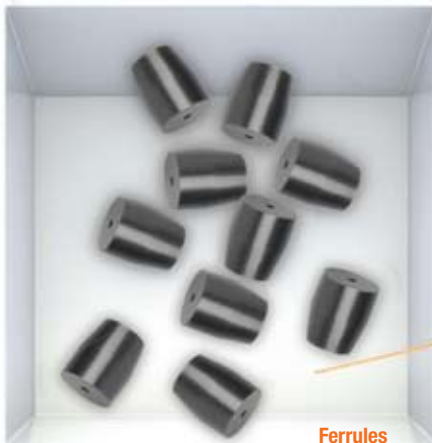


GC Accessories Solutions Guide



Liners



Ferrules



Cool-Lock™ Nut



Septa



Vials



Gold Seals

 **phenomenex**[®]
...breaking with traditionSM



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Inlet Base Seals

new

Easy Seals™ for Agilent® GCs

- Soft surface eliminates need for washer
- Minimal torque required to form tight seal
- Increase column lifetime with tight seal

Phenomenex's Easy Seals make a tight seal without the need to apply high torque. These seals eliminate the need to use a washer and reduce breakdown and adsorption of active compounds, such as acids, bases, and pesticides.



Ordering Information

Easy Seals

Part No.	Description	Unit	Price
Standard, single groove for splitless applications, 0.8 mm dia. inlet hole			
AGO-8619	Easy Seal Inlet Base Seal, Gold Plated, for Agilent GCs	2/pk	
AGO-8620	Easy Seal Inlet Base Seal, Gold Plated, for Agilent GCs	10/pk	

Gold Inlet Base Seals for Agilent GCs

- Traps non-volatile residues, septum fragments, and other contaminants
- Exceptional inertness

Ordering Information

Gold Inlet Base Seals

Part No.	Description	Similar to Mfr. No.*	Unit	Price
Standard, single groove for splitless applications, 0.8 mm dia. inlet hole				
AGO-7518	Gold Inlet Base Seal, splitless (single groove), 0.8 mm	18740-20885	2/pk	
AGO-7519	Gold Inlet Base Seal, splitless (single groove), 0.8 mm	18740-20885	10/pk	
High Split Flow, cross groove for split applications, 0.8 mm dia. inlet hole				
AGO-7520	Gold Inlet Base Seal, split (double groove/cross), 0.8 mm	5182-9652	2/pk	
AGO-7521	Gold Inlet Base Seal, split (double groove/cross), 0.8 mm	5182-9652	10/pk	
Standard, single groove for splitless applications, 1.2 mm dia. inlet hole				
AGO-8581	Gold Inlet Base Seal, splitless (single groove), 1.2 mm	21305	2/pk	
AGO-8582	Gold Inlet Base Seal, splitless (single groove), 1.2 mm	21306	10/pk	
High Split Flow, cross groove for split applications, 1.2 mm dia. inlet hole				
AGO-8583	Gold Inlet Base Seal, split (double groove/cross), 1.2 mm	21009	2/pk	
AGO-8584	Gold Inlet Base Seal, split (double groove/cross), 1.2 mm	21010	10/pk	
Replacement Inlet Seal Washers				
AGO-8397	Inlet Seal Washers Gold Plated, for Agilent GC injection port	–	12/pk	



Due to different replacement frequencies, inlet seal washers are sold separately from inlet base seals.

Stainless Steel Inlet Base Seals for Agilent GCs

- Lower cost alternative
- Ideal for hydrocarbon analysis

Ordering Information

Stainless Steel Inlet Base Seals

Part No.	Description	Similar to Mfr. No.*	Unit	Price
Standard, single groove for splitless applications, 0.8 mm dia. inlet hole				
AGO-8393	Stainless Steel Inlet Base Seal, splitless (single groove), 0.8 mm	18740-20880	2/pk	
AGO-8394	Stainless Steel Inlet Base Seal, splitless (single groove), 0.8 mm	18740-20880	10/pk	
High Split Flow, cross groove for split applications, 0.8 mm dia. inlet hole				
AGO-8395	Stainless Steel Inlet Base Seal, split (double groove/cross), 0.8 mm	–	2/pk	
AGO-8396	Stainless Steel Inlet Base Seal, split (double groove/cross), 0.8 mm	–	10/pk	
Replacement Inlet Seal Washers				
AGO-7522	Inlet Seal Washers, Stainless Steel, for Agilent GC injection port	5061-5869	12/pk	



*Similar to but not always an exact equivalent to the original manufacturer's product.

Installation Nuts

Cool-Lock™ Nut

U.S. Patent No. 8, 062, 516

Fast GC Column Installation without the Burn

- Avoid burning your fingers again – cools with the oven
- Increased reproducibility—locks insertion depth before installation
- No need for wrench with hand-tightened connections
- No more Wite-Out®, Tipp-Ex®, or septa pieces!

Quick and Easy!



Part No. AGO-8319

Parts for Agilent GC Systems

How to Select a Cool-Lock Nut for your Agilent GC System

1

Decide on The Style of Cool-Lock Nut Needed

Short Style (AGO-8319)	Long Style (AGO-8320)
Recommended for use with standard short style ferrules.	Recommend for use with standard long style ferrules.
Also, use for both the inlet and detector configurations on Agilent 6890, 5890, and 7890 GC systems (<i>Short ferrules provide a robust seal and typically remain tight over time.</i>)	

2

Determine How Many Cool-Lock Nuts Needed Per System

Detector	Number of Nuts
MS	1
FID, ECD, Other	2

Ordering Information

Cool-Lock GC Capillary Nut For Agilent GC Systems*

Part No.	Description	Unit	Price
AGO-8319	Cool-Lock GC Capillary Nut For Use With Short-Style Ferrules	ea	
AGO-8320	Cool-Lock GC Capillary Nut For Use With Long-Style Ferrules	ea	

* Guaranteed fit for Agilent 5850, 5890, 6850, 6890, 7890 GC systems



Cool-Lock Nut Installation Gauge for Agilent GC Systems

Part No.	Description	Unit	Price
AGO-8349	Cool-Lock Nut Installation Gauge	ea	



For Ferrule Selection Guide for Cool-Lock Nuts, see p. 8

Parts for Shimadzu GC Systems



Ordering Information

Cool-Lock GC Capillary Nut For Shimadzu GC Systems**

Part No.	Description	Unit	Price
AGO-8419	Cool-Lock GC Capillary Nut For Use With Shimadzu GC Systems	ea	

** Guaranteed fit for Shimadzu 2010 and 2014 GC systems



Cool-Lock Nut Installation Gauge For Shimadzu GC Systems

Part No.	Description	Unit	Price
AGO-8420	Cool-Lock Nut Installation Gauge	ea	



Caution: For safety, please use common sense when handling metal surfaces within the GC oven, including the Cool-Lock Nut. The Cool-Lock Nut is designed to track the GC oven temperature as close as possible, therefore, when you cool down your GC oven, the Cool-Lock Nut will follow suit because it is related to oven temperature with the fan on. So if the oven is hot enough to cause severe burns, the Cool-Lock Nut will also be hot enough to cause severe burns. If the GC oven fan has turned off and the injection port temperature is still hot, the Cool-Lock Nut will begin to heat up causing it to be too hot to touch with the bare hand. For any questions regarding use of the Cool-Lock Nut, please contact your local Phenomenex representative.



Contact Phenomenex or your local Phenomenex distributor for additional GC products and applications.

Installation Nuts

Standard Nut

- For capillary column connections to both Agilent injectors and GC detectors (not MS)
- Interchangeable with original Agilent nuts
- Standard length nut uses short Agilent ferrules (1.65 mm)
- Extended length (deep well) nut uses standard ferrules (2.4 mm)



Ordering Information

GC Fittings					
Part No.	Description	Similar to Mfr. No.*	Unit	Price	
AGO-5152	Agilent GC Standard Capillary Nut, 1/16 in. hex stainless steel, uses short Agilent ferrules (1.65 mm length)	5181-8830	2/pk		
AGO-5153	Agilent GC Deep Well Capillary Nut, 1/16 in. hex stainless steel, uses standard Agilent ferrules (2.4 mm length)	5020-8292	2/pk		

* Similar to but not always an exact equivalent to the original manufacturer's product.



For quick and accurate GC installation without burning your fingers, use the Cool-Lock™ Nut, see p.4

Capillary Column Mini-Unions

Capillary Column Mini-Unions

- High-precision unions for capillary GC columns
- Connect capillary columns of same or dissimilar sizes
- Inert and precise glass-lined bore
- Low dead volume



Selection Guide

- Connecting similar sized columns or tubing:
Select the union with inside diameter large enough to accommodate the tubing in question.
- Connecting dissimilar sized columns or tubing:
Select the union with inside diameter large enough to accommodate the smaller of the two sizes.

Applications

- Connecting a guard column to an analytical column
- Connecting columns of different selectivities
- Connecting transfer lines to, e.g., mass spec
- Repairing a broken column
- May be used to connect polyimide-coated and metal capillaries, unlike glass unions

Graphite/Vespel® Ferrule Mini-Unions

- 15 % Graphite / 85 % Vespel ferrules, Rated to 350 °C
- Comes with 1 mini-union, 2 nuts, and 5 ferrules

Ordering Information

Graphite/Vespel Ferrule Mini-Unions						
Column 1 ID (mm)	Column 2 ID (mm)	Ferrule ID (mm)	Similar to Mfr. No.*	Part No.	Unit	Price
0.10-0.25	0.10-0.53	0.4	103431	AGO-5160	ea	
0.28-0.35	0.32-0.53	0.5	103432	AGO-5161	ea	
0.45-0.53	0.45-0.53	0.8	103433	AGO-5162	ea	

Replacement Ferrules

Column ID (mm)	Ferrule ID (mm)	Similar to Mfr. No.*	Part No.	Unit	Price
0.10-0.25	0.4	072696	AGO-7033	10/pk	
0.28-0.35	0.5	072697	AGO-7034	10/pk	
0.45-0.53	0.8	072698	AGO-7035	10/pk	

SilTite™ Mini-Unions

- Supplied with SilTite ferrules – no more leaks and no need to re-tighten after installation
- Recommended for high temperature analysis. Stable above 450 °C.
- Comes with 1 mini-union, 2 nuts, and 5 ferrules

SilTite Mini-Unions

Column 1 ID (mm)	Column 2 ID (mm)	Ferrule ID (mm)	Similar to Mfr. No.*	Part No.	Unit	Price
0.10-0.25	0.10-0.53	0.4	073550	AGO-8763	ea	
0.28-0.35	0.32-0.53	0.5	073551	AGO-8764	ea	
0.45-0.53	0.45-0.53	0.8	073554	AGO-8825	ea	

Replacement Ferrules

Column ID (mm)	Ferrule ID (mm)	Similar to Mfr. No.*	Part No.	Unit	Price
0.10-0.25	0.4	073470	AGO-8759	10/pk	
0.28-0.35	0.5	073471	AGO-8760	10/pk	
0.45-0.53	0.8	073473	AGO-8824	10/pk	

* Similar to but not always an exact equivalent to the original manufacturer's product.

Silicone Rubber Inlet Septa

- Advanced silicone formulations reduce coring and increase septum lifetime
- Enhanced durability and re-sealing capabilities

How to choose the correct Septa

- 1 Find the correct size for your GC inlet (See Septa Sizes chart)
- 2 Choose the appropriate temperature stability at or above the maximum temperature of your inlet
- 3 If using narrow gauge needles, select an option with GuideRight™ hole



Septa Sizes by GC Instrument

Manufacturer	Instrument Model	Septa Diameter
Agilent® (HP)®	5850, 5880, 5890, 6850, 6890, 7890	7/16 in. (11 mm)
	5700 series, 5880A	3/8 in. (9.5 mm)
Antek®	All	3/8 in. (9.5 mm)
Thermo Scientific®	Finnigan	3/8 in. (9.5 mm)
	Finnigan/Tremetics	1/2 in. (12.7 mm)
	Fisons/Carlo Erba	2 1/2 in. (17 mm)
	8000 Series	3/8 in. (9.5 mm)
GOW-MAC®	All	3/8 in. (9.5 mm)
HNU	Portable GC	3/8 in. (9.5 mm)
PerkinElmer®	Sigma series, 900, 9900, 8000, Autosampler	7/16 in. (11 mm)
Shimadzu®	All	plug
Tracor	220, 222	1/2 in. (12.7 mm)
	540	1 1/4 in. (11.5 mm)
	550, 560	3/8 in. (9.5 mm)
Varian®	Packed column injectors	3/8 in. (9.5 mm)
	SPI	7/16 in. (11 mm)
	3700 / Vista capillary injectors	7/16 in. (11 mm) or 1 1/4 in. (11.5 mm)
	Saturn GC/MS	1 1/4 in. (11.5 mm)

Type	Temperature Stability	Durability	Available with GuideRight™ hole
PhenoGrey™-250	250 °C	Best	
PhenoBlue™-300	350 °C	Better	
PhenoRed™-400	400 °C	Good	✓
PhenoGreen™-400	400 °C	Good	✓

Ordering Information

GuideRight Injection Hole Septa

Part No.	Description	Unit	Price
PhenoGreen 3/8 in. (9.5 mm) Diameter 400 °C			
AGO-7874	PhenoGreen™ 400 Injector Septa	50/pk	
PhenoRed 3/8 in. (9.5 mm) Diameter 400 °C			
AGO-7916	PhenoRed™ 400 Injector Septa	50/pk	
PhenoGreen 7/16 in. (11 mm) Diameter 400 °C			
AGO-7875	PhenoGreen™ 400 Injector Septa	50/pk	
PhenoRed 7/16 in. (11 mm) Diameter 400 °C			
AGO-7917	PhenoRed™ 400 Injector Septa	50/pk	

Ordering Information

Silicone Rubber Septa

Part No.	Description	Unit	Price
PhenoGrey 3/8 in. (9.5 mm) Diameter			
AGO-4686	PhenoGrey-250 Injector Septa	50/pk	
AGO-4687	PhenoGrey-250 Injector Septa	100/pk	
PhenoBlue 3/8 in. (9.5 mm) Diameter			
AGO-4688	PhenoBlue-300 Injector Septa	50/pk	
AGO-4689	PhenoBlue-300 Injector Septa	100/pk	
PhenoRed 3/8 in. (9.5 mm) Diameter			
AGO-4690	PhenoRed-400 Injector Septa	50/pk	
AGO-4691	PhenoRed-400 Injector Septa	100/pk	
PhenoGreen 3/8 in. (9.5 mm) Diameter			
AGO-8572	PhenoGreen-400 Injector Septa	50/pk	

Part No.	Description	Unit	Price
PhenoGrey 7/16 in. (11 mm) Diameter			
AGO-4692	PhenoGrey-250 Injector Septa	50/pk	
AGO-4693	PhenoGrey-250 Injector Septa	100/pk	
PhenoBlue 7/16 in. (11 mm) Diameter			
AGO-4694	PhenoBlue-300 Injector Septa	50/pk	
AGO-4695	PhenoBlue-300 Injector Septa	100/pk	
PhenoRed 7/16 in. (11 mm) Diameter			
AGO-4696	PhenoRed-400 Injector Septa	50/pk	
AGO-4697	PhenoRed-400 Injector Septa	100/pk	
PhenoGreen 7/16 in. (11 mm) Diameter			
AGO-8573	PhenoGreen-400 Injector Septa	50/pk	

Injector Septa Plugs

- High temperature silicone



Ordering Information

Shimadzu Injector Septa Plug

Part No.	Description	Unit	Price
AGO-7517	Septa Plug for Shimadzu Injectors (9A, 14, 15A, 16, 17A, 2010) Rated to 350 °C	50/pk	
AGO-8802	Septa BTO® Plugs, Rated to 400 °C	50/pk	

Merlin Microseal™ Septum

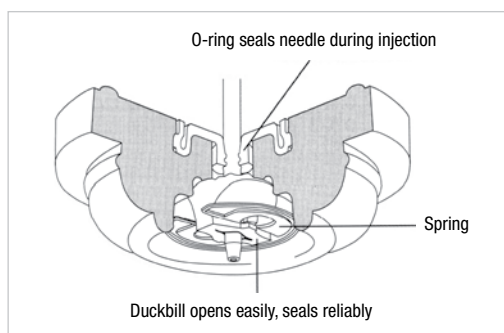
- Improves chromatographic performance and quantitative results by reducing bleed and ghost peaks
- Improves reliability and performance during extended automated runs
- Thousands of injections before seal replacement
- Save time changing septa, instrument downtime and troubleshooting

The Merlin Microseal Septum is a long-life replacement for the standard septum on the capillary inlet or the purged-packed inlet of Agilent GC systems.

The Microseal is a patented inlet assembly that provides two distinct sealing mechanisms. The first is a double O-ring seal around the syringe that ensures gas leak integrity during time of injection. There is no traditional septum to core or flake, which can cause bleeding and ghost peaks, and less force is required for the user to make a manual injection. The second seal is a spring-assisted duckbill that reliably maintains a high-pressure seal within the injection port at all times.

Since the syringe does not pierce any septum material, seal lifetime is significantly extended – Microseals are typically used for up to one year or more under normal conditions before septum replacement. Many laboratories experience lifetimes of 5,000 to 10,000 injections or more. This means you save tremendously in time changing septa, instrument downtime and troubleshooting. Chromatographic performance will also improve due to less bleed and fewer ghost peaks, improving quantitation and data reliability.

Instrument Compatibility: The Merlin Microseal systems can be used manually with all Agilent 5800, 6800, and 7890 series GCs. However, for autosampler use it is compatible with only the 7673A and 7673B units. Other inlets or autosampler systems from Agilent or other manufacturers are not compatible.



(1) Complete High Pressure Kits include the nut and one or two Microseal septa. All High Pressure Kits are rated for inlet pressures up to 100 psi. For long-term operation (>6 months) with the Microseal septum use the following injection port limits: (a) Agilent 6890, 5890 Series II - 325 °C; (b) Agilent 5890A - 300 °C. Higher temperatures will result in shorter lifetimes. (2) The Merlin Microseal Septum should only be used with a blunt-tipped, 0.63 mm diameter (0.025 in., 23 gauge) syringe needle (typically used with the Agilent 7673 autosampler). Sharp-pointed or sharp-edged needles should not be used as they may slice or pierce the seals.

Ordering Information

Merlin Microseal Septum

Part No.	Description	Unit	Price
AGO-5985	Merlin Microseal High Pressure Septum Standard Kit, includes nut and 2 septa	ea	
AGO-5986	Merlin Microseal High Pressure Septum Starter Kit, includes nut and 1 septum	ea	

Replacement Parts

AGO-5987	Merlin Microseal High Pressure Septum	ea	
AGO-5988	Merlin Microseal High Pressure Nut	ea	

Syringes for Use With the Merlin Microseal

Ordering Information

Part No.	Mfr. No.	Agilent P/N	Description*	Capacity (µL)	Unit	Price
For Agilent 7673 Autosamplers						
ASO-4386	87987	9301-0892	75ASN (23s/1.71in./HP)	5	ea	
ASO-4387	80387	9301-0713	701ASN (23s/1.71in./HP)	10	ea	
ASO-4388	80390	9301-0725	701ASN (23s/1.71in./HP)	10	6/pk	

Removable Needles

ASO-4401	7786-01	9301-0892	RN (23s/1.71in./HP)	2.5-100 µL	6/pk	
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NOTE: Replacement needles are available in packs of three.

* Values in parentheses denote the following: (gauge/length/point style), "s" after gauge denotes smaller/reduced internal needle diameter.



Contact Phenomenex or your local Phenomenex distributor for additional GC products and applications.

Ferrules

Ferrule Selection Guide by Material

Material	Advantage	Disadvantage	Recommended for
100 % Graphite	<ul style="list-style-type: none"> • Easy to use • Tight, stable seal • Rated to 450 °C 	<ul style="list-style-type: none"> • Porous to oxygen • Not for MS or other oxygen sensitive detectors • Easily deformed • Potential to contaminate system 	<ul style="list-style-type: none"> • General use • FID and ND • High temperature analysis • Cool on-column
85/15 % Vespel®/Graphite	<ul style="list-style-type: none"> • Durable for long lifetime • Not porous to oxygen • Rated to 350 °C 	<ul style="list-style-type: none"> • Non-reusable • Need to re-tighten frequently • Flows at high temperatures 	<ul style="list-style-type: none"> • Good for MS or other oxygen sensitive detectors • Most leak free
60/40 % Vespel/Graphite	<ul style="list-style-type: none"> • Easier to use than 85/15 • Not porous to oxygen • Rated to 400 °C 	<ul style="list-style-type: none"> • Non-reusable • Easier to deform than 85/15 	<ul style="list-style-type: none"> • Good for MS or other oxygen sensitive detectors • Best balance between tight seal and ease of use
SilTite™	<ul style="list-style-type: none"> • No need to re-tighten • Reliable seal • No contamination • Rated to > 450 °C 	<ul style="list-style-type: none"> • Easily deforms 	<ul style="list-style-type: none"> • High temperature MS analysis

Ferrule Selection Guide by Length

Length	Advantage	Disadvantage	Recommended for
Short	<ul style="list-style-type: none"> • Robust seal 	<ul style="list-style-type: none"> • Not recommended for MS detector connection 	<ul style="list-style-type: none"> • Standard detectors and inlet
Long	<ul style="list-style-type: none"> • Good nut and interface design 	<ul style="list-style-type: none"> • Not recommended for inlet connection 	<ul style="list-style-type: none"> • MS detector connection

Ferrule Selection Guide for Cool-Lock Nuts

		Agilent Systems				Shimadzu Systems	
		Long Style Nut		Short Style Nut			
Column ID (mm)	Ferrule ID (mm)	Top Ferrule	Bottom Ferrule	Top Ferrule	Bottom Ferrule	Top Ferrule	Bottom Ferrule
0.10-0.25	0.4	AGO-4698	AGO-4698	AGO-7513	AGO-4698	AGO-8881	AGO-4698
0.25-0.35	0.5	AGO-4701	AGO-4701	AGO-7513	AGO-4701	AGO-8881	AGO-4701
0.45-0.53	0.8	AGO-4704	AGO-4704	AGO-8676	AGO-4704	AGO-8882	AGO-4704

Ordering Information

Short Ferrules

Composition	GC Column ID (mm)	Ferrule ID (mm)	Similar to Mfr. No.*	Part No.	Preconditioned	Unit	Price
100 % Graphite	0.10-0.35	0.5	072635	AGO-7513	Y	10/pk	
			5080-8853				
	0.45-0.53	0.8	072636	AGO-8676	Y	10/pk	
85 % Vespel / 15 % Graphite	0.10-0.25	0.4	5181-3323	AGO-7318	N	10/pk	
			5181-3322	AGO-7321	Y	10/pk	
	0.28-0.35	0.5	5062-3514	AGO-7319	N	10/pk	
			5062-3513	AGO-7322	Y	10/pk	
	0.40-0.53	0.8	5062-3512	AGO-7320	N	10/pk	
			5062-3511	AGO-7323	Y	10/pk	

* Similar to but not always an exact equivalent to the original manufacturer's product.



All ferrules are 1/16 in. (except SilTite™) Preconditioned for lower bleed.



All Vespel containing ferrules should be pre-shrunk in an oven at 250 °C for at least 4 hours prior to use.

Ferrules



Ordering Information

Long Ferrules

Composition	GC Column ID (mm)	Ferrule ID (mm)	Similar to Mfr. No.*	Part No.	Preconditioned	Unit	Price
100 % Graphite	0.10-0.25	0.4	20200	AGO-4698	N	10/pk	
			20227	AGO-4699		50/pk	
	0.28-0.35	0.5	72635	AGO-4701	N	10/pk	
			-	AGO-4702		50/pk	
	0.45-0.53	0.8	82636	AGO-4704	N	10/pk	
			-	AGO-4705		50/pk	
85 % Vespel®/ 15 % Graphite	0.10-0.25	0.4	07663	AGO-8677	Y	10/pk	
			5062-3508				
	0.28-0.35	0.5	072654	AGO-8678	Y	10/pk	
			5062-3506				
	0.45-0.53	0.8	072655	AGO-8679	Y	10/pk	
			5062-3538				
60 % Vespel / 40 % Graphite	0.10-0.25	0.4	20211	AGO-4707	Y	10/pk	
			20229	AGO-4708		50/pk	
	0.28-0.35	0.5	20212	AGO-4710	Y	10/pk	
			20231	AGO-4711		50/pk	
	0.45-0.53	0.8	20213	AGO-4713	Y	10/pk	
			20230	AGO-4714		50/pk	

* Similar to but not always an exact equivalent to the original manufacturer's product.



Ordering Information

Two Hole Ferrules

Composition	GC Column ID (mm)	Ferrule ID (mm)	Similar to Mfr. No.*	Part No.	Preconditioned	Unit	Price
85 % Vespel / 15 % Graphite	0.10-0.25	0.4	072662	AGO-8680	Y	10/pk	
			5062-3580				
	0.28-0.35	0.5	212222	AGO-8681	N	10/pk	
	0.45-0.53	0.8	5062-3581	AGO-8682	Y	10/pk	

Ordering Information

SiITite Ferrules

Composition	GC Column ID (mm)	Ferrule ID (mm)	Similar to Mfr. No.*	Part No.	Preconditioned	Unit	Price
SiITite™	0.10-0.25	0.4	073220	AGO-8762	Y	10/pk	
	0.28-0.35	0.5	073221	AGO-8757	Y	10/pk	
	0.45-0.53	0.8	073222	AGO-8758	Y	10/pk	

Note: SiITite™ ferrules are to be used with SiITite™ nuts. Please contact your Phenomenex technical consultant or distributor for the appropriate nut and ferrule part numbers for your GC system.



Ordering Information

100 % Graphite Ferrules (Metal Encapsulated) for Shimadzu GCs

Composition	GC Column ID (mm)	Ferrule ID (mm)	Similar to Mfr. No.*	Part No.	Preconditioned	Unit	Price
100 % Graphite (Metal Encapsulated)	0.10-0.25	0.4	221-32126-05	AGO-8881	Y	10/pk	
	0.25-0.35	0.5	221-32126-05	AGO-8881	Y	10/pk	
	0.45-0.53	0.8	221-32126-08	AGO-8882	Y	10/pk	



For Replacement Ferrules for Mini-unions, see p. 5



All ferrules are 1/16 in. (except SiITite™)
Preconditioned for lower bleed.

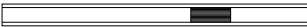
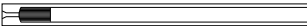
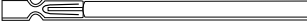


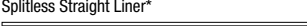
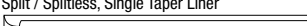
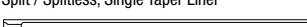


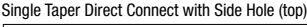



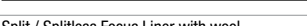
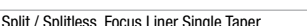
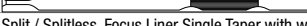

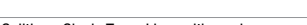
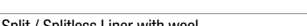



All Vespel containing ferrules should be pre-shrunk
in an oven at 250 °C for at least 4 hours prior to use.

Injection Port Inlet Liners

Liners for Agilent Technologies® (HP) GC Systems

Ordering Information





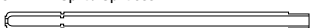
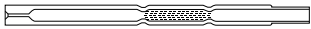

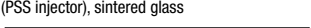

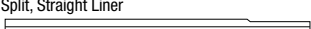
Liners							Agilent Technologies (HP)			
Description	Benefits / Uses	GC Model No.	Dimensions ID x L x OD (mm)	Units	Similar to Mfr. No.**	Part No.	Unit	Price		
 Split / Splittless Liner with wool	Large injection, trace analysis	5880/5890/6890/7890	4 x 78.5 x 6.3	ea	19251-60540	—	—	—		
				5/pk	5183-4691	20782	AGO-4655	5/pk		
 Splittless Single Taper Liner with wool	Large injection, trace analysis	5880/5890/6890/7890	4 x 78.5 x 6.45	ea	5062-3587	22405	—	—		
				5/pk	5183-4693	22406	AGO-4657	5/pk		
 Cup Splitter / Split Liner*	High and low MW compounds and large volume injections	5880/5890/6890/7890	4 x 78.5 x 6.3	ea	HP 18740-80190	20709	—	—		
				5/pk	5183-4699	20710	AGO-4647	5/pk		
 Cup Splitter / Split Liner with wool*	Large volume injection of dirty samples	5880/5890/6890/7890	4 x 78.5 x 6.3	ea	18740-60840	—	—	—		
				5/pk	5183-4697	—	AGO-4648	5/pk		
 Splittless Liner Straight Liner	Small injection, trace analysis	5880/5890/6890/7890	2 x 78.5 x 6.45	not deactivated	HP 18740-80220	—	—	—		
				ea	5181-8818	20712	—	—		
 Splittless Straight Liner*	Large injection, trace analysis	5880/5890/6890/7890	4 x 78.5 x 6.3	5/pk	5183-4703	20713	AGO-4649	5/pk		
				25/pk	5183-4704	20714	AGO-4650	25/pk		
 Split / Splittless, Single Taper Liner	Large injection, trace analysis	5880/5890/6890/7890	4 x 78.5 x 6.45	ea	210-3003	20772	—	—		
				5/pk	210-3003-5	20773	AGO-4651	5/pk		
 Split / Splittless, Single Taper Liner*	Small injection, trace analysis	5880/5890/6890/7890	2 x 78.5 x 6.45	25/pk	20774	20774	AGO-4652	25/pk		
				ea	—	20795	—	—		
 Direct Liner	Injection < 1 µL or Purge & Trap/Headspace	5880/5890/6890/7890	1.5 x 78.5 x 6.45	5/pk	18740-80200	20972	—	—		
				25/pk	5183-4709	20973	AGO-4659	5/pk		
 Split / Splittless, Recessed Gooseneck Liner with wool	Large injection of dirty samples	5880/5890/6890/7890	4 x 78.5 x 6.45	ea	19251-60540	—	—	—		
				5/pk	5183-4647	22408	—	—		
 Single Taper Direct Connect with Side Hole (top)	Great recovery and linearity for trace analysis of active compounds	5880/5890/6890/7890	4 x 78.5 x 6.3	25/pk	5183-4691	22409	AGO-4661	5/pk		
				ea	5183-4692	22410	AGO-4662	25/pk		
 Single Taper Direct Connect with Side Hole (bottom)	Great recovery and linearity for trace analysis of active compounds	5880/5890/6890/7890	4 x 78.5 x 6.3	ea	G1544	21054	—	—		
				5/pk	G1544-80730	20771	AGO-7850	5/pk		
 Split Liner with wool	General use or dirty samples	5880/5890/6890/7890	4 x 78.5 x 6.3	ea	5183-4647	21032	—	—		
				5/pk	5183-4701	21033	AGO-8172	5/pk		
 Split / Splittless, Double Taper/Gooseneck Liner	Large injection, trace analysis of active compounds	5880/5890/6890/7890	4 x 78.5 x 6.3	25/pk	5183-4702	—	—	—		
				ea	5181-3315	20784	—	—		
 Split / Splittless Focus Liner with wool	Trace analysis of dirty samples	5880/5890/6890/7890	4 x 78.5 x 6.3	5/pk	5183-4705	20785	AGO-8173	5/pk		
				25/pk	5183-4706	20786	—	—		
 Split / Splittless, Focus Liner Single Taper with wool	General use or dirty samples	5880/5890/6890/7890	4 x 78.5 x 6.3	ea	210-4004	21022	—	—		
				5/pk	20979	21023	AGO-7515	5/pk		
 Split / Splittless, Focus Liner Single Taper with wool	General use or dirty samples	5880/5890/6890/7890	4 x 78.5 x 6.3	25/pk	5183-4711	20994	—	—		
				ea	5183-4712	20995	AGO-4680	5/pk		
 Double Gooseneck with Bottom Hole	Great recovery and linearity for trace analysis of active compounds	5880/5890/6890/7890	4 x 78.5 x 6.3	5/pk	5183-4713	20996	AGO-7514	25/pk		
				ea	092003	22406	AGO-8175	5/pk		
 Splittless, Single Taper Liner with wool	Large injection, trace analysis	5880/5890/6890/7890	4 x 78.5 x 6.45	5/pk	G1544-80700	20989	—	—		
				ea	5183-4693	20954	AGO-8430	5/pk		
 Split / Splittless Liner with wool	Large injection, trace analysis	5880/5890/6890/7890	4 x 78.5 x 6.3	5/pk	5183-4691	—	AGO-8499	5/pk		
				25/pk	5183-4692	—	AGO-8653	5/pk		
 Split / Splittless Liner with wool	Small injection, trace analysis of dirty samples	5880/5890/6890/7890	2.3 x 78.5 x 6.3	5/pk	5183-4692	—	AGO-8654	25/pk		
				ea	210-4022	—	AGO-8379	5/pk		

Note: Large injection ≥ 2 µL. Small injection ≤ 2 µL. *Liner is not deactivated ** Similar to but not always an exact equivalent to the original manufacturer's product.

Injection Port Inlet Liners

Liners for PerkinElmer® GC Systems


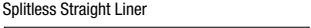


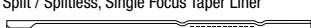

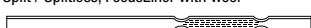
Ordering Information

Liners									PerkinElmer
Description	Benefits / Uses	GC Model No.	Dimensions ID x L x OD (mm)	Units	Similar to Mfr. No.**	Part No.	Unit	Price	
 Split / Splitless Single Taper / Gooseneck Tapered FocusLiner™ with wool	General use or dirty samples	AutoSystem™ & Clarus® 500	4 x 92 x 6.2	-	092095 09209525	-	AGO-4681	5/pk	
							AGO-7864	25/pk	
 Split / Splitless Tapered FocusLiner™ with wool	Dirty samples, trace analysis	AutoSystem & Clarus 500	4 x 92 x 6.2	-	092092 09209225	-	AGO-7639 AGO-7865	5/pk 25/pk	
 Cup Splitter / Split Liner*	Low activity, great for large volume injections	8000/Sigma	3.5 x 100 x 5	5/pk	0330-5181	20740	AGO-4663	5/pk	
 Split / Splitless Liner*	General use and trace samples	AutoSystem	4 x 92 x 6.2	5/pk	N610-1052	20836-214.5	AGO-4665	5/pk	
 3 mm ID Split / Splitless	Large injection, trace analysis	8000/Sigma	3 x 100 x 5	5/pk	092091	-	AGO-8655	5/pk	
 Split / Splitless Single Taper FocusLiner	Large injection, trace analysis	AutoSystem & Clarus 500	4 x 92 x 6.2	5/pk	092095	-	AGO-8656	5/pk	
 Split / Splitless FocusLiner with wool	General use or dirty samples	AutoSystem & Clarus 500 (PSS Injector)	2 x 86.2 x 4	5/pk	092101	-	AGO-8657	5/pk	
 Large Volume Injection (LVI) liner for AutoSystem XL (PSS injector), sintered glass	Large injection, trace analysis	AutoSystem & Clarus 500 (PSS Injector)	2 x 86.2 x 4	5/pk	092244	-	AGO-8658	5/pk	
 Split, Straight Liner	Large injection, trace analysis	AutoSystem / Clarus 500	4 x 92 x 6.2	5/pk	092100	-	AGO-8659	5/pk	
 Split, Straight Liner	Small injection, trace analysis	AutoSystem / Clarus 500	2 x 92 x 6.2	5/pk	092103	-	AGO-8660	5/pk	

Note: Large injection ≥ 2 µL. Small injection ≤ 2 µL. *Liner is not deactivated. ** Similar to but not always an exact equivalent to the original manufacturer's product.

Liners for Shimadzu® GC Systems

Ordering Information

Liners									Shimadzu
Description	Benefits / Uses	GC Model No.	Dimensions ID x L x OD (mm)	Units	Similar to Mfr. No.**	Part No.	Unit	Price	
 Split/Splitless Single Taper / Gooseneck Tapered FocusLiner™ with wool	Great recovery and linearity for trace analysis of active compounds	17A, 17B, 2010, 2014	3.4 x 95 x 5	-	092068	-	AGO-4683	5/pk	
 Splitless Straight Liner	Small injection, trace analysis	17A, 17B, 2010, 2014	2.6 x 95 x 5	-	-	-	AGO-4667	5/pk	
 Splitless Liner	Trace analysis	9A/15A/16A	3.4 x 139 x 5	5/pk 25/pk	20749 20750	-	AGO-4669	5/pk	
 Split / Splitless, Single Focus Taper Liner	General use or dirty samples	14/15A/16	3.4 x 99 x 5	5/pk	092066	-	AGO-4682	5/pk	
 Split / Splitless, Liner with Middle Gooseneck	General use or dirty samples	17A/2014	3.4 x 95 x 5	5/pk	092085	-	AGO-8661	5/pk	
 Split / Splitless, FocusLiner with wool	Large injection, trace analysis	17A/2014	3.4 x 95 x 5	5/pk	092062	-	AGO-8662	5/pk	
 Split / Splitless, Recessed Gooseneck Liner with quartz wool	General use or dirty samples	17A/2014	3.4 x 95 x 5	5/pk	092061	-	AGO-8663	5/pk	
 Split / Splitless, Single Taper FocusLiner	General use or dirty samples	2010	3.4 x 95 x 5	5/pk	092058	-	AGO-8664	5/pk	

Note: Large injection ≥ 2 µL. Small injection ≤ 2 µL. ** Similar to but not always an exact equivalent to the original manufacturer's product.


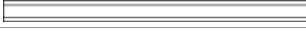
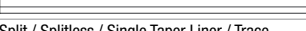

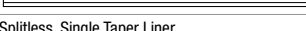


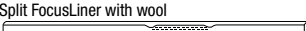
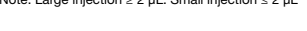


For sealing O-Rings, go to p. 30

Injection Port Inlet Liners

Liners for Thermo Scientific® GC Systems







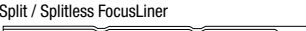
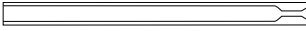


Ordering Information

Liners							Thermo Scientific Systems		
Description	Benefits / Uses	GC Model No.	Dimensions ID x L x OD (mm)	Units	Similar to Mfr. No.**	Part No.	Unit	Price	
 Split / Splitless Double Taper FocusLiner™ with wool	Trace analysis of dirty samples	TRACE™ / FOCUS™	5 x 105 x 8.0	-	092046 09204625	AGO-4679	5/pk		
						AGO-7863	25/pk		
 Splitless Liner	General use	Mega 4000 / 5000, & 6000	3 x 79.5 x 5.0	5/pk 25/pk	45300400	AGO-4643 -	5/pk		
 Splitless Liner	General use	TRACE™ / FOCUS™	3 x 105 x 8.0	5/pk 25/pk	- -	AGO-4645 -	5/pk		
 Split / Splitless / Single Taper Liner / Trace	Trace analysis	TRACE™ / FOCUS™	5 x 105 x 8.0	ea 5/pk 25/pk	45350033	20945 20946 20947 AGO-7852	5/pk		
 Split, Straight Liner	General use	TRACE™ / FOCUS™	5 x 105 x 8.0	5/pk	092150	AGO-8669	5/pk		
 Splitless, Single Taper Liner	Large injection, trace analysis	Mega 4000 / 5000, & 6000	3 x 79.5 x 5.0	5/pk	092041	AGO-8670	5/pk		
 Splitless, FocusLiner	General use or dirty samples	TRACE™ / FOCUS™	5 x 105 x 8.0	5/pk	092045	AGO-8671	5/pk		
 Splitless Single Taper Liner	Small injection, trace analysis	TRACE™ / FOCUS™	3 x 105 x 8.0	5/pk	092141	AGO-8672	5/pk		
 Split FocusLiner with wool	General use or dirty samples	TRACE™ / FOCUS™	5 x 105 x 8.0	5/pk	092048	AGO-8673	5/pk		

Note: Large injection ≥ 2 µL. Small injection ≤ 2 µL. ** Similar to but not always an exact equivalent to the original manufacturer's product.

Liners for Varian® GC Systems

Ordering Information

Liners							Varian		
Description	Benefits / Uses	GC Model No.	Dimensions ID x L x OD (mm)	Units	Similar to Mfr. No.**	Part No.	Unit	Price	
 Split / Splitless Single Taper / Gooseneck Tapered FocusLiner™ with wool	Great recovery and linearity for trace analysis of active compounds	1075/1077	4 x 72 x 6.3	-	092025	-	AGO-4684	5/pk	
 Split / Splitless Double Taper / Gooseneck Tapered FocusLiner™ with wool	General use and large injections	1078/1079	3.4 x 54 x 5	-	092036	-	AGO-4685	5/pk	
 Splitless Liner	Small injection, trace analysis	1075/1077	2 x 75 x 6.3	ea 5/pk 25/pk not deactivated	- 01-900109-05 03-949437-09	20721 - 20722 20723 -	AGO-4671 -	5/pk	
 Split / Splitless Liner	Large injection, trace analysis	1075/1077	4 x 75 x 6.3	ea 5/pk 25/pk	16-000830-00 01-900109-05 -	20904 20905 20906	AGO-4673 -	5/pk	
 SPI (septum-equipped programmable injector) Liner (0.25 mm)	Great linearity for 0.25 & 0.32 mm IDs	1093/1094	0.5 x 54 x 4.6	ea 5/pk 25/pk not deactivated	- 01-900109-06 03-918332-01	20775 20776 20777 -	AGO-4675 -	5/pk	
 SPI (septum-equipped programmable injector) Liner (0.50 mm)	Great linearity for 0.53 mm ID	1093/1094	0.8 x 54 x 4.6	ea 5/pk 25/pk	- 01-900109-07	20778 20779 20780	AGO-4677 -	5/pk	
 Straight Liner	Trace analysis	1078/1079	0.5 x 54 x 5.0	5/pk	092031	AGO-8665	5/pk		
 Split / Splitless FocusLiner	General use or dirty samples	1078/1079	3.4 x 54 x 5.0	5/pk	092037	AGO-8666	5/pk		
 Split / Splitless, Single Taper Liner	Large injection, trace analysis	1078/1079	3.4 x 54 x 5.0	5/pk	092038	AGO-8667	5/pk		
 Splitless, Single Taper Liner	Small injection, trace analysis	1078/1079	2 x 54 x 5.0	5/pk	092039	AGO-8668	5/pk		

Note: Large injection ≥ 2 µL. Small injection ≤ 2 µL. ** Similar to but not always an exact equivalent to the original manufacturer's product.

Syringes



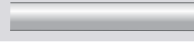


Syringe Selection Guide

Needle Gauge Dimensions

Gauge	OD		ID	
26	0.018 in.	0.46 mm	0.0102 in.	0.26 mm
26s	0.019 in.	0.47 mm	0.0050 in.	0.13 mm
25	0.021 in.	0.51 mm	0.0102 in.	0.26 mm
23s	0.025 in.	0.64 mm	0.0060 in.	0.15 mm
23	0.025 in.	0.64 mm	0.0132 in.	0.34 mm
22s	0.028 in.	0.72 mm	0.0060 in.	0.15 mm
22	0.028 in.	0.72 mm	0.0162 in.	0.41 mm



Needle Point Styles

Style	Description	Advantage
	AS/Cone	Exclusively for Agilent autosamplers
	2, BV (Beveled tip)	Optimal septum penetration for reduced septum coring
	3, LD (Blunt tip)	General sample pipetting and HPLC injectors
	5 (Conical with side hole)	Side hole for sample filling and dispensing
	H (Dome with side hole)	Side hole for sample filling and dispensing. Dome tip minimizes septum coring.

Needle / Needle Connection Styles

Style	Description	Manufacturer	Advantage
ASN	Autosampler Needle	Hamilton®	For use with autosamplers
RN	Removable Needle	Hamilton	Allows freedom to change needle style or replace broken needles
N	Cemented Needle	Hamilton	Low dead volume
KH	Knurled Hub	Hamilton	Able to handle pressure up to 6000 psig
LTN	Luer Tip Cemented Needle	Hamilton	Fixed needle with Luer Tip
TLL	PTFE Luer Lock	Hamilton	Luer Lock with locking hub for use with syringe filters
F	Fixed Needle	SGE®	Economical and more reproducible
R	Removable Needle	SGE	Allows freedom to change needle style or replace broken needles
FLL	Fixed Luer Lock	SGE	Allows use with syringe filters
LL	Luer Lock	SGE	Allows use with syringe filters

Autosampler Syringes

Syringes for Agilent® GC 7673, 7683, and 6850 Autosampler Systems

Ordering Information

Hamilton Syringes

Volume (µL)	Needle/Needle Connection	Gauge	Needle Length	Needle Style	Model	Mfr. No	Similar to Mfr. No.*	Unit	Part No.	Price
Microliter Syringes										
5	ASRN	23	1.71 in.	Agilent	75	87957	24793	ea	ASO-8834	
5	ASN	23s	1.71 in.	Agilent	75	87987	9301-0892	20168	ea	ASO-4386
5	ASN	23s	1.71 in.	Agilent	75	87990	20170		6/pk	ASO-7641
5	ASRN	26	1.71 in.	Agilent	75	87958	24792		ea	ASO-8833
5	ASN	26s	1.71 in.	Agilent	75	87989	21230		6/pk	ASO-8683
5	ASRN	23s-26s	1.71 in.	Agilent	75	87959	21211		ea	ASO-8831
5	ASN	23s-26s	1.71 in.	Agilent	75	87993	24593		ea	ASO-8380
10	ASRN	23	1.71 in.	Agilent	701	80357	24795		ea	ASO-8836
10	ASN	23s	1.71 in.	Agilent	701	80387	9301-0713	20167	ea	ASO-4387
10	ASN	23s	1.71 in.	Agilent	701	80390	9301-0725	20169	6/pk	ASO-4388
10	ASRN	26	1.71 in.	Agilent	701	80358	24794		ea	ASO-8835
10	ASN	26s	1.71 in.	Agilent	701	80389	24599		6/pk	ASO-4389
10	ASRN	23s-26s	1.71 in.	Agilent	701	80359	21213		ea	ASO-8832
10	ASN	23s-26s	1.71 in.	Agilent	701	80393	24596		ea	ASO-8684
10	ASN	23s-26s	1.71 in.	Agilent	701	80391	24600		6/pk	ASO-8685

Teflon Tip Gastight® Syringes

5	ASN	23s	1.71 in.	Agilent	175	80074	24893	ea	ASO-8686
10	ASN	23s-26s	1.71 in.	Agilent	1701	80079	n/a	ea	ASO-8837

Syringes

Autosampler Syringes (cont'd)

Syringes for Agilent® GC 7673, 7683, and 6850 Autosampler Systems

Ordering Information

SGE® Syringes

Volume (µL)	Needle/Needle Connection	Gauge	Needle Length	Needle Style	Model	Mfr. No	Similar to Mfr. No.*	Unit	Part No.	Price
Microliter Syringes										
5	F	23	42 mm	Cone	5F-HP-0.63C	001810	24781	ea	ASO-8839	
5	F	23	42 mm	Cone	SK-5F-HP-0.63	001814	24783	6/pk	ASO-8687	
5	R	23	42 mm	Cone	5R-HP-0.63C	001815	24793	ea	ASO-8843	
5	F	26	42 mm	Cone	5F-HP-0.47C	001800	24780	ea	ASO-8838	
5	F	26	42 mm	Cone	SK-5F-HP-0.47	001814	24782	6/pk	ASO-8608	
5	F	23s-26s	42 mm	Cone	SK-5F-HP-0.63/0.47	001822	21214	6/pk	ASO-8689	
5	R	26	42 mm	Cone	5R-HP-0.47C	001805	24792	ea	ASO-8842	
5	F	23-26	42 mm	Cone	5F-HP-0.63*0.47	001821	5181-1273 21210	ea	ASO-5208	
10	F	26	42 mm	Cone	SK-10F-HP-47	002804	24786	6/pk	ASO-7637	
10	R	23	42 mm	Cone	10RHP-0.63	002815	24795	ea	ASO-8690	
10	F	23	42 mm	Cone	10F-HP-0.63	002810	24785	ea	ASO-8691	
10	F	26	42 mm	Cone	SK-10F-HP-0.47	002804	24786	6/pk	ASO-7637	
10	R	26	42 mm	Cone	10R-HP-0.47C	002805	24794	ea	ASO-8844	
10	F	23	42 mm	Cone	SK-10F-HP-0.63	002814	24787	6/pk	ASO-8692	
10	F	23s-26s	42 mm	Cone	10F-HP-0.63/0.47	002821	21212	ea	ASO-8693	
10	F	23s-26s	42 mm	Cone	SK-10F-HP-0.63/0.47	002822	21215	6/pk	ASO-8694	
10	R	23-26	42 mm	Cone	10R-HP-0.63/0.47C	002825	21213	ea	ASO-8841	
Teflon Tip Gastight Syringes										
10	F	23	42 mm	Cone	HF-HP-GT-0.63	002812	24789	ea	ASO-8695	
10	R	23-26	42 mm	Cone	10R-HP-GT-0.63/0.47	002829	21220	ea	ASO-8696	
10	F	23-26	42 mm	Cone	10F-HP-GT-0.63/0.47	002826	5181-1267	ea	ASO-5209	
10	F	23-26	42 mm	Cone	SK10F-HP-FT-0.63/0.47	002827	5181-3361	6/pk	ASO-5210	

Syringes for PerkinElmer® AutoSystem™ and Clarus® 500 GC Systems

Ordering Information

SGE Syringes

Volume (µL)	Needle/Needle Connection	Gauge	Needle Length	Needle Style	Model	Mfr. No	Similar to Mfr. No.*	Unit	Part No.	Price
Microliter Syringes										
0.5	R	23	70 mm	Cone	0.5BR-PE-0.63	000478	24811	ea	ASO-8697	
5	F	23	70 mm	Cone	5F-PE-0.63	001954	24813	ea	ASO-8698	

Syringes for Varian® 8000 Series GC Systems

Ordering Information

SGE Syringes

Volume (µL)	Needle/Needle Connection	Gauge	Needle Length	Needle Style	Model	Mfr. No	Similar to Mfr. No.*	Unit	Part No.	Price
Microliter Syringes										
10	R	25	53 mm	Side Hole	10R-VA8X-II	002924	24852	ea	ASO-8699	
10	F	26	50 mm	Cone	10F-C/F-5/0.47C	002980	24922	ea	ASO-8700	
10	F	26	50 mm	Bevel	10F-VA8400-5/0.47	002950	21202	ea	ASO-8701	

Syringes for Shimadzu® AOC 9GC Systems

Ordering Information

Hamilton Syringes

Volume (µL)	Needle/Needle Connection	Gauge	Needle Length	Needle Style	Model	Mfr. No	Similar to Mfr. No.*	Unit	Part No.	Price
Microliter Syringes										
5	RN	26s	2 in. /51 mm	2	75RN	87930	24617	ea	ASO-8702	
5	N	26s	2 in. /51 mm	2	75N	87900	24938	ea	ASO-4390	
10	RN	26s	2 in. /51 mm	2	701RN	80330	24530	ea	ASO-0100	

SGE Syringes

Volume (µL)	Needle/Needle Connection	Gauge	Needle Length	Needle Style	Model	Mfr. No	Similar to Mfr. No.*	Unit	Part No.	Price
Microliter Syringes										
10	R	23	42 mm	Cone	10R-S-0.63	002898	24845	ea	ASO-8703	



*Similar to but not always an exact equivalent to the original manufacturer's product.

Syringes

Manual Syringes

Ordering Information

Hamilton Syringes

Volume (µL)	Needle/Needle Connection	Gauge	Needle Length	Needle Style	Model	Mfr. No	Similar to Mfr. No.*	Unit	Part No.	Price
Microvolume Syringes										
5	N	26s	2 in./51 mm	2	75N	87900	24938	ea	ASO-4390	
5	RN	26s	2 in./51 mm	2	75RN	87930	24617	ea	ASO-8702	
10	N	26s	2 in./51 mm	2	701N	80300	20174	ea	ASO-0077	
10	N	26s	2 in./51 mm	2	701N	80366	20175	6/pk	ASO-0016	
10	RN	26s	2 in./51 mm	2	701RN	80330	24530	ea	ASO-0100	
25	N	22s	2 in./51 mm	2	702N	80400	24531	ea	ASO-0078	
10	N	26s	2 in./51 mm	5	701NPT5	80339	24967	ea	ASO-0094	
Positive Displacement Syringes										
0.5	KH	25	2.75 in./70 mm	2	7000.5	86259	24545	ea	ASO-8715	
1.0	KH	22	2.75 in./70 mm	2	7101	86211	24549	ea	ASO-8716	
1.0	KH	25s	2.75 in./70 mm	2	7001	80135	24547	ea	ASO-1918	
1.0	KH	25s	2.75 in./70 mm	3	7001	80100	24548	ea	ASO-8717	
2.0	KH	25	2.75 in./70 mm	2	7002	88411	24551	ea	ASO-8718	
5.0	KH	24	2.75 in./70 mm	2	7105	88011	24555	ea	ASO-8719	
Teflon Tip Gastight Syringes										
10	N	26s	2 in./51 mm	2	1701	80000	24557	ea	ASO-4391	
10	RN	26s	2 in./51 mm	2	1701	80030	24558	ea	ASO-1898	
25	N	22s	2 in./51 mm	2	1702	80200	24559	ea	ASO-8720	
25	RN	22s	2 in./51 mm	2	1702	80230	24560	ea	ASO-1899	
50	N	22s	2 in./51 mm	2	1705	80900	24561	ea	ASO-0061	
50	RN	22s	2 in./51 mm	2	1705	80930	24562	ea	ASO-1900	
100	N	22s	2 in./51 mm	2	1710	81000	24563	ea	ASO-0062	
100	RN	22s	2 in./51 mm	2	1710	81030	24564	ea	ASO-1901	
250	N	22s	2 in./51 mm	2	1725	81100	24567	ea	ASO-0063	
250	RN	22s	2 in./51 mm	2	1725	81130	24568	ea	ASO-1902	
500	LTN	22	2 in./51 mm	2	1750	81217	24571	ea	ASO-0064	
500	RN	22	2 in./51 mm	2	1750	81230	24572	ea	ASO-1903	
1 mL	LTN	22	2 in./51 mm	2	1001	81317	24575	ea	ASO-0065	
1 mL	RN	22	2 in./51 mm	2	1001	81330	24576	ea	ASO-8721	
1 mL	TLL	-	-	w/o slots	1001	81320	24578	ea	ASO-1907	
2.5 mL	TLL	-	-	w/o slots	1002	81420	24584	ea	ASO-1908	
2.5 mL	RN	22	2 in./51 mm	2	1002	81430	24582	ea	ASO-8722	
2.5 mL	N	22	2 in./51 mm	2	1002	81417	24581	ea	ASO-8723	
5 mL	TLL	-	-	w/o slots	1005	81520	20178	ea	ASO-8724	
10 mL	TLL	-	-	w/o slots	1010	81620	20179	ea	ASO-1910	

continued on next page

Syringes

Manual Syringes

Ordering Information

SGE Syringes

Volume (µL)	Needle/Needle Connection	Gauge	Needle Length	Needle Style	Model	Mfr. No	Similar to Mfr. No.*	Unit	Part No.	Price
Microvolume Syringes										
5	F	26	50 mm	2	5F	001000	24700	ea	ASO-8725	
5	R	26	50 mm	2	5R	001050	24701	ea	ASO-8726	
10	F	26	50 mm	2	10F	002000	24702	ea	ASO-8727	
10	F	26	50 mm	2	SK-10F	002030	24715	6/pk	ASO-8728	
10	R	26	50 mm	2	10R	002050	24703	ea	ASO-8729	
10	R	26	50 mm	2	SK-10R	002080	24716	6/pk	ASO-8730	
Positive Displacement Syringes										
0.5	R	23	70 mm	2	0.5BR-7BV	000311	24771	ea	ASO-8737	
1.0	R	23	70 mm	2	1BR-7BV	000506	24775	ea	ASO-8738	
1.0	R	26	70 mm	Cone	1BR-7/0.47	000570	24776	ea	ASO-8739	
5.0	R	23	70 mm	2	5BR-7BV	000803	24779	ea	ASO-8740	
Teflon Tip Gastight Syringes										
10	F	26	50 mm	2	10F-GT	002200	24725	ea	ASO-8741	
10	R	26	50 mm	2	10R-GT	002250	24726	ea	ASO-8742	
25	F	25	50 mm	2	25F-GT	003200	24727	ea	ASO-8743	
50	F	25	50 mm	2	50F-GT	004200	24729	ea	ASO-8744	
50	R	25	50 mm	2	50R-GT	004250	24730	ea	ASO-8745	
100	F	25	50 mm	2	100F-GT	005200	24734	ea	ASO-8746	
100	R	25	50 mm	2	100R-GT	005250	24735	ea	ASO-8747	
250	F	25	50 mm	2	250F-GT	006200	24738	ea	ASO-8748	
250	R	25	50 mm	2	250R-GT	006250	24739	ea	ASO-8749	
500	F	25	50 mm	2	500F-GT	007200	24742	ea	ASO-8750	
500	R	25	50 mm	2	500R-GT	007250	24743	ea	ASO-8751	
1 mL	RN	23	50 mm	Bevel	1MDR-GT	008100	24750	ea	ASO-8845	
1 mL	LL	-	-	-	1MDF-LL-GT	008025	24752	ea	ASO-0120	
2.5 mL	R	23	50 mm	Bevel	MDR-GT	008500	-	ea	ASO-8752	
5 mL	LL	-	-	-	5MDR-LL-GT	008760	24757	ea	ASO-0121	
5 mL	FLL	-	-	-	5MDF-LL-GT	008762	-	ea	ASO-8753	
10 mL	LL	-	-	-	10MDR-LL-GT	008960	24759	ea	ASO-0122	
10 mL	FLL	-	-	-	10MDR-LL-GT	008962	-	ea	ASO-8754	
25 mL	LL	-	-	-	25MDR-LL-GT	009462	24760	ea	ASO-8755	
25 mL	FLL	-	-	-	25MDR-LL-GT	009463	-	ea	ASO-8756	



*Similar to but not always an exact equivalent to the original manufacturer's product.

Verex™

Leading in Quality, Delivery and Support

The most critical point of your analysis is when you put your sample in the vial. Verex certified sample vials, inserts, caps and seals are guaranteed to ensure problem-free, reproducible performance with consistent results you can trust.

All Vials, Caps and Kits

- Advanced manufacturing
- Multi-step QA/QC
- Cleanroom packaged
- Certified

With the demand for better product stability and performance in glass, septa and caps, we developed Verex HPLC / GC vial products with high quality materials to exceed industry specifications and tolerances. Verex innovative precision products provide air-tight, leak-free seals to safely transfer and store your most important samples. Through extensive testing, we've created guaranteed-fit vial products that offer compatibility with virtually any autosampler for trouble-free operation.

With tightly controlled 100 % traceable manufacturing processes, we re-defined the standards for lot traceability and certification of every Verex product to ensure a uniform product with optimum performance for any application. For those with the most sensitive applications, choose Verex-Certified PLUS for excellent ultra-grade cleanliness. Bottom line, Verex is your sample transfer and storage solution.

Vials and inserts are made of inert, high-purity, chemically-stable borosilicate glass to exacting specifications, individually heat-treated to burn off any impurities, then packaged in a cleanroom environment. Choose from crimp, snap, and screw types or mix and match vials and caps to your application. Most vials are offered with or without write-on marking spot or "patch". For easy selection, purchase convenience, or assembled vial kits ready to go!

Verex caps / seals / closures are made to exacting specifications, giving a tight seal each and every time. The aluminum crimp seals, plastic screw and snap caps come with highly pure septa material and are available in pre-slit and non-slit formats. Economical press-fit and specially formulated bonded-in septa styles are both available. And our NEW mass spec certified screw caps provide you with a state-of-the art solution for your most challenging, sensitive applications.

A variety of convenience complete vial kits are available to meet the most demanding needs of chromatographers, from routine analytical to high-sensitivity work:

- 33 Expansion clear glass (USP Type 1 borosilicate, Class A), 51A amber glass
- Limited volume (high sample recovery) vials
- Silanized (deactivated) glass
- Polypropylene for biocompatibility
- Certified and special MS-certified (caps and vials)

Quality Manufacturing Overview

Eliminate troubleshooting and costly re-work caused by low-quality products

All Verex vial and cap products from Phenomenex are certified and lot traceable using the most advanced methods available and finished in tamper-evident packaging for added quality assurance. Each item is manufactured, processed, and packaged to exacting specifications and must pass a battery of certification tests:

Phenomenex autosampler vials are machine-made from high quality borosilicate glass (Type I Class A), offering the lowest ion content possible. State of the art facilities use the most advanced manufacturing technologies available to deliver the finest product possible. Machine vision cameras at multiple locations inspect several critical dimensions and tolerances, ensuring the manufacture of uniform, defect-free products.

Once formed by high-speed automated machines, the vials are immediately annealed at approximately 1200 °F to improve integrity and to burn off any organic chemical contamination. The result is particulate-, contaminate-; and pyrogen-free products. As the vials exit the annealing (Lehr) oven, they pass through a contained cooling station, and into a positive-pressure cleanroom environment where they are robotically packaged contaminate free into pre-cleaned, inert vial trays.

During manufacture, each production lot is sampled using random sampling procedures, following ANSI methods and standards. The internal and external dimensions as well as neck and thread finishes are measured, adhering to tight tolerances to exactly match manufacturer's systems and autosamplers. Then most products are rigorously tested by LC-UV, GC-FID or LC-MS for any possible contamination. No vial or insert is placed in inventory without passing contamination, cleanliness, and performance testing. Certified Verex vials are your assurance and guarantee of reliability and performance.

Septa and cap assemblies are also rigorously tested and inspected for the low particulate and extractables. Headspace GC of the raw and processed materials ensures the lowest possible contamination from silicone polymers and other trace chemicals. Soak time solvent testing of finished goods is performed, as well as shelf life testing by LC to ensure product cleanliness and lack of impurities.

Verex™ Vials

All Verex™ products are fully lot-tested and certified, ensuring optimum performance for your application. Each product comes with a Certificate of Conformance. Learn more about product specifications and testing at www.phenomenex.com/Verex.

Verex™: Three Levels of Certification



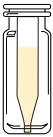
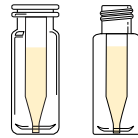
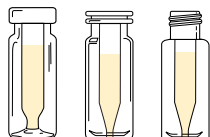

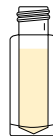
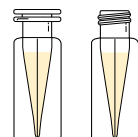
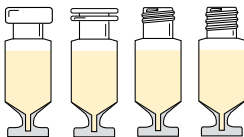
	LEVEL 1 Certified	LEVEL 2 Certified + PLUS (Cert+)	LEVEL 3 Certified MSQ (certified + MSQ) (Mass Spec Quality)
Ultra Clean Specially designed and treated for mass spectrometry (MS) applications.			✓
Low Bleed Special cap / closure processing, treating, and testing for low bleed of residual organics. For high sensitivity GC/MS and LC/MS applications.		✓	✓
Dimensionally Verified Machine vision cameras and gauges inspect critical dimensions and tolerances to produce uniform, defect-free products.	✓	✓	✓
Lot Traceable Vial and cap packs are 100% traceable through the manufacturing process. Certificate of Conformance available by lot number upon request.	✓	✓	✓
Clean Room Packaged Ensures particulate and contaminate-free products for clean chromatography.	✓	✓	✓
Part number Extension	<i>No Extension Needed</i>	<i>Certificate of Conformance Included; Extension "-C"</i>	<i>Certificate of Conformance Included Extension "-M"</i>
Part number Example	AR0-9921-13	AR0-9921-13 "-C"	AR0-9921-13 "-M"



If Verex vials and caps do not perform as well or better than your current vial and cap products of similar type, dimensions, and material, return the Verex vials and caps with comparative data within 45 days for a FULL REFUND.

Need vials to meet requirements for official EPA methods? Try Verex EPA Certified vials – look for part numbers ending with “-E”.
Example: AR0-9531-12-E

12 x 32 mm Specialty Vials

	Type and Description	Finish	Material	Total Volume	Residual Volume	Available as	Page Number	Part Numbers
	High-Recovery CD Vial Center-draining	9-425 Screw Thread	Glass	1.5 mL	< 20 µL	Convenience Kits (certified and regular)	22 22 21 21	ARO-9981-13 ARO-9982-13 ARO-9985-13-C ARO-9986-13-C
	Max-Recovery CD Vial Center-draining	9-425 Screw Thread	Glass	1.5 mL	< 2 µL	Convenience Kits (certified)	21 21	ARO-9987-13-C ARO-9988-13-C
	Insert Vial µVial i2V	11 mm Snap	Glass	300 µL	< 4 µL	Vials (regular)	Inquire Inquire	ARO-3630-13 ARO-3631-13
	Insert Vial µVial i3 (Qsert)	11 mm Snap or 9-425 Screw Thread	Glass	475 µL	< 2 µL	Convenience Kits (certified and regular)	Inquire Inquire 22 22 21	ARO-9671-13 ARO-9672-13 ARO-9973-13 ARO-9974-13 ARO-9974-13-C
	Insert Vial µVial i3 (Qsert)	11 mm Crimp or 11 mm Snap or 9-425 Screw Thread	Glass	475 µL	< 2 µL	Vials (regular)	Inquire 20 20 22 22	ARO-3625-13 ARO-3725-13 ARO-3726-13 ARO-3920-13 ARO-3921-13
	Insert Vial µVial i3 (Qsert)	10-425 Screw Thread	Glass	450 µL	< 2 µL	Vials (regular)	Inquire Inquire	ARO-3020-13 ARO-3021-13
	Plastic Vial	9-425 Screw Thread	Polypropylene	700 µL	< 5 µL	Convenience Kits (certified)	21 21	ARO-9993-13-C ARO-9994-13-C
	Plastic Vial	11 mm Snap or 9-425 Screw Thread	Polypropylene	300 µL	< 2 µL	Convenience Kits (certified and regular) Vials	Inquire Inquire 22 22 21 Inquire 22	ARO-9691-13-C ARO-9692-13-C ARO-9991-13 ARO-9992-13 ARO-9995-13-C ARO-36S0-13-C ARO-39S0-13-C
	Micro Vial with Tapered Base v-Vial	11 mm Crimp or 11 mm Snap or 9-425 Screw Thread or 10-425 mm Screw Thread	Glass	1.4 mL	< 4 µL	Vials (regular)	Inquire Inquire Inquire 20 20 22 22	ARO-3040-13 ARO-3640-13 ARO-3641-13 ARO-3740-13 ARO-3741-13 ARO-3940-13 ARO-3941-13



Need help matching your current vials and caps to Verex? use online matching tool, www.phenomenex.com/VialMatch

For vial finish, the prefix refers to vial diameter followed by standard thread finish. For example, 9-425 neck finish represents a vial with a diameter of 9 mm across the outside of the threads and a thread style of 425.

12 x 32 mm, 11 mm Crimp-Top Vials and Closures



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

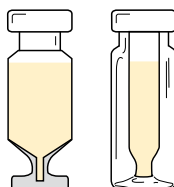
Ordering Information

Description	1000/pk	Price
Standard Opening		
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	

Description	1000/pk	Price
Wide Mouth Opening		
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)



Description	100/pk	Price	1000/pk	Price
Vial, Crimp, v-Vial Clear, No Patch*	—	—	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. See page 19 for specialty vials product details.



Seals / Closures for Crimp-Top Vials

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

Description	1000/pk	Price
Seal, 11mm Diameter, Crimp, PTFE/Silicone, silver	ARO-5780-13	
Seal, 11mm Diameter, Crimp, PTFE/Silicone/PTFE, silver	ARO-5760-13	
Seal, 11mm Diameter, Crimp, PTFE/Rubber, silver	ARO-5740-13	
Seal, 11mm Diameter, Crimp, PTFE/Rubber, blue	ARO-5742-13	
Seal, 11mm Diameter, Crimp, PTFE/Rubber, red	ARO-5741-13	
Seal, 11mm Diameter, Crimp, PTFE/Rubber, green	ARO-5743-13	
Seal, 11mm Diameter, Crimp, PTFE/Rubber, gold	ARO-5746-13	
Seal, 11mm Diameter, Crimp, PTFE, silver	ARO-5710-13	



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



Request a Quote. Want to make sure you're getting the best pricing on vials? Visit Phenomenex.com/Verex

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

Convenience Kits – Certified PLUS (Cert+) Mass Spec Quality (MSQ) 9-425 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

LEVEL 3

Description	1000/pk	Price
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+) 9-425 Screw-Top Vials and Caps with Bonded-In Septa

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

LEVEL 2

Description	1000/pk	Price
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	

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

Convenience Kits – Certified PLUS (Cert+) Limited Volume Specialty 9-425 Screw-Top Vials and Caps

- Kits for microsampling (center-draining and fused-insert vials)
- Lower trace contaminants for higher sensitivity work
- Inert polypropylene (PP) vials for biochromatography, or pH-sensitive applications

LEVEL 2

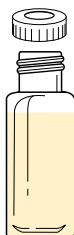


Description	100/pk	Price	1000/pk	Price
Cert+ Vial Kit, 9 mm, Maximum Recovery (CD) Clear + PTFE/Silicone cap *	ARO-9987-12-C		ARO-9987-13-C	
Cert+ Vial Kit, 9 mm, Maximum Recovery (CD) Clear + PTFE/Silicone, preSlit cap *	ARO-9988-12-C		ARO-9988-13-C	
Cert+ Vial Kit, 9 mm, High Recovery (CD) Clear + PE-Starburst cap □	ARO-9985-12-C		ARO-9985-13-C	
Cert+ Vial Kit, 9 mm, High Recovery (CD) Amber + PE-Starburst cap □	ARO-9986-12-C		ARO-9986-13-C	
Cert+ Vial Kit, 9 mm, µVial i3(Qsert) Clear w/ Patch + PTFE/Silicone, preSlit cap *	ARO-9974-12-C		ARO-9974-13-C	
Cert+ Vial Kit, 9 mm, PP, 300 µL + PE-Starburst cap □**	—	—	ARO-9995-13-C	
Cert+ Vial Kit, 9 mm, PP, 700 µL + PTFE/Silicone cap ***	—	—	ARO-9993-13-C	
Cert+ Vial Kit, 9 mm, PP, 700 µL + PTFE/Silicone, preSlit cap *	—	—	ARO-9994-13-C	

No write-on patch unless otherwise indicated. See page 19 for specialty vials product details.
 *B = Bonded-In Septa. □ Cap is one piece, constructed of ultra-pure, medical-grade polyethylene.

Convenience Kits – 9-425 Screw-Top Vials and Caps with Bonded-In Septa

- Sample volume range from 0.2 to 1.5 mL



Description	1000/pk	Price
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, preSlit	ARO-9925-13	
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, preSlit	ARO-9926-13	
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	
Vial Kit, 9 mm, 2 mL Amber w/ Patch + PTFE/Rubber, preSlit	ARO-9913-13	



Request a Quote. Visit Phenomenex.com/Verex for additional product selection and detailed information.

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

Convenience Kits – Limited Volume Specialty 9-425 Screw-Top Vials and Caps with Bonded-In Septa

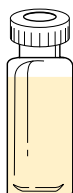
- Kits for microsampling (center-draining and fused-insert vials)
- CD and Qsert vials offer superior performance over vials with loose inserts
- Polypropylene (PP) vial kits for bio- or ion-chromatography, or pH-sensitive samples



Ordering Information

Description	100/pk	Price	1000/pk	Price
Vial Kit, 9 mm, High Recovery (CD) Clear + PTFE/Silicone	ARO-9981-12		ARO-9981-13	
Vial Kit, 9 mm, High Recovery (CD) Clear + PTFE/Silicone, preSlit	ARO-9982-12		ARO-9982-13	
Vial Kit, 9 mm, µVial i3 (Qsert) Clear w/ Patch + PTFE/Silicone	ARO-9973-12		ARO-9973-13	
Vial Kit, 9 mm, µVial i3 (Qsert) Clear w/ Patch + PTFE/Silicone, preSlit	ARO-9974-12		ARO-9974-13	
Vial Kit, 9 mm, PP, 300 µL + PTFE/Silicone**	—	—	ARO-9991-13	
Vial Kit, 9 mm, PP, 300 µL + PTFE/Silicone, preSlit**	—	—	ARO-9992-13	

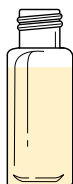
No write-on patch unless otherwise indicated. See page 19 for specialty vials product details. **Made of Polypropylene.



Convenience Kits – Assembled 9-425 Screw-Top Vials and Caps with Bonded-In Septa

- Cap and septa attached to vials
- Ready to use
- Save time and labor

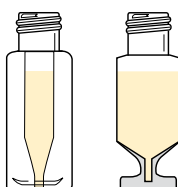
Description	1000/pk	Price
Vial Kit, 9 mm, 2 mL Clear w/ Patch + PTFE/Silicone, preSlit	ARO-9925-13-A	
Vial Kit, 9 mm, 2 mL Amber w/ Patch + PTFE/Silicone, preSlit	ARO-9926-13-A	
Vial Kit, 9 mm, 2 mL Clear, w/ Patch + PTFE/Rubber, Silanized	ARO-9915-13-A	



9-425 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)

Description	1000/pk	Price
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	



Limited Volume Specialty 9-425 Screw-Top Vials

- Microsampling Qsert and v-Vial center-draining vials
- Qsert fused-insert vials ensure proper seating of the cap
- Extremely low residual volume

Description	100/pk	Price	1000/pk	Price
Vial, 9 mm Screw, µVial i3 (Qsert) Clear, No Patch	ARO-3920-12		ARO-3920-13	
Vial, 9 mm Screw, µVial i3 (Qsert) Amber, No Patch	ARO-3921-12		ARO-3921-13	
Vial, 9 mm Screw, v-Vial Clear, No Patch*	ARO-3940-12		ARO-3940-13	
Vial, 9 mm Screw, v-Vial Amber, No Patch*	ARO-3941-12		ARO-3941-13	
Cert + Vial, 9 mm, Screw, PP, 300 µL Clear, No Patch**	ARO-39S0-12-C		ARO-39S0-13-C	

*51-Expansion glass. See page 19 for specialty vials product details. **Made of Polypropylene.



Need help matching your current vials and caps to Verex? use online matching tool, www.phenomenex.com/Vial Match

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

Certified PLUS (Cert+) Mass Spec Quality (MSQ) Caps for 9-425 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



LEVEL 3

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	Price
Cert+ MSQ Cap (pre-assembled), 9 mm, w/ Locked-fit PTFE/Silicone septa, blue	ARO-8952-13-M	
Cert+ MSQ Cap (pre-assembled), 9 mm, w/ Locked-fit PTFE/Silicone preSlit septa, blue	ARO-8972-13-M	



Certified PLUS (Cert+) Caps for 9-425 Screw-Top Vials

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

LEVEL 2

Description	1000/pk	Price
Cert+ Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, blue	ARO-8952-13-C	
Cert+ Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone preSlit septa, blue	ARO-8972-13-C	
Cert+ Cap (one-piece), 9 mm PE w/ Starburst preSlit, natural [□]	ARO-89P6-13-C	

[□] Cap is one piece, constructed of ultra-pure, medical-grade polyethylene.

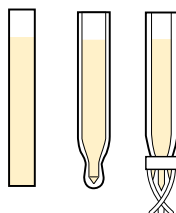


Bonded-In Caps for 9-425 Screw-Top Vials

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

Description	1000/pk	Price
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, black	ARO-8957-13-B	
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, blue	ARO-8952-13-B	
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, green	ARO-8953-13-B	
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, natural	ARO-8956-13-B	
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone septa, red	ARO-8951-13-B	
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone preSlit septa, black	ARO-8977-13-B	
Cap (pre-assembled), 9 mm, w/ Bonded-in PTFE/Silicone preSlit septa, blue	ARO-8972-13-B	

For a more economical alternative, Press-Fit Caps are available.



Inserts for 9-425 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

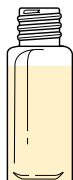
Description	500/pk	Price	1000/pk	Price
Insert, 6 mm Diameter, Flat Bottom, 450 µL	ARO-4610-52		—	—
Insert, 6 mm Diameter, Flat Bottom, 450 µL, Silanized	ARO-4615-52		—	—
Insert, 6 mm Diameter, Conical Bottom, 350 µL	—	—	ARO-4620-13	
Insert, 6 mm Diameter, Conical Bottom, w/ bottom spring, 300 µL	—	—	ARO-4621-13	
Insert, 6 mm Diameter, Conical Bottom, w/ bottom spring, 300 µL, Silanized	—	—	ARO-4623-13	

Approximate useable volume indicated in µL

12 x 32 mm, 8-425 (8 mm) Screw-Top Vials

8-425 Screw-Top Vials, 2.0 mL

- Standard-neck vials for Varian and Shimadzu® autosamplers
- 33 Expansion clear glass (USP Type 1 borosilicate, Class A), 51A amber glass



Ordering Information

Description	1000/pk	Price
Vial, 8 mm Screw, 2 mL Clear, No Patch	ARO-3800-13	
Vial, 8 mm Screw, 2 mL Amber, No Patch	ARO-3801-13	
Vial, 8 mm Screw, 2 mL Clear, w/ Patch	ARO-3810-13	
Vial, 8 mm Screw, 2 mL Amber, w/ Patch	ARO-3811-13	

Caps / Closures for 8-425 Screw-Top Vials

- Prevent rework and wasted productivity with perfect fit bonded-in septa
- Fewer trace contaminants for higher sensitivity work



Description	1000/pk	Price
Cap (pre-assembled), 8-425, w/ Bonded-in PTFE/Silicone septa, black*	ARO-8857-13-B	
Cap (pre-assembled), 8-425, w/ Bonded-in PTFE/Silicone preSlit septa, black*	ARO-8877-13-B	
Cap (pre-assembled), 8-425, w/ PTFE/Silicone septa, black**	ARO-8857-13	
Cap (pre-assembled), 8-425, w/ PTFE/Silicone preSlit septa, black**	ARO-8877-13	
Cap (pre-assembled), 8-425, w/ PTFE/Silicone/PTFE septa, black**	ARO-8867-13	
Cap (pre-assembled), 8-425, w/ Open-top cap (w/o septa), black	ARO-8897-13	
Cap (pre-assembled), 8-425, w/ Open-top cap (w/o septa, flanged lip), black	ARO-88A7-13	

*-B = Bonded-in Septa
**Press-Fit-Septa

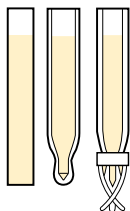
Septa for 8-425 Screw Caps

- Preconditioned and tested
- For caps / closures without septa (ARO-8897-13 and ARO-88A7-13)

Description	1000/pk	Price
Septa, 8 mm Diameter, PTFE/Silicone 0.060 in	ARO-6853-13	
Septa, 8 mm Diameter, PTFE/Silicone/PTFE 0.060 in	ARO-6863-13	
Septa, 8 mm Diameter, PTFE 0.010 in	ARO-6817-13	

Inserts for 8-425 Screw-Top Vials

- For limited volume sampling
- Precisely centers and fits vial neck
- Transforms full capacity vials to micro sample vials



Description	500/pk	Price	1000/pk	Price
Insert, 5 mm Diameter, Flat Bottom, 200 µL	ARO-4510-52		ARO-4510-13	
Insert, 5 mm Diameter, Flat Bottom, 200 µL, deactivated (silanized)	ARO-4514-52		ARO-4514-13	
Insert, 5 mm Diameter, Conical Bottom, 100 µL	—	—	ARO-4520-13	
Insert, 5 mm Diameter, Conical Bottom, w/ bottom spring, 175 µL	—	—	ARO-4521-13	

*Approximate useable volume indicated in µL

Headspace Vials

Crimp-Top Headspace Vials

- 10 and 20 mL crimp neck, with rounded or flat bottom
- Uniform glass thickness ensures even heating
- Reliable quality, exceeds OEM specifications
- Lot traceable



Ordering Information

Description	1000/pk	Price
Headspace Vial, 23 x 46 mm, 10 mL Square Rim, Flat Bottom, Clear, No Patch	ARO-3220-13	
Headspace Vial, 23 x 46 mm, 10 mL Square Rim, Round Bottom, Clear, No Patch	ARO-3230-13	
Headspace Vial, 23 x 75 mm, 20 mL Beveled Rim, Flat Bottom, Clear, No Patch	ARO-3260-13	
Headspace Vial, 23 x 75 mm, 20 mL Beveled Rim, Flat Bottom., Clear, No Patch, Silanized	ARO-3263-13	
Headspace Vial, 23 x 75 mm, 20 mL Square Rim, Flat Bottom, Clear, No Patch	ARO-3290-13	
Headspace Vial, 23 x 75 mm, 20 mL Beveled Rim, Round Bottom, Clear, No Patch	ARO-3270-13	

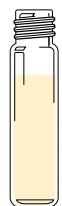
Headspace Crimp Top Seals / Closures

- Variety of styles for any application
- Crimp and decrimp with ease
- Magnetic and pressure-release caps available



Description	1000/pk	Price
Seal, 20 mm Diameter, PTFE/Gray Butyl Rubber, magnetic cap	ARO-52C5-13	
Seal, 20 mm Diameter, PTFE/Gray Butyl Rubber, Pressure Release, silver	ARO-52A0-13	
Seal, 20 mm Diameter, PTFE/Butyl Rubber Pharmafix Molded Septum, silver	ARO-52D0-13	
Seal, 20 mm Diameter, PTFE/Butyl Rubber Pressure Release, Pharmafix Molded Septum, silver	ARO-52B0-13	
Seal, 20 mm Diameter, PTFE/Silicone magnetic cap	ARO-5255-13	
Seal, 20 mm Diameter, PTFE/Silicone silver	ARO-5250-13	
Seal, 20 mm Diameter, PTFE/Silicone Pressure Release, silver	ARO-5220-13	

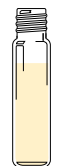
Autosampler Compatibility
 Flat Bottom: HP / Agilent,
 Carlo Erba, Shimadzu
 Round Bottom: PerkinElmer,
 Tekmar, LEAP Technologies,
 Varian



VOA / ASE Assembled Vial Kits and Storage Vial Kits

- Convenient assembled kit includes vials with matching seals / closures
- Clear or amber, with open top or closed caps
- PTFE (Teflon®) faced 0.125 in. silicone septa or PTFE with foam urethane backing
- Lot numbered for traceability

Ordering Information



Description	100/pk	Price	1000/pk	Price
Vial Kit, Storage, 20 mL screw, Clear w/ Caps 24-400 white PTFE/Foam Urethane liner, closed top	ARO-9559-12		ARO-9559-13	
Vial Kit, Storage, 20 mL screw, Amber w/ Caps 24-400 white PTFE/Foam Urethane liner, closed top	ARO-9551-12		ARO-9551-13	
Vial Kit, Storage, 40mL screw, Clear w/ Caps 24-400 white PTFE/Foam Urethane, closed top	ARO-9542-12		ARO-9542-13	
Vial Kit, Storage, 40mL screw, Amber w/Caps 24-400 white PTFE/Foam Urethane, closed top	ARO-9543-12		ARO-9543-13	
Vial Kit, VOA/ASE, 40mL screw, Clear w/Caps 24-400 white PTFE/Silicone, open top	ARO-9540-12		ARO-9540-13	
Vial Kit, VOA/ASE, 40mL screw, Amber w/ Caps 24-400 white PTFE/Silicone, open top	ARO-9541-12		ARO-9541-13	
Vial Kit, VOA/ASE, 20 mL screw, Clear w/ Caps 24-400 white PTFE/Silicone (assembled)*, open top	ARO-9531-12-E		ARO-9531-13-E	

* EPA certified Class 100 vials, caps, and septa are assembled, without processing.
 ASE = Dionex Accelerated Solvent Extractor for pesticide analyses.

Learn More. Visit Phenomenex.
 com/Verex for additional
 product selection
 and detailed information

Filtration

Syringe Filters

Phenex™

For sample and solvent filtration prior to chromatography

- Rapid filtration of HPLC and GC samples prior to analysis
- Particulate, PVC, and extractable-free filters
- Less system downtime
- More consistent, reproducible results
- Increased column lifetime



Phenex Offers:

- Broad chemical compatibility
- Minimized extractables
- Excellent flow rate
- High total throughput
- Certified quality
- 100 % integrity tested
- Low hold-up volume
- Low protein adsorption
- Bi-directional use

Syringe Filter Selection Guide

1. Choose filter diameter based on sample volume

4 mm Diameter	15 mm Diameter	25 - 28 mm Diameter
≤ 2 mL Sample Volume	2 - 10 mL Sample Volume	10 - 100 mL Sample Volume

2. Choose a 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.	
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.	0.20 µm
Gas samples prior to GC. Liquid samples prior to UHPLC or LC/MS. Other particulate-sensitive methods.	
Viscous samples such as serum, plasma or other biological matrices. Solutions with high particulate load such as some environmental or food and beverage applications.	Glass Fiber Filter with 0.45 µm filter

3. Choose a filter membrane according to the characteristics of your sample and filtering objective

Membrane Type	Recommended Uses
RC (Regenerated Cellulose)	Hydrophilic Regenerated Cellulose filter membranes are compatible with a very broad range of aqueous and mixed-organic solutions, making them one of the most universal filter materials used prior to chromatography. Phenex-RC filters also exhibit fast-flow and ultra-low protein and non-specific binding characteristics. Due to the beneficial material characteristics, Phenex-RC membranes are broadly recommended as an excellent general purpose/high-performance sample filter for most applications.
PTFE, Teflon® (Polytetrafluoroethylene)	PTFE is an inherently hydrophobic membrane excellent for filtration of organic-based, highly acidic or basic samples and solvents. Widely used in chromatography, it is especially well suited for the clarification of non-aqueous samples. Although this membrane is hydrophobic, it can be made hydrophilic by wetting the membrane with alcohol and then flushing with deionized water.
PES (Polyethersulfone)	Polyethersulfone membranes exhibit very fast-flow and ultra-low protein binding characteristics and are ideally suited for use in many life science clarification applications. Phenex-PES membranes typically offer better chemical resistance than cellulose acetate and are broadly recommended for filtering critical biological samples, tissue culture media, additives and buffers.
NY (Nylon)	Nylon has inherent hydrophilic characteristics and works well for filtration of many aqueous and mixed-organic samples. For applications that require low protein or non-specific binding characteristics, Phenomenex recommends Phenex-RC (Regenerated Cellulose) filters.
CA (Cellulose Acetate)	Cellulose Acetate membranes exhibit ultra-low protein binding and are broadly used in the filtration of biological samples. In combination with a glass pre-filter (Phenex-GF/CA), this membrane is excellent for filtration of tissue culture media, general biological sample filtration and clarification.
GF (Glass Fiber)	Phenex-GF (Glass Fiber) filters are made of inert borosilicate glass and have a nominal 1.2 µm pore size. They are commonly used with highly viscous samples or samples that contain high concentrations of particulate matter (e.g., food analysis, biological samples, soil samples, fermentation broth samples, removal of yeasts, molds, etc.). Glass Fiber filters can be used alone or in series with other Phenex filter membranes such as the 0.45 µm pore Phenex-RC filter to reduce clogging of the membrane and optimize flow.

Phenex is a trademark of Phenomenex, Inc.

If Phenex Syringe Filters do not perform as well or better than your current syringe filter product of similar membrane, diameter and pore size, return the product with comparative data within 45 days for a FULL REFUND.

Syringe Filters (cont'd)

Syringe Filter Applications and Recommended Membranes

Application / Sample	Recommended Filter	First Alternative	Second Alternative
HPLC and GC Sample Prep	RC	PTFE	PES
Aggressive or Pure Organic Solvents	PTFE	RC	NY
Protein Analysis / Biological Samples	PES	RC	GF/CA
High Particulate Loads	GF/NY	GF + RC	PTFE
Environmental Methods	GF/NY	RC	PTFE
Food and Beverage	GF/NY	RC	PTFE
Clinical / Toxicology	RC	PES	NY
Dissolution Testing	GF/NY	RC	PTFE
Ion Chromatography	RC	PES	PTFE
Trace Metals (ICP-MS, AAS)	RC	PES	NY
Capillary Electrophoresis (CE)	RC	PES	NY
Tissue Cultures, Media, Buffers	GF/CA	PES	RC



Tip: Try a Sample Pack!
Request yours today by phone or visit www.phenomenex.com/sample



For high load and particulate-laden samples you may consider placing a Glass Fiber (GF) pre-filter in line with the membrane syringe filter of your choice or choose a filter with an integrated glass fiber membrane.

Phenex Syringe Filters	4 mm Diameter for ≤ 2 mL sample volumes			15 mm Diameter for 2 – 10 mL sample volumes			25 - 28 mm Diameter for 10 – 100 mL sample volumes			
	Membrane Type/Size	Part No.	Unit	Price	Part No.	Unit	Price	Part No.	Unit	Price
0.20 µm										
Phenex-RC (Regenerated Cellulose)	AF0-3203-12	100/pk			AF0-2203-12	100/pk			AF0-8203-12 ⁵	100/pk
	AF0-3203-52	500/pk			AF0-2203-52	500/pk			AF0-8203-52 ⁵	500/pk
Phenex-PES ³ (Polyethersulfone)	—	—			—	—			AF0-8208-12 ⁷	100/pk
	—	—			—	—			AF0-8208-52 ⁷	500/pk
Phenex-PTFE ⁶ (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 (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	100/pk	
								AF0-1A47-52	500/pk	
Phenex-GF/CA ^{2,3,4} (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 ⁷	100/pk	
								AF0-8A09-52 ⁷	500/pk	
0.45 µm										
Phenex-RC (Regenerated Cellulose)	AF0-3103-12	100/pk			AF0-2103-12	100/pk			AF0-8103-12 ⁵	100/pk
	AF0-3103-52	500/pk			AF0-2103-52	500/pk			AF0-8103-52 ⁵	500/pk
Phenex-PES ³ (Polyethersulfone)	—	—			AF2-5108-12 ¹	100/pk			AF0-8108-12 ⁷	100/pk
	—	—			—	—			AF0-8108-52 ⁷	500/pk
Phenex-PTFE ⁶ (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 (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.							AF0-1B47-12	100/pk	
								AF0-1B47-52	500/pk	
Phenex-GF/CA ^{2,3,4} (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.							AF0-8B09-12 ⁷	100/pk	
								AF0-8B09-52 ⁷	500/pk	
1.20 µm										
Phenex-GF ^{2,3} (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 ⁷	100/pk	
								AF0-8515-52 ⁷	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 >1.2 µm.
- 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.

GC Columns Check Standards

Test the Performance of GC Columns

- Convenient way to check column performance
- Essential tool for GC troubleshooting
- Affordable and easy to use
- Suitable for Phenomenex Zebron™ and equivalent brands
- Sealed in 2 mL glass ampules - prevent evaporation and increase shelf life
- All test mixes supplied with Certificate of Analysis



App ID 15840

Zebron ZB-1ms	
Part No.: AGO-7805	Price:
500 µg/mL each in acetone:	
1. Decane	5. Tridecane
2. 2-Ethylhexanoic Acid	6. 1-Undecanol
3. 4-Chlorophenol	7. Dicyclohexylamine
4. Naphthalene	8. Pentadecane

App ID 10714

Zebron ZB-1, ZB-5, ZB-1HT, and ZB-5HT	
Part No.: AGO-5155	Price:
250 µg/mL each in hexane:	
1. Undecane	4. 1-Undecanol
2. 4-Chlorophenol	5. Dicyclohexylamine
3. Tridecane	6. Pentadecane

App ID 14836

Guardian Integrated Guard / ZB-5	
Part No.: AGO-7549	Price:
250 µg/mL each in acetone:	
1. Decane	6. 1-Methylnaphthalene
2. 2-Ethylhexanoic Acid	7. 1-Undecanol
3. 1,6-Hexanediol	8. Tetradecane
4. 4-Chlorophenol	9. Dicyclohexylamine
5. Tridecane	

App ID 16439

Zebron ZB-5MSI	
Part No.: AGO-8362	Price:
250 µg/mL each in acetone:	
1. Decane	6. 1,8-Octanediol
2. Methyl Caprylate	7. Dihexylamine
3. 1,6-Hexanediol	8. 1-Undecanol
4. 4-Chlorophenol	9. Dicyclohexylamine
5. Tridecane	10. Pentadecane

App ID 14973

Zebron ZB-5ms, ZB-XLB, and ZB-XLB-HT	
Part No.: AGO-7578	Price:
250 µg/mL each in acetone:	
1. Decane	6. 1-Methylnaphthalene
2. 2-Ethylhexanoic Acid	7. 1-Undecanol
3. 1,6-Hexanediol	8. Tetradecane
4. 4-Chlorophenol	9. Dicyclohexylamine
5. Tridecane	10. Pentadecane

App ID 5161

Zebron ZB-35, ZB-35HT, ZB-1701, and ZB-1701P	
Part No.: AGO-5156	Price:
250 µg/mL each in hexane:	
1. Undecane	5. 1-Undecanol
2. 2,4-Dimethylphenol	6. 1-Methylnaphthalene
3. 2,6-Dimethylaniline	7. Hexadecane
4. Tetradecane	

App ID 5163

Zebron ZB-50	
Part No.: AGO-5157	Price:
250 µg/mL each in hexane:	
1. Undecane	5. 1-Undecanol
2. Tridecane	6. 1-Methylnaphthalene
3. 2,4-Dimethylphenol	7. Hexadecane
4. 2,6-Dimethylaniline	

App ID 5165

Zebron ZB-624	
Part No.: AGO-5159	Price:
1000 µg/mL each in methanol:	
1. 1,2-Dichloropropane	4. Chlorobenzene
2. Octane	5. Nonane
3. Tetrachloroethylene	

App ID 16214

Zebron ZB-WAX ^{PLUS}		
Part No.: AGO-7869	Price:	
250 µg/mL each in hexane:		
1. 2-Octanone	6. Methyl decanoate	11. Methyl dodecanoate
2. Tetradecane	7. Heptadecane	12. 2,6-Dimethylaniline
3. Pentadecane	8. Methyl undecanoate	13. Nonadecane
4. 1-Octanol	9. 1-Decanol	14. 2,6-Dimethylphenol
5. Hexadecane	10. Octadecane	

App ID 14326, App ID 5164

Zebron ZB-WAX and ZB-FFAP	
Part No.: AGO-5158	Price:
250 µg/mL each in hexane:	
1. 2-Octanone	6. 1-Decanol
2. Tetradecane	7. Methyl dodecanoate
3. 1-Octanol	8. 2,6-Dimethylaniline
4. Methyl decanoate	9. 2,6-Dimethylphenol
5. Methyl undecanoate	

App ID 18461

Zebron ZB-Drug-1	
Part No.: AGO-8431	Price:
250 µg/mL each in acetone:	
1. Dodecane	5. 1-Undecanol
2. Tridecane	6. 1-Methylnaphthalene
3. 4-Chlorophenol	7. Dicyclohexylamine
4. Tetradecane	8. Hexadecane

App ID 19305

Zebron ZB-1XT SimDist	
Part No.: AGO-8645	Price:
1000 µg/mL each in hexane:	
1. Undecane	4. 1-Undecanol
2. Dodecane	5. Dicyclohexylamine
3. Tridecane	6. Pentadecane

App ID 5158

Grob Test Mixture		
<i>(For most GC capillary columns)</i>		
Part No.: AGO-5154	Price:	
400 µg/mL each in methylene chloride:		
1. 2,3-Butanediol	5. 1-Nonanal	9. Methyl decanoate
2. Decane	6. 2-Ethylhexanoic acid	10. Methyl undecanoate
3. Undecane	7. 2,6-Dimethylphenol	11. Dicyclohexylamine
4. 1-Octanol	8. 2,6-Dimethylaniline	12. Methyl dodecanoate



Test mix components are shown in order of elution

Gas Trap and Purifiers

Indicating Glass Moisture Traps

- Reduces noise for high-sensitivity GC detectors: GC/MS, MSD, ECD, Hall EC, Ion Trap
- Heavy-wall borosilicate glass tube prevents oxygen and water infusion

Technical Specifications

Packing:	Molecular sieve 13X
Indicator:	yes, 4A indicating molecular sieve
Max pressure:	100 psi (690 kPa)
Efficiency:	≤10 ppb water
Capacity:	100 cc unit: 10 standard "A" cylinders with up to 300 ppm water
Fittings:	1/8 or 1/4 in.



Indicating Glass Moisture Traps			
Part No.	Description	Unit	Price
100 cc			
AG0-4766	Glass Indicating Moisture Trap, 1/8 in. fittings	ea	
250 cc			
AG0-4768	Large Glass Indicating Moisture Trap, 1/8 in. fittings	ea	
AG0-4769	Large Glass Indicating Moisture Trap, 1/4 in. fittings	ea	

Indicating Oxygen Traps

- Improves analytical sensitivity
- Reduces oxygen to less than 1 ppb
- Color indicator warns of saturation

Technical Specifications

Packing:	Proprietary
Indicator:	yes
Max pressure:	50 psi (345 kPa)
Efficiency:	≤1 ppb oxygen
Fittings:	1/8 or 1/4 in.
Frit:	40 μm stainless steel



Indicating Oxygen Traps			
Part No.	Description	Unit	Price
50 cc			
AG0-4774	Indicating Oxygen Trap, 1/8 in. fittings	ea	
AG0-4775	Indicating Oxygen Trap, 1/4 in. fittings	ea	
150 cc			
AG0-4776	Large Indicating Oxygen Trap, 1/8 in. fittings	ea	
AG0-4777	Large Indicating Oxygen Trap, 1/4 in. fittings	ea	

LabClear OxiClear™ Gas Purifiers

- High performance, high capacity purifier
- Removes oxygen and trace amounts of water and organics from carrier gases
- Popular, affordable and disposable



Contact Phenomenex or your local Phenomenex distributor for additional GC products and applications.

Hydrocarbon Traps

- Improves baselines and analytical sensitivity
- Integral 40 μm frits prevent particle contamination
- Removes trace organics from carrier gases, air and hydrogen

Technical Specifications

Packing:	Impregnated carbon filter media
Indicator:	no
Max pressure:	250 psi (1724 kPa)
Efficiency:	Excellent to none (call for specific compound ratings)
Fittings:	1/8 or 1/4 in.
Purge Gas:	Helium, ultra-high purity



Hydrocarbon Traps			
Part No.	Description	Unit	Price
100 cc			
AG0-4770	Hydrocarbon Trap, capillary grade, 1/8 in. fittings	ea	
AG0-4771	Hydrocarbon Trap, capillary grade, 1/4 in. fittings	ea	
200 cc			
AG0-4772	Hydrocarbon Trap, 1/8 in. fittings	ea	
AG0-4773	Hydrocarbon Trap, 1/4 in. fittings	ea	
AG0-5618	Hydrocarbon Trap Refill, 1 pint, 2 recharges	ea	

Combination Oxygen /Moisture Traps

- Improves analytical sensitivity of GC/MS, MSD, ECD
- Reduces oxygen/water to less than 15 ppb
- Pre-purged with ultra-high purity helium for rapid equilibration/stabilization

Technical Specifications

Packing:	Proprietary
Indicator:	no
Max pressure:	250 psi (1724 kPa)
Efficiency:	≤15 ppb oxygen and water
Capacity:	2 g water
Fittings:	1/8 or 1/4 in.



Combination Oxygen/Moisture Traps			
Part No.	Description	Unit	Price
AG0-4778	Combo Oxygen / Moisture Trap, 1/8 in. fittings	ea	
AG0-4779	Combo Oxygen / Moisture Trap, 1/4 in. fittings	ea	

Technical Specifications

Packing:	Proprietary
Indicator:	no
Max pressure:	250 psi (1724 kPa)
Max recommended flow:	3 mL/min @ 35 psi
Efficiency:	≤5 ppb oxygen when incoming oxygen concentration is 15 ppm or less
Capacity:	≥1200 cubic ft. standard grade gas
Fittings:	1/8 or 1/4 in.

OxiClear Gas Purifiers			
Part No.	Description	Unit	Price
5 1/2 x 2 in.			
AG0-4792	OxiClear Disposable Gas Purifier, 1/8 in. fittings	ea	
AG0-4791	OxiClear Disposable Gas Purifier, 1/4 in. fittings	ea	

GC Accessories

Capillary Unions and Splitters

- Connect fused silica capillary tubing of the same or different diameter, from 0.10 to 0.53 mm ID
- Patented laser-formed linear taper
- Provides leak-free seal without tools, glue or fittings
- Stays sealed even at high temperatures and pressures
- Laser-cut smooth ends prevent column damage during insertion



Use the Union for:

- Connecting a guard column to an analytical column
- Connecting columns of different selectivities
- Connecting transfer lines to e.g., mass spec
- Repairing a broken column

Use the Y-connector (splitter) for:

- Splitting a sample onto two columns (perform confirmational analysis in a single injection)
- Splitting the column eluent to two detectors

Ordering Information

Capillary Unions and Splitters

Part No.	Description	Unit	Price
AG0-4716	Universal Capillary Column Union, Borosilicate	5/pk	
AG0-4717	Universal Capillary Column Y-connector, Borosilicate	ea	



Contact Phenomenex or your local Phenomenex distributor for additional GC products and applications.

Polyimide Resins

- Permanently connects unions and splitters to capillary tubing
- Prevents connections from dislodging due to vibration or shock



Ordering Information

Polyimide Resins

Part No.	Description	Unit	Price
AG0-5722	Polyimide Resin, 350 °C, 0.5 mL	ea	
AG0-8514	High Temperature, 400 °C, Polyimide Resin, 0.5 mL	ea	



For GC Retention Gaps and Guard Column Kits, see p. 62

Sealing O-Rings

- Thermally stable
- Graphite suitable for GC/MS



Ordering Information

Part No.	Description	Similar to Mfr. No.*	Unit	Price
Sealing Rings for Agilent Inlet Liners				
AG0-7326	Sealing ring, Viton Fluorocarbon, rated to < 300 °C	5180-4182	10/pk	
AG0-7327	Sealing ring, graphite, rated to 450 °C	5180-4168	10/pk	
Sealing Rings for PerkinElmer Inlet Liners				
AG0-8674	Sealing ring for 6.2 mm OD inlet liners	N9302783	10/pk	
Sealing Rings for Shimadzu Model 2010 Inlet Liners				
AG0-8675	Sealing ring, Viton	036-11203-84	10/pk	



*Similar to but not always an exact equivalent to the original manufacturer's product.

Terms and Conditions

Subject to Phenomenex Standard Terms and Conditions which may be viewed at <http://www.phenomenex.com/TermsAndConditions>.

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Cool-Lock Nut is patented by Phenomenex. U.S. Patent No. 8,062,516.

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GC Accessories

Ferrule Remover Tool Kit

- Simple and convenient tools effectively remove stuck ferrules from fittings
- Special spiral-cut ratchet design slides in and grabs ferrule tight
- Includes two tools for removing capillary ferrules from 0.4 to 0.8 mm ID



Ordering Information

Ferrule Remover Tool Kit			
Part No.	Description	Unit	Price
AD0-4725	GC Ferrule Remover Tool Kit	ea	

Ceramic Scoring Wafers

- High quality ceramic cutting tool for fused silica capillary columns



Ordering Information

Ceramic Scoring Wafers			
Part No.	Description	Unit	Price
AG0-4718	Ceramic Scoring Wafer	2/pk	

Flame Detector Jet Cleaning Kit

- For routine maintenance of Flame Ionization Detectors
- Includes:
 - Set of 3 jet reamers 0.008, 0.08 and 0.02 in.
 - 1 Stainless steel and 1 brass brush
 - 1 Dual-ended pin vise for holding reamers and brushes
- Use after the flame jet has been taken apart or while installed in the GC



Ordering Information

Flame Detector Jet Cleaning Kit			
Part No.	Description	Unit	Price
AD0-4723	GC Flame Detector Jet Cleaning Kit	ea	

Injection Port Cleaning Kit

- Includes 4 stainless steel brush sizes 1/8, 3/16, 1/4 and 3/8 in.
- Also includes a scraper-pick combo for hard septum residues and septum removal
- Easy to use with twisted wire handles and a convenient wire ring to keep parts together



Ordering Information

Injection Port Cleaning Kit			
Part No.	Description	Unit	Price
AD0-4724	GC Injection Port Cleaning Kit	ea	



Contact Phenomenex or your local Phenomenex distributor for additional GC products and applications.

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