

# Liquid Chromatography **Accessories** Solutions Guide

Clean LC systems last longer  
and defer maintenance



 **phenomenex**<sup>®</sup>  
...breaking with tradition<sup>™</sup>



[www.phenomenex.com/accessories](http://www.phenomenex.com/accessories)

# Guaranteed!

We're committed to the highest quality standards. Phenomenex products are governed by our ISO 9001:2008 quality management system to ensure that every product meets certification specifications.



guarantee

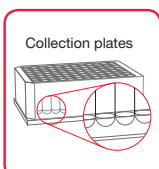
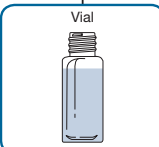
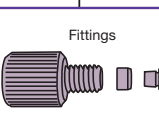
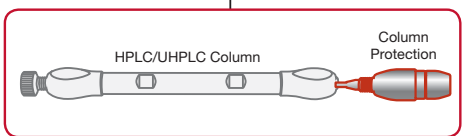
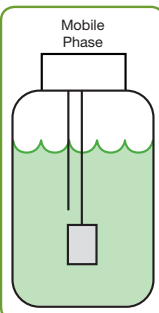
If Phenomenex products in this guide do not perform as well or better than your current product of similar type, dimensions, and material, send in your comparative data within 45 days and keep the Phenomenex product for FREE.



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[www.phenomenex.com/accessories](http://www.phenomenex.com/accessories)



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## Eliminate Damaging Contaminants Before They Reach Your Expensive HPLC/UHPLC Column with Syringe Filters

### Why is sample preparation important?

Sample preparation products protect your column and system from damaging particulates and contaminants, which lead to shorter column lifetime, increased unscheduled system downtime, and unacceptable results.

- Filtering your samples reduces the risk of contamination and clogging of your column and system components.
- Clean samples extend column lifetimes and decrease the incidence of high pressure fluctuations caused by particulate and contaminant buildup at the head of the column.
- Effective sample filtration also saves your system's rotor seals, and valve stators from unnecessary wear and damage caused by undissolved sample particulates grinding away at the expensive injection port components.

### Filtration Cleans Sample Prior to Analysis



#### Free Samples, request yours today!

Want to try free sample or need assistance selecting the best syringe filter for your application? Use our online web tool to find the guaranteed match. Visit:

[www.phenomenex.com/SFMatch](http://www.phenomenex.com/SFMatch)

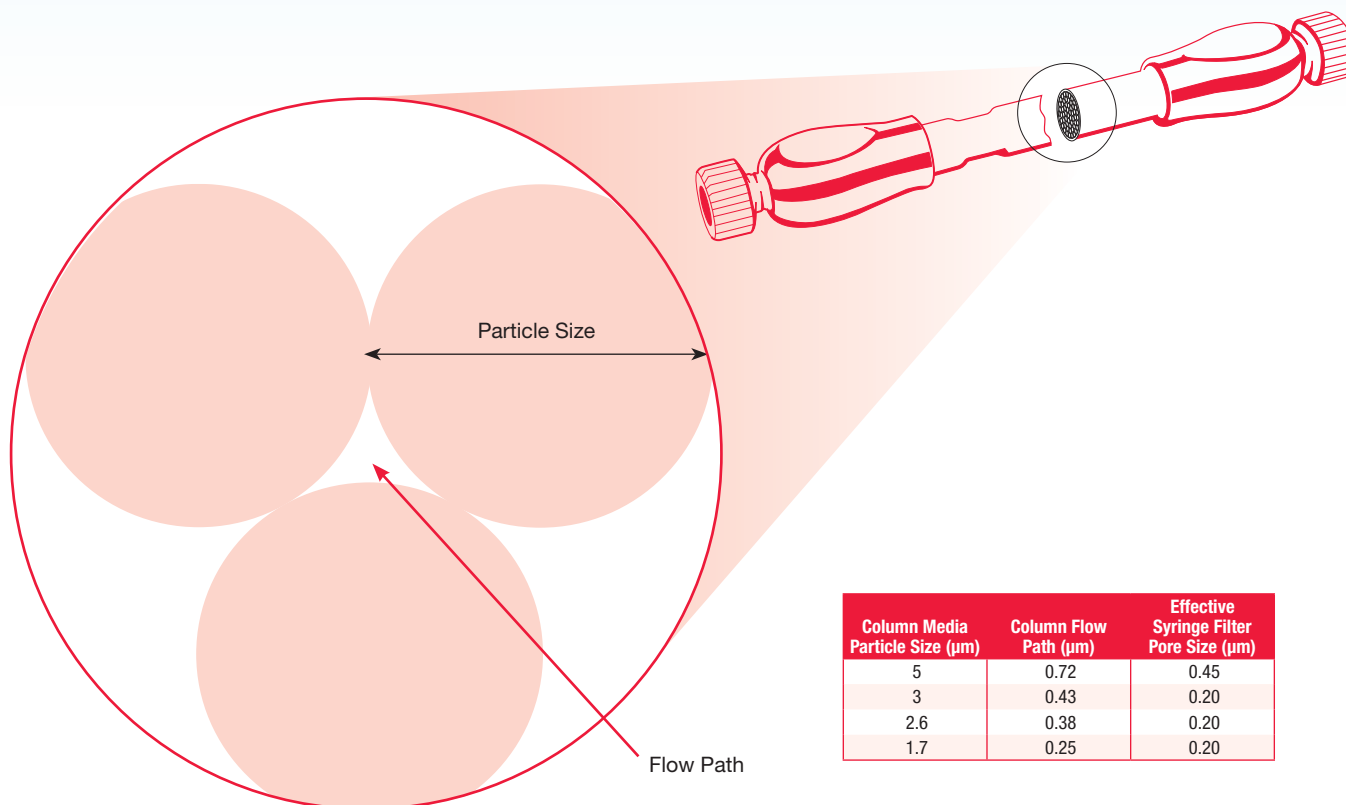


# Eliminate Damaging Contaminants Before They Reach Your Expensive HPLC/UHPLC Column with Syringe Filters

## How do syringe filters work?

- Phenex syringe filters utilize a filter membrane to remove particulates from your sample, and thus prevent particulates from entering the injector and the column. Samples are easily pushed through the filter membrane with a syringe and then the collected filtered samples are ready for analysis.
- Columns packed with  $\leq 3\mu\text{m}$  chromatographic media require a syringe filter with  $0.20\mu\text{m}$  filter membrane to ensure complete removal of unwanted particulates from entering the system flow path. The benefits are longer column lifetimes and increased system uptime while also protecting your UHPLC system from over-pressurization. Spurious and split peak phenomena are reduced, enhancing overall chromatographic reliability and reproducibility.
- UHPLC systems utilize relatively small internal diameter connection tubing ( $\leq 0.005''$  or  $\leq 0.127\text{mm}$ ) compared with traditional HPLC systems in order to minimize system dead volume contributions. Removing particulates is essential to reducing the potential for clogged tubing and maintaining system backpressures as low as possible to reduce system wear and tear.

## Column Flow Path





# Sample Filtration

**Protect injector valves, prevent costly rework, and reduce system downtime**

Phenex syringe filters increase column lifetime and improve chromatographic reproducibility. Phenex offers a variety of chemically compatible syringe filter membranes that are ideal for any application. Proper membrane and size selection are the keys to choosing the best product matched to your sample while protecting your UHPLC, HPLC, or GC column system from particulate contamination.



## Select your filter in three EASY steps:

### 1. Select filter diameter based on sample volume

If your sample volume is:		
≤ 2 mL Sample Volume	2 to 10 mL Sample Volume	10 to 100 mL Sample Volume
4 mm Diameter	15 - 17 mm Diameter	25 - 28 mm Diameter

### 2. Select pore size based on the nature of your sample and chromatographic method

Sample Description	Recommended Filter Pore Size
General aqueous or mixed organic samples prior to HPLC analysis with column packed with > 3 μm particles. General clarification of GC, SFC, CE, and GPC samples.	0.45 μm
Viscous samples or samples containing high levels of particulate matter.	0.20 μm
General aqueous or mixed organic samples prior to HPLC analysis with columns packed with ≤ 3 μm particles. Removal of fine particulate matter prior to GC, SFC, CE, and GPC samples.	
Gas samples prior to GC. Liquid samples prior to UHPLC or LC/MS. Other particulate-sensitive methods.	Glass Fiber filter with 0.45 μm filter
Viscous samples such as serum, plasma, or other biological matrices. Solutions with high particulate load (e.g., some environmental or food and beverage applications).	

### 3. Select filter membrane according to the characteristics of your sample and filtering objective

Aqueous (Particulate-laden samples may require pre-filtration)			Solvents	
Solvent Mixtures 	Tissue Culture Media, Buffers	Protein Analysis / Biological Samples	Non-Aqueous ↓ Hydrophobic	Aqueous Mixtures ↓ Hydrophilic
↓ RC (Regenerated Cellulose)	↓ CA (Cellulose Acetate)	↓ PES (Polyethersulfone)	↓ PTFE (Polytetrafluoroethylene)	↓ RC (Regenerated Cellulose)



# Sample Filtration

## Ordering Information <sup>1</sup> Phenex Syringe Filters

Membrane Type/Size	4 mm Diameter for ≤ 2mL sample volumes		15 mm Diameter for 2 – 10mL sample volumes		25 - 28 mm Diameter for 10 – 100 mL sample volumes	
	Part No.	Unit	Part No.	Unit	Part No.	Unit
<b>0.20 µm</b>						
Phenex-RC (Regenerated Cellulose)	AF0-3203-12	100/pk	AF0-2203-12	100/pk	AF0-8203-12 <sup>5</sup>	100/pk
	AF0-3203-52	500/pk	AF0-2203-52	500/pk	AF0-8203-52 <sup>5</sup>	500/pk
Phenex-PES <sup>3</sup> (Polyethersulfone)	—	—	—	—	AF0-8208-12 <sup>7</sup>	100/pk
	—	—	—	—	AF0-8208-52 <sup>7</sup>	500/pk
Phenex-PTFE <sup>6</sup> (Polytetrafluoroethylene)	AF0-3202-12	100/pk	AF0-2202-12	100/pk	AF0-1202-12	100/pk
	AF0-3202-52	500/pk	AF0-2202-52	500/pk	AF0-1202-52	500/pk
Phenex-NY (Nylon)	AF3-3207-12	100/pk	AF0-2207-12	100/pk	AF0-1207-12	100/pk
	AF3-3207-52	500/pk	AF0-2207-52	500/pk	AF0-1207-52	500/pk
Phenex-GF/NY <sup>2</sup> (Glass Fiber/Nylon)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a Nylon (NY) membrane. Excellent for filtration of particle-laden samples, such as foods and beverages, environmental, biofuels, and dissolution samples. Use less hand pressure to filter even the most difficult samples. Outlet connection is luer lock.				AF0-1A47-12 <sup>7</sup>	100/pk
					AF0-1A47-52 <sup>7</sup>	500/pk
Phenex-PVDF (Polyvinylidene Fluoride)	—	—	AF6-5206-12	100/pk	AF6-6206-12	100/pk
	—	—	AF6-5206-52	500/pk	AF6-6206-52	500/pk
Phenex-GF/PVDF (Glass Fiber/Polyvinylidene Fluoride)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a PVDF membrane. The hydrophilic PVDF membrane provides high flow rates and throughput, low extractables and broad chemical compatibility. This membrane binds less protein than nylon or PTFE membranes.				AF6-6C06-12	100/pk
					AF6-6C06-52	500/pk
Phenex-CA <sup>4</sup> (Cellulose Acetate)	—	—	—	—	AF0-8204-12 <sup>7</sup>	100/pk
	—	—	—	—	AF0-8204-52 <sup>7</sup>	500/pk
Phenex-GF/CA <sup>2,3,4</sup> (Glass Fiber/Cellulose Acetate)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a CA membrane. Excellent for filtration of tissue culture media, general biological sample filtration and clarification. Outlet connection is luer lock.				AF0-8A09-12 <sup>7</sup>	100/pk
					AF0-8A09-52 <sup>7</sup>	500/pk
<b>0.45 µm</b>						
Phenex-RC (Regenerated Cellulose)	AF0-3103-12	100/pk	AF0-2103-12	100/pk	AF0-8103-12 <sup>5</sup>	100/pk
	AF0-3103-52	500/pk	AF0-2103-52	500/pk	AF0-8103-52 <sup>5</sup>	500/pk
Phenex-PES <sup>3</sup> (Polyethersulfone)	—	—	—	—	AF0-8108-12 <sup>7</sup>	100/pk
	—	—	—	—	AF0-8108-52 <sup>7</sup>	500/pk
Phenex-PTFE <sup>6</sup> (Polytetrafluoroethylene)	AF0-3102-12	100/pk	AF0-2102-12	100/pk	AF0-1102-12	100/pk
	AF0-3102-52	500/pk	AF0-2102-52	500/pk	AF0-1102-52	500/pk
Phenex-NY (Nylon)	AF3-3107-12	100/pk	AF0-2107-12	100/pk	AF0-1107-12	100/pk
	AF3-3107-52	500/pk	AF0-2107-52	500/pk	AF0-1107-52	500/pk
Phenex-GF/NY <sup>2</sup> (Glass Fiber/Nylon)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a Nylon (NY) membrane. Excellent for filtration of particle-laden samples, such as foods and beverages, environmental, biofuels, and dissolution samples. Use less hand pressure to filter even the most difficult				AF0-1B47-12 <sup>7</sup>	100/pk
					AF0-1B47-52 <sup>7</sup>	500/pk
Phenex-PVDF (Polyvinylidene Fluoride)	—	—	AF6-5106-12	100/pk	AF6-6106-12	100/pk
	—	—	AF6-5106-52	500/pk	AF6-6106-52	500/pk
Phenex-GF/PVDF (Glass Fiber/Polyvinylidene Fluoride)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a PVDF membrane. The hydrophilic PVDF membrane provides high flow rates and throughput, low extractables and broad chemical compatibility. This membrane binds less protein than nylon or PTFE				AF6-6D06-12	100/pk
					AF6-6D06-52	500/pk
Phenex-GF/CA <sup>2,3,4</sup> (Glass Fiber/Cellulose Acetate)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a CA membrane. Excellent for filtration of tissue culture media, general biological sample filtration and clarification. Outlet connection				AF0-8B09-12 <sup>7</sup>	100/pk
					AF0-8B09-52 <sup>7</sup>	500/pk
<b>1.20 µm</b>						
Phenex-GF <sup>2,3</sup> (Glass Fiber)	Prefiltration of heavily contaminated or highly viscous samples. When used in-series preceding a membrane filter, clogging of the membrane filter is prevented and sample clean up is optimized. Outlet connection is luer lock.				AF0-8515-12 <sup>7</sup>	100/pk
					AF0-8515-52 <sup>7</sup>	500/pk



- Larger quantity purchases at significant savings are available.
- Glass fiber filters are 28 mm diameter and made of borosilicate. They will remove 90% of all particles >1.2µm.
- Housing material is methacrylate butadiene styrene (MBS) polymerisate. Also known as Cyrolite®.
- Cellulose acetate is surfactant-free.
- 26 mm diameter.
- Hydrophobic membrane. Can be made hydrophilic by pre-wetting with IPA.
- 28 mm diameter.
- Additional dimensions and membrane types are available. Please contact your local Phenomenex technical consultant or distributor for availability or assistance.



Above syringe filters are non-sterile. Housing is made of medical-grade polypropylene (PP), and offer luer lock inlet/slip outlet connections, unless otherwise indicated.

## All-Plastic Disposable Syringes

- Use for all syringe filter applications
- Luer-lock outlet makes connection easy
- Capacities ranging from 3 to 20 mL
- Made of ultra-clean, high-purity plastic



## Ordering Information

Part No.	Description	Capacity (mL)	Unit
AS0-8408	Plastic Disposable Syringes, Luer-lock	3	100/pk
AS0-8409	Plastic Disposable Syringes, Luer-lock	5	100/pk
AS0-8410	Plastic Disposable Syringes, Luer-lock	10	100/pk
AS0-8411	Plastic Disposable Syringes, Luer-lock	20	100/pk

\* Choose larger volume syringe to reduce force on syringe filter membrane. 10 mL or larger syringe is recommended.



# Collect, Store, and Transfer Samples with 96-Well Collection Plates and Sealing Mats

Collection plates are an excellent way to collect, store, and transfer your bioanalytical samples. Choose from several well shapes and volumes to customize your work. Phenomenex 96-well collection plates are compatible with all Phenomenex 96-well sample preparation products including Clarity® Biosolutions, Strata™-X Polymer-Based SPE, Strata® Silica-Based SPE, Novum™ SLE, Phree™ Phospholipid Removal Products, and Impact™ Protein Precipitation Plates.

## Round Well Collection Plates (polypropylene)

Top View	Side View	Well Volume	Well Bottom	Part No.	Unit	Suggested Sealing Mats
		1 mL	Round	AH0-7279	50/pk	AH0-8631, AH0-8632
		2 mL	Round	AH0-8636	50/pk	AH0-8633, AH0-8634

## Round Well Sealing Mats

Part No.	Description	Material	Unit
AH0-8631	Pierceable, 7 mm diameter	Silicone	50/pk
AH0-8632	Pre-Slit, 7 mm diameter	Silicone	50/pk
AH0-8633	Pierceable, 8 mm diameter	Silicone	50/pk
AH0-8634	Pre-Slit, 8 mm diameter	Silicone	50/pk
AH0-7362	Sealing Tap Pad	—	10/pk

## Square Well Collection Plates (polypropylene)

Top View	Side View	Well Volume	Well Bottom	Part No.	Unit	Suggested Sealing Mats
		350 µL	Conical	AH0-7192	50/pk	AH0-8597, AH0-8598, AH0-8199, AH0-7195
		1 mL	Conical	AH0-7193	50/pk	AH0-8597, AH0-8598, AH0-8199, AH0-7195
		2 mL	Conical	AH0-7194	50/pk	AH0-8597, AH0-8598, AH0-8199, AH0-7195
		2 mL	Round-Conical	AH0-8635	50/pk	AH0-8597, AH0-8598, AH0-8199, AH0-7195

## Square Well Sealing Mats

Part No.	Description	Material	Unit
AH0-8597	Pierceable	Silicone	50/pk
AH0-8598	Pre-Slit	Silicone	50/pk
AH0-8199	Pierceable	Santoprene™	100/pk
AH0-7195	Pierceable	Ethylene Vinyl Acetate (EVA)	50/pk
AH0-7362	Sealing Tap Pad	—	10/pk





# Instantly Increase Throughput Without Investing in Expensive Capital Equipment

## Vacuum Manifolds

Vacuum manifolds are an easy way to increase throughput when performing Solid Phase Extraction (SPE), Simplified Liquid Extraction (SLE), Phospholipid Depletion, or Protein Precipitation. Choose from several sizes and format compatibilities to best suit your work.

### 96-Well Plate Vacuum Manifold

- Includes vacuum valve attachment and two collection plate spacer inserts
- Made of durable acrylic
- Designed to accommodate 96-well plates, collection plates, protein precipitation plates, and filtration plates

#### 96-Well Plate Vacuum Manifold and Accessories

Part No.	Description	Unit
AHO-8950	96-Well Plate Manifold with Vacuum Gauge	Ea
AHO-9054	96-Well Tab-Less Tube Holder for use with 96-Well Vacuum Manifold (AHO-8950)	Ea



### SPE Tube Vacuum Manifold

- Process up to 12 or 24 samples at one time
- Process up to 10 large volume samples at one time
- Female Luer inlets fit all male Luer tipped SPE tubes and cartridges

#### 1, 3, and 6 mL Tube Vacuum Manifolds

Part No.	Description	Unit
AHO-6023	12-Position Vacuum Manifold, complete assembly	Ea
AHO-6024	24-Position Vacuum Manifold, complete assembly	Ea

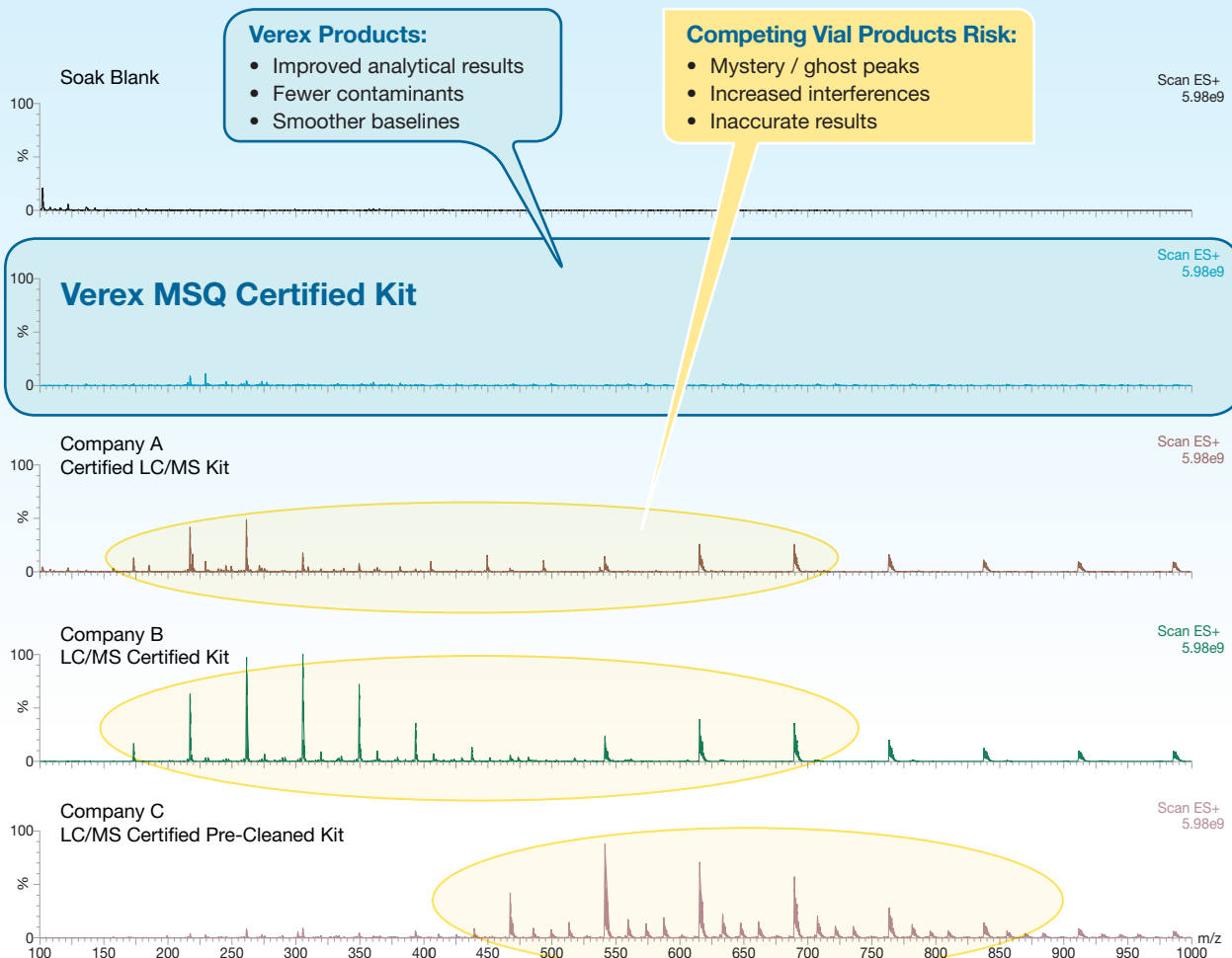


View our vast portfolio of sample preparation products at [www.phenomenex.com/sampleprep](http://www.phenomenex.com/sampleprep)

Solid Phase Extraction (SPE) / Simplified Liquid Extraction (SLE) / Phospholipid Depletion / Protein Precipitation

# Certified Vial Products for UHPLC/HPLC, GC, SFC and MS Analysis

Though they may look alike, not all vials offer equivalent performance. Variations in product quality can adversely affect your chromatography, leading to mystery peaks, loss of analytes, and irreproducible results. Begin your LC analysis with high quality Verex™ products to minimize troubleshooting delays, and costly, unnecessary rework.



To minimize the potential for ghost peaks and interferences, we recommend the use of Verex MSQ Certified vials and caps. These products deliver unmatched performance (as seen in the comparison above). Other companies' LC/MS certified products can contaminate your sample and introduce unidentifiable mystery peaks.

## Three Levels of Certification

	LEVEL 1 Certified	LEVEL 2 Certified PLUS (Cert+)	LEVEL 3 Certified MSQ (Cert + MSQ) (Mass Spec Quality)
<b>Ultra Clean</b> Specially designed and treated for mass spectrometry (MS) applications.			✓
<b>Low Bleed</b> Special cap / closure processing, treating, and testing for low bleed of residual organics. For high sensitivity GC/MS and LC/MS applications.		✓	✓
<b>Dimensionally Verified</b> Machine vision cameras and gauges inspect critical dimensions and tolerances to produce uniform, defect-free products.	✓	✓	✓
<b>Lot Traceable</b> Vial and cap packs are 100% traceable through the manufacturing process. Certificate of Conformance available by lot number upon request.	✓	✓	✓
<b>Clean Room Packaged</b> Ensures particulate- and contaminate-free products for clean chromatography.	✓	✓	✓
<b>Part Number Extension</b>	No Extension Needed	Certificate of Conformance Included; Extension -C	Certificate of Conformance Included; Extension -M
<b>Part Number Example</b>	ARO-9921-13	ARO-9921-13-C	ARO-9921-13-M

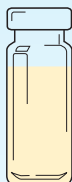
# 12 x 32 mm, 11 mm Crimp-Top Vial Products

## Crimp-Top Vials, 2.0 mL

- Cleaner vials eliminate ghost peaks and contaminants
- Used with most autosamplers, including Agilent®, Thermo Scientific®, Waters®
- Larger-opening “wide-mouth” style prevents broken needles and system downtime
- Precision neck improves crimping

### Ordering Information

Description	1000/pk
<b>Standard Opening</b>	
Vial, Crimp, 2 mL Clear, No Patch	ARO-3700-13
Vial, Crimp, 2 mL Clear, w/ Patch	ARO-3710-13
Vial, Crimp, 2 mL Amber, w/ Patch	ARO-3711-13
<b>Wide Mouth Opening</b>	
Vial, Crimp, 2 mL Wide Mouth, Clear, No Patch	ARO-37K0-13
Vial, Crimp, 2 mL Wide Mouth, Clear, w/ Patch	ARO-37L0-13
Vial, Crimp, 2 mL Wide Mouth, Amber, No Patch	ARO-37K1-13
Vial, Crimp, 2 mL Wide Mouth, Amber, w/ Patch	ARO-37L1-13



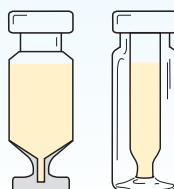
## Limited Volume Specialty Crimp-Top Vials

- Microsampling (center-draining and fused-insert vials)

### Ordering Information

Description	100/pk	1000/pk
Vial, Crimp, v-Vial Clear, No Patch*	ARO-3740-12	ARO-3740-13
Vial, Crimp, v-Vial Amber, No Patch*	—	ARO-3741-13
Vial, Crimp, µVial i3 (Qsert), Clear, w/ Patch	ARO-3725-12	ARO-3725-13
Vial, Crimp, µVial i3 (Qsert), Amber, w/ Patch	ARO-3726-12	ARO-3726-13

\*51-Expansion glass.



## Seals / Closures for Crimp-Top Vials

- Excellent for volatile samples
- Extra clean to eliminate contamination
- Colored aluminum



### Ordering Information

Description	1000/pk
Seal, 11 mm Diameter, Crimp, PTFE/Silicone, silver	ARO-5780-13
Seal, 11 mm Diameter, Crimp, PTFE/Silicone/PTFE, silver	ARO-5760-13
Seal, 11 mm Diameter, Crimp, PTFE/Rubber, silver	ARO-5740-13
Seal, 11 mm Diameter, Crimp, PTFE/Rubber, blue	ARO-5742-13
Seal, 11 mm Diameter, Crimp, PTFE/Rubber, red	ARO-5741-13
Seal, 11 mm Diameter, Crimp, PTFE/Rubber, green	ARO-5743-13
Seal, 11 mm Diameter, Crimp, PTFE/Rubber, gold	ARO-574G-13
Seal, 11 mm Diameter, Crimp, PTFE, silver	ARO-5710-13



**Save Money.** Bulk discounts available.  
Timely delivery. Excellent support.



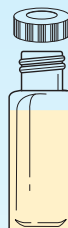
Need help matching your current vials and caps to Verex? Visit:  
[www.phenomenex.com/VialMatch](http://www.phenomenex.com/VialMatch)



## 12 x 32 mm, 9 mm (9-425) Screw-Top Vials and Kits

### Convenience Kits – Certified PLUS (Cert+) Mass Spec Quality (MSQ) 9mm Screw-Top Vials and Caps with Locked-Fit Septa

- For your most demanding analysis; high sensitive detectors
- HPLC and LC/MS tested and certified
- State-of-the-art design and manufacture



#### Ordering Information

Description	1000/pk
Cert+ MSQ Vial Kit, 9 mm, 2 mL Clear w/ Patch + MSQ PTFE/Silicone	ARO-992A-13-M
Cert+ MSQ Vial Kit, 9 mm, 2 mL Amber w/ Patch + MSQ PTFE/Silicone	ARO-992B-13-M

### Convenience Kits – Certified PLUS (Cert+) 9 mm Screw-Top Vials and Caps with Bonded-In Septa

- Certified for cleanliness and enhanced quality
- Polyethylene-Starburst cap is an excellent choice for inertness



#### Ordering Information

Description	1000/pk
Cert+ Vial Kit, 9 mm, 2 mL Clear w/ Patch + PTFE/Silicone cap	ARO-9921-13-C
Cert+ Vial Kit, 9 mm, 2 mL Clear w/ Patch + PE-Starburst cap	ARO-9927-13-C
Cert+ Vial Kit, 9 mm, 2 mL Amber w/ Patch + PTFE/Silicone, preSlit cap	ARO-9926-13-C
Cert+ Vial Kit, 9 mm, 2 mL Amber w/ Patch + PE-Starburst cap	ARO-9928-13-C

### Convenience Kits – 9 mm Screw-Top Vials and Caps with Bonded-In Septa

- Sample volume range from 0.2 to 1.5 mL



#### Ordering Information

Description	1000/pk
Vial Kit, 9 mm, 2 mL Clear + PTFE/Silicone	ARO-9901-13
Vial Kit, 9 mm, 2 mL Clear + PTFE/Silicone, preSlit	ARO-9903-13
Vial Kit, 9 mm, 2 mL Clear w/ Patch + PTFE/Silicone	ARO-9921-13
Vial Kit, 9 mm, 2 mL Clear w/ Patch + PTFE/Silicone, Silanized	ARO-9921-13-D
Vial Kit, 9 mm, 2 mL Clear w/ Patch + PTFE/Silicone, preSlit	ARO-9925-13
Vial Kit, 9 mm, 2 mL Clear w/ Patch + PTFE/Silicone, preSlit, Silanized	ARO-9925-13-D
Vial Kit, 9 mm, 2 mL Clear + PTFE/Silicone/PTFE	ARO-9905-13
Vial Kit, 9 mm, 2 mL Clear + PTFE/Rubber	ARO-9907-13
Vial Kit, 9 mm, 2 mL Clear w/ Patch + PTFE/Rubber, preSlit	ARO-9914-13
Vial Kit, 9 mm, 2 mL Amber w/ Patch + PTFE/Silicone	ARO-9922-13
Vial Kit, 9 mm, 2 mL Amber w/ Patch + PTFE/Silicone, Silanized	ARO-9922-13-D
Vial Kit, 9 mm, 2 mL Amber w/ Patch + PTFE/Silicone, preSlit	ARO-9926-13
Vial Kit, 9 mm, 2 mL Amber w/ Patch + PTFE/Silicone, preSlit, Silanized	ARO-9926-13-D
Vial Kit, 9 mm, 2 mL Amber w/ Patch + PTFE/Silicone/PTFE	ARO-9923-13
Vial Kit, 9 mm, 2 mL Amber w/ Patch + PTFE/Rubber	ARO-9912-13

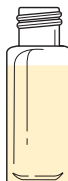


### 9 mm Screw-Top Vials, 2.0 mL

- Used with most autosamplers, including Agilent®, Thermo Scientific®, Waters® and many others
- Performs as well as crimp or snap vials
- Offers improved cap convenience and accessibility (easy on, easy off)

#### Ordering Information

Description	1000/pk
Vial, 9 mm Screw, 2 mL Clear, No Patch	ARO-3900-13
Vial, 9 mm Screw, 2 mL Amber, No Patch	ARO-3901-13
Vial, 9 mm Screw, 2 mL Clear, w/ Patch	ARO-3910-13
Vial, 9 mm Screw, 2 mL Amber, w/ Patch	ARO-3911-13
Vial, 9 mm Screw, 2 mL Clear, w/ Patch, Silanized	ARO-3960-13



# 12 x 32 mm, 9 mm (9-425) Screw-Top Vials and Kits (cont'd)

## Certified PLUS (Cert+) Mass Spec Quality (MSQ) Caps for 9 mm Screw-Top Vials

- HPLC and LC/MS tested and certified
- For your most demanding analysis; high sensitive detectors
- Locked-fit provides a positive physical septa lock into the cap



**MS Quality.** Constructed of virgin polymers, free of siloxanes and trace contaminants, these caps are the cleanest available from Phenomenex.

### Ordering Information

Description	1000/pk
Cert+ MSQ Cap (pre-assembled), 9 mm, w/ Locked-fit PTFE/Silicone septa, blue	<a href="#">ARO-8952-13-M</a>
Cert+ MSQ Cap (pre-assembled), 9 mm, w/ Locked-fit PTFE/Silicone preSlit septa, blue	<a href="#">ARO-8972-13-M</a>



## Certified PLUS (Cert+) Caps for 9 mm Screw-Top Vials

- Certified ultra-clean
- High-grade, preconditioned raw materials
- Finished product inspected and LC/MS tested



### Ordering Information

Description	1000/pk
Cert+ Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, blue	<a href="#">ARO-8952-13-C</a>
Cert+ Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone preSlit septa, blue	<a href="#">ARO-8972-13-C</a>
Cert+ Cap (one-piece*), 9 mm PE w/ Starburst preSlit, natural*	<a href="#">ARO-89P6-13-C</a>



\* Cap is one piece, constructed of ultra-pure, medical-grade polyethylene

\* For a more economical alternative, Press-Fit Caps are available. Contact your Phenomenex technical consultant or distributor.

## Bonded-In Caps for 9 mm Screw-Top Vials

- Bonded septa caps eliminate costly liner/septa fallout
- Prevents rework and wasted productivity with perfect-fit septa
- Saves instrument downtime



### Ordering Information

Description	1000/pk
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, black	<a href="#">ARO-8957-13-B</a>
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, blue	<a href="#">ARO-8952-13-B</a>
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, natural	<a href="#">ARO-8956-13-B</a>
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, red	<a href="#">ARO-8951-13-B</a>
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, green	<a href="#">ARO-8953-13-B</a>
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone preSlit septa, black	<a href="#">ARO-8977-13-B</a>
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone preSlit septa, blue	<a href="#">ARO-8972-13-B</a>
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone preSlit septa, grey	<a href="#">ARO-8976-13-B</a>



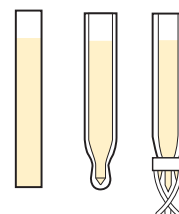
## Inserts for 9 mm Screw-Top Vials

- For limited volume sampling in 2 mL sample vials
- Virtually no adsorption or pH effects
- Precisely centers and fits vial neck
- Offers maximum opening to sampling needle

### Ordering Information<sup>Δ</sup>

Description	500/pk	1000/pk
Insert, 6 mm Diameter, Flat Bottom, 450 μL	<a href="#">ARO-4610-52</a>	—
Insert, 6 mm Diameter, Flat Bottom, 450 μL, Silanized	<a href="#">ARO-4615-52</a>	—
Insert, 6 mm Diameter, Conical Bottom, 350 μL	—	<a href="#">ARO-4620-13</a>
Insert, 6 mm Diameter, Conical Bottom, w/ bottom spring, 300 μL	—	<a href="#">ARO-4621-13</a>
Insert, 6 mm Diameter, Conical Bottom, w/ bottom spring, 300 μL, Silanized	—	<a href="#">ARO-4623-13</a>

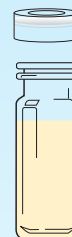
<sup>Δ</sup>Approximate useable volume indicated in μL



## 12 x 32 mm, 11 mm Snap-Top Vials and Kits

### Convenience Kits – Snap-Top Vials and Seals / Closures

- Precision formed for autosampler fit
- Larger-opening “wide-mouth” style prevents broken needles and system downtime
- Rigorous quality testing for consistent performance
- Precise vial depth provides consistent sample recoveries



#### Ordering Information<sup>†</sup>

Description	1000/pk
Vial Kit, Snap Cap, 2 mL Clear, w/ Patch + PTFE/Silicone	ARO-9721-13
Vial Kit, Snap Cap, 2 mL Clear + PTFE/Silicone, preSlit	ARO-9727-13
Cert+ Vial Kit, Snap Cap, PP, 300 µL + PTFE/Silicone **	ARO-9691-13-C
Cert+ Vial Kit, Snap Cap, PP, 300 µL + PTFE/Silicone, preSlit**	ARO-9692-13-C

<sup>†</sup>No write-on patch unless otherwise indicated \*\*Made of Polypropylene. \*\*\*Certified PLUS (Cert+) Level 2 Certification

### Convenience Kits – Limited Volume Specialty Snap-Top Vials and Seals / Closures

- Microsampling (fused-insert vials)
- Cleaner vials eliminate ghost peaks and contaminants



#### Ordering Information

Description	100/pk	1000/pk
Vial Kit, Snap, µVial i3 (Qsert), Clear w/ Patch + PTFE/Silicone	ARO-9671-12	ARO-9671-13
Vial Kit, Snap, µVial i3 (Qsert), Clear w/ Patch + PTFE/Silicone, preSlit	ARO-9672-12	ARO-9672-13

### Snap-Top Vials\*, 2.0 mL

- Great for less volatile samples or high-throughput labs
- Save time, without crimping or twisting

#### Ordering Information

Description	1000/pk
Vial, Snap, 2 mL Clear, No Patch	ARO-3600-13
Vial, Snap, 2 mL Clear, w/ Patch	ARO-3610-13
Vial, Snap, 2 mL Amber, w/ Patch	ARO-3611-13
Vial, Snap, 2 mL Clear, w/ Patch, Silanized	ARO-3613-13
Vial, Snap, 2 mL Amber, w/ Patch, Silanized	ARO-3614-13



\*Vials can accept either snap or crimp-tops to effectively seal the vial.

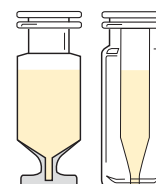
### Limited Volume Specialty Snap-Top Vials

- For small volume microsamples (center-draining and fused-insert vials)
- One piece vial with fused-insert

#### Ordering Information

Description	100/pk	1000/pk
Vial, Snap, v-Vial i2V Clear, No Patch*	ARO-3640-12	ARO-3640-13
Vial, Snap, v-Vial i2V Amber, No Patch*	ARO-3641-12	ARO-3641-13
Vial, Snap, µVial i2V Clear, No Patch	ARO-3630-12	ARO-3630-13
Vial, Snap, µVial i2V Amber, No Patch	ARO-3631-12	ARO-3631-13
Vial, Snap, µVial i3 (Qsert), Clear, w/ Patch	ARO-3625-12	ARO-3625-13
Vial, Snap, Maximum Recovery (CD), Clear, No Patch	ARO-3680-12	ARO-3680-13
Cert+ Vial, Snap, PP, 300 µL, Clear, No Patch***	ARO-36S0-12-C	ARO-36S0-13-C

\*51-Expansion glass. \*\*Made of Polypropylene. \*\*\*Certified PLUS (Cert+) Level 2 Certification



# 12 x 32 mm, 11 mm Snap-Top Vials and Kits (cont'd)

## Seals / Closures for Snap-Top Vials

- Specially designed for secure fit
- Easily snap cap onto vial and pull cap off



### Ordering Information

Description	1000/pk
<b>No-Slit</b>	
Seal, 11 mm Diameter, Snap, PTFE/Silicone, blue	ARO-5652-13
Seal, 11 mm Diameter, Snap, PTFE/Silicone, Cert+, blue	ARO-5652-13-C
Seal, 11 mm Diameter, Snap, PTFE/Silicone, natural	ARO-5656-13
Seal, 11 mm Diameter, Snap, PTFE/Silicone, red	ARO-5651-13
Seal, 11 mm Diameter, Snap, PTFE/Silicone, green	ARO-5653-13
Seal, 11 mm Diameter, Snap, PTFE/Silicone, yellow	ARO-5654-13
Seal, 11 mm Diameter, Snap, PTFE/Rubber, natural	ARO-5646-13
Seal, 11 mm Diameter, Snap, PTFE, blue	ARO-5612-13
<b>preSlit</b>	
Seal, 11 mm Diameter, Snap, PTFE/Silicone/PTFE	ARO-5661-13
Seal, 11 mm Diameter, Snap, PTFE/Silicone preSlit, blue	ARO-5672-13
Seal, 11 mm Diameter, Snap, PTFE/Silicone preSlit, natural	ARO-5676-13
Seal, 11 mm Diameter, Snap, PTFE/Silicone preSlit, red	ARO-5671-13
Seal, 11 mm Diameter, Snap, PTFE/Silicone preSlit, green	ARO-5673-13
Seal, 11 mm Diameter, Snap, PTFE/Silicone preSlit, yellow	ARO-5674-13



Simply choose the vial closure convenience kit for your application and you'll also receive a free dispenser box!

## Make the Switch from your Current Vials and Caps to Verex!

Finding the Verex replacement to your current vials and caps is EASY. Use our online web tool to find the guaranteed Verex product match.



**FREE Verex Vial Samples. Visit:**  
[www.phenomenex.com/VialMatch](http://www.phenomenex.com/VialMatch)



### 3 Easy Steps:

1. Enter your current vial or cap part number
2. Confirm the correct part number was entered
3. Order the recommended Verex part number



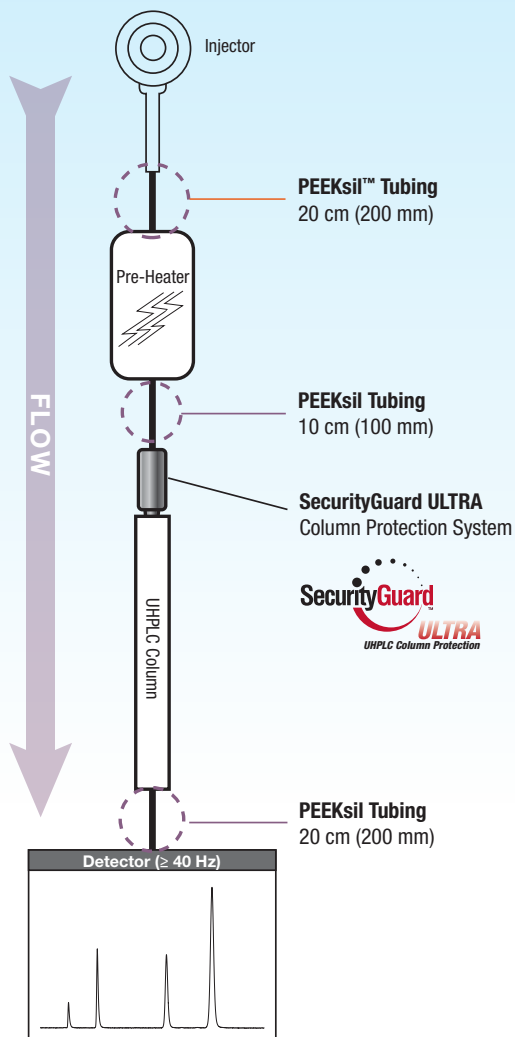
# Core-Shell Performance Enhancement Kit

The connections made throughout the system are critical to maximizing the benefit from your UHPLC setup. The fittings and tubing used in this kit are carefully chosen to minimize dead volume and reduce band broadening. Combined with a core-shell column and the SecurityGuard™ ULTRA column protection system, the kit will provide reliable connections and quality performance every time.

- Optimize UHPLC system connections – for both routine and critical applications
- Increase method efficiency, resolution, and detection
- Minimize dead volume between injector and detector
- Make connections quickly and reliably – every time, on any analytical system
- Improve results for sensitive and demanding applications



## Installing your core-shell performance enhancement kit



### Ordering Information

#### Core-Shell Performance Enhancement Kit

Part No.	Description	Unit
AQ0-8892	Core-Shell Performance Enhancement Kit, Includes: PEEKsil™ Tubing, Fittings and Tool*	ea

*Kit AQ0-8892 includes the following components:		Kit Quantity
	PEEKsil Tubing 0.100 mm ID x 1/16 in. OD x 20 cm L, Red	2/pk
	PEEKsil Tubing 0.100 mm ID x 1/16 in. OD x 10 cm L, Red	ea
	Sure-Lok™ High Pressure PEEK 1-Pc Nut, 10-32, for 1/16 in. Tubing	10/pk
	Sure-Lok Fitting Tightening Tool, Aluminum	ea

#### Accessories and Replacement Parts

Part No.	Description	Unit
AT0-8896	PEEKsil Tubing 0.100 mm ID x 1/16 in. OD x 20 cm L, Red	5/pk
AT0-8897	PEEKsil Tubing 0.100 mm ID x 1/16 in. OD x 10 cm L, Red	5/pk
AQ0-8503	Sure-Lok High Pressure PEEK 1-Pc Nut, 10-32, for 1/16 in. Tubing	10/pk
AQ0-8530	Sure-Lok Fitting Tightening Tool, Aluminum	ea



For additional information, please contact your Phenomenex technical consultant or distributor.





# UHPLC Column Fittings (Over 19,000 psi)

## Ultra-High Performance Stainless Steel Nut and Ferrule Set

For ultra-high pressure connections use this specially-designed 10-32 stainless steel nut and ferrule set. The metal ferrule cuts a ring near the end of the tube to swage the fitting to the tube, and will provide a maximum operational limit of

28,000 psi (1,930 bar). Seating (swaging) the fitting usually takes only about a ¼ turn beyond the point where the ferrule first starts to grab the tubing.

### Ordering Information

Part No.	Description	Unit
AQ0-8506	Nut and Ferrule Set, SS, 10-32, for ¼ in. Tubing, 28,000 psi (1,930 bar)	10/pk

Important: To achieve the maximum pressure rating, 45 lbs of torque is required.



Pressure rated up to 28,000 psi (1,930 bar)

## UHPLC/ HPLC Sure-Lok™ High Pressure PEEK Male Nut Fittings

Made of a proprietary PEEK blend, these ultra-high performance polymeric fittings are perfect for all extreme high-pressure applications, and best for ion- and bio-chromatography. For ¼ in. diameter tubing, there are two design types. The convenient one-piece design is pressure rated to 12,000 psi (827 bar) and stable up to temperatures of 200 °C. The second type is engineered as a 3-piece unit, with a ferrule and stainless steel gripping ring that will provide leak-free connections up to 19,000 psi (1,310 bar). For higher pressure-rated fittings use the stainless steel nut and ferrule set (AQ0-8506).

### Ordering Information

Part No.	Description	Unit
AQ0-8503	Sure-Lok High Pressure PEEK 1-Pc Nut, 10-32, for ¼ in. Tubing, 12,000 psi (827 bar)**	10/pk
AQ0-8504	Sure-Lok High Pressure PEEK Nut, 10-32, for ¼ in. Tubing, 19,000 psi (1,310 bar)***	10/pk
AQ0-8505	Sure-Lok PEEK Ferrule Assembly (2-pc), for High Pressure 2-Pc Nut (AQ0-8504)	10/pk

\*Ferrule assembly (AQ0-8505) must be ordered separately.

\*\*Sure-Lok Fitting Tightening Tool (AQ0-8530) is required for AQ0-8503 and AQ0-8504

### Quick Use Notes for AQ0-8504 and AQ0-8505

Slide the nut (AQ0-8504), steel ring and PEEK ferrule on the tube, in that order.

**Important!** The side of the ring with the wider flat surface should face toward the nut, and the narrow-edged side of the ring toward the ferrule.



AQ0-8503  
Pressure rated up to 12,000 psi (827 bar)



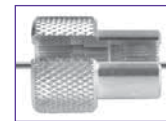
AQ0-8504 shown with AQ0-8505  
Pressure rated up to 19,000 psi (1,310 bar)

## Essential High Pressure Fitting Tool

Use this handy tool to tighten any standard, short- or long-style knurl-headed (high pressure) male nut like the Sure-Lok™ polymeric ones shown above. The tool can also be used with many of the low-pressure nuts commonly used in the lab.

### Ordering Information

Part No.	Description	Unit
AQ0-8530	Sure-Lok Fitting Tightening Tool, Aluminum	ea



## Ultra-High Performance Stainless Steel Zero Dead-Volume Union

### Stainless Steel Construction, Pressure Rated to 28,000 psi (1,930 bar)

- For ¼ in. OD tubing, with 10-32 threading
- 0.010 in. thru hole, 20 nL swept volume
- Includes 2 fittings (nuts and ferrules)

### Ordering Information

Part No.	Description	Unit
AQ0-8507	Zero Dead Volume Union, SS, with Fittings, 10-32, for ¼ in. Tubing, 28,000 psi (1,930 bar)	ea



Pressure rated up to 28,000 psi (1,930 bar)



# Column Protection

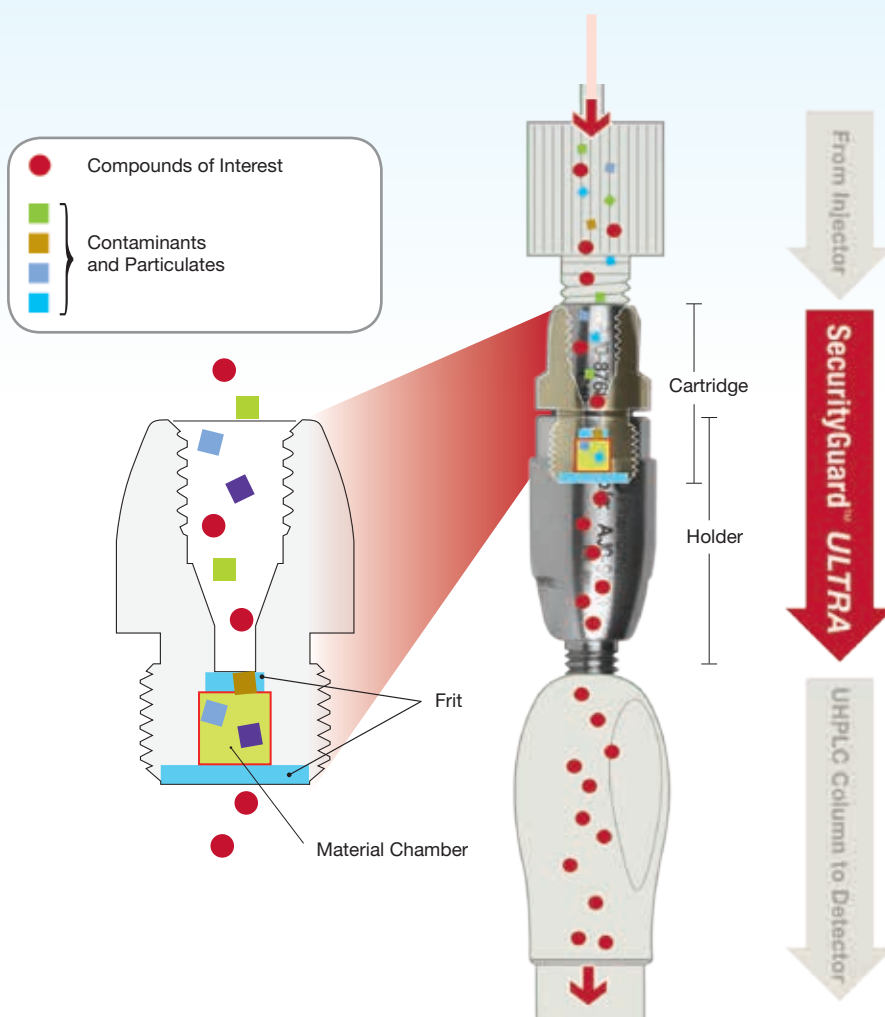
Prevent damaging micro-particulates, system particles, and chemical contaminants from entering your column and detector with SecurityGuard™.

## Why is column protection important?

Column protection systems reduce the amount of sample and mobile phase contaminants from building up at the head of the column, which can otherwise degrade chromatography, increase system backpressure, and shorten column lifetimes. Protection systems also safeguard columns and detectors from damaging pump and rotor seal particulates.

## How does column protection work?

SecurityGuard protects your UHPLC/HPLC columns and detectors from microparticulates in the sample, solvent, or wear on the polymeric seals of the pump or injector. SecurityGuard traps particulates and chemical contaminants before they can reach the column or detector. Contaminants can clog frits, irreversibly bind to column packings, degrade analytical performance, and even damage expensive detector flow cells.



There are Two Types of Column Protection:

<b>UHPLC</b>		<b>SecurityGuard ULTRA</b> All core-shell and/or <math>3\ \mu\text{m}</math> particle columns (<math>< 20,000\ \text{psi} / 1,378\ \text{bar}</math>)	pp. 19-20
<b>HPLC</b>		<b>SecurityGuard</b> All non core-shell and >math>3\ \mu\text{m}</math> particle columns (<math>< 3,500\ \text{psi} / 241\ \text{bar}</math>)	pp. 21-23

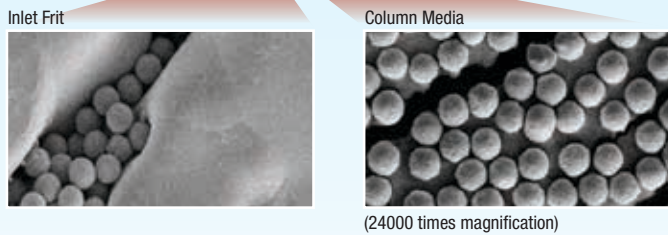


# UHPLC Column Protection

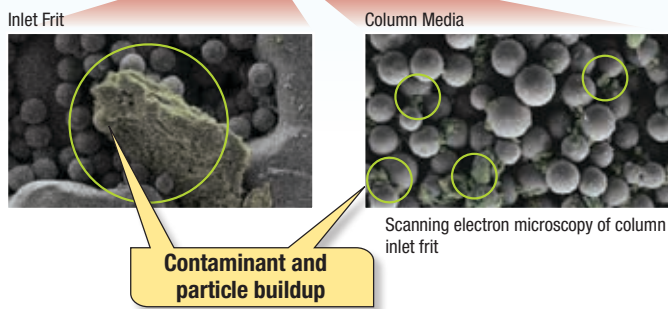
**SecurityGuard™ effectively removes both contaminants and particulates to increase column lifetime.**

When contaminants and particulates build up at the head of your column or on the guard cartridge, system backpressures can increase dramatically. By simply replacing the SecurityGuard ULTRA cartridge, instead of your column, you will be able to regain normal operating conditions and reclaim original column performance.

## With SecurityGuard ULTRA

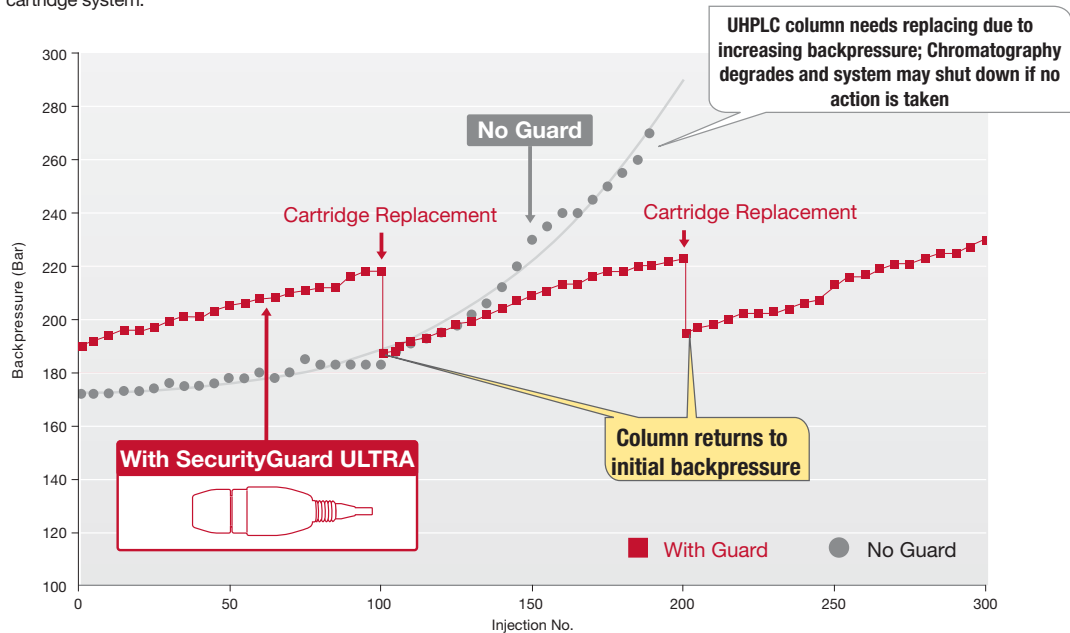


## Without SecurityGuard ULTRA



## SecurityGuard ULTRA Performance

In this accelerated column lifetime test, the UHPLC column lasts substantially longer with SecurityGuard ULTRA guard cartridge system.



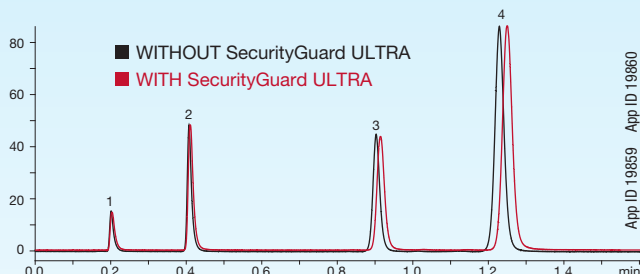
Accelerated lifetime test using endogenous biological matrix on Kinetex® 2.6µm C18 50 x 4.6mm ID column.



# UHPLC Column Protection

## Protects with No Loss of Column Performance!

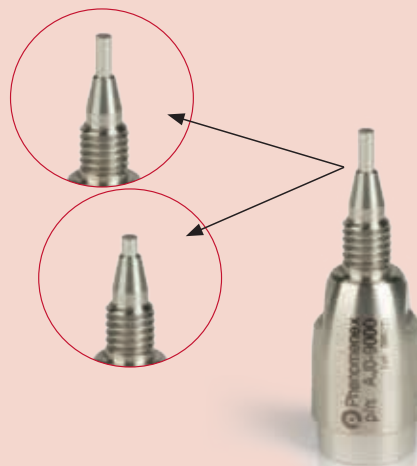
SecurityGuard™ ULTRA's unique design minimizes sample peak dispersion to maintain column performance without altering your chromatography results.



**Conditions for both columns:**  
**Column:** Kinetex 1.7 μm XB-C18  
**Dimensions:** 50 x 2.1 mm  
**Guard Cartridge:** SecurityGuard ULTRA C18 (ODS) 2.1 mm ID Part No.: AJ0-8768  
**Mobile Phase:** Acetonitrile / Water (50:50)  
**Flow Rate:** 0.5 mL/min

**Detection:** UV @ 254 nm  
**Sample:** 1. Uracil  
 2. Acetophenone  
 3. Toluene  
 4. Naphthalene

Tip adjusts to fit any UHPLC column



### Ordering Informaton:

### SecurityGuard ULTRA Cartridge Holder

#### Ordering Information

Part No.	Description	Unit
AJ0-9000	SecurityGuard ULTRA Cartridge Holder	ea



Compatible UHPLC Fittings



### SecurityGuard ULTRA Cartridges

#### Ordering Information

Cartridges for General Purpose/ Pharmaceutical			Column ID (mm)		
			2.1	3.0	4.6
Material	Description	pH Stability	3pk	3pk	3pk
EVO C18	(ODS, Octadecyl)	1.0 – 12.0	AJ0-9298	AJ0-9297	AJ0-9296
C18	(ODS, Octadecyl)	1.5 – 8.5*	AJ0-8782	AJ0-8775	AJ0-8768
C8	(MOS, Octyl)	1.5 – 8.5*	AJ0-8784	AJ0-8777	AJ0-8770
PFP	(Pentafluorophenyl)	1.5 – 8.5*	AJ0-8787	AJ0-8780	AJ0-8773
F5	(Pentafluorophenyl)	1.5 – 8.5*	AJ0-9322	AJ0-9321	AJ0-9320
Biphenyl	(Biphenyl)	1.5 – 8.5*	AJ0-9209	AJ0-9208	AJ0-9207
Phenyl	(Phenylhexyl)	1.5 – 8.5*	AJ0-8788	AJ0-8781	AJ0-8774
HILIC	HILIC	2.0 – 7.5	AJ0-8786	AJ0-8779	AJ0-8772
Cartridges for Protein and Peptide Reversed Phase					
Widepore C18	(ODS, Octadecyl)	1.5 – 8.5*	AJ0-8783	–	AJ0-8769
Widepore C8	(MOS, Octyl)	1.5 – 8.5*	AJ0-8785	–	AJ0-8771
Widepore C4	(Butyl)	1.5 – 8.5*	AJ0-8899	–	AJ0-8901
Peptide C18	(ODS, Octadecyl)	1.5 – 8.5*	AJ0-8948	AJ0-8947	AJ0-8946
Cartridges for Synthetic DNA / RNA Analysis					
Oligo-MS C18	(ODS, Octadecyl)	1.5 – 8.5*	AJ0-9068	AJ0-9067	AJ0-9066

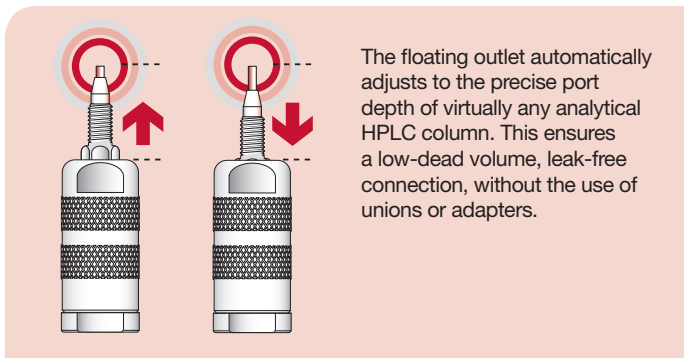
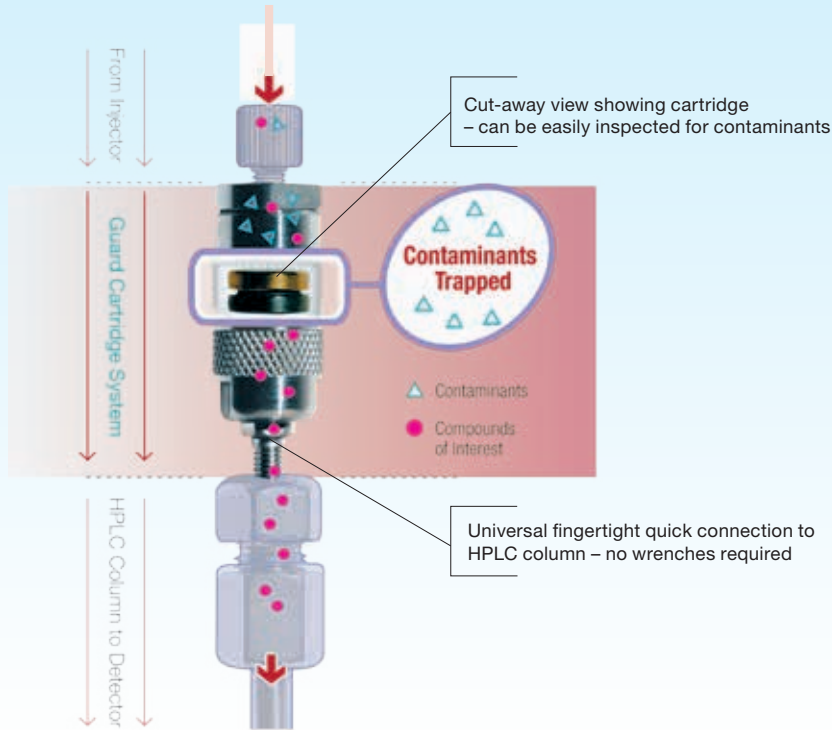
\*pH stable 1.5–8.5 under gradient conditions. pH stable 1.5–10 under isocratic conditions.





# HPLC Column Protection

The traditional HPLC SecurityGuard analytical cartridge holder (patented) directly finger-tightens into virtually any manufacturer's non core-shell and  $\geq 3\ \mu\text{m}$  particle columns. Contaminants are retained by an inexpensive, 4 mm, disposable cartridge instead of fouling your expensive analytical column.



## Fits virtually all your HPLC columns!

- |              |              |              |                  |
|--------------|--------------|--------------|------------------|
| Yarra™       | LiChrospher® | XBridge®     | PartiSphere®     |
| Jupiter®     | LiChrosorb®  | Capcell Pak® | Bio-Sil®         |
| Luna®        | Prodigy™     | Symmetry®    | CHIRALCEL® OD-H® |
| SphereClone™ | Gemini®      | Rezex™       | PolymerX™        |
| BioSep™      | Vydac®       | Nucleosil®   | SynChropak®      |
| Hypersil®    | ZORBAX®      | Synergi™     | Sugar-Pak™       |
| Spherisorb®  | SunFire®     | Partisil®    | Aminex®          |
| Inertsil®    | Ultrasphere® | XTerra®      | Kromasil®        |
| Lux®         | Bondclone™   | Develosil®   | and many more... |



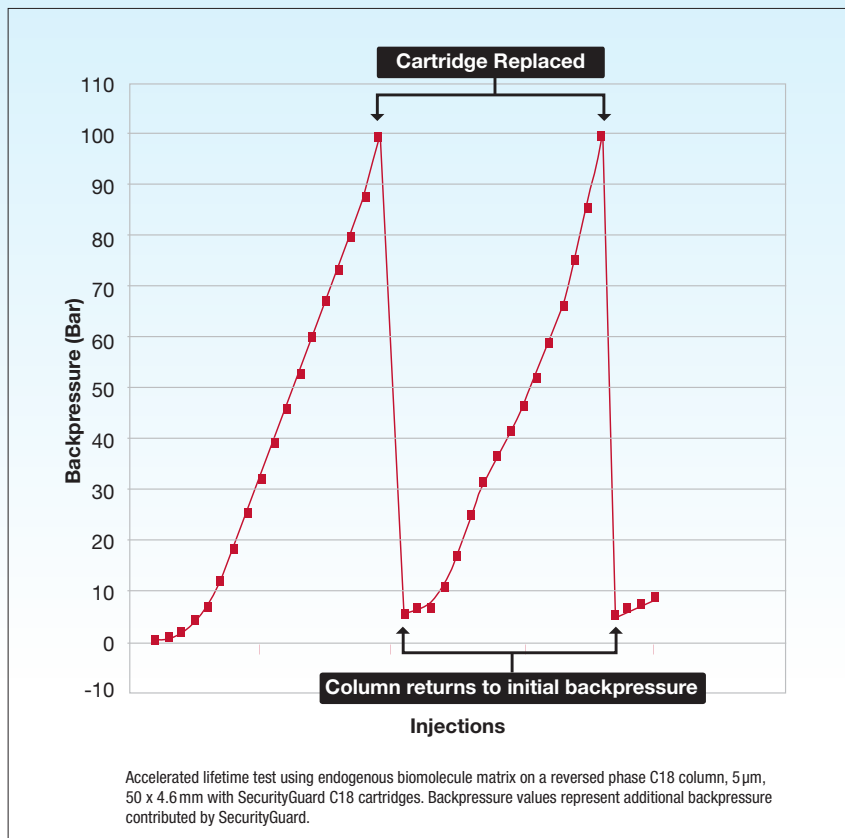


HPLC Column Protection

# HPLC Column Protection

## Increases HPLC Column Lifetime, Guaranteed!

Simply replace SecurityGuard cartridges instead of your expensive HPLC columns. In this graph, once the expired SecurityGuard cartridge was replaced, the pressure immediately dropped and the column performance was restored allowing for extended column use.



## Column Guard Finder

Having a difficult time finding the best column protection device for your specific UHPLC, HPLC or Prep column?

- Guard Finder matches over 57,000 column part numbers
- Interactive selection tool finds the appropriate column guard in seconds
- Quickly find column protection for any column from any of the top column manufacturers
- Search by brand, part number, technique, or column phase



Try it today!

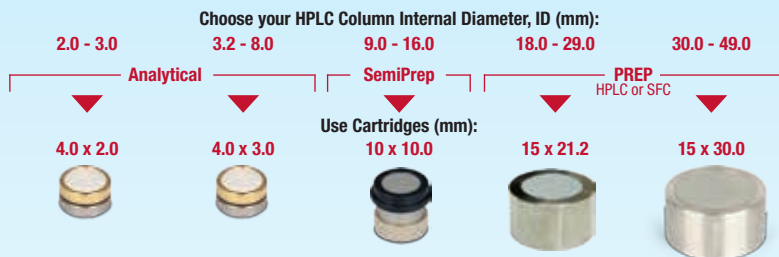
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# HPLC Column Protection

**HPLC Column Protection**

## Cartridges and Holders

**Step 1: Choose column ID**  
**Step 2: Match column phase**


**Ordering Information**

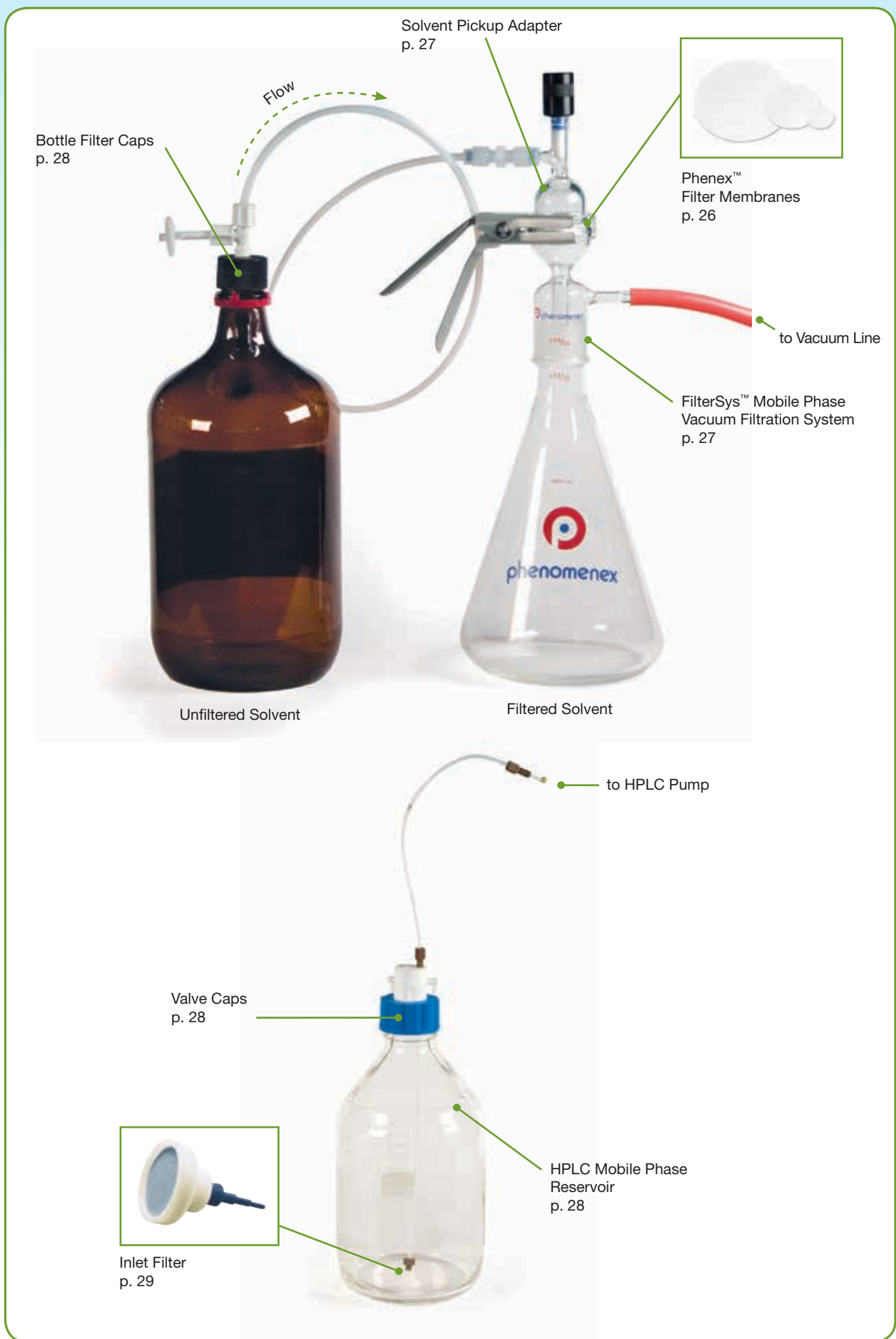
Material	Description	pH Stability	/10pk	/10pk	/3pk	ea	ea
<b>Cartridges for General Purpose/Pharmaceutical</b>							
C18	(ODS, Octadecyl)	1.5 - 10	AJO-4286	AJO-4287	AJO-7221	AJO-7839	AJO-8301
C12	(Dodecyl)	1.5 - 10	AJO-6073	AJO-6074	AJO-7275	AJO-7842	AJO-8304
C8	(MOS, Octyl)	1.5 - 10	AJO-4289	AJO-4290	AJO-7222	AJO-7840	AJO-8302
C5	(Pentyl)	1.5 - 10	AJO-4292	AJO-4293	AJO-7372	—	—
C1	(TMS)	2 - 9	AJO-4298	AJO-4299	AJO-7373	—	—
Silica	—	—	AJO-4347	AJO-4348	AJO-7223	AJO-7229	AJO-8312
HILIC	HILIC	1.5 - 8	AJO-8328	AJO-8329	AJO-8902	—	—
NH <sub>2</sub>	(Amino, Aminopropyl)	1.5 - 11	AJO-4301	AJO-4302	AJO-7364	AJO-8162	AJO-8309
CN	(Cyano, Cyanopropyl)	2 - 7.5	AJO-4304	AJO-4305	AJO-7313	AJO-8220	AJO-8311
Phenyl	(Phenylhexyl)	1.5 - 10	AJO-4350	AJO-4351	AJO-7314	AJO-7841	AJO-8303
PFP(2)	Pentafluorophenyl	1.5 - 8	AJO-8326	AJO-8327	AJO-8376	AJO-8377	AJO-8378
SCX	(SA, Strong Cation Exchanger)	2.5 - 7.5	AJO-4307	AJO-4308	AJO-7369	AJO-8595	AJO-8596
SAX	(SB, Strong Anion Exchanger)	2.5 - 7.5	AJO-4310	AJO-4311	AJO-7370	—	—
RP-1	(Reversed Phase - Polymer)	0 - 14	AJO-5808	AJO-5809	AJO-7368	AJO-8358	—
Polar-RP	(Ether-linked Phenyl)	1.5 - 7	AJO-6075	AJO-6076	AJO-7276	AJO-7845	AJO-8307
Fusion-RP	(C18 Polar Embedded)	1.5 - 10	AJO-7556	AJO-7557	AJO-7558	AJO-7844	AJO-8306
AQ C18	(Polar Endcapped C18)	1.5 - 7.5	AJO-7510	AJO-7511	AJO-7512	AJO-7843	AJO-8305
Gemini <sup>®</sup> NX-C18	(C18 TWIN-NX <sup>™</sup> Technology)	1 - 12	AJO-8367	AJO-8368	AJO-8369	AJO-8370	AJO-8371
Gemini C18	(C18 TWIN <sup>™</sup> Technology)	1 - 12	AJO-7596	AJO-7597	AJO-7598	AJO-7846	AJO-8308
Gemini C6-Phenyl	(C6-Phenyl TWIN Technology)	1 - 12	AJO-7914	AJO-7915	AJO-9156	AJO-9157	AJO-9158
Oligo-RP <sup>™</sup>	(C18 TWIN Technology)	1 - 12	AJO-8134	AJO-8135	AJO-8136	AJO-8210	AJO-8310
Oligo-WAX <sup>™</sup>	(WA, Weak Anion Exchanger)	1.5 - 11	—	AJO-8324	AJO-8325	AJO-8639	AJO-8420
<b>Cartridges for Protein and Polypeptide Reversed Phase</b>							
<i>For use with silica columns for separation of proteins &amp; peptides, such as Jupiter (Phenomenex) and other widepore or 300 Å brands.</i>							
Widepore C18	(ODS, Octadecyl)	1.5 - 10	AJO-4320	AJO-4321	AJO-7224	AJO-7230	AJO-8313
Widepore C5	(Pentyl)	1.5 - 10	AJO-4326	AJO-4327	AJO-7371	—	—
Widepore C4	(Butyl)	1.5 - 10	AJO-4329	AJO-4330	AJO-7225	AJO-7231	AJO-8314
<b>Cartridges for Silica GFC (Gel Filtration Chromatography)</b>							
<i>(Aqueous SEC) For use with silica GFC columns, such as Yarra and BioSep (Phenomenex); ZORBAX<sup>®</sup> GF-Series (Agilent); Bio-Sil<sup>®</sup> (Bio-Rad).</i>							
GFC-2000	—	2 - 7.5	—	AJO-4487	—	AJO-8588	—
GFC-3000	—	2 - 7.5	—	AJO-4488	—	AJO-8589	—
GFC-4000	—	2 - 7.5	—	AJO-4489	—	AJO-8590	—
<b>Cartridges for Polymer GPC (Gel Permeation Chromatography)</b>							
<i>(Organic GPC) For use with polymer GPC columns, such as Phenogel<sup>™</sup> (Phenomenex); PLgel<sup>™</sup> (Agilent<sup>®</sup>); SDV<sup>®</sup> (PSS); Styragel<sup>®</sup> (Waters<sup>®</sup>); GPC Series (Shodex<sup>®</sup>); TSKgel<sup>®</sup> (Tosoh Bioscience<sup>®</sup>)</i>							
GPC	—	0 - 14	AJO-9292	—	—	—	—
<b>Cartridges for Chiral</b>							
<i>For use with chiral columns, such as Lux Cellulose-1, -2, -3, -4, &amp; Amylose-2 (Phenomenex); CHIRALCEL<sup>®</sup> OD-H<sup>®</sup>, CHIRALCEL<sup>®</sup> OJ-H<sup>®</sup> &amp; CHIRALPAK<sup>®</sup> AD<sup>®</sup>-H (DAICEL Corporation)</i>							
Lux Cellulose-1	Cellulose tris (3, 5-dimethyl-phenylcarbamate)	2 - 9	AJO-8402	AJO-8403	AJO-8404	AJO-8405	AJO-8406
Lux Cellulose-2	Cellulose tris (3-chloro-4-methylphenylcarbamate)	2 - 9	AJO-8398	AJO-8366	AJO-8399	AJO-8400	AJO-8401
Lux Cellulose-3	Cellulose tris (4-methylbenzoate)	2 - 9	AJO-8621	AJO-8622	AJO-8623	AJO-8624	AJO-8625
Lux Cellulose-4	Cellulose tris (4-chloro-3-methylphenylcarbamate)	2 - 9	AJO-8626	AJO-8627	AJO-8628	AJO-8629	AJO-8630
Lux Amylose-2	Amylose tris (5-chloro-2-methylphenylcarbamate)	2 - 9	AJO-8471	AJO-8470	AJO-8472	AJO-8473	AJO-8474
Lux Amylose -1	Amylose tris (3,5-dimethyl-phenylcarbamate)	2 - 9	—	AJO-9336	—	AJO-9338	AJO-9339
<b>Cartridges for Carbohydrate/Organic Acid</b>							
<i>For organic acid and carbohydrate analysis, such as Rezex<sup>™</sup> (Phenomenex); Aminex<sup>®</sup> (Bio-Rad); Sugar-Pak<sup>™</sup> (Waters).</i>							
Carbo-H <sup>+</sup>	—	1 - 8	—	AJO-4490	—	—	—
Carbo-Ag <sup>+</sup>	—	Neutral	—	AJO-4491	—	—	—
Carbo-Pb <sup>+2</sup>	—	Neutral	—	AJO-4492	—	—	—
Carbo-Ca <sup>+2</sup>	—	Neutral	—	AJO-4493	—	—	—
<b>Guard Cartridge Holders (one-time purchase only)</b>							
			/kit	/holder	/kit	/kit	/kit
			KJO-4282	AJO-9281	AJO-8223	AJO-8277	

\*For use with saccharide and oligosaccharide columns in Ag<sup>+</sup> form.





# Mobile Phase Filtration Components







## Mobile Phase Filtration

*Protect your chromatographic equipment and columns from mobile phase contaminants that can damage system components and produce poor results.*

### Why is mobile phase filtration important for HPLC/UHPLC analysis?

Unfiltered or low quality mobile phase may contain particulates and bacterial contaminants that can build up and create a chain reaction of system and column problems. Check valves, pump seals and the injector may be damaged by particulates passing through tight, low-dead volume systems. Once these particulates reach your column, the buildup will result in pressure increases, causing the system to work harder, damaging the pump, or even shutting your system down. Trace amounts of mobile phase contaminants can also produce split peaks or extraneous unidentifiable peaks, leading to unacceptable results.

Note: for UHPLC/MS applications it may not be necessary to filter the organic solvents (Acetonitrile and Methanol) assuming one is already using ultra high purity solvents, as this may introduce ultra low levels of trace impurities.

### How does mobile phase filtration work?

There are two convenient ways to transfer solvents for filtration.

- A pickup adapter can be used to directly feed the solvent from the source container into the filtration system (part number AH0-2947)
- A funnel can be used to hold and transfer the solvent for filtration (see page 27).

Either way, solvents are passed through a 47 mm diameter Phenex™ filter membrane (0.2 μm recommended for UHPLC) which is placed between the FilterSys™ mobile filtration system's fritted glass support base and the sample reservoir. The filtered, particulate-free solvents are then stored in plasticizer-free glass reservoirs for delivery to the chromatographic system. When the filtered solutions are ready for use, a solvent inlet filter (see page 29) placed in the mobile phase reservoir helps to remove any buffer salts that may have precipitated or any bacterial growth that has occurred before they enter the system.

Together, this system allows for the rapid filtration of particulate matter along with the removal of undissolved buffer salts from your solvents.





# Mobile Phase Filter Membranes

## Remove particulates from solvents

Phenex™ Filter Membranes reduce sample preparation times and improve chromatography in one step by filtering solvents.

- Wide selection of membrane sizes and types
- Virtually free of unwanted plasticizers or contaminants
- Excellent chemical resistance to most laboratory solvents

## Choose the proper membrane type for your analysis:

**Regenerated Cellulose (RC)** is recommended for general filtration, de-gassing solvents, and HPLC mobile phases (both aqueous and organic)

**Nylon (NY)** is hydrophilic and makes the filtering of aqueous solvents simple, without pre-wetting

**Polytetrafluoroethylene (PTFE, Teflon®)** is hydrophobic and is recommended for the filtration of non-aqueous solutions

**Polyethersulfone (PES)** has excellent flow speeds with a wide pH range (2-12) for aggressive solvents

**Cellulose Acetate (CA)** is recommended for buffers and other aqueous solutions

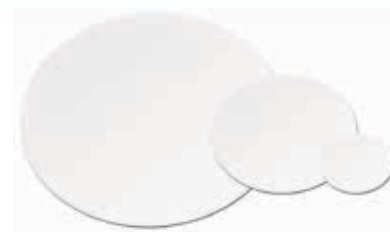
**Cellulose Nitrate Ester (MCE)\*** is recommended for particle collection, sample pre-treatment, and chemotaxis



### Ordering Information

#### Filter Membranes

Part No.	Pore Size (µm)	Disc Diameter (mm)	Membrane Material	Unit
<b>Regenerated Cellulose (RC)</b>				
AF0-8440	0.45	13	RC	100/pk
AF0-8441	0.2	13	RC	100/pk
AF0-8442	0.2	25	RC	100/pk
AF0-8443	0.45	47	RC	100/pk
AF0-8444	0.2	47	RC	100/pk
<b>PTFE</b>				
AF0-0509	0.2	13	PTFE	100/pk
AF0-0511	0.2	25	PTFE	100/pk
AF0-0512	0.45	25	PTFE	100/pk
AF0-0513	0.2	47	PTFE	100/pk
AF0-0514	0.45	47	PTFE	100/pk
<b>Cellulose Acetate (CA)</b>				
AF0-8436	0.45	25	CA	100/pk
AF0-8437	0.2	25	CA	100/pk
AF0-8438	0.45	47	CA	100/pk
AF0-8439	0.2	47	CA	100/pk
<b>Nylon</b>				
AF0-0500	0.45	13	Nylon	100/pk
AF0-0501	0.2	25	Nylon	100/pk
AF0-0502	0.45	25	Nylon	100/pk
AF0-0503	0.2	47	Nylon	100/pk
AF0-0504	0.45	47	Nylon	100/pk
<b>Polyethersulfone (PES)</b>				
AF0-8445	0.2	25	PES	100/pk
AF0-8446	0.45	25	PES	100/pk
AF0-8447	0.2	47	PES	100/pk
AF0-8448	0.45	47	PES	100/pk
<b>Cellulose Nitrate Ester (MCE)*</b>				
AF0-8454	0.45	47	MCE	100/pk



Above filter membranes are non-sterile.  
\*MCE = mixed cellulose esters



# Mobile Phase Filtration Components

## FilterSys™ Mobile Phase Vacuum Filtration System

- Rapid filtration of buffers, organics and corrosive liquids
- Prevents pump and system component damage
- Removes damaging microparticulates and bacterial contaminants

### Ordering Information

Part No.	Description	Unit
<b>Complete Assembly</b>		
AHO-1566	FilterSys, 47 mm, 300 mL funnel with 1 L vacuum flask	ea
AHO-3314	FilterSys, 47 mm, 500 mL funnel with 2 L vacuum flask	ea
AHO-3315	FilterSys, 47 mm, 1000 mL funnel with 4 L vacuum flask	ea
<b>Component Parts</b>		
AHO-1567	Fritted support base, 47 mm, 40/35 taper	ea
AHO-1568	Funnel, graduated, 300 mL, 47 mm	ea
AHO-3323	Funnel, graduated, 500 mL, 47 mm	ea
AHO-3324	Funnel, graduated, 1000 mL, 47 mm	ea
AHO-1569	1 liter filter flask, 40/35 taper	ea
AHO-3321	2 liter filter flask, 40/35 taper	ea
AHO-3322	4 liter filter flask, 40/35 taper	ea
AHO-1570	Aluminum clamp, 47 mm	ea



### WARNING:

The apparatus should be used with a water aspiration line, not a true vacuum line, unless secured behind an appropriate safety shield.



## Solvent Pickup Adapter

### Use filter membranes with this rapid filtration system!

This glass adapter enables direct pickup of mobile phase solvent using the Phenomenex FilterSys™. It replaces the tedious and dangerous pour-and-wait funnel filtration method by drawing solvent directly from the reagent bottle, which is the safest way to transfer and filter solvents.

- 4 mm PTFE stopcock with ¼ in. OD outlet
- PTFE connector with compression fittings for ¼ in. OD tubing
- 3 feet of ¼ in. OD PTFE tubing

### Ordering Information

<b>Solvent Pickup Adapter</b>		
Part No.	Description	Unit
AHO-2947	Mobile Phase Pickup Adapter, 47 mm	ea





# Mobile Phase Filtration Components

## Solvent Reservoir

- Low-leaching (low alkali), borosilicate glass
- Chemically inert (no plasticizers), internal PTFE seal

### Ordering Information

Reservoir and Valve Cap Assembly		
Part No.	Description	Unit
AH0-4142	HPLC Reservoir, 1000 mL clear glass, GL45 wide-mouth, includes 3-way Valve Cap	ea
AH0-4143	HPLC Reservoir, 2000 mL clear glass, GL45 wide-mouth, includes 3-way Valve Cap	ea



## Replacement Valve Cap

### For GL45 Neck Mobile Phase Reservoirs

- Valve caps provide an inert PTFE (Teflon®) seal against the solvents inside. An all-Teflon block design with stainless steel heli-coils grips the Teflon tubing.
- Supplied with 1/8 in. fitted tubes, will not twist when tightened
- Pressure rated to 15 psi (1 bar) and autoclavable

### Ordering Information

Replacement Valve Cap for GL45 Threaded Bottles		
Part No.	Description	Unit
AH0-4141	3-Way Valve Cap, GL45 threads, solid PTFE (Teflon®) block construction	ea



## Bottle Filter Cap

### Reduce solvent evaporation and gas absorption

Bottle filter caps ensure constant pH levels and increase chromatography reproducibility by minimizing the reabsorption of dissolved gases back into the solvent

- All cap parts are compatible with most common HPLC solvents
- Neatly seals to prevent particulates from entering the solvent bottle

### Ordering Information

Filter Cap			
Part No.	Description	Cap Size	Unit
AH0-1565	Filter Reservoir Cap	38 mm	ea





# Inlet Filters

The Solvent Saver™ Inlet Filters minimize costly system repairs and reduce system downtime by filtering solvents before analysis. Phenomenex offers two types of solvent inlet filters to fit your analysis: Metal-Free/Biocompatible and Stainless Steel.

## Metal-Free / Biocompatible

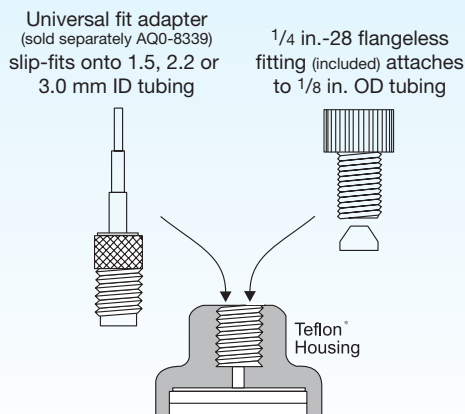
This is a great choice for sensitive biochromatography and ion chromatography applications where metal surfaces may corrode or interact with samples.

- Flat bottom design uses all available mobile phase
- High surface area for long filter life



### Ordering Information

Solvent Saver Inlet Filter - Metal-Free		
Part No.	Description	Unit
AH0-1562	Solvent Saver Inlet Filter with 10 µm PEEK filter with Flangeless fitting for 1/8 in. OD tubing	ea
AQ0-8339	Solvent Saver Unifit Adapter, Tri-Step Tubing Connector, PEEK	ea
AQ0-2949	Flangeless Nut and Ferrule for 1/16 in. OD tubing, 1/4 in.-28 threads, red Delrin®	10/pk
AQ0-2950	Flangeless Nut and Ferrule for 1/8 in. OD tubing, 1/4 in.-28 threads, green Delrin	10/pk
AT0-2953	Teflon Tubing, 5 ft. L x 1/16 in. OD x 1/32 in. (0.031 in.) ID	ea
AT0-2955	Teflon Tubing, 5 ft. L x 1/8 in. OD x 1/16 in. (0.062 in.) ID	ea



## Stainless Steel

The best option for general applications that use non-corrosive chemicals.

- Protects pumps and check valves
- Easy to replace
- Low cost

### Ordering Information

Solvent Inlet Filters - Stainless Steel		
Part No.	Description	Unit
AF0-0356	Solvent Inlet Filter, 2 µm, for 1/16 in. ID tubing	ea
AF0-0359	Solvent Inlet Filter, 2 µm, for 1/8 in. ID tubing	ea
AT0-2953	Teflon Tubing, 5 ft. L x 1/16 in. OD x 1/32 in. (0.031 in.) ID	ea
AT0-2955	Teflon Tubing, 5 ft. L x 1/8 in. OD x 1/16 in. (0.062 in.) ID	ea



If Phenomenex products in this guide do not perform as well or better than your current product of similar type, dimensions, and material, send in your comparative data within 45 days and keep the Phenomenex product for FREE.

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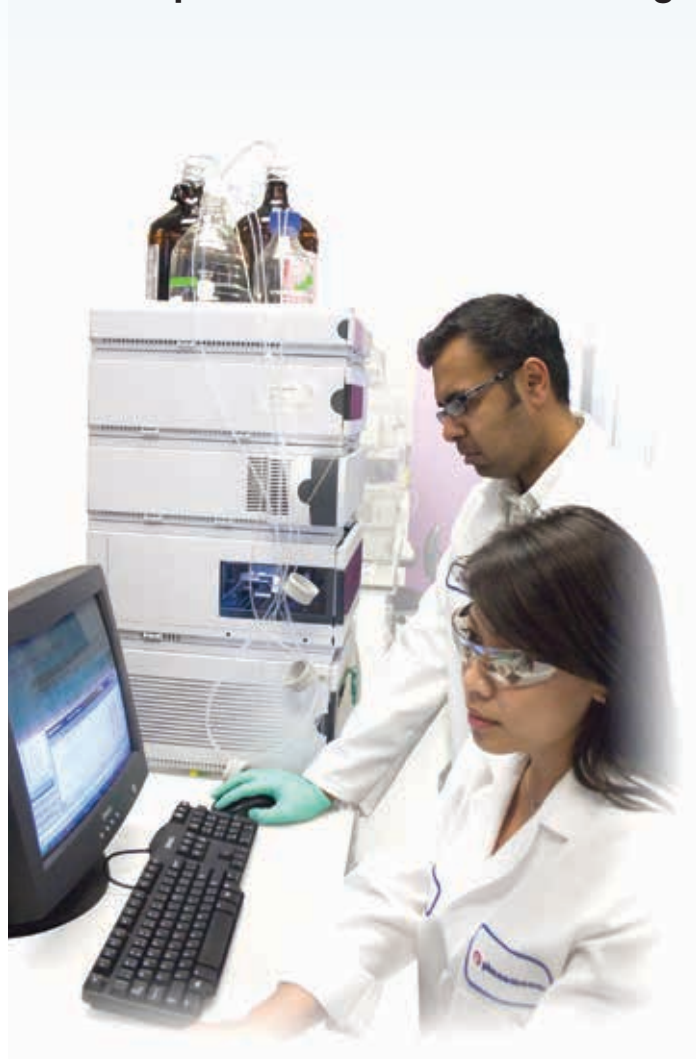
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### Partial list of resources used in the PhenoLogix lab

- Agilent®, Shimadzu, ACQUITY® and JASCO HPLC and UHPLC systems
- API 3000™ LC/MS/MS
- API 4000™ LC/MS/MS
- API 5000™ LC/MS/MS
- 4000 Q-TRAP® LC/MS/MS
- Waters® Micromass® Quattro™ MS
- Agilent and Shimadzu GC/MS systems
- Gilson® and PerkinElmer® liquid handlers

# Liquid Chromatography Accessories Solutions Guide

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Strata-X is patented by Phenomenex. U.S. Patent No. 7,119,145.

Novum is patent pending.

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