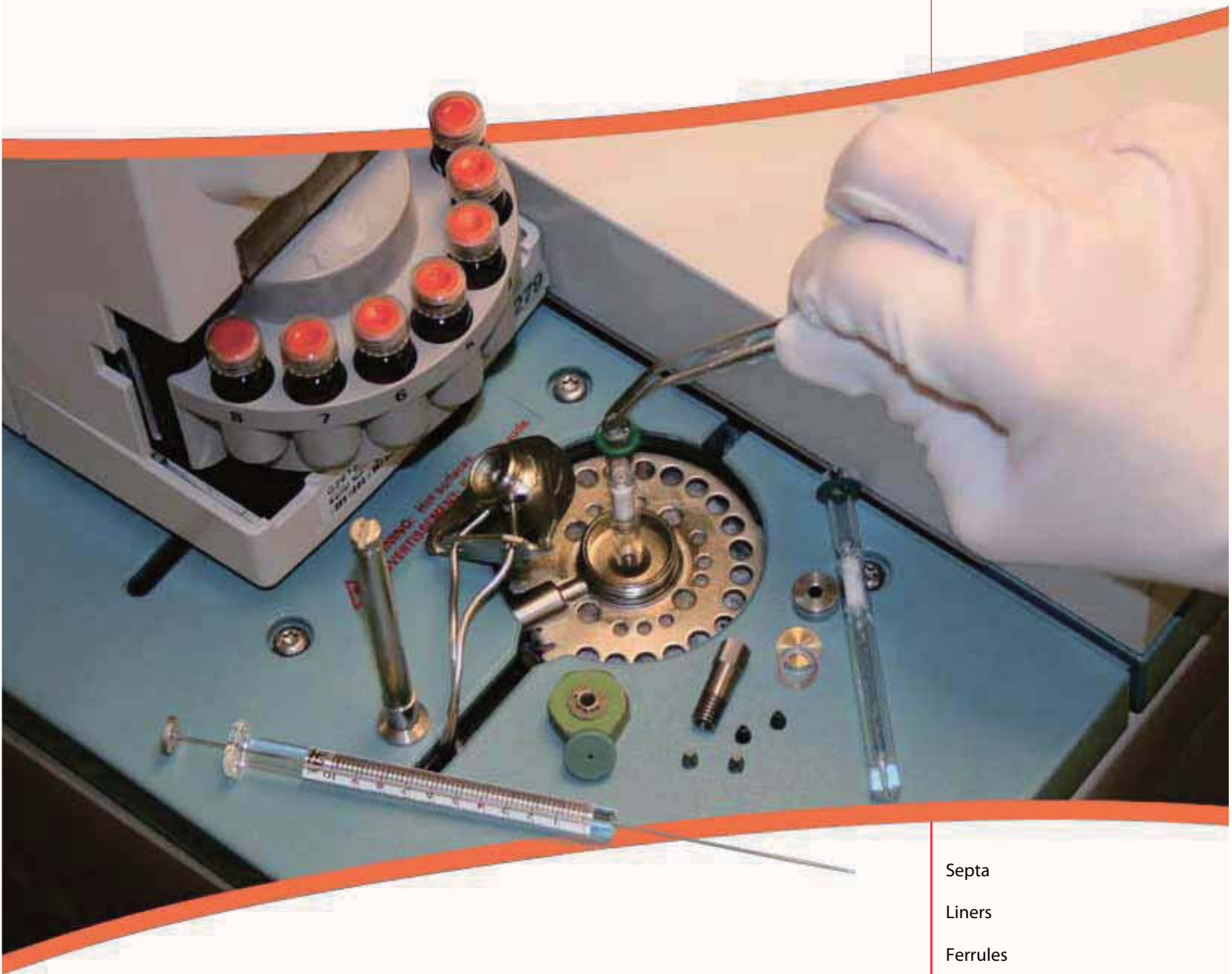


# Maximize Performance!

Gas Chromatography Accessories and  
Gas Purification/Management Products



- Septa
- Liners
- Ferrules
- Solvents
- Syringes
- Vials
- Purifiers and more



## Choosing the Correct Products

Choosing the proper items for routine system maintenance and new column installation can save costly downtime and rework, plus help prevent inaccurate chromatographic results. For the gas chromatographer, choosing the correct items when upgrading and replacing parts and accessories for their system can bring on many challenges due to the vast array of commercially available products. At Supelco, we offer our own unique products, as well as products from some of the most trusted names in the industry, to assist in making the selection process easier.

### Preventative Maintenance

Often overlooked is the importance of preventative maintenance of the gas chromatographic system. Many times, maintenance is only performed after a serious problem occurs, and serves solely to remedy the situation. A better choice is to take a proactive, instead of a reactive, approach to maintenance in an effort to prevent problems from manifesting. This can best be performed by strictly adhering to a schedule of routine preventative maintenance.

Non-volatile material accumulates on injection port items, creating active spots, leading to poor chromatography and loss of sensitivity. Periodical replacement of injection port items will minimize this adsorption of analytes. Over time, purifiers become saturated and must be replaced to maintain the continuous

supply of chromatographic quality carrier gas. To maximize the performance of the chromatographic system, Supelco offers preventative maintenance items only of the highest quality; items such as septa, inlet liners, O-rings, inlet seals, ferrules, and purifiers.

### Installation and Troubleshooting

In addition to being required for a scheduled preventative maintenance routine, quality products are also needed for installation and troubleshooting tasks. Some of the same items and tools are used whether performing an initial set-up of a new instrument, the replacement of system components (such as a column), or troubleshooting activities. To aid in accomplishing these tasks, Supelco offers the highest quality products; products such as column nuts, flow meters, tubing, fittings, valves, particle and oil filters, gas generators, leak detectors and pressure regulators. Additionally, Supelco offers numerous hand tools that have been specifically designed to assist the chromatographer in the installation and maintenance associated with gas chromatography.

### Supelco Products

Throughout this brochure you will find GC Accessories and Gas Purification/Management products that are designed to maximize instrument performance while helping to reduce the risk of chromatographic problems. Please note that this represents a brief listing of the GC Accessories and Gas Purification/Management products that we offer. For a complete listing, please refer to our catalog and/or web site, [sigma-aldrich.com/gc](http://sigma-aldrich.com/gc)

## Quick Look-Up Tables

These quick look-up tables can be used as a reference to find frequently replaced accessories for commonly used GC instruments. In-depth details (photos, descriptions and specifications) can be found elsewhere in this brochure.

### Agilent® 5890, 6890, 7890 GCs

Description	Pkg	Cat. No.
Molded Thermogreen™ LB-2 Septa, 9.5 mm, with injection hole	50 ea	<b>28331-U</b>
Molded Thermogreen LB-2 Septa, 11 mm, with injection hole	50 ea	<b>28336-U</b>
Inlet Liner, Cup Design, Wool Packed, 4 mm I.D.	5 ea	<b>2048205</b>
Inlet Liner, Straight Through, Wool Packed, 4 mm I.D.	5 ea	<b>2048605</b>
Inlet Liner, Single Taper. 4 mm I.D.	5 ea	<b>2046605</b>
Inlet Liner, FocusLiner™, Single Taper, Wool Packed, 4 mm I.D.	5 ea	<b>2879905-U</b>
Therm-O-Ring™, 1/4 in.	10 ea	<b>21003-U</b>
Gold Plated Inlet Seal	10 ea	<b>23319-U</b>
Supeltex M-2A Short Capillary Ferrules, 0.25 mm Column	10 ea	<b>24803-U</b>
Supeltex M-4 Short Capillary Ferrules, 0.25 mm Column	10 ea	<b>24811-U</b>
Supeltex M-2A Long Capillary Ferrules, 0.25 mm Column	10 ea	<b>24826-U</b>
Column Nut for Agilent	2 ea	<b>24833-U</b>
Source Column Nut for Agilent MSD	5 ea	<b>28034-U</b>

### PerkinElmer® AutoSystem™ and Clarus GCs

Description	Pkg	Cat. No.
Molded Thermogreen LB-2 Septa, 11 mm, with injection hole	50 ea	<b>28336-U</b>
Inlet Liner, FocusLiner, Single Taper, Wool Packed, 4 mm I.D.	5 ea	<b>2879105-U</b>
Inlet Liner, Straight Through, 2 mm I.D.	5 ea	<b>2631105</b>
Therm-O-Ring, 1/4 in.	10 ea	<b>21003-U</b>
M-2A Long Capillary Ferrules, 0.25 mm Column	10 ea	<b>24826-U</b>
Column Nut for PerkinElmer	5 ea	<b>28034-U</b>

### Varian® GCs

Description	Pkg	Cat. No.
Thermogreen LB-2 Septa, 9.0 mm	50 ea	<b>28021-U</b>
Molded Thermogreen LB-2 Septa, 11 mm, with injection hole	50 ea	<b>28336-U</b>
Inlet Liner, FocusLiner, Single Taper, Wool Packed, 3.4 mm I.D. for 1078/1079 injectors	5 ea	<b>2875705-U</b>
Inlet Liner, SPME, 0.75 mm I.D., for CP-1177 Injector	5 ea	<b>2637505</b>
M-2A Long Capillary Ferrules, 0.25 mm Column	10 ea	<b>24826-U</b>
Column Nut for Varian	1 ea	<b>28033-U</b>

# Septa

## Molded Thermogreen LB-2 Septa



Molded Thermogreen LB-2 septa are manufactured from high quality, low bleed material using the same exclusive LB-2 rubber formulation that chromatographers are accustomed to using. The difference is that molded septa, unlike traditional die-cut septa, offer easier installation and better sealing. This is because our liquid injection molding process yields septa that all conform to the same shape with crisp, clean sides.

The useable inlet temperature range of 100-350 °C is adequate for the majority of GC applications. **Don't be fooled by other septa that advertise a maximum temperature of 400 °C (to make a septa with high thermal limits, one must also make it stiffer, resulting in septa that are harder to pierce and easier to core)! Our molded Thermogreen LB-2 septa offer the perfect combination of temperature range, low bleed, and easy puncturability.**

The version with injection hole is for autosampler injections, manual injections, and/or SPME applications. The solid disc version is for manual injections.

- Rubber formulation exclusive to Supelco
- Strict tolerances (diameter, thickness, and injection hole) due to the constant dimensions of the mold itself.
- Ultra low bleed over a wide range of inlet temperatures (100 °C to 350 °C)
- No foreign substances or powders (which could contaminate the inlet) are used during manufacturing
- Fully tested for bleed and contamination
- Already conditioned, ready-to-use
- Ideal for use with low bleed GC-MS columns

Description	Pkg	Cat. No.
9.5 mm, with injection hole	50 ea	<b>28331-U</b>
9.5 mm, with injection hole	250 ea	<b>28332-U</b>
9.5 mm, solid discs	50 ea	<b>28670-U</b>
9.5 mm, solid discs	250 ea	<b>28671-U</b>
10 mm, with injection hole	50 ea	<b>28333-U</b>
10 mm, with injection hole	250 ea	<b>28334-U</b>
10 mm, solid discs	50 ea	<b>28673-U</b>
10 mm, solid discs	250 ea	<b>28675-U</b>
11 mm, with injection hole	50 ea	<b>28336-U</b>
11 mm, with injection hole	250 ea	<b>28338-U</b>
11 mm, solid discs	50 ea	<b>28676-U</b>
11 mm, solid discs	250 ea	<b>28678-U</b>
11.5 mm, with injection hole	50 ea	<b>29446-U</b>
11.5 mm, with injection hole	250 ea	<b>29448-U</b>
11.5 mm, solid discs	50 ea	<b>29449-U</b>
11.5 mm, solid discs	250 ea	<b>29451-U</b>
17 mm, with injection hole	50 ea	<b>29452-U</b>
17 mm, with injection hole	250 ea	<b>29453-U</b>
17 mm, solid discs	50 ea	<b>29456-U</b>
17 mm, solid discs	250 ea	<b>29457-U</b>

## Thermogreen LB-2 Septa

We test every lot of Thermogreen LB-2 septa, to ensure low bleed and high puncture tolerance. We also condition these septa – they are ready-to-use, right from the container. Popular dimensions are listed below. Other dimensions can be found in our catalog and on our web site.



- Formulation exclusive to Supelco
- Extremely low bleed over a wide range of inlet temperatures (100 °C to 350 °C)
- Already conditioned, ready-to-use

Description	Pkg	Cat. No.
9.0 mm	50 ea	<b>28021-U</b>
9.5 mm	50 ea	<b>20652</b>
9.5 mm	250 ea	<b>20666</b>
10 mm	50 ea	<b>20653-U</b>
10 mm	250 ea	<b>23156</b>
11 mm	50 ea	<b>20654</b>
11 mm	250 ea	<b>23163</b>
11 mm	1000 ea	<b>23164</b>
11.5 mm	50 ea	<b>23154</b>
17 mm	50 ea	<b>23159</b>
Plug (for Shimadzu)	10 ea	<b>20608</b>
Plug (for Shimadzu)	50 ea	<b>20633</b>

## Merlin Microseal™ System Kits

The Merlin Microseal system incorporates a unique design with two sequential seals that provide long septum life. The patented design is a replacement for the standard septum and septum nut in a capillary inlet system. Popular kits are listed below. Kit components can be found in our catalog and on our web site.



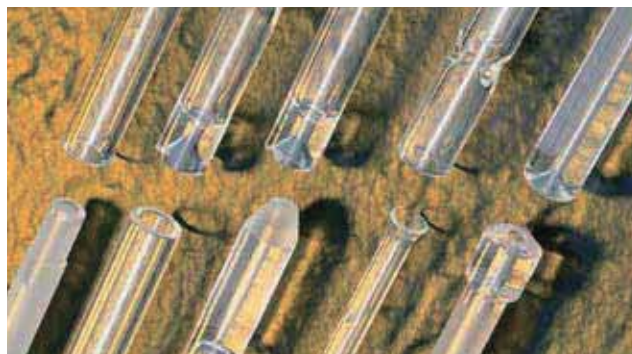
- Sustain many injections without leaks or septum fragments
- For use with 23 gauge blunt tipped needles
- Ideal for use with an SPME device with a 23 gauge needle
- These kits include all necessary items for initial installation

Description	Max Pressure	Cat. No.
For Agilent 5890/6890/7890 GCs	30 psi	<b>22584</b>
For Agilent 5890/6890/7890 GCs	100 psi	<b>24815-U</b>
For Varian 3400/3800 GCs with 1077/1078/1079 Injectors	100 psi	<b>24817-U</b>
For Varian 3800 GCs with CP-1177 Injector	100 psi	<b>22609-U</b>

# Liners and Seals

## Inlet Liners

A regular schedule of inlet liner replacement as part of a preventative maintenance routine will help prevent adsorption problems that can drastically affect chromatography if left unchecked. Inlet liners should be highly inert and manufactured to the strictest of tolerances. Supelco is recognized as a leader in the manufacturing of high quality inlet liners. Popular inlet liner dimensions are listed below. Other inlet liners can be found in our catalog and on our web site.



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- Proprietary high temperature silanization (exclusively from Supelco) ensures inertness
- Our in-house glass shop ensures consistent dimensions that meet, or exceed, GC manufacturers' strict tolerances
- Inlet liners that are packed use a high-quality glass wool, deactivated using a proprietary silanization process (exclusively from Supelco)

Description	Pkg	Cat. No.
<b>For Agilent 5890/6890/7890 (78.5 mm length x 6.3 mm O.D.)</b>		
Split with cup, 4 mm I.D., unpacked	5 ea	<b>2051005</b>
Split with cup, 4 mm I.D., wool packed	5 ea	<b>2048205</b>
Split straight through, 4 mm I.D., unpacked	5 ea	<b>2879405-U</b>
Split straight through, 4 mm I.D., wool packed	5 ea	<b>2048605</b>
Splitless with single taper, 4 mm I.D., unpacked	5 ea	<b>2046605</b>
Splitless with single taper, 4 mm I.D., wool packed	5 ea	<b>2047805</b>
Splitless with dual taper, 4 mm I.D., unpacked	5 ea	<b>2048505</b>
Splitless straight through, 2 mm I.D., unpacked	5 ea	<b>2051305</b>
Splitless straight through, 1.5 mm I.D., unpacked	5 ea	<b>2051705</b>
SPME, 0.75 mm I.D., unpacked	5 ea	<b>2637505</b>
<b>For Finnigan</b>		
Same catalog numbers as Agilent		
<b>For PerkinElmer AutoSystem and Clarus (92 mm length x 6.3 mm O.D.)</b>		
Split, 4 mm I.D., unpacked	5 ea	<b>2630905</b>
Split, 4 mm I.D., wool packed	5 ea	<b>2631005</b>
Splitless straight through, 2 mm I.D., unpacked	5 ea	<b>2631105</b>
SPME, 0.75 mm I.D., unpacked	5 ea	<b>2631205</b>
<b>For Shimadzu® 17A with SPL-17 Injector (95 mm length x 5 mm O.D.)</b>		
Split, 3.4 mm I.D., unpacked	5 ea	<b>2633605</b>
Split, 3.4 mm I.D., wool packed	5 ea	<b>2632705</b>
Splitless with middle gooseneck, 3.4 mm I.D., unpacked	5 ea	<b>2878305-U</b>

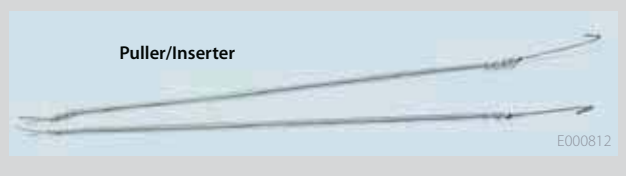
Description	Pkg	Cat. No.
Splitless with recessed gooseneck, 3.4 mm I.D., wool packed	5 ea	<b>2877905-U</b>
Splitless straight through, 2.6 mm I.D., unpacked	5 ea	<b>2633705</b>
SPME, 0.75 mm I.D., unpacked	5 ea	<b>2633905</b>
<b>For Thermo® ThermoQuest 8000/TRACE® (105 mm length x 8 mm O.D.)</b>		
Split, 5 mm I.D., unpacked	5 ea	<b>2877105-U</b>
Split, 3 mm I.D., unpacked	5 ea	<b>2876705-U</b>
Splitless with single taper, 5 mm I.D., unpacked	5 ea	<b>2877305-U</b>
Splitless with single taper, 3 mm I.D., unpacked	5 ea	<b>2877405-U</b>
SPME, 0.8 mm I.D., unpacked	5 ea	<b>2876605-U</b>
<b>For Varian 1075/1077 Injectors (72 mm length x 6.3 mm O.D.)</b>		
Split with baffle, 4 mm I.D., unpacked	5 ea	<b>2050105</b>
Split, 4 mm I.D., unpacked	5 ea	<b>2636105</b>
Split, 4 mm I.D., wool packed	5 ea	<b>2636005</b>
Splitless, 2 mm I.D., unpacked	5 ea	<b>2050205</b>
SPME, 0.75 mm I.D., unpacked	5 ea	<b>2635805</b>
<b>For Varian 1078/1079 Injectors (54 mm length x 5 mm O.D.)</b>		
Split, 3.4 mm I.D., unpacked	5 ea	<b>2637105</b>
Split, 3.4 mm I.D., wool packed	5 ea	<b>2637305</b>
Splitless, 2 mm I.D., unpacked	5 ea	<b>2637405</b>
Splitless, 2 mm I.D., wool packed	5 ea	<b>2637705</b>
SPME, 0.8 mm I.D., unpacked	5 ea	<b>2637805</b>
<b>For Varian CP-1177 Injectors</b>		
Same catalog numbers as Agilent		

## Glass Wool

Glass wool is a fine pliable untreated glass fiber. Silanized glass wool and Pesticide Grade glass wool undergo a proprietary deactivation process to remove active sites that may interfere with an analysis.



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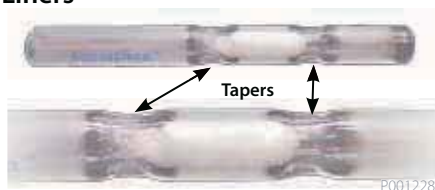
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- Maximum temperature 400 °C
- Silanized – use where minimal activity is required
- Pesticide Grade – use in the analysis of pesticides
- Phosphoric Acid Treated – use in the analysis of free acids, phenols, and glycols
- Puller/Inserter – easily inserts or removes glass wool plugs

Description	Pkg	Cat. No.
Silanized	50 g	<b>20411</b>
Pesticide Grade	10 g	<b>20409</b>
Phosphoric Acid Treated	50 g	<b>20383</b>
Puller/Inserter Tool	2 g	<b>22406</b>

## FocusLiner Inlet Liners

The use of a wool plug in inlet liners has been used for many years to promote the rapid vaporization of the



entire sample, minimize mass discrimination, and prevent non-volatile material from entering the column. FocusLiner inlet liners incorporate a unique design that prevents shifting of the wool plug during repeated injections or sudden inlet pressure changes. Popular FocusLiner inlet liners are listed below. Other inlet liners can be found in our catalog and on our web site.

- Tapers inside the liner stabilize the position of the wool plug, the wool plug is always correctly located
- Unique design prevents shifting of the wool plug during repeated injections or sudden inlet pressure changes
- Large surface area for maximum sample vaporization
- Wiping action removes residual liquid sample from the needle tip, thus preventing droplet formation
- Reduced solvent tailing
- Lower mass discrimination during split injections
- Typically reduces injection variability by at least 96%
- Provide maximum sensitivity and improved detection levels
- High temperature deactivated glass
- Guaranteed to fit

Description	Pkg	Cat. No.
<b>For Agilent 5890/6890/7890 (78.5 mm length x 6.3 mm O.D.)</b>		
Split/splitless, 4 mm I.D., wool packed	5 ea	<b>2879805-U</b>
Split/splitless, 2.3 mm I.D., wool packed	5 ea	<b>2879605-U</b>
Split/splitless with single taper, 4 mm I.D., wool packed	5 ea	<b>2879905-U</b>
Split/splitless with single taper, 2.3 mm I.D., wool packed	5 ea	<b>2879505-U</b>
<b>For Finnigan</b>		
Same catalog numbers as Agilent		
<b>For PerkinElmer AutoSystem and Clarus (92 mm length x 6.3 mm O.D.)</b>		
Split/splitless, 4 mm I.D., wool packed	5 ea	<b>2879205-U</b>
Split/splitless with single taper, 4 mm I.D., wool packed	5 ea	<b>2879105-U</b>
<b>For Shimadzu 17A with SPL-17 Injector (95 mm length x 5 mm O.D.)</b>		
Split/splitless, 3.4 mm I.D., wool packed	5 ea	<b>2878605-U</b>
Split/splitless with single taper, 3.4 mm I.D., wool packed	5 ea	<b>2878405-U</b>
<b>For Thermo ThermoQuest 8000/TRACE (105 mm length x 8 mm O.D.)</b>		
Split, 5 mm I.D., wool packed (for use with 50 mm needles)	5 ea	<b>2877005-U</b>
Splitless, 5 mm I.D., wool packed (for use with 70 mm needles)	5 ea	<b>2877205-U</b>
Splitless with single taper, 5 mm I.D., wool packed	5 ea	<b>2877505-U</b>

Description	Pkg	Cat. No.
<b>For Varian 1075/1077 Injectors (72 mm length x 6.3 mm O.D.)</b>		
Split, 4 mm I.D., wool packed	5 ea	<b>2875405-U</b>
Split with single taper, 4 mm I.D., wool packed	5 ea	<b>2874805-U</b>
Split, 2.3 mm I.D., wool packed	5 ea	<b>2874705-U</b>
<b>For Varian 1078/1079 Injectors (54 mm length x 5 mm O.D.)</b>		
Split/splitless with single taper, 3.4 mm I.D., wool packed	5 ea	<b>2875705-U</b>
Split/splitless with dual taper, 3.4 mm I.D., wool packed	5 ea	<b>2875505-U</b>
<b>For Varian CP-1177 Injectors</b>		
Same catalog numbers as Agilent		

## Therm-O-Ring Seals

Inlet liners used in an Agilent GC require an O-ring placed near the top for proper operation. This O-ring ensures that the only path for carrier gas to get to the outside of the inlet liner is through the grooves in the inlet seal at the bottom of the injection port.

- Available exclusively from Supelco
- Fit 6.3 mm, 6.5 mm, or 1/4" O.D. capillary liners that use an O-ring seal
- Can be used with inlet temperatures up to 375 °C without sticking or fragmenting
- Superior replacements for O-rings made from Viton™

Description	Pkg	Cat. No.
Therm-O-Ring Seal	10 ea	<b>21003-U</b>
Therm-O-Ring Seal	25 ea	<b>21004-U</b>

## Inlet Seals

The inlet seals in an Agilent GC must be regularly changed to prevent sample adsorption due to accumulation of sample residue and/or septum fragments. Supelco offers replacement inlet seals of the highest quality.

- Stainless steel for analyses of non-reactive compounds
- Pure gold plating for applications requiring more inertness
- No brighteners used in the plating process
- Cross design intended for high split flows (>200 mL/min.)
- Packs of two or ten include one washer for each seal
- Packs of 100 include 50 washers

Description	Pkg	Cat. No.
Non-plated	2 ea	<b>23316-U</b>
	10 ea	<b>23317-U</b>
	100 ea	<b>23363-U</b>
Gold-plated	2 ea	<b>23318-U</b>
	10 ea	<b>23319-U</b>
Gold-plated, cross design	2 ea	<b>23413-U</b>
	10 ea	<b>23415-U</b>

# Ferrules and Nuts

GC ferrules should provide a leak-tight seal, accommodate column O.D. variations, seal with minimum torque, and not stick to the column or fittings. Additionally, they should be resilient enough to maintain their seal when column temperature and corresponding back pressure increases. Three popular ferrule compositions that meet these requirements are listed below. Ferrules of other compositions and/or with other internal diameters can be found in our catalog and on our web site.

## Supelco™ M-2A Ferrules

- Max. Temp.: 400 °C
- Composition: VESPEL® SP-21 (85% polyimide/15% graphite)
- Characteristics: Seal at 1/4-turn past fingertight.
- Benefits: High reusability. Won't stick to metal or glass. Form leaktight seals without sticking to the column. Do not require back ferrules.

## Supelco M-4 Ferrules

- Max. Temp.: 450 °C
- Composition: Flexible graphite
- Characteristics: Seal at 1/4-turn past fingertight.
- Benefits: An improved design that offers a clean, sharp profile with minimal flash. Maximum sealing surface contact. Reduced risk of column contamination at installation.

## CapSeal Bullet™ Ferrules

- Available exclusively from Supelco
- Max. Temp.: 450 °C
- Composition: Graphite material captured in aluminum base
- Characteristics: Seal at 1/8-turn past fingertight.
- Benefits: Reusable. A special end taper reduces graphite extrusion into fitting. Aluminum base keeps the ferrule from adhering to the fitting, making it easy to remove.

## Column Nuts

Improper nut/ferrule combinations create dead volume (empty space between the ferrule and the injection port that is not swept by carrier gas). This may result in poor chromatography, as evidenced by fronting peaks and band broadening. Ensure that your chromatography is the best by always using the proper nut/ferrule combination. For assistance in determining the correct nut/ferrule combination, contact Supelco Technical Service at 800-359-3041 (US and Canada only), 814-359-3041, or e-mail [techservice@sial.com](mailto:techservice@sial.com).



P000777, P000920, P000282, P000915

## Ferrule Designs

### Short design ferrules fit:

- The original nuts that ship with Agilent GCs

### Long design ferrules fit:

- MSD source nuts for Agilent GCs
- The original nuts that ship with PerkinElmer GCs
- The original nuts that ship with Varian GCs

### General purpose ferrules fit:

- Supelco Ferrule Nut Adapters for Agilent GCs
- 1/16 inch compression nuts for PerkinElmer GCs



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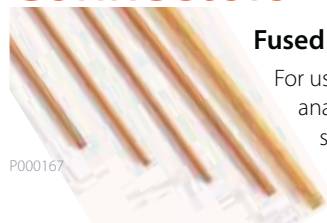
## Ferrules

Column I.D.	Ferrule I.D.	Pkg	Cat. No.
<b>Supelco M-2A, Short Design</b>			
0.10-0.25 mm	0.4 mm	10 ea	<b>24803-U</b>
0.10-0.25 mm	0.4 mm	50 ea	<b>24807-U</b>
<b>Supelco M-4, Short Design</b>			
0.10-0.25 mm	0.4 mm	10 ea	<b>24811-U</b>
<b>CapSeal Bullet, Short Design</b>			
0.10-0.25 mm	0.4 mm	10 ea	<b>23864</b>
0.10-0.25 mm	0.4 mm	50 ea	<b>23867</b>
<b>Supelco M-2A, Long Design</b>			
0.10-0.25 mm	0.4 mm	10 ea	<b>24826-U</b>
0.10-0.25 mm	0.4 mm	50 ea	<b>28022-U</b>
<b>Supelco M-4, Long Design</b>			
0.10-0.25 mm	0.4 mm	10 ea	<b>28025-U</b>
0.10-0.25 mm	0.4 mm	50 ea	<b>28028-U</b>
<b>CapSeal Bullet, Long Design</b>			
0.10-0.25 mm	0.4 mm	12 ea	<b>23488</b>
0.10-0.25 mm	0.4 mm	48 ea	<b>23493</b>
<b>Supelco M-2A, General Purpose</b>			
0.10-0.25 mm	0.4 mm	10 ea	<b>503258</b>
0.10-0.25 mm	0.4 mm	50 ea	<b>22474</b>
<b>Supelco M-4, General Purpose</b>			
0.10-0.25 mm	0.4 mm	10 ea	<b>22498</b>
0.10-0.25 mm	0.4 mm	50 ea	<b>22480-U</b>
<b>CapSeal Bullet, General Purpose</b>			
0.10-0.25 mm	0.4 mm	12 ea	<b>23480-U</b>
0.10-0.25 mm	0.4 mm	48 ea	<b>23485</b>

## Column Nuts

Description	Ferrules Used	Pkg	Cat. No.
Agilent nut	Short design	2 ea	<b>24833-U</b>
Supelco ferrule nut adapter	General purpose	2 ea	<b>22470-U</b>
Agilent MSD source nut	Long design	5 ea	<b>28034-U</b>
PerkinElmer nut	Long design	5 ea	<b>28034-U</b>
1/16 inch compression nut	General purpose	10 ea	<b>22021</b>
Varian nut	Long design	1 ea	<b>28033-U</b>

# Guard Columns and Connectors



## Fused Silica Guard Columns

For use as guard columns to protect analytical columns from damaging sample components. Match the deactivation of the tubing with the polarity of the injection solvent.

P000167

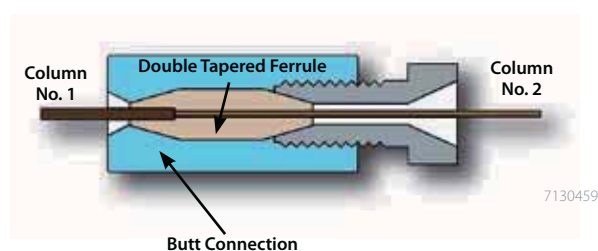
Deactivation	Injection Solvents	Max. Temp.
Non-Polar	Alkanes Carbon disulfide Ethers	360 °C
Intermediate Polarity	Acetone Methylene chloride Toluene	360 °C
Polar	Acetonitrile Methanol Water	260 °C

	Length (m)	I.D. (mm)	Cat. No.
<b>Non-Polar Deactivation</b>			
	3	0.25	<b>25722</b>
	5	0.25	<b>25742</b>
	3	0.32	<b>25723</b>
	5	0.32	<b>25743</b>
<b>Intermediate Polarity Deactivation</b>			
	3	0.25	<b>25727</b>
	5	0.25	<b>25747</b>
	3	0.32	<b>25728</b>
	5	0.32	<b>25748-U</b>
<b>Polar Deactivation</b>			
	5	0.32	<b>25752-U</b>

## Fused Silica Tubing Inner/Outer Diameters

Tubing I.D.	Tubing I.D. Range	Tubing O.D. Range
0.10 mm (1)	0.094 – 0.106 mm	0.348 – 0.370 mm
0.10 mm (2)	0.094 – 0.106 mm	0.285 – 0.315 mm
0.20 mm	0.194 – 0.206 mm	0.345 – 0.375 mm
0.25 mm	0.244 – 0.256 mm	0.345 – 0.375 mm
0.32 mm	0.312 – 0.328 mm	0.425 – 0.455 mm
0.53 mm	0.523 – 0.551 mm	0.650 – 0.690 mm
0.75 mm	0.742 – 0.758 mm	0.875 – 0.925 mm

(1) Columns with non-polar or intermediate polarity stationary phases.  
(2) Columns with polar stationary phases.



## Capillary Column Butt Connector

This device consists of a double-tapered ferrule and a stainless steel compression housing with a threaded cap. Small and light (2.3 cm x 0.6 cm, 4.4 g with ferrule), it provides a gas tight seal with zero dead volume. This unit maintains inertness with no change in column efficiency.

Description	Cat. No.
Capillary Column Butt Connector, body only	<b>23804</b>
<b>Supeltex M-2B Ferrules, pack of 2, Max. Temp. 350 °C</b>	
To connect 0.20/0.25 mm I.D. to 0.20/0.25 mm I.D.	<b>22453</b>
To connect 0.32 mm I.D. to 0.32 mm I.D.	<b>22454</b>
To connect 0.53 mm I.D. to 0.53 mm I.D.	<b>22591</b>
To connect 0.20/0.25 mm I.D. to 0.53 mm I.D.	<b>22455-U</b>
To connect 0.32 mm I.D. to 0.53 mm I.D.	<b>22586</b>

## GlasSeal™ Capillary Column Connectors

Use a GlasSeal connector to attach a guard column to an analytical column or to repair a column which has broken.

Use a GlasSeal "Y" connector to split a sample to two columns for confirmatory analysis or to split the output of one column to two detectors. Silanized for an inert inside surface, these can be used with our 0.10-0.53 mm I.D. tubing. To make this an extremely durable connection, use a small drop of polyimide sealing resin (cure at 200 °C, maximum temperature 350 °C).



Description	Pkg	Cat. No.
Borosilicate Glass Connector	12 ea	<b>20479</b>
Fused Silica Connector	5 ea	<b>23627</b>
Fused Silica Connector	25 ea	<b>23628</b>
Borosilicate Glass "Y" Connector	1 ea	<b>20480</b>
Fused Silica "Y" Connector	1 ea	<b>23631</b>
Fused Silica "Y" Connector	3 ea	<b>23632</b>
Polyimide Sealing Resin	5 ea	<b>23817</b>

## Flowmeters

Gas chromatographers must routinely measure gas flows (when setting up an instrument, developing a method, or troubleshooting). Even though many GCs have electronic pressure control (EPC) for setting flow rates, a flowmeter is still an essential tool to have to verify EPC readings when troubleshooting. Additionally, older GCs do not have EPC, requiring that flows be set manually. There are a variety of flow measuring devices available for this, falling into one of two categories, volumetric (bubble) flowmeters and mass flowmeters.

### Optiflow Bubble Flowmeters

These volumetric (bubble) flowmeters are reliable, accurate, and easy to use.

- Automates the 'positive displacement' technique, which works independent of the type, mass, or mixture of gas being measured
- Combines the simplicity and versatility of a bubble meter with the speed and accuracy of a microprocessor
- Optical sensors respond accurately to the passage of a bubble
- Features an easy to read, accurate digital display, eliminating the need for tedious bubble watching, timing, and flow rate/time conversions
- Requires a 9 volt battery for operation



E001024

Description	Flow Range	Cat. No.
<b>Optiflow Bubble Flowmeters</b>		
Model 520	0.5-500 mL/min.	<b>28679-U</b>

## Hand Tools

We offer a variety of hand tools that are specifically designed to assist the chromatographer in the installation and maintenance associated with gas chromatography.



P000911



Description	Cat. No.
Capillary Starter Kit	<b>23639</b>
Hook Septum Puller	<b>20352</b>
Screw Septum Puller	<b>20353</b>
Stainless Steel Forceps	<b>22435-U</b>
Pin Vise Drill Kit	<b>23820-U</b>
Capillary Cleaving Tool, retractable blade	<b>23814</b>
Coddington Magnifier, 20X	<b>23139</b>
Lenscope Illuminated Magnifier, 10X	<b>23135</b>
Mirror with Rotating Head	<b>22434</b>
Solvent Rinse Kit	<b>23626</b>
Split Vent Trap Kit	<b>22536</b>



# High-Purity GC Solvents

Our high-purity GC solvents are suitable for a wide variety of applications, including pesticide residue analysis (PRA), metabolites, volatiles, other environmentally relevant substances, and preservatives. All solvents are manufactured and bottled under oxygen-free conditions and sealed with a PTFE-lined cap to prevent product contamination and degradation.

Description	Qty.	Cat. No.
Acetone, PESTANAL®	2.5 L	<b>34480-2.5L</b>
	4 x 2.5 L	<b>34480-4X2.5L</b>
Acetonitrile, PESTANAL	1 L	<b>34481-1L</b>
	6 x 1 L	<b>34481-6X1L</b>
	2.5 L	<b>34481-2.5L</b>
	4 x 2.5 L	<b>34481-4X2.5L</b>
Carbon disulfide, low benzene, <i>ReagentPlus</i> ®, ≥99.9%	1 L	<b>342270-1L</b>
	6 x 1 L	<b>342270-6X1L</b>
Diethyl ether, for residue analysis, ≥99.8%	1 L	<b>31671-1L</b>
	2.5 L	<b>31671-2.5L</b>
Ethyl acetate, PESTANAL	1 L	<b>31063-1L</b>
	2.5 L	<b>31063-2.5L</b>
	4 x 2.5 L	<b>31063-4X2.5L</b>
	7 L	<b>31063-7L</b>
n-Hexane, PESTANAL	2.5 L	<b>34484-2.5L</b>
	4 x 2.5 L	<b>34484-4X2.5L</b>
n-Hexane, ENVISOLV™, ≥95%	2.5 L	<b>34412-2.5L</b>
Isooctane, PESTANAL	1 L	<b>34499-1L</b>
	6 x 1 L	<b>34499-6X1L</b>
	2.5 L	<b>34499-2.5L</b>
Methanol, PESTANAL	2.5 L	<b>34485-2.5L</b>
	4 x 2.5 L	<b>34485-4X2.5L</b>
Methanol, purge and trap grade, ≥99.9%	1 L	<b>414816-1L</b>
Methyl tert-butyl ether (MTBE), PESTANAL	1 L	<b>34498-1L</b>
	2.5 L	<b>34498-2.5L</b>
	4 x 2.5 L	<b>34498-4X2.5L</b>
Methylene chloride, PESTANAL	1 L	<b>34488-1L</b>
	2.5 L	<b>34488-2.5L</b>
	4 x 2.5 L	<b>34488-4X2.5L</b>
Methylene chloride, ENVISOLV, ≥99.8%	2.5 L	<b>34411-2.5L</b>
Pentane, PESTANAL	1 L	<b>34497-1L</b>
	2.5 L	<b>34497-2.5L</b>
Toluene, PESTANAL	2.5 L	<b>34494-2.5L</b>
	4 x 2.5 L	<b>34494-4X2.5L</b>
Toluene, ENVISOLV, ≥99.7%	2.5 L	<b>34413-2.5L</b>

## Trademarks

Agilent – **Agilent Technologies**; AutoSystem, Clarus, PerkinElmer – **PerkinElmer Inc.**; CapSeal Bullet, ENVISOLV, GlasSeal, OMI, PESTANAL, *ReagentPlus*, Supelco, Supelpure, Supeltex, Thermogreen, Therm-O-Ring – **Sigma-Aldrich Biotechnology LP**; ChromGas, domnick hunter, NITROX – **Parker domnick hunter**; FocusLiner – **SGE International Pty Ltd.**; GOW-MAC – **GOW-MAC Instruments Co.**; Hamilton – **Hamilton Co.**; Microseal – **Merlin Instrument Company**; Norgren – **C.A. Norgren Co.**; Shimadzu – **Shimadzu Corporation**; SIR – **Airgas**; Super Clean – **Scientific Glass Technology B.V.**; Swagelok – **Swagelok Co.**; Teflon, VESPEL, Viton – **E.I. duPont de Nemours & Co., Inc.**; Thermo, TRACE – **Thermo Electron Corp.**; Varian – **Varian Associates Corp.**

## GC Headspace Solvents

Analysis of residual solvents using headspace GC techniques is an important quality control procedure in pharmaceutical and food-related laboratories. Our GC headspace solvents are specifically designed and tested for such applications. These solvents provide both high purity to maximize detector sensitivity and extremely low background due to volatile impurities.

Description	Qty.	Cat. No.
N,N-Dimethylacetamide, puriss. p.a., ≥99.9%	1 L	<b>44901-1L</b>
N,N-Dimethylformamide, puriss. p.a., ≥99.9%	1 L	<b>51781-1L</b>
1,3-Dimethyl-2-imidazolidinone, puriss. p.a., ≥99.5%	1 L	<b>67484-1L</b>
Dimethyl sulfoxide, puriss. p.a., ≥99.9%	1 L	<b>51779-1L</b>
Water, puriss. p.a.	1 L	<b>53463-1L</b>

## Sigma-Aldrich Solvent Grades

Grade	Description
ENVISOLV	Suitable for the analysis of dioxins, furans, and PCBs
PESTANAL	Suitable for pesticide residue analysis (PRA)
Purge and Trap puriss. p.a.	Suitable for analysis of volatiles using purge and trap ≥98.5% pure
<i>ReagentPlus</i>	≥98.5% pure



# GC Autosampler Syringes



The syringe is the interface between the sample and the chromatograph. Rapid and precise injection requires a tight fit of the syringe in the autosampler. Supelco carries two brands of top-quality autosampler syringes, Hamilton\* and SGE.

- 23s gauge needles – for standard injections
- 26s gauge needles – for on-column and split/splitless injection
- 23s-26s dual gauge needles perform all applications without the need to change syringes
- Available with fixed needle or removable needle

## Agilent (7673, 7683 and 6850)

Manufacturer Model Number	Volume	Needle Length in./mm	Gauge	O.D. mm	Point Style	Manufacturer Part No.	Pkg. Size	Cat. No.
<b>Hamilton</b>								
<b>Modified Microliter Syringes - Removable Needle</b>								
7000.5ASRN	0.5 µL	1.71/43	23s	0.64	Cone	86276	1	<b>26214</b>
7000.5ASRN	0.5 µL	1.71/43	26s	0.47	Cone	86274	1	<b>26215</b>
7001ASRN	1 µL	1.71/43	23s	0.64	Cone	80176	1	<b>26216</b>
7001ASRN	1 µL	1.71/43	26s	0.47	Cone	80175	1	<b>26217</b>
<b>Microliter Syringes - Fixed Needle</b>								
75ASN	5 µL	1.71/43	23s	0.64	Cone	87987	1	<b>21311</b>
75ASN	5 µL	1.71/43	23s-26s	0.64-0.47	Cone	87993	1	<b>24570-U</b>
75ASN	5 µL 6/pk	1.71/43	23s	0.64	Cone	87990	6	<b>21315</b>
75ASN	5 µL 6/pk	1.71/43	26s	0.47	Cone	87989	6	<b>21314</b>
75ASN	5 µL 6/pk	1.71/43	23s-26s	0.64-0.47	Cone	87994	6	<b>24571</b>
75ASN	5 µL	1.71/43	23s	0.64	Bevel	87991	1	<b>26714</b>
75ASN	5 µL	1.71/43	26s	0.47	Bevel	87992	1	<b>26721</b>
701ASN	10 µL	1.71/43	23s	0.64	Cone	80387	1	<b>21313</b>
701ASN	10 µL	1.71/43	26s	0.47	Cone	80388	1	<b>21312</b>
701ASN	10 µL	1.71/43	23s-26s	0.64-0.47	Cone	80393	1	<b>24573</b>
701ASN	10 µL 6/pk	1.71/43	23s	0.64	Cone	80390	6	<b>21317</b>
701ASN	10 µL 6/pk	1.71/43	26s	0.47	Cone	80389	6	<b>21316</b>
701ASN	10 µL 6/pk	1.71/43	23s-26s	0.64-0.47	Cone	80391	6	<b>24574</b>
701ASN	10 µL	1.71/43	23s	0.64	Bevel	80398	1	<b>26715</b>
701ASN	10 µL	1.71/43	26s	0.47	Bevel	80399	1	<b>26722</b>
<b>Microliter Syringes - Removable Needle</b>								
75ASRN	5 µL	1.71/43	23s	0.64	Cone	87957	1	<b>21321</b>
701ASRN	10 µL	1.71/43	23s	0.64	Cone	80357	1	<b>21323-U</b>
701ASRN	10 µL	1.71/43	26s	0.47	Cone	80358	1	<b>21322-U</b>
701ASRN	10 µL	1.71/43	23s-26s	0.64-0.47	Cone	80359	1	<b>24575</b>
<b>Gastight Syringes - Fixed Needle</b>								
175	5 µL	1.71/43	23s	0.64	Cone	80074	1	<b>26716</b>
175	5 µL 6/pk	1.71/43	23s	0.64	Cone	80090	6	<b>26700-U</b>
175	5 µL 6/pk	1.71/43	23s-26s	0.64-0.47	Cone	80092	6	<b>24577</b>
1701	10 µL	1.71/43	23s	0.64	Cone	80080	1	<b>26719</b>
1701	10 µL	1.71/43	23s-26s	0.64-0.47	Cone	80079	1	<b>24579</b>

## Agilent (7673, 7683 and 6850)

Manufacturer Model Number	Volume	Needle Length in./mm	Gauge	O.D. mm	Point Style	Manufacturer Part No.	Pkg. Size	Cat. No.
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### Hamilton (contd.)

#### Gastight Syringes - Fixed Needle

1701	10 µL 6/pk	1.71/43	23s	0.64	Cone	80094	6	<b>26701</b>
1701	10 µL 6/pk	1.71/43	23s-26s	0.64-0.47	Cone	80096	6	<b>24580</b>

#### Gastight Syringes - Removable Needle

1701	10 µL	1.71/43	23s	0.64	Cone	80087	1	<b>21325-U</b>
1701	10 µL	1.71/43	26s	0.47	Cone	80088	1	<b>21324</b>
1701	10 µL	1.71/43	23s-26s	0.64-0.47	Cone	80089	1	<b>24581</b>

### SGE

#### Fixed Needle

SK-5F-HP-0.47	5 µL	1.65/42	26	0.47	Cone	001804	6	<b>21910</b>
5F-HP-0.63	5 µL	1.65/42	23	0.63	Cone	001810	1	<b>21542</b>
SK-5F-HP-0.63	5 µL	1.65/42	23	0.63	Cone	001814	6	<b>21911</b>
10F-HP-0.47	10 µL	1.65/42	26	0.47	Cone	002800	1	<b>21541</b>
SK-10F-HP-0.47	10 µL	1.65/42	26	0.47	Cone	002804	6	<b>21912</b>
10F-HP-0.63	10 µL	1.65/42	23	0.63	Cone	002810	1	<b>21543</b>
SK-10F-HP-0.63	10 µL	1.65/42	23	0.63	Cone	002814	6	<b>21544</b>

#### Fixed Needle - Dual Gauge

5F-HP-0.63/0.47	5 µL	1.65/42	23-26	0.63/0.47	Cone	001822	6	<b>26887-U</b>
10F-HP-0.63/0.47	10 µL	1.65/42	23-26	0.63/0.47	Cone	002821	1	<b>29616-U</b>
10F-HP-0.63/0.47	10 µL	1.65/42	23-26	0.63/0.47	Cone	002822	6	<b>26889-U</b>

#### Removable Needle

0.5BR-HP-0.63	0.5 µL	1.65/42	23	0.63	Cone	000410	1	<b>24403</b>
5R-HP-0.47	5 µL	1.65/42	26	0.47	Cone	001805	1	<b>23963</b>
5R-HP-0.63	5 µL	1.65/42	23	0.63	Cone	001815	1	<b>23962</b>
10R-HP-0.47	10 µL	1.65/42	26	0.47	Cone	002805	1	<b>24417</b>
10R-HP-0.63	10 µL	1.65/42	23	0.63	Cone	002815	1	<b>24416</b>
25R-HP-0.63	25 µL	1.65/42	23	0.63	Cone	003865	1	<b>509701</b>

#### Gas Tight - Fixed Needle, Dual Gauge

10F-HP-GT-0.63/0.47	10 µL	1.65/42	23-26	0.63/0.47	Cone	002826	1	<b>26890-U</b>
SK-10F-HP-GT-0.63/0.47	10 µL	1.65/42	23-26	0.63/0.47	Cone	002827	6	<b>26891-U</b>
25F-HP-GT-0.63/0.47	25 µL	1.65/42	23-26	0.63/0.47	Cone	003668	1	<b>26892-U</b>
50F-HP-GT-0.63/0.47	50 µL	1.65/42	23-26	0.63/0.47	Cone	004668	1	<b>26893-U</b>
100F-HP-GT-0.63/0.47	100 µL	1.65/42	23-26	0.63/0.47	Cone	005668	1	<b>26894-U</b>

## CTC (A200S)

### Hamilton

#### Gastight Syringes - Fixed Needle

1701N	10 µL	2/51	22s	0.72	Blunt	203560	1	<b>29612-U</b>
1702N	25 µL	2/51	22s	0.72	Blunt	203563	1	<b>29613-U</b>
1710N	100 µL	2/51	22s	0.72	Blunt	203566	1	<b>29614-U</b>



## CTC (GC PAL Autosamplers)

Manufacturer Model Number	Volume	Needle Length in./mm	Gauge	O.D. mm	Point Style	Manufacturer Part No.	Pkg. Size	Cat. No.
<b>Hamilton (contd.)</b>								
<b>Microliter Syringes - Fixed Needle</b>								
7701.2N	1.2 µL	2/51	26P	---	Cone	203185	1	<b>28617-U</b>
75N	5 µL	2/51	26s	0.47	Cone	203189	1	<b>28613-U</b>
701N	10 µL	2/51	26s	0.47	Bevel	203072	1	<b>28614-U</b>
701N	10 µL	2/51	26s	0.47	Bevel	203269	6	<b>29607-U</b>
701N	10 µL	2/51	26s	0.47	Cone	203205	1	<b>28615-U</b>
701N	10 µL	2/51	23s	0.64	Bevel	203363	1	<b>29606-U</b>
701N	10 µL	2/51	23s	0.64	Cone	203361	1	<b>29603-U</b>
<b>Gastight Syringes - Fixed Needle</b>								
1702N	25 µL	2/51	26s	0.47	Cone	203043	1	<b>28649-U</b>
1702N Slim	25 µL	2/51	26s	0.47	Cone	203074	1	<b>29608-U</b>
1710N	100 µL	2/51	26s	0.47	Cone	203076	1	<b>28651-U</b>
1725N	250 µL	2/51	26s	0.47	Cone	203078	1	<b>28652-U</b>
1750N	500 µL	2/51	26s	0.47	Cone	203080	1	<b>28653-U</b>

## PerkinElmer (GC Autosystem and Clarus® 500)

### Hamilton

<b>Microliter Syringes - Fixed Needle</b>								
75ASN/PE	5 µL	2.75/70	26s	0.47	Blunt	88040	1	<b>24522</b>
75ASN/PE	5 µL	2.75/70	23s	0.64	Blunt	88035	1	<b>24523</b>

### SGE

<b>Fixed Needle</b>								
5F-PE-0.47	5 µL	2.75/70	26	0.47	Cone	001953	1	<b>509736</b>
5F-PE-0.63	5 µL	2.75/70	23	0.63	Cone	001954	1	<b>509744</b>
<b>Removable Needle (Plunger-in-needle)</b>								
0.5BR-PE-0.47	0.5 µL	2.75/70	26	0.47	Cone	000475	1	<b>24406</b>
0.5BR-PE-0.63	0.5 µL	2.75/70	23	0.63	Cone	000478	1	<b>24407</b>
<b>Gas Tight Syringes - Fixed Needle</b>								
5F-PE-GT-0.47	5 µL	2.75/70	26	0.47	Cone	001955	1	<b>21930-U</b>
5F-PE-GT-0.63	5 µL	2.75/70	23	0.63	Cone	001957	1	<b>21929-U</b>

## Shimadzu (AOC9 Autosampler)

### Hamilton

<b>Microliter Syringe - Removable Needle</b>								
701	10 µL	2/51	26s	0.47	Bevel	80330	1	<b>20697</b>

### SGE

<b>Fixed Needle - Flexible Plunger</b>								
10FX	10 µL	1.97/50	26	0.47	Bevel	002130	6	<b>23966</b>

## Shimadzu (AOC9 Autosampler and AOC 14, AOC 17, and AOC 20 GC Autosamplers)

Manufacturer Model Number	Volume	Needle Length in./mm	Gauge	O.D. mm	Point Style	Manufacturer Part No.	Pkg. Size	Cat. No.
<b>SGE</b>								
<b>Removable Needle - Flexible Plunger</b>								
10RX	10 µL	1.97/50	26	0.47	Bevel	002180	6	<b>23967</b>
<b>Removable Needle</b>								
0.5BR-S(9)-0.63	10 µL	1.97/50	26	0.47	Cone	002885	1	<b>509760</b>
<b>Fixed Needle</b>								
10F-S-0.47	5 µL	1.65/42	26	0.47	Cone	001987	1	<b>29619-U</b>
10F-S-0.63	5 µL	1.65/42	23	0.63	Cone	001988	1	<b>29618-U</b>
<b>Removable Needle</b>								
10R-S-0.47	10 µL	1.65/42	26	0.47	Cone	002897	1	<b>24418</b>
10R-S-0.63	10 µL	1.65/42	23	0.63	Cone	002898	1	<b>24419</b>
<b>Gas Tight - Removable Needle</b>								
10R-S-GT-0.63	10 µL	1.65/42	23	0.63	Cone	002902	1	<b>29621-U</b>

## Thermo Finnigan Autosamplers

### Hamilton

<b>Microliter Syringes - Fixed Needle</b>								
701	10 µL	2/51	26s	0.47	Bevel	80300	1	<b>20734</b>
701	10 µL	2/51	26s	0.47	Bevel	80366	6	<b>20779</b>
701	10 µL	2/51	26s	0.47	Cone tip, Side-port	80339	1	<b>24532</b>
<b>Microliter Syringes - Removable Needle</b>								
701	10 µL	2/51	26s	0.47	Bevel	80338	1	<b>21357</b>

## Varian Autosamplers

### SGE

<b>Varian 8035, 8100, and 8200 GC Autosamplers – Fixed Needle</b>								
10F-VA8X-11	10 µL	1.97/50	26	0.47	Bevel	002950	1	<b>29617-U</b>
<b>Varian 8035, 8100, and 8200 GC Autosamplers - Removable Needle</b>								
10R-VA8X-11	10 µL	2.09/53	25	0.5	Cone tip, Side-port	002924	1	<b>24421</b>
<b>SGE Replacement Needles and Plungers for Varian Syringes</b>								
for Varian 8035	---	.09/53	25	0.5	Bevel	037776	2	<b>24444</b>
for Varian 8100	---	2.09/53	25	0.5	Cone tip, Side-port	037777	1	<b>24445</b>
Replacement plunger for Varian 10 µL syringes	---	---	---	---	---	031218	1	<b>21924</b>

## GC Autosampler Vials

A critical component to a successful chromatography analysis is the autosampler vial. Supelco offers autosampler vials in several configurations to assist in maintaining sample integrity.

- Available with crimp seals or screw caps
- Available in clear or amber glass (amber glass protects sensitive samples from exposure to UV light)
- Silanized glass available in some configurations (silanization prevents adsorption on glass surfaces)



## Crimp Top Vials

Description	Pack Size	Cat. No.	Pack Size	Cat. No.
<b>12 x 32 mm, 6.0 mm Opening</b>				
<b>Vials</b>				
2.0 mL, Clear glass, 6.0 mm opening, crimp top	100	<b>SU860055</b>	1000	<b>854964</b>
2.0 mL, Amber glass, 6.0 mm opening, crimp top	100	<b>SU860063</b>	1000	<b>854981</b>
2.0 mL, Clear glass, 6.0 mm opening, crimp top, with marking spot	100	–	1000	<b>854500</b>
2.0 mL, Clear glass, 6.0 mm opening, crimp top, silanized	100	<b>27060-U</b>	1000	<b>27061</b>
2.0 mL, Amber glass, 6.0 mm opening, crimp top, silanized	100	<b>27225-U</b>	1000	<b>27216</b>
2.0 mL, Amber glass, 6.0 mm opening, crimp top, with marking spot	100	<b>854998</b>	–	–
1.5 mL, Maximum recovery vials, clear glass	100	<b>29298-U</b>	–	–
1.1 mL, Clear glass, conical bottom (requires support 27335)	100	<b>27310</b>	1000	<b>27311</b>
0.1 mL, Limited volume vials, clear glass	100	<b>24714</b>	–	–
<b>Inserts for 6.0mm vials</b>				
0.1 mL Glass insert with bottom spring, 6 x 28 mm	100	<b>SU860066</b>	1000	<b>854110</b>
0.1 mL Glass insert, conical, 6 x 31 mm	100	<b>SU860067</b>	1000	<b>854988</b>
0.25 mL Glass insert, conical, 6 x 31 mm	100	<b>24717</b>	1000	<b>24718</b>
0.35 mL Glass insert, shell style, 6 x 31 mm	100	<b>24715</b>	1000	<b>24716</b>
<b>11mm Crimp caps</b>				
Aluminum, clear, 5.5 mm opening, TEF/natural rubber, 1.0 mm thick	100	<b>854140</b>	1000	<b>854980-U</b>
Aluminum, green, 5.5 mm opening, TEF/natural rubber, 1.0 mm thick	–	–	1000	<b>854142</b>
Aluminum, red, 5.5 mm opening, TEF/natural rubber, 1.0 mm thick	–	–	1000	<b>854144</b>
Aluminum, blue, 5.5 mm opening, TEF/natural rubber, 1.0 mm thick	100	<b>854187</b>	–	–
Aluminum, gold, 5.5 mm opening, TEF/natural rubber, 1.0 mm thick	100	<b>854188</b>	–	–
Aluminum, clear, 5.5 mm opening, PTFE/white silicone, 1.3 mm thick	100	<b>SU860094</b>	1000	<b>SU860016</b>
Aluminum, clear, 5.5 mm opening, red PTFE/white silicone/red PTFE, 1.0 mm thick	100	<b>SU860080</b>	–	–
<b>Convenience kits</b>				
2.0 mL Clear vials, with PTFE/red rubber cap, unassembled	100	<b>27239</b>	1000	<b>27240-U</b>
2.0 mL Amber vials, with PTFE/red rubber cap, unassembled	100	<b>27241</b>	1000	<b>27242-U</b>

## Snap Top Vials

### 12 x 32 mm, 6.0 mm Opening

<b>Vials</b>				
2.0 mL Clear glass, 6.0 mm opening	100	<b>SU860068</b>	1000	<b>854974</b>
2.0 mL Amber glass, 6.0 mm opening	100	<b>SU860089</b>	1000	<b>854993</b>
2.0 mL Clear glass, 6.0 mm opening, with marking spot	100	<b>SU860081</b>	–	–
2.0 mL Amber glass, 6.0 mm opening, with marking spot	100	<b>SU860082</b>	–	–

## Snap Top Vials

Description	Pack Size	Cat. No.	Pack Size	Cat. No.
<b>12 x 32 mm, 6.0 mm Opening (contd.)</b>				
<b>Inserts for 6.0mm vials</b>				
0.1 mL Glass insert with bottom spring, 6 x 28 mm	100	<b>SU860066</b>	1000	<b>854110</b>
0.1 mL Glass insert, conical, 6 x 31 mm	100	<b>SU860067</b>	1000	<b>854988</b>
0.25 mL Glass insert, conical, 6 x 31 mm	100	<b>24717</b>	1000	<b>24718</b>
0.35 mL Glass insert, shell style, 6 x 31 mm	100	<b>24715</b>	1000	<b>24716</b>
<b>Snap ring caps</b>				
Polyethylene snap caps, 6 mm opening, TEF/natural rubber liner, 1.0 mm thick	100	<b>SU860090</b>	1000	<b>854975</b>
Polyethylene snap caps, 6 mm opening, PTFE/silicone liner, 1.3 mm thick	100	<b>SU860093</b>	–	–
Polypropylene snap caps with PTFE liner, 0.3 mm thick	100	<b>24754</b>	–	–
Polypropylene snap caps with PTFE/silicone with slit, 1.0 mm thick	100	<b>27426</b>	–	–
Polypropylene snap caps with PTFE/silicone with starburst, 1.0 mm thick	100	<b>27427</b>	–	–
Polypropylene snap caps with PTFE/silicone/PTFE with starburst, 1.0 mm thick	100	<b>27428</b>	–	–
Polypropylene snap caps with PTFE/silicone/PTFE, 1.0 mm thick	100	<b>24760-U</b>	–	–

## Screw Cap Vials

### 12 x 32 mm, 4.6 mm Opening, 8/425 Thread

<b>Vials</b>				
2.0 mL, Amber glass, 4.6 mm opening	100	<b>SU860083</b>	1000	<b>854983</b>
2.0 mL, Clear glass, 4.6 mm opening, with marking spot	100	<b>854171</b>	–	–
2.0 mL, Amber glass, 4.6 mm opening, with marking spot	100	<b>854172</b>	–	–
1.1 mL, Clear glass, tapered bottom, Chromacol (requires sleeve 27335)	100	<b>27317</b>	1000	<b>27318</b>
<b>Inserts for 4.6mm vials</b>				
0.1 mL Glass insert with bottom spring, 5 x 29 mm	100	<b>24707</b>	–	–
0.35 mL Glass insert, shell style, 5 x 31 mm	100	<b>24701</b>	1000	<b>24702</b>
<b>Caps with septa</b>				
Polypropylene cap, black, 5.5 mm centre hole, TEF/natural rubber, 1.3 mm thick	100	<b>SU860091</b>	1000	<b>854984</b>
Polypropylene cap, black, 5.5 mm centre hole, red PTFE/white silicone, 1.3 mm thick	100	<b>SU860076</b>	–	–
Polypropylene cap, black, 5.5 mm centre hole, red PTFE/cream silicone, 1.3 mm thick	–	–	1000	<b>854985</b>
<b>Caps without septa</b>				
Phenolic cap, black, open top	100	<b>27094-U</b>	–	–
Polypropylene cap, black, open top	100	<b>27052</b>	1000	<b>24764</b>
Phenolic cap, solid caps with PTFE liner	100	<b>27091-U</b>	–	–
Phenolic cap, solid cap with aluminum liner	100	<b>27092-U</b>	–	–
<b>Septa</b>				
Septa, red PTFE/silicone/red PTFE, 1.0 mm thick	100	<b>27096-U</b>	1000	<b>23182-U</b>
Septa, beige PTFE/silicone, 1.5 mm thick	100	<b>27095-U</b>	1000	<b>33213</b>
Septa, red PTFE/white silicone, 1.5 mm thick	100	<b>27097-U</b>	1000	<b>23243</b>
Septa, PTFE/silicone with slit, 1.0 mm thick	100	<b>27098-U</b>	1000	<b>24881</b>
Septa, black viton, 0.75 mm thick	100	<b>27350-U</b>	–	–
Septa, PTFE/red rubber, 1.3 mm thick	100	<b>27132</b>	–	–
Liner, white PTFE, 0.25 mm thick (for use with solid top cap)	100	<b>27133</b>	–	–



## Screw Cap Vials

Description	Pack Size	Cat. No.	Pack Size	Cat. No.
<b>12 x 32 mm, 6.0 mm Opening, 9 mm Thread</b>				
<b>Vials</b>				
2.0 mL, Clear glass, 6.0 mm opening, with marking spot	100	<b>854165</b>	–	–
2.0 mL, Amber glass, 6.0 mm opening, with marking spot	100	<b>SU860033</b>	–	–
<b>Inserts for 6.0mm vials</b>				
0.1 mL, Glass insert with bottom spring, 6 x 28 mm	100	<b>SU860066</b>	1000	<b>854110</b>
0.1 mL, Glass insert, conical, 6 x 31 mm	100	<b>SU860067</b>	1000	<b>854988</b>
0.25 mL, Glass insert, conical, 6 x 31 mm	100	<b>24717</b>	1000	<b>24718</b>
0.35 mL, Glass insert, shell style, 6 x 31 mm	100	<b>24715</b>	1000	<b>24716</b>
<b>Caps</b>				
Blue polypropylene cap, 6.0 mm centre hole with TEF/natural rubber septa, 1.0 mm thick	100	<b>854161</b>	1000	–
Blue polypropylene cap, 6.0 mm centre hole with red PTFE/white silicone septa, 1.0 mm thick	100	<b>SU860092</b>	1000	<b>SU860019</b>
Blue polypropylene cap, 6.0 mm centre hole with red PTFE/white silicone/red PTFE septa, 1.0 mm thick	100	<b>SU860079</b>	1000	<b>SU860020</b>
<b>12 x 32 mm, 6.0 mm Opening, 10/425 Thread</b>				
<b>Vials</b>				
2.0 mL, Clear glass, 6.0 mm opening	100	<b>27265</b>	2000	<b>27266</b>
2.0 mL, Clear glass, 6.0 mm opening, with 0.25 mL glass insert	100	<b>27418</b>	–	–
2.0 mL, Amber glass, 6.0 mm opening	100	<b>27267-U</b>	1000	–
2.0 mL, Amber glass with step, 6.0 mm opening	100	<b>27406</b>	–	–
2.0 mL, Amber glass, 6.0 mm opening, with 0.25 mL glass insert	100	<b>27419</b>	–	–
1.0 mL, Polypropylene, 6.0 mm opening	100	<b>27269</b>	1000	<b>27270-U</b>
0.75 mL, Polypropylene, 6.0 mm opening	100	<b>27411</b>	–	–
0.5 mL, Polypropylene, 6.0 mm opening	100	<b>27410</b>	–	–
<b>Inserts for 6.0mm vials</b>				
0.1 mL, Glass insert with bottom spring, 6 x 29 mm	100	<b>24721</b>	–	–
0.25 mL, Glass insert, conical, 6 x 31 mm	100	<b>24717</b>	1000	<b>24718</b>
0.35 mL, Glass insert, shell style, 6 x 31 mm	100	<b>24715</b>	1000	<b>24716</b>
<b>Caps for 6.0 mm opening vials</b>				
Polypropylene, black, open top	100	<b>27271</b>	1000	<b>27272-U</b>
Polypropylene, yellow, open top	100	<b>27413</b>	–	–
Polypropylene, white, open top	100	<b>27414</b>	–	–
Polypropylene, black, open top with PTFE/silicone septa, 1.5 mm thick	100	<b>27273</b>	–	–
<b>Septa for 6.0 mm opening vials</b>				
Septa, PTFE/silicone/PTFE, 1.0 mm thick	100	<b>27275</b>	1000	<b>27276</b>
Septa, red PTFE/silicone, 1.5 mm thick	100	<b>27277</b>	1000	<b>27278</b>
Septa, PTFE/silicone with slit, 1.0 mm thick	100	<b>27279</b>	1000	<b>27280-U</b>



## Vial Accessories

- Hand Crimper – secures vial closure with a consistent and dependable seal
- Decapper – for quick and easy removal of an aluminum seal
- Vial Rack – convenient storage of screw and crimp cap vials
- Glass Magnet – keeps individual vials in place to prevent them from being accidentally knocked over



Description	Pkg	Cat. No.
Hand Crimper, for use with 11 mm crimp seals	1 ea	<b>33195</b>
Pliers-Type Decapper, for use with 11 mm crimp seals	1 ea	<b>33281</b>
Vial Rack, for 12 x 32 mm vials (holds 50 vials)	5 ea	<b>23207</b>
Glass Magnet, 4 inch diameter	2 ea	<b>57270</b>

## PID Lamps

The photoionization detector (PID) lamp is a valuable tool for chromatographers and others investigating the presence of volatile organic compounds (VOCs). In fact, the PID continues to be the preferred choice for detecting VOCs due to its fast response time and sensitivity.



- Can detect volatiles as low as 1 ppb
- Emits very stable, precise photon energy
- More selective alternative than the flame ionization detector (FID)

Description	Chamber Gas	Cat. No.
Model 108, 10.0/10.6 eV	Krypton	<b>22626</b>
Model 108-BTEX, 10.0/10.6 eV	Krypton	<b>23129-U</b>
Model 103C, 10.0/10.6 eV	Krypton	<b>22631</b>
PID Window Cleaning Kit	---	<b>22627</b>

## Wire Brush Detector Cleaning Kit

A collection of wire brushes specially tailored to clean FIDs and injection ports that accept 1/4 inch columns. The brass brushes prevent scratching and marring of expensive FID components.

Kit includes:

- Two detector brushes
- One injector port tube brush
- Brass toothbrush (for cleaning jets)
- A piece of emery (for electrical contacts)



Description	Pkg	Cat. No.
For use with HP 5700, 5830	1 ea	<b>22403</b>
For use with Varian 3700, 1400, and 2700	1 ea	<b>22404</b>



## Purifiers

Gas purification begins by determining the contaminants that need to be removed from the particular gas stream, levels to which the contaminants must be reduced, flow and pressure needs of the system, and the desired frequency of purifier change-out. Multiple purifiers may be necessary to remove the desired levels of contaminants to adequately protect the column and detector. Purifiers for most applications are listed below. Other purifiers are available, and can be found in our catalog and on our web site.

### OMI™ (Oxygen Moisture Indicating) Polishing Purifier

- Polishing purifier that removes many contaminants that other upstream purifiers miss
- Simultaneously removes moisture, oxygen, carbon monoxide, carbon dioxide, most sulfur compounds, most halogen compounds, alcohols, and phenols to less than 10 ppb
- Detects moisture and oxygen in hydrogen, helium, nitrogen, argon, and argon/methane
- As little as 1 ppm of moisture or oxygen will change the indicating resin from black to brown
- The indicating resin is licensed exclusively to Supelco for use in chromatographic applications
- Inert glass body prevents diffusion of ambient room contaminants into the carrier gas stream
- See-through polycarbonate holder provides safety



### Supelpure™ HC Hydrocarbon Trap

- Activated charcoal purifier that adsorbs hydrocarbons and other contaminants from carrier gas, compressed air, and hydrogen
- When the total hydrocarbons in the incoming gas average 100 ppm, operates efficiently for approximately six months



### High Capacity Gas Purifier

- Removes moisture, oxygen, carbon monoxide, and carbon dioxide
- No other purifier removes both moisture and oxygen in such large quantities
- Removes up to 35 liters of moisture or 14 liters of oxygen
- Clamshell heating unit has been specifically designed to ensure maximum gas purity
- Purifier tube is heated inside an oven where moisture and oxygen react with the reactant material in the tube
- Irreversible chemical reaction prevents contaminants from returning to the gas stream even when the purifier tube reaches saturation



### Molecular Sieve 5A Water Vapor Trap

- Can reduce moisture in the gas stream to final concentrations less than 0.1 ppm
- Also preferred for use on in-house gas lines where moisture content could be high
- Offers greater working capacity than similar molecular sieves



## Supelpure-O Oxygen Trap

- Reduces oxygen to less than 0.5 ppm when the level in the incoming gas does not exceed 10 ppm
- Oxygen-removing catalyst coated on a molecular sieve, will also trap significant amounts of moisture
- 120 cc purifier removes up to 1.5 g of moisture
- 750 cc purifier removes up to 10.2 g of moisture



## Supelco Helium Purifier

- Incorporates a highly effective, high capacity adsorbent material to remove hydrocarbons, moisture, oxygen, carbon monoxide, and carbon dioxide from helium streams
- Ideal for any GC or GC-MS application where high purity helium is essential
- Output gas is 99.99999% pure
- Output purity: <100 ppb total of all contaminants, <30 ppb hydrocarbons (as methane), <20 ppb moisture, <2 ppb oxygen, <20 ppb carbon monoxide, <20 ppb carbon dioxide



## Super Clean™ Base-Plate Design Purifiers

- Specially designed base plate has needle valves that instantly close to provide a diffusion-proof seal when the purifier is removed
- Purifier replacement can be performed in seconds without exposing the gas lines to room air
- Purifiers remove contaminants to produce better than 6.0 gas quality (99.9999% pure), independent of the purity of the incoming gas



## Carbon Dioxin Trap

- Selectively removes carbon dioxide from gas streams
- Contains sodium hydroxide nonfibrous silicate media
- Media changes color from greenish-brown to white as carbon dioxide is absorbed
- Media can absorb 20-30% of its weight in carbon dioxide before reaching saturation
- Media evolves water as carbon dioxide is absorbed (recommend to install a water vapor trap downstream)



## Economy Water Vapor Trap

- Economical choice for moisture removal for compressed air service to pneumatically-controlled devices
- Contains a mixture of Molecular Sieves 4A and 13X
- Purifier body is clear polycarbonate
- Not for use with carrier gases due to permeability of purifier body



## Recommended Purifier Options per Application

**Carrier gas:** need to remove hydrocarbons, moisture, and oxygen

- Option 1: Supelpure HC, High Capacity Gas Purifier, OMI-2
- 2: Supelpure HC, Molecular Sieve 5A, Supelpure-O, OMI-2
- 3: Supelco Helium Purifier, OMI-2
- 4: Super Clean hydrocarbon, Super Clean moisture, Super Clean oxygen, OMI-2
- 5: Super Clean dual, Super Clean oxygen, OMI-2
- 6: Super Clean triple, OMI-2

**Compressed air (for FIDs):** need to remove hydrocarbons and moisture

- Option 1: Supelpure HC, Molecular Sieve 5A
- 2: Super Clean hydrocarbon, Super Clean moisture
- 3: Super Clean dual

**Hydrogen fuel gas (for FIDs):** need to remove hydrocarbons

- Option 1: Supelpure HC
- 2: Super Clean hydrocarbon

**Compress air (for pneumatic control):** need to remove moisture

- Option 1: Economy water vapor trap

# Purifiers

Description	Design	Indicating?	Fittings	Cat. No.
<b>Polishing Purifiers (remove many contaminants that upstream purifiers miss)</b>				
OMI-2 purifier tube	In-line (1)	Yes (2)	n/a	<b>23906</b>
OMI-4 purifier tube	In-line (1)	Yes (2)	n/a	<b>23909</b>
<b>Hydrocarbon-only Removing Purifiers</b>				
Supelpure HC hydrocarbon trap, 120 cc	In-line	No	1/8 inch	<b>22445-U</b>
Supelpure HC hydrocarbon trap, 120 cc	In-line	No	1/4 inch	<b>22446</b>
Supelpure HC hydrocarbon trap, 750 cc	In-line	No	1/4 inch	<b>24518</b>
Supelpure HC hydrocarbon trap, 750 cc	In-line	No	1/2 inch	<b>24519</b>
Super Clean hydrocarbon trap	Base-plate (3)	No	n/a	<b>SU861023</b>
<b>High Capacity Moisture and Oxygen Removing Purifiers</b>				
High Capacity Gas Purifier, 110 V	In-line	No	1/8 inch	<b>23800-U</b>
High Capacity Gas Purifier, 230 V	In-line	No	1/8 inch	<b>23801</b>
High Capacity replacement purifier tube	In-line	No	1/8 inch	<b>22396</b>
High Capacity Gas Purifier, 110 V	In-line	No	1/4 inch	<b>23802</b>
High Capacity Gas Purifier, 230 V	In-line	No	1/4 inch	<b>23803</b>
High Capacity replacement purifier tube	In-line	No	1/4 inch	<b>22398</b>
<b>Moisture-only Removing Purifiers</b>				
Molecular Sieve 5A water vapor trap, 200 cc	In-line	No	1/8 inch	<b>20619</b>
Molecular Sieve 5A water vapor trap, 200 cc	In-line	No	1/4 inch	<b>20618</b>
Molecular Sieve 5A water vapor trap, 750 cc	In-line	No	1/4 inch	<b>23991</b>
Molecular Sieve 5A water vapor trap, 750 cc	In-line	No	1/2 inch	<b>23992</b>
Super Clean moisture trap	Base-plate (3)	Yes	n/a	<b>SU861021</b>
Economy water vapor trap, 400 cc	In-line	Yes	1/8 inch	<b>23987</b>
Economy water vapor trap, 400 cc	In-line	Yes	1/4 inch	<b>23988</b>
<b>Oxygen-only Removing Purifiers</b>				
Supelpure-O oxygen trap, 120 cc	In-line	No	1/8 inch	<b>22449</b>
Supelpure-O oxygen trap, 120 cc	In-line	No	1/4 inch	<b>22450-U</b>
Supelpure-O oxygen trap, 750 cc	In-line	No	1/4 inch	<b>503088</b>
Supelpure-O oxygen trap, 750 cc	In-line	No	1/2 inch	<b>503096</b>
Super Clean oxygen trap	Base-plate	Yes	n/a	<b>SU861022</b>
<b>Triple Purifiers (remove hydrocarbons, moisture, and oxygen)</b>				
Supelco Helium purifier	In-line	No	1/8 inch	<b>27600-U</b>
Supelco Helium purifier	In-line	No	1/4 inch	<b>27601-U</b>
Super Clean triple purifier	Base-plate (3)	Yes (4)	n/a	<b>SU861026</b>
Super Clean triple purifier, helium specific	Base-plate (3)	Yes (4)	n/a	<b>SU861027</b>
<b>Dual Purifiers (remove hydrocarbons and moisture)</b>				
Super Clean dual purifier	Base-plate (3)	Yes (4)	n/a	<b>SU861025</b>
<b>Carbon Dioxide-only Removing Purifiers</b>				
Carbon dioxide trap, 100 cc	In-line	Yes	1/8 inch	<b>503185</b>
Carbon dioxide trap, 100 cc	In-line	Yes	1/4 inch	<b>503193</b>
Carbon dioxide trap, 250 cc	In-line	Yes	1/8 inch	<b>503207</b>
Carbon dioxide trap, 250 cc	In-line	Yes	1/4 inch	<b>503215</b>

1. Must be installed into a reusable holder prior to use.  
2. Indicating for moisture and oxygen.

3. Must be installed into a reusable base-plate prior to use.  
4. Not indicating for hydrocarbons.

# Purifiers

## Purifier Accessories

Description	Cat. No.
<b>OMI Holders</b>	
OMI-2 holder, 1/8 inch stainless steel fittings	<b>23921</b>
OMI-4 holder, 1/8 inch stainless steel fittings	<b>23926</b>
<b>Super Clean Base-Plates</b>	
One position, 1/8 inch brass fittings	<b>SU861011</b>
Two position, 1/8 inch brass fittings	<b>SU861012</b>
Three position, 1/8 inch brass fittings	<b>SU861013</b>
<b>Mounting Clips</b>	
For 100 cc traps, 1 ea	<b>502936</b>
For 120 cc traps, 1 ea	<b>23993</b>
For 200 cc traps, 1 ea	<b>503231</b>
For 400 cc traps, 1 ea	<b>23990</b>
For 750 cc traps, 1 ea	<b>24983</b>
<b>Purifier Refills</b>	
Supelpure HC hydrocarbon trap refill, non-indicating, 400 cc	<b>22451</b>
Molecular Sieve 5A water vapor trap refill, non-indicating, 220 g	<b>20298</b>
Carbon dioxide trap refill, indicating, 500 cc	<b>503223</b>
Economy water vapor trap refill, indicating, 475 cc	<b>23989</b>

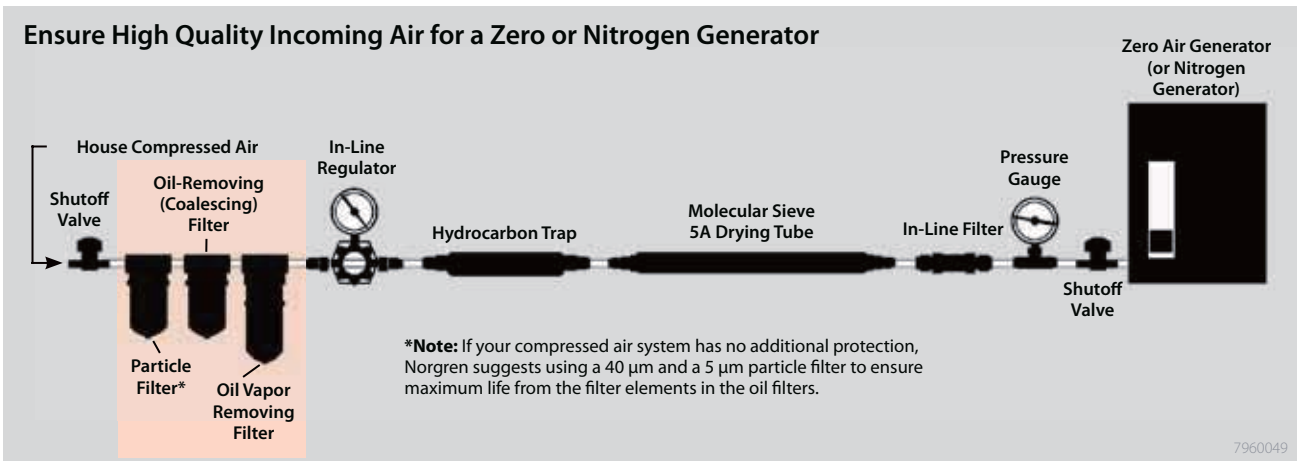


# Norgren® Particle and Oil Filters

Airborne dust can be drawn into the intake of an air compressor. These dust particles as well as any oils released from an air compressor can damage any downstream gas generator. Norgren filters are designed to remove solid and liquid particles in addition to oil aerosols. The oil-removing and oil vapor-removing filters must be protected with a particle filter upstream.

- Install between air compressors and gas generators
- Designed to be used together as a three- or four-filter system
- Elements are easily replaced

Description	Fittings	Cat. No.
Particle filter, 40 µm	1/4 inch female NPT	<b>24990-U</b>
Particle filter, 5 µm	1/4 inch female NPT	<b>24992</b>
Oil-removing filter	1/4 inch female NPT	<b>24994</b>
Oil vapor-removing filter	3/8 inch female NPT	<b>24996</b>



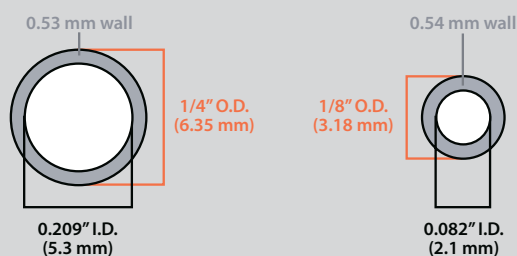
# Tubing, Cutters, and Fittings



Many types of tubing are available to supply a variety of gases for gas chromatography systems. Supelco recommends using stainless steel for the most sensitive applications, such as high resolution MS detection (MS-MS, ion trap, or TOF). More economical copper tubing is recommended for all other GC and GC-MS plumbing needs. All of our tubing is specially cleaned to remove any residue. Other tubing choices are available and can be found in our catalog and on our web site.

## Premium Grade 304 Stainless Steel Tubing

### Stainless Steel Tubing Dimensions



- Virtually impermeable to the diffusion of room air through the tubing walls
- Undergoes a proprietary cleaning procedure to remove all active sites and to ensure inertness
- Best choice for the most sensitive applications, such as high resolution MS detection (MS-MS, ion trap, or TOF)

## Cleaned Copper Tubing

- Most commonly used tubing for gas chromatography
- Cleaned according to ASTM B-280 plus a proprietary Supelco cleaning procedure, resulting in tubing that exceeds instrument manufacturers' requirements
- Best choice for most GC and GC-MS plumbing needs

Description	Cat. No.
<b>Premium Grade 304 Stainless Steel Tubing</b>	
50 ft. x 1/4 inch (6.35 mm) O.D. x 0.209 inch (5.3 mm) I.D.	<b>20527</b>
50 ft. x 1/8 inch (3.18 mm) O.D. x 0.085 inch (2.1 mm) I.D.	<b>20526-U</b>
100 ft. x 1/16 inch (1.59 mm) O.D. x 0.030 inch (0.762 mm) I.D.	<b>20553</b>
<b>Cleaned Copper Tubing</b>	
50 ft. x 1/4 inch (6.35 mm) O.D. x 0.190 inch (4.83 mm) I.D.	<b>20489</b>
50 ft. x 1/8 inch (3.18 mm) O.D. x 0.065 inch (1.65 mm) I.D.	<b>20488</b>

## Tubing Cutters

Proper gas line connections are important for maximum chromatographic performance. Leaks, caused by a poor fit between tubing and the mating seat, can cause serious damage to GC columns. Therefore, it is critical for tubing to have crisp, clean ends.



- TC-20 is voltage selectable (110/220 V) and CE compliant
- TC-20 cuts 1/16, 1/8, or 1/4 inch copper or stainless steel
- Heavy duty cuts 1/8 or 1/4 inch copper or stainless steel
- Tubing bender – easily bends copper and stainless tubing up to 180° without kinking
- Tubing reamer – opens and rounds tubing after cutting



Description	Cat. No.
TC-20 Tubing Cutter (110/220 V)	<b>58539-U</b>
Heavy Duty Tubing Cutter	<b>20425-U</b>
1/8 inch O.D. Tubing Bender	<b>20422-U</b>
1/4 inch O.D. Tubing Bender	<b>20424-U</b>
Tubing Reamer	<b>20389</b>

## Swagelok® Tubing Fittings

A leak free system is the first requirement in a systematic approach to supplying quality gas to a chromatography system. Swagelok fittings combine superior design principles with close manufacturing tolerance and rigid quality to provide such a leak free connection. Some of the most popular items are listed. For a complete listing, please refer to our catalog and/or our web site.



Description	Cat. No.
Swagelok Fittings Kit	<b>22668-U</b>
Nuts Plus Front and Back Ferrules, brass, 1/8 inch, 10 of each	<b>22014</b>
Nuts Plus Front and Back Ferrules, stainless steel, 1/8 inch, 5 of each	<b>22040-U</b>
Tee, brass, 1/8 inch	<b>22020-U</b>
Tee, stainless steel, 1/8 inch	<b>22046</b>
On/off throttling valve, brass, 1/8 inch	<b>22138-U</b>
On/off throttling valve, stainless steel, 1/8 inch	<b>22139-U</b>
Toggle valve, brass, 1/8 inch	<b>22699</b>
Toggle valve, stainless steel, 1/8 inch	<b>22698</b>

## Valves and Gauges

### Diaphragm Shutoff Valve

- Multiple metal diaphragms provides a permanent seal
- Diaphragm prevents diffusion of air and moisture into gas flow
- Brass body
- Kel-F seat



P000208

Description	Pkg	Cat. No.
1/4 in. male NPT, 1/4 in. female NPT	1 ea	<b>23896</b>
1/4 in. male NPT	1 ea	<b>23897</b>

### Pressure Gauge

- Steel and copper alloy construction
- 2 inch diameter gauge
- Brass tee



P000209

Description	Pkg	Cat. No.
0-30 psi, in-line tee: 1/8 in.	1 ea	<b>20469</b>
0-60 psi, in-line tee: 1/8 in.	1 ea	<b>20470</b>
0-100 psi, in-line tee: 1/8 in.	1 ea	<b>22423</b>
0-30 psi, in-line tee: 1/8 in. male NPT	1 ea	<b>20393</b>
0-60 psi, in-line tee: 1/8 in. male NPT	1 ea	<b>20394</b>

### Pressure Gauge Kit

- 0-100 psi
- 1/8 inch tee
- Includes 1/2 meter of copper tubing



P000210

Description	Pkg	Cat. No.
Pressure gauge kit	1 ea	<b>20392</b>

### Related Information

For more information on plumbing gas lines to a GC, whether a single system or a complete facility, request T196898 AYW (Gas Management Systems for GC), or contact Supelco Technical Service at 800-359-3041 (US and Canada only), 814-359-3041, or techservice@sial.com

## Leak Detectors

Using liquids to detect gas leaks in a gas chromatography system can lead to unforeseen problems. Small amounts of liquid can seep into fittings, or through the septum, and damage the column. Electronic leak detectors are a much better alternative than liquid detectors, and can easily and quickly pinpoint gas leaks that are too small to detect with a soap solution. Liquid leak detectors are still available, and can be found in our catalog and on our web site.



P001377

### GOW-MAC® Gas Leak Detectors

- Easy to operate
- Allow leaks to be found quickly without risk of contaminating the system
- Provides maximum usable sensitivity with high signal to noise ratio amplification
- Operates on the same principle as a thermal conductivity detector
- Will respond to any gas mixture that has a thermal conductivity value different from that of air
- Include internal, rechargeable batteries and charger

Description	Cat. No.
Model 21-070, miniature, 115 V	<b>22807</b>
Model 21-072, miniature, 230 V	<b>22808</b>
Carrying case for 22807 or 22808	<b>22809</b>

# Pressure Regulators

For all chromatographic applications, it is recommended to use a regulator that does not allow contaminants to enter the gas stream. Our HP, HP+, and UHP regulators meet this stringent demand. We only offer regulators with bar stock bodies. Compared to forged body regulators, ours have:

- Smoother internal surfaces resulting in more efficient gas flows (no eddy swirling), and that contaminants will not cling to
- Much smaller internal volumes (about 20X less) that take less time to purge

Each of our cylinder regulators also has two additional features, which help keep contaminants from entering the regulator body.

- A check valve in the inlet fitting, activated during cylinder change-out
- A shut-off valve on the outlet side that can be closed when replacing downstream components

## Two-Stage Cylinder Regulators

- Reduces cylinder pressure to a factory-set intermediate pressure, then to a user-set final pressure
- Use when the gas cylinder is located within 25 feet of the instrumentation



E001123

## Single-Stage Cylinder Regulators

- Reduces cylinder pressure to a user-set intermediate pressure
- Use when the gas cylinder is located more than 25 feet from the instrumentation
- Requires an in-line regulator to be installed within 25 feet of the instrumentation



E001124

## In-line Regulators

- Reduces an intermediate pressure to a user-set final pressure
- Install within 25 feet of the instrumentation



P000211

### Cylinder Pressure Regulator Features

Feature	HP	HP+	UHP
Check valve in inlet	•	•	•
Bar stock nickel-plated brass body	•	•	•
Stainless steel diaphragm with captive Teflon seal	•	•	
Stainless steel diaphragm with metal-to-metal seal			•
Nickel-plated zinc bonnets	•	•	
Machined brass bonnets (panel-mount capable)			•
2 1/2 inch diameter gauges	•	•	•
Needle shut-off valve	•		
Diaphragm shut-off valve		•	•
1/8 inch male stainless steel Swagelok outlet fitting	•	•	•

## Pressure Regulators

Description	Grade	Maximum Inlet Pressure (psi / bar)	Maximum Delivery Pressure (psi / bar)	Cat. No.
<b>CGA 580 Cylinders (for helium, nitrogen, and argon)</b>				
Two-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29557-U</b>
Single-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29556-U</b>
Two-stage	HP+	3000 / 204	0-100 / 0-6.9	<b>29574-U</b>
Two-stage	HP+	3000 / 204	0-150 / 0-10.3	<b>29575-U</b>
Single-stage	HP+	3000 / 204	0-100 / 0-6.9	<b>29573-U</b>
Two-stage	UHP	3000 / 204	0-100 / 0-6.9	<b>29585-U</b>
Single-stage	UHP	3000 / 204	0-100 / 0-6.9	<b>29584-U</b>
<b>DIN 6 Cylinders (for helium, nitrogen, and argon)</b>				
Two-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29559-U</b>
Single-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29558-U</b>
Two-stage	HP+	3000 / 204	0-100 / 0-6.9	<b>29577-U</b>
Two-stage	HP+	3000 / 204	0-150 / 0-10.3	<b>29578-U</b>
Single-stage	HP+	3000 / 204	0-100 / 0-6.9	<b>29576-U</b>
Two-stage	UHP	3000 / 204	0-100 / 0-6.9	<b>29588-U</b>
Single-stage	UHP	3000 / 204	0-100 / 0-6.9	<b>29587-U</b>



## Pressure Regulators (contd.)

Description	Grade	Maximum Inlet Pressure (psi / bar)	Maximum Delivery Pressure (psi / bar)	Cat. No.
<b>CGA 350 Cylinders (for hydrogen, methane, and argon/methane)</b>				
Two-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29561-U</b>
Single-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29560-U</b>
Two-stage	HP+	3000 / 204	0-100 / 0-6.9	<b>29581-U</b>
Single-stage	HP+	3000 / 204	0-100 / 0-6.9	<b>29579-U</b>
Two-stage	UHP	3000 / 204	0-100 / 0-6.9	<b>29591-U</b>
Single-stage	UHP	3000 / 204	0-100 / 0-6.9	<b>29589-U</b>
<b>DIN 1 Cylinders (for hydrogen, methane, and argon/methane)</b>				
Two-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29563-U</b>
Single-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29562-U</b>
Two-stage	HP+	3000 / 204	0-100 / 0-6.9	<b>29583-U</b>
Single-stage	HP+	3000 / 204	0-100 / 0-6.9	<b>29582-U</b>
Two-stage	UHP	3000 / 204	0-100 / 0-6.9	<b>29593-U</b>
Single-stage	UHP	3000 / 204	0-100 / 0-6.9	<b>29592-U</b>
<b>CGA 320 Cylinders (for carbon dioxide)</b>				
Two-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29567-U</b>
Single-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29564-U</b>
<b>CGA 590 Cylinders (for compressed air)</b>				
Two-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29569-U</b>
Single-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29568-U</b>
<b>DIN 13 Cylinders (for compressed air)</b>				
Two-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29572-U</b>
Single-stage	HP	3000 / 204	0-100 / 0-6.9	<b>29571-U</b>
<b>In-line</b>				
Single-stage	HP	400 / 27	0-100 / 0-6.9	<b>23882</b>
Single-stage	UHP	400 / 27	0-100 / 0-6.9	<b>23884</b>

### Related Information

Interested in learning more? Here is a short list of technical and application pieces designed to assist you in meeting your analyses needs, available for download at no charge. Simply visit [sigma-aldrich.com/gc](http://sigma-aldrich.com/gc), or contact Supelco Technical Service at 800-359-3041 (US and Canada only), 814-359-3041, or [techservice@sial.com](mailto:techservice@sial.com)

Lit. Code	Type	Description
T401027 DWM	Product Information Sheet	Capillary Injector Products for Agilent Technologies GCs
T407082 JQV	Product Information Sheet	Molded Thermogreen LB-2 Septa
T196899 BBB	Bulletin	Capillary GC Inlet Liner Selection Guide
T408101 KOX	Product Information Sheet	FocusLiner Inlet Liners
T404081 HCH	Poster	Selecting The Appropriate Inlet Liner
T100741 AXR	Bulletin	Ferrules and Fittings for Packed and Capillary GC
T308184 KPP	Application Note	Hydrogen: Superior Carrier Gas to Helium
T197918 BIT	Bulletin	Selecting Purifiers for Gas Chromatography
T196898 AYW	Bulletin	Gas Management Systems for GC
T407110 JXP	Brochure	Gas Generators
T112853 AIP	Bulletin	Capillary GC Troubleshooting Guide



# Gas Generators

Laboratory gas generators are a great alternative to gas cylinders. In addition to being a much more sensible source of gas from a cost standpoint, generators are safer, cosmetically better, take up less space, and do not require the labor needed to transport bulky cylinders into the lab. Supelco offers gas generators from Parker domnick hunter. Models for hydrogen, zero air, and nitrogen are listed below. Other gas generators can be found in our catalog and on our web site.

## Parker PEM and ChromGas® Hydrogen Generators

- Easy to use, an electrical outlet and deionized water are all that are required to generate hydrogen for weeks of continuous operation
- Minimal maintenance required
- Uses a solid polymer electrolyte, rather than a liquid electrolyte, eliminating the need for toxic liquids
- Built-in sensing circuit shuts the generator down if a leak is detected
- Can be used with any instrumentation requiring fuel grade hydrogen
- Connections: 1/8" compression fitting
- Delivery purity: 99.9995% (99.99997% for Model 9800)



E000959

## Parker ChromGas Zero Air Generators



P000945

- Easy to use, an electrical outlet and a compressed air source are all that are required to produce ultra-high purity zero air
- Minimal maintenance required
- Recommended for use with flame ionization detectors to stabilize baselines and improve detection
- Inlet air pressure: 2-125 psi
- Connections: 1/8" compression fitting
- Delivery purity: <0.1 ppm total hydrocarbons (as methane)

## domnick hunter® NITROX™ Hydrocarbon-free Nitrogen Generators

- Employs pressure swing adsorption technology to produce a continuous supply of hydrocarbon-free nitrogen.
- Integral oil-free air compressor eliminates need for a separate air compressor
- Filtered compressed air goes across a bed of carbon molecular sieve, which selectively removes hydrocarbons, moisture, oxygen, and carbon dioxide
- Heated catalyst reduces any residual hydrocarbons
- Connections: 1/4" NPT fitting
- Delivery purity: <10 ppm oxygen
- Delivery purity: <0.1 ppm total hydrocarbons (as methane)



P000938

## domnick hunter NITROX High-Purity Nitrogen Generators

- Employs pressure swing adsorption technology to produce a continuous supply of high purity nitrogen
- Integral oil-free air compressor eliminates need for a separate air compressor
- Filtered compressed air goes across a bed of carbon molecular sieve, which selectively removes hydrocarbons, moisture, oxygen, and carbon dioxide
- Connections: 1/4" NPT fitting
- Delivery purity: <10 ppm oxygen

Description	Max. Output	Cat. No.
<b>Parker PEM and ChromGas Hydrogen Generators</b>		
H2PEM-100, 110-230 V	100 mL/min.; 90 psi	<b>27773-U</b>
H2PEM-165, 110-230 V	165 mL/min.; 90 psi	<b>27620-U</b>
H2PEM-260, 110-230 V	260 mL/min.; 90 psi	<b>22751</b>
H2PEM-510, 110-230 V	510 mL/min.; 90 psi	<b>22801</b>
Model 9800, 110 V	1200 mL/min.; 100 psi	<b>22835</b>
<b>Parker ChromGas Zero Air Generators</b>		
Model 1000, 110 V	1000 mL/min.; 125 psi	<b>22824</b>
Model 3500, 110 V	3500 mL/min.; 125 psi	<b>27625-U</b>
Model 1001, 230 V	1000 mL/min.; 125 psi	<b>22830-U</b>
Model 3501, 230 V	3500 mL/min.; 125 psi	<b>27626-U</b>
<b>domnick hunter Hydrocarbon-free Nitrogen Generators</b>		
Model 1001, 110 V	1000 mL/min.; 73 psi / 5 bar	<b>27765-U</b>
Model 1001, 230 V	1000 mL/min.; 73 psi / 5 bar	<b>28366-U</b>
<b>domnick hunter High-Purity Nitrogen Generators</b>		
Model 0751, 110 V	750 mL/min.; 73 psi / 5 bar	<b>27760-U</b>
Model 1501, 110 V	1500 mL/min.; 73 psi / 5 bar	<b>27761-U</b>
Model 3001, 110 V	3000 mL/min.; 73 psi / 5 bar	<b>27762-U</b>
Model 0751, 230 V	750 mL/min.; 73 psi / 5 bar	<b>28360-U</b>