A	ea.
A-224	Replacement Frits, Stainless Steel, ea.	20 µm	N/A	—	—	9.7 µL	N/A	ea.
VHP-500	Inline VHP Filter	0.5 µm	1/16" OD	10-32 Coned	(5) VHP-501	1.2 µL	25,000 psi (1,725 bar)	ea.
VHP-505	Inline VHP Filter	0.2 µm	1/16" OD	10-32 Coned	(5) VHP-506	1.1 µL	25,000 psi (1,725 bar)	ea.
VHP-501	Replacement Inline VHP Frit	0.5 µm	N/A	N/A	N/A	0.60 µL	N/A	ea.
VHP-506	Replacement Inline VHP Frit	0.2 µm	N/A	N/A	N/A	0.54 µL	N/A	ea.
BIOCOMPATIBLE INLINE FILTERS								
A-430	Biocompatible Filter Assembly	2 µm		10-32 Coned	(1) A-429	7.1 µL	6,000 psi (414 bar)	ea.
A-431	Biocompatible Filter Assembly	0.5 µm		10-32 Coned	(1) A-428	5.9 µL	6,000 psi (414 bar)	ea.
A-428x	PEEK Filter End Fittings, Black PEEK body, 10-pk	0.5 µm		10-32 Coned	—	5.7 µL	N/A	10-pk
A-429x	PEEK Filter End Fittings, Natural PEEK body, 10-pk	2 µm		10-32 Coned	—	6.9 µL	N/A	10-pk

**Swept volumes include/reflect theoretical frit volume values.*
SST = Stainless Steel

Precolumn Filters

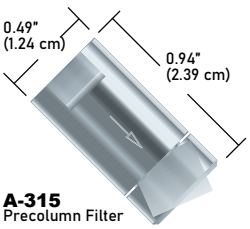
Our economical Precolumn Filters offer secure protection for analytical columns in HPLC and UHPLC. We offer traditional versions that can successfully connect tubing on both sides and our direct-connect versions attach to the inlet port of most standard columns. All versions feature a 10-32 coned ports for 1/16" OD tubing.

Standard Precolumn Filters

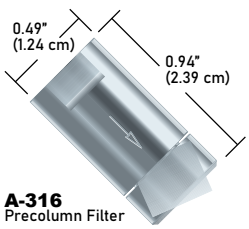
- Economical protection for larger columns and injections
- Traditional versions connect tubing on both sides
- Direct-connect versions attach to the inlet port of most standard columns
- All versions feature 10-32 coned ports for 1/16" OD tubing

These are designed to protect columns by filtering out particulate matter originating from the sample or from rotor seal wear.

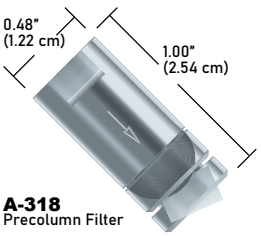
- Assemblies that begin with the letter "A" are traditional versions for standard HPLC
- Assemblies that begin with "VHP" are direct-connect versions for UHPLC applications
- Versions that begin with "9085" are direct-connect for standard HPLC and must be used with polymer fittings



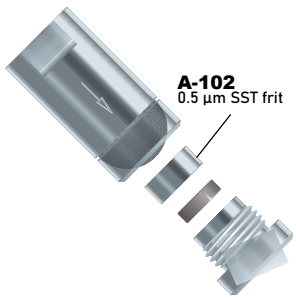
A-315
Precolumn Filter

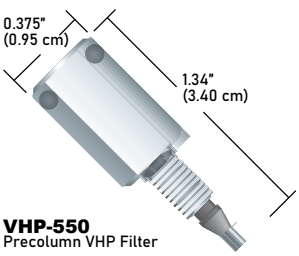


A-316
Precolumn Filter

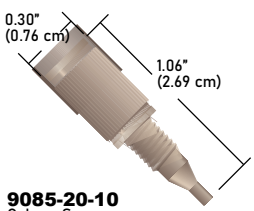


A-318
Precolumn Filter





VHP-550
Precolumn VHP Filter



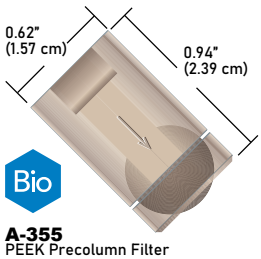
9085-20-10
ColumnSaver
Precolumn Filter

Precolumn Filters (Cont.)

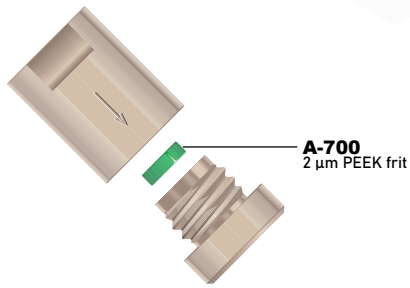
Biocompatible Precolumn Filters

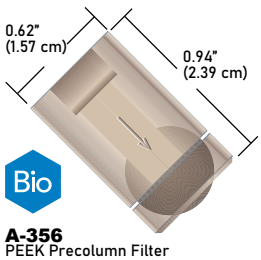
- Pre-assembled with either 0.5 µm or 2 µm porosity frits
- Great column protection
- Feature PEEK bodies and PCTFE-surrounded PEEK frits

Biocompatible Precolumn Filters have 0.020" (0.50 mm) diameter thru-holes and 8° distribution cones for minimal band spreading and mixing. The bodies of these filters are manufactured from biocompatible PEEK polymer and are pressure rated to 5,000 psi (345 bar). These filters are designed for use with 1/16" OD tubing, which can be connected to these filters using standard Fingertight fittings.

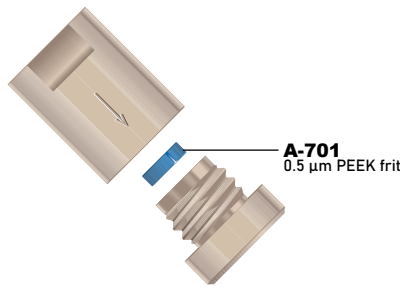


A-355
PEEK Precolumn Filter





A-356
PEEK Precolumn Filter



Precolumn Filters

Part No.	Description	Porosity	For Tubing Size	Threads	Includes	Swept Volume*	Pressure Rating	Qty.
STANDARD PRECOLUMN FILTERS								
A-315	Solvent Filter Assembly	2 µm	1/16" OD	10-32 Coned	(1) A-101	1.4 µL	6,000 psi (414 bar)	ea.
A-316	Solvent Filter Assembly	0.5 µm	1/16" OD	10-32 Coned	(1) A-102	1.3 µL	6,000 psi (414 bar)	ea.
A-318	Solvent Filter Assembly	0.5 µm	1/16" OD	10-32 Coned	(1) A-102	0.84 µL	6,000 psi (414 bar)	ea.
A-101	Replacement Frits, Stainless Steel, ea.	2 µm	N/A	—	—	0.74 µL	N/A	ea.
A-102	Replacement Frits, Stainless Steel, ea.	0.5 µm	N/A	—	—	0.61 µL	N/A	ea.
VHP-550	Precolumn VHP Filter	0.5 µm	1/16" OD	10-32 Coned	(5) VHP-551	1.9 µL	20,000 psi (1,380 bar)	ea.
VHP-555	Precolumn VHP Filter	0.2 µm	1/16" OD	10-32 Coned	(5) VHP-556	1.8 µL	20,000 psi (1,380 bar)	ea.
VHP-551	Replacement Precolumn VHP Frit Assembly	0.5 µm	N/A	N/A	N/A	1.9 µL	N/A	ea.
VHP-556	Replacement Precolumn VHP Frit Assembly	0.2 µm	N/A	N/A	N/A	1.8 µL	N/A	ea.
9085-05-10	ColumnSaver Precolumn Filter, with SST frit	0.5 µm	1/16" OD	10-32 Coned	N/A	3.1 µL	6,000 psi (414 bar)	10-pk
9085-20-10	ColumnSaver Precolumn Filter, with SST frit	2 µm	1/16" OD	10-32 Coned	N/A	3.1 µL	6,000 psi (414 bar)	10-pk
BIOCOMPATIBLE PRECOLUMN FILTERS								
A-355	Solvent Filter Assembly, Biocompatible	2 µm		10-32 Coned	(1) A-700	1.4 µL	5,000 psi (345 bar)	ea.
A-356	Solvent Filter Assembly, Biocompatible	0.5 µm		10-32 Coned	(1) A-701	1.3 µL	5,000 psi (345 bar)	ea.
A-700	Replacement Frit, PEEK Polymer	2 µm		—	—	0.74 µL	N/A	ea.
A-701	Replacement Frit, PEEK Polymer	0.5 µm		—	—	0.61 µL	N/A	ea.

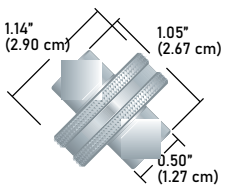
SST = Stainless Steel
**Swept volumes include/reflect theoretical frit volume values.*

Semi-Prep Filters

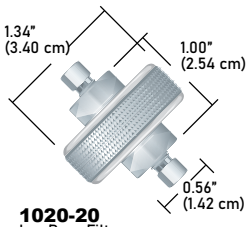
Biocompatible Semi-Prep Filters consist of a stainless steel body, two PEEK end fittings, and a separate PEEK frit. These filters are ideal for many higher flow analytical, semi-prep and preparative applications. Best of all, if the filter becomes clogged, simply unscrew the assembly, remove the frit and replace it. The frits are interchangeable.

Semi-Prep Inline Filters

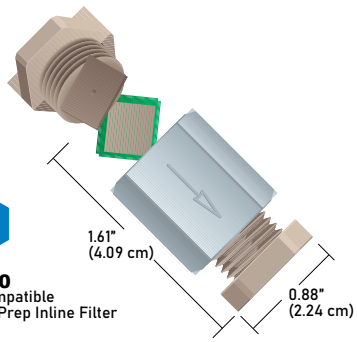
- Designed for high-flow applications
- Economical protection for larger columns and injections
- SFC and HPLC compatible



A-330
High Pressure Semi-Prep Inline Filter



1020-20
Iso-Prep Filter
Shown with standard 10-32 stainless steel nuts and ferrules (not included)



A-410
Biocompatible
Semi-Prep Inline Filter

Biocompatible Semi-Prep Inline Filters

- Versions for 1/16", 1/8", 3/16", 1/4", and 5/16" OD tubing
- 100% PEEK flow path

Biocompatible Semi-Prep Filters consist of a stainless steel body, two PEEK end fittings, and a separate PEEK frit. These filters are ideal for many higher flow analytical, semi-prep and preparative applications. Best of all, if the filter becomes clogged, simply unscrew the assembly, remove the frit and replace it. The frits are interchangeable.

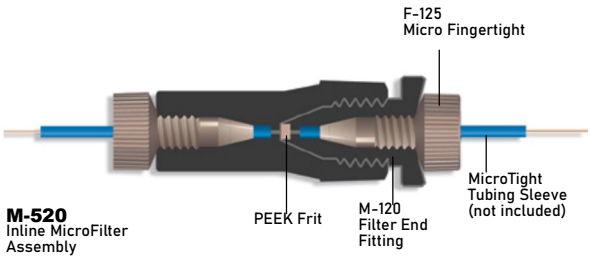
Part No.	Description	Porosity	Threads	Includes	Swept Volume*	Pressure Rating	Qty.
SEMI-PREP INLINE FILTERS							
A-330	Semi-Prep Filter Assembly	10 µm	10-32 Coned	(1) A-331	223 µL	7,500 psi (517 bar)	ea.
A-360	Semi-Prep Filter Assembly	10 µm	5/16-24 Flat Bottom	(1) A-331	235 µL	3,500 psi (207 bar)	ea.
A-331	Stainless Steel Frits, Natural ETFE ring	10 µm	N/A	N/A	142 µL	N/A	ea.
A-332	Stainless Steel Frits, Natural ETFE ring	2 µm	N/A	N/A	122 µL	N/A	ea.
A-337	Stainless Steel Frits, Natural ETFE ring	20 µm	N/A	N/A	152 µL	N/A	ea.
ISO-PREP FILTERS							
1020-05	21.2 mm Filter Holder	0.5 µm	10-32 Coned	(1) 7031-05	203 uL	8,000 psi (552 bar)	ea.
1020-20	21.2 mm Filter Holder	2 µm	10-32 Coned	(1) 7031-20	196 uL	8,000 psi (552 bar)	ea.
7031-05	21.2 mm Replacement Filter	0.5 µm	N/A	N/A	122 uL	8,000 psi (552 bar)	ea.
7031-20	21.2 mm Replacement Filter	2 µm	N/A	N/A	115 uL	8,000 psi (552 bar)	ea.
BIOCOMPATIBLE SEMI-PREP INLINE FILTERS							
A-410	Biocompatible Filter Assembly	2 µm	10-32 Coned	(1) OC-802	89 µL	6,000 psi (414 bar)	ea.
A-411	Biocompatible Filter Assembly	10 µm	10-32 Coned	(1) OC-803	103 µL	6,000 psi (414 bar)	ea.
A-510	Biocompatible Filter Assembly	5 µm	5/16-24 Flat Bottom	(1) OC-805	89 µL	500 psi (34 bar)	ea.
OC-802	PEEK Frit, Green PCTFE ring	2 µm	N/A	N/A	46 µL	N/A	ea.
OC-803	PEEK Frit, Natural PCTFE ring	10 µm	N/A	N/A	57 µL	N/A	ea.
OC-805	PEEK Frit, Natural PCTFE ring	5 µm	N/A	N/A	50 µL	N/A	ea.

**Swept volumes include/reflect theoretical frit volume values.*

Inline MicroFilters

- 100% biocompatible PEEK polymer option available
- Miniscule 240 nL void volume
- Two versions: direct connect 1/32" OD tubing or use MicroTight® tubing sleeves for 70–520 µm OD capillary tubing

Our Inline MicroFilters protect your column from particles originating in the mobile phase or sample, or from pump seal and sample injection valve wear. These filters have a 0.006" (150 µm) thru-hole. Choose the M-520 with a 0.5 µm 100% PEEK frit to connect to capillary tubing using the MicroTight tubing sleeves (page 52). You may also directly connect 1/32" OD tubing using the M-525 which contains a 0.5 µm PEEK frit.



M-520
Inline MicroFilter Assembly

Bio

M-525
Inline MicroFilter Assembly

Part No.	Description	Porosity	For Tubing Size	Threads	Includes	Swept Volume	Pressure Rating	Qty.
INLINE MICROFILTERS								
M-520	Inline MicroFilter Assembly, PEEK Frit	0.5 µm	MicroTight Tubing Sleeve	MicroTight Tubing Sleeve	(5) M-120, (2) F-125	240 nL	4,000 psi (276 bar)	ea.
M-525	Inline MicroFilter Assembly, PEEK Frit	0.5 µm	1/32" OD	1/32" OD	(5) M-140, (2) F-126	240 nL	4,000 psi (276 bar)	ea.
REPLACEMENT INLINE MICROFILTER END-FITTINGS								
M-120x	End-Fittings, Black, with PEEK Frit	0.5 µm	MicroTight Tubing Sleeve	MicroTight Tubing Sleeve	N/A	216 nL	N/A	10-pk
M-140x	End-Fittings, Natural, with PEEK Frit	0.5 µm	1/32" OD	1/32" OD	N/A	216 nL	N/A	10-pk

Mini MicroFilters

- Total volume as low as 10 nL
- Conductive version for CEC and mass spectrometry applications

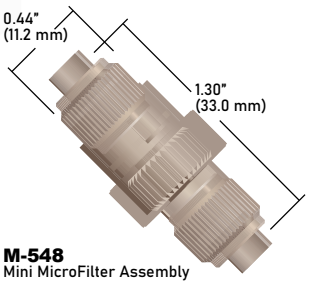
Our Inline Mini MicroFilter Assemblies filter effectively with internal volumes low enough to ensure reliable chromatographic results — even at nanoliter per minute flow rates! Internal volumes of these encapsulated filters are as low as 85 nL with the micro-screen and 10 nL to 22 nL with the frit disc option.

APPLICATION NOTE

The Mini MicroFilters can be used to pack capillary tubing. Simply place one of these filters on the effluent side of the capillary tubing, then slurry pack. Once packed, place a filter at the head of the tubing. This creates a reliable capillary column without fusing the silica to make frits or pressing filter paper inside the capillary tubing.

Increase the Life of Your Column

Why use a Precolumn Filter when there is a frit at the head of the column itself? Changing the column frit is extremely difficult to do without disturbing the column packing. A Precolumn Filter provides relatively inexpensive insurance against column damage, and changing its frit is easy. A Precolumn Filter placed between the sample injection valve and the HPLC column protects the column from particles originating in the sample and from pump and valve seal wear.

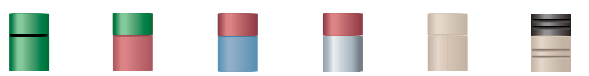


M-548
Mini MicroFilter Assembly

SPECIFICATIONS & DETAILS

Because of the size-specific nature of the ferrules included with each Mini MicroFilter assembly, please note that these ferrules are not interchangeable with other MicroFerrules for different tubing sizes.

Filter Capsule Color Identification



M-121 **M-124** **M-125** **M-128** **M-131** **M-133**

What's the Difference Between Precolumn & Inline Filters?

You may have noticed that the bodies of Precolumn and Inline Filters look similar, and as such, you may have wondered what the differences are. Because Precolumn Filters, by definition, are typically placed in a volume-sensitive area immediately preceding the column, these filters usually feature smaller thru-holes and smaller frit diameters. In contrast, Inline Filters are often placed where the internal volume is not as critical and where longer life and less fluid restriction is more important.

Part No.	Description	Porosity	Frit Type	For use with Tubing	Includes	Swept Volume	Pressure Rating	Qty.
MINI MICROFILTER ASSEMBLY								
M-543	Mini MicroFilter Assembly	1 µm	SST Screen	1/32" (790 µm) OD	(5) M-131, (2) F-112, (2) P-416	97 nL	4,000 psi (276 bar)	ea.
M-547	Mini MicroFilter Assembly	1 µm	SST Frit	1/32" (790 µm) OD	(5) M-133, (2) F-112, (2) P-416	22 nL	4,000 psi (276 bar)	ea.
M-548	Mini MicroFilter Assembly	1 µm	Ti Frit	1/32" (790 µm) OD	(5) M-134, (2) F-112, (2) P-416	22 nL	4,000 psi (276 bar)	ea.

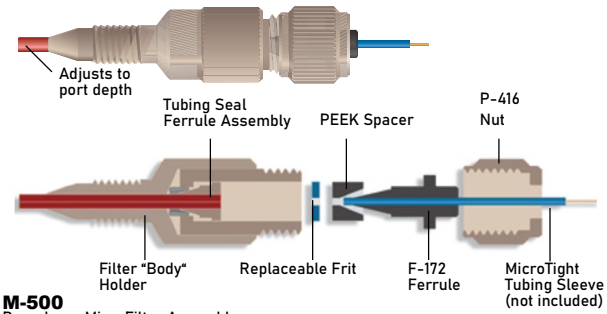
Part No.	Description	Porosity	Frit Type	For Use With	Material	Swept Volume	Qty.
REPLACEMENT MINI MICROFILTER CAPSULES							
M-121	Filter Capsule	1 µm	SST Screen	M-530 and M-531	PEEK	85 nL	2-pk
M-124	Filter Capsule	2 µm	SST Screen	M-532	PEEK	85 nL	2-pk
M-125	NanoFilter Capsule	1 µm	SST Frit	M-537 and M-538	PEEK	10 nL	2-pk
M-126	NanoFilter Capsule	1 µm	Ti Frit	M-537 and M-538	PEEK	10 nL	2-pk
M-131	Filter Capsule	1 µm	SST Screen	M-543	PEEK	85 nL	2-pk
M-133	NanoFilter Capsule	1 µm	SST Frit	M-547 and M-548	PEEK	10 nL	2-pk
M-134	NanoFilter Capsule	1 µm	Ti Frit	M-547 and M-548	PEEK	10 nL	2-pk
M-128	Conductive NanoFilter Capsule	1 µm	SST Frit	M-534	SST/PEEK	10 nL	2-pk

SST = Stainless Steel; Ti = Titanium

Precolumn MicroFilters

- Direct connects to columns with 10-32 threads
- Total void volume of 0.5 µL
- Two versions: direct connect 1/16" OD tubing or use MicroTight® tubing sleeves for 70–520 µm OD capillary tubing

The Precolumn MicroFilters directly connect into your microbore or analytical column. Total theoretical void volume is only 0.5 µL (includes frit volume) and the PEEK tubing used in the assembly of these units has a 0.005" (125 µm) ID, virtually eliminating any mixing of the sample with the mobile phase.



M-500
Precolumn MicroFilter Assembly
(Includes indicated products)

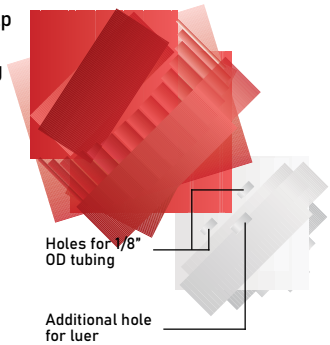
Part No.	Description	Porosity	For Tubing Size	Threads	Includes	Swept Volume	Pressure Rating	Qty.
PRECOLUMN MICROFILTER ASSEMBLIES								
M-500	Precolumn MicroFilter Assembly, SST Frit	0.5 µm	MicroTight Tubing Sleeve	10-32 Coned	(5) C-425, (1) F-172, (1) P-416	0.5 µL	4,000 psi (276 bar)	ea.
M-510	Precolumn MicroFilter Assembly, PEEK Frit	0.5 µm	MicroTight Tubing Sleeve	10-32 Coned	(5) A-735, (1) F-172, (1) P-416	0.5 µL	4,000 psi (276 bar)	ea.
M-550	Precolumn MicroFilter Assembly, SST Frit	0.5 µm	1/16" OD	10-32 Coned	(5) C-425, (1) F-132, (1) P-416	0.5 µL	4,000 psi (276 bar)	ea.
M-560	Precolumn MicroFilter Assembly, PEEK Frit	0.5 µm	1/16" OD	10-32 Coned	(5) A-735, (1) F-132, (1) P-416	0.5 µL	4,000 psi (276 bar)	ea.
REPLACEMENT PRECOLUMN MICROFILTER FRITS (FRIT DIAMETER X FRIT THICKNESS X OVERALL DIAMETER)								
A-735	PEEK Frits, 0.045" x 0.031" x 0.192"	0.5 µm	N/A	N/A	N/A	216 nL	N/A	ea.
C-420	SST Frits, 0.038" x 0.028" x 0.192"	2 µm	N/A	N/A	N/A	101 nL	N/A	ea.
C-425	SST Frits, 0.038" x 0.028" x 0.192"	0.5 µm	N/A	N/A	N/A	101 nL	N/A	ea.

Bottle Caps

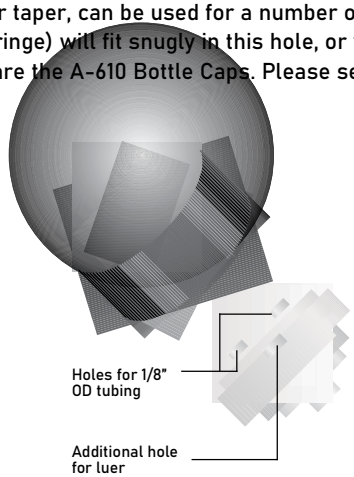
- Extremely simple — no threaded ports or fittings
- Manufactured from ETFE and Polypropylene

If you are looking for a bottle cap that is quick and easy to use, but still allows many connect ion options, we have just what you need! The Bottle Caps fit standard GL-45 (1 L) or smaller-neck GL-38 (4 L) glass bottles.

Each cap has three holes. With two of the holes you simply push your tubing straight through. The third hole, with a luer taper, can be used for a number of options. Any male luer (such as a luer-lock syringe) will fit snugly in this hole, or you can use the A-626 or A-627 Plug. Exceptions are the A-610 Bottle Caps. Please see the note below.



A-620
GL-45 Bottle Cap for 1/8" tubing



A-622
GL-38 Bottle Cap for 1/8" tubing

APPLICATION NOTE

- A self-regulating sparging system can help reduce helium consumption and improve pump performance. Set this up by pressing your tubing through the appropriate holes in your bottle cap and attaching each line to a filter. Sparge your mobile phase with an inert gas (preferably helium) for 15–20 minutes. Then reduce the outlet pressure of the sparging gas to a maximum of 5 psi (0.34 bar) and insert a plug (A-626 or A-628) into the remaining port of the cap. The sparging gas will shut off once the incoming pressure equals the pressure inside the reservoir. As the mobile phase is consumed and the internal pressure lowers, sparging gas will enter to keep the system pressurized and degassed. Please *Note: If gas leaks while pressurizing the bottle, try removing the sealing ring from the bottle, as it sometimes interferes with the sealing of these bottle caps.*
- One concern with sparging systems is the possibility of solvent backing up the sparging inlet line. This can occur if the gas tank completely evacuates with the regulating valves open, creating a vacuum in the tubing. Solvent backup may damage sparging system components and cause cross-contamination of mobile phase reservoirs. To help prevent solvent backup, install the CV-3010 Inline Check Valve (page 135) along the tubing line that runs between the gas supply and the solvent bottle.
- For a more efficient degassing system, please see the HPLC Vacuum Degassing Systems on page 154.
- Please see the Quick-Stop Luer Check Valve on page 139 for another solvent inlet Application Note.

NOTE

The A-610 Bottle Cap has a slightly different configuration than other caps. One hole accepts 3/16" OD tubing, the typical size used with some Waters® systems. The remaining two holes accept 1/8" OD tubing. Unlike the other caps, the A-610 does not have a tapered luer hole. If desired, use our A-628 Plug or A-629 Filter Plug for one of the 1/8" holes.

RELATED PRODUCTS

To ensure a tight seal, use fluoropolymer tubing with these bottle caps (page 55).

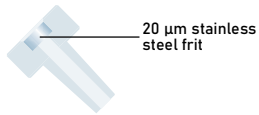
Part No.	Description	Qty.
BOTTLE CAPS FOR GL-45, 1 L BOTTLES		
A-610	for 3/16" OD tubing, Red	ea.
A-620	for 1/8" OD tubing, Red	ea.
A-630	for 1/16" OD tubing, Red	ea.
BOTTLE CAPS FOR GL-38, 4 L BOTTLES		
A-622	for 1/8" OD tubing, Black	ea.

Bottle Cap Plugs

Use the A-626 Bottle Cap Plug to seal the third “tapered” luer hole found in most IDEX Health & Science Bottle Caps. Or, use the A-628 Plug to seal any unused 1/16” or 1/8” bottle cap holes.

Alternatively, try the A-627 or A-629 Filter Bottle Cap Plug to cap an unused hole in your bottle cap. The 20 µm stainless steel frit in these products prevents foreign matter from contaminating your solvent while leaving the bottle open to the atmosphere, thus allowing fluid to be pulled out without creating a vacuum (generally not used with sparging applications). All plug bodies are manufactured from ultra-high molecular weight polyethylene (UHMWPE).

A-626
Bottle Cap Plug



A-629
Filter Bottle Cap Plug

Part No.	Description	Qty.
BOTTLE CAP PLUGS		
A-626	Bottle Cap Plug for luer hole, UHMWPE	ea.
A-627	Filter Bottle Cap Plug for luer hole, UHMWPE with 20 µm stainless steel frit	ea.
A-628	Bottle Cap Plug for 1/16”, 1/8” or 3/16” hole, UHMWPE	ea.
A-629	Filter Bottle Cap Plug for 1/16”, 1/8” or 3/16” hole, UHMWPE with 20 µm stainless steel frit	ea.