Genuine Restek Replacement Parts

Thermo Scientific GCs

More Parts & Accessories **for More** GC Systems

Agilent • Bruker/Varian • PerkinElmer • Shimadzu • Thermo Scientific • And More!

RESTEK **Innovative Chromatography Products** www.restek.com

More Parts & Accessories **for More** GC Systems

Agilent • Bruker/Varian • PerkinElmer • Shimadzu • Thermo Scientific • And More!

Dear Colleague,

Restek's GC Accessories Team is devoted to bringing you the highest-quality products, delivered on time every time, to help you maximize data reproducibility and minimize instrument downtime—regardless of which brand of instrument you use. From our exceptionally inert Sky® inlet liners on the right to the invaluable Restek Electronic Leak Detector on page 10, Genuine Restek Replacement Parts are designed to meet or even exceed GC manufacturers' already-strict specifications and performance requirements. And of course, as with all Restek products, we also offer exemplary Plus 1 service before and after you order.

Do you have a product suggestion or question about Restek's GC accessories? Feel free to contact one of our team members or your Restek representative today. We look forward to hearing from you!

Sincerely,
Scott Adams
GC Accessories Product Marketing Manager

Scott Grossman
GC Accessories Chemist

Rob Lindquist
GC Accessories Associate Product Marketing Manager

Kelli Steindl
GC Product Line Manager

Scott Adams
GC Accessories Product Marketing Manager

e-mail us at gcaccpmm@restek.com

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? How can we help you today? Contact us. . .

customer **service**: **1-814-353-1300** (ext. 3) | **e-mail:** csreps@restek.com

technical **service**: **1-814-353-1300** (ext. 4) | **e-mail:** support@restek.com

sales representatives: **1-814-353-1300** | **e-mail:** salesreps@restek.com

3 ways to **order**:

1. **CALL: 1-800-356-1688** (ext. 3) or 1-814-353-1300 (ext. 3)
   Monday–Friday 8:00 a.m.–6:00 p.m. Eastern Time
2. **FAX: 1-814-353-1309** *24 hours a day*
3. **ONLINE: www.restek.com** *24 hours a day*

Outside the U.S.? *Find a distributor at* ***www.restek.com/distributor***

Sky® Inlet Liners

Patent pending

True Blue Performance

- Increase accuracy and reproducibility with state-of-the-art deactivation.
- Achieve lower detection limits for a wide range of active compounds.
- Use wool with confidence—quartz wool is deactivated after packing, preventing the loss of sensitive analytes.

When faced with complex choices, simple solutions stand out. Sky® inlet liners from Restek use a comprehensive, state-of-the-art deactivation and are the only blue liners on the market—making them an easy-to-recognize solution to common inlet problems.

Sky® liners give you the inertness you need for more accurate trace-level results.

The innovative deactivation used for Sky® liners results in exceptional inertness for a wide range of analyte chemistries. By reducing active sites and enhancing analyte transfer to the column, these liners increase accuracy and precision, allowing lower detection limits for many active compounds. In addition to improved data quality, you'll benefit from fewer liner changes and less downtime for maintenance.

Selecting the right liner for your application can be a challenging task. Sky® inlet liners make the choice simple; the comprehensive deactivation, distinctive color, and availability in popular configurations mean Sky® liners are the best choice for optimizing chromatographic performance. Regardless of your application, Sky® liners provide reliable inertness and assured performance, day-after-day and analysis-after-analysis.

The Story Behind Sky® Liners

For over 25 years, Restek's vision has been to be the company chromatographers trust. This philosophy is the cornerstone of our business, and it's the reason our chemists and engineers are dedicated to developing innovative, best-in-class products like Sky® liners. As chromatographers, we understand your needs and strive to develop and deliver products that make your life easier.

With Sky® liners, our goal was to create a state-of-the-art deactivation that provides superior performance. But why did we make them blue? Restek has always been associated with the color blue; to us, it signifies strength, innovation, and excellence. We made Sky® liners blue because it represents the technological advancements and unmatched quality that define Restek products. Choose blue—the best choice for dependable results.

Simple Solutions:

Inert Sky® Inlet Liners Improve Accuracy and Precision for a Wide Range of Analytes

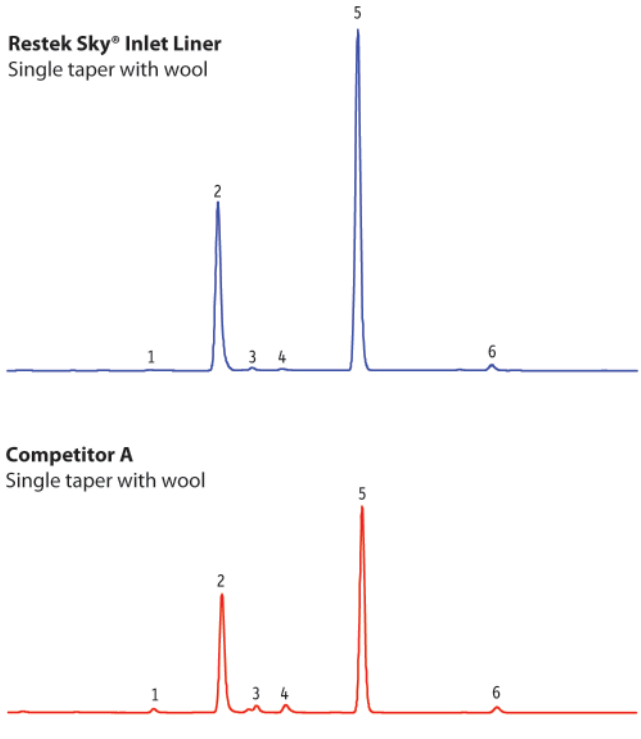
Many chromatographic problems, such as poor response and missing or tailing peaks, are caused by activity in the inlet liner. These effects complicate quantification and can be particularly problematic for sensitive analytes. Sky® inlet liners from Restek offer exceptional inertness, ensuring enhanced transfer of analytes to the column, good response, and highly symmetric peaks. The inertness of these liners is due to a state-of-the-art deactivation process that completely passivates the liner and wool so that they are inert to a wide variety of active analytes.

Some deactivations, such as base deactivation, are effective only for particular target compound chemistries. In contrast, the balanced deactivation of Sky® liners prevents interactions with many chemical classes. As shown on the following pages, complex pesticide probes, as well as both acidic and basic compounds have strong responses and excellent peak shapes, demonstrating the inertness of Sky® liners. With Sky® inlet liners, you will see improved sensitivity, accuracy, and reproducibility liner-to-liner, which allows you to quantify challenging compounds at trace levels with confidence.

Reduced Breakdown Improves Trace Analyses

Endrin and DDT are important analytes for the environmental and food safety industries, and they also serve as excellent general probes for liner inertness. Both compounds are sensitive to different modes of activity due to their chemical structures and their being analyzed at very low concentrations. As shown in Figure 1, Sky® liners are significantly more inert than comparable competitor liners, showing 3–4 times less endrin and DDT breakdown.

Figure 1: Endrin and DDT breakdown is significantly reduced with Sky® liners, demonstrating higher inertness.



Inert Sky® liners reduce analyte breakdown, giving you more accurate results.

	% Breakdown	
	Endrin	DDT
Restek	**4.8**	**1.3**
Competitor A	12	5.2

Peaks
1. DDE*
2. Endrin
3. DDD*
4. Endrin aldehyde*
5. DDT
6. Endrin ketone*

*breakdown products

GC_EV1200_1202

Column: Rxi®-5Sil MS, 15 m, 0.25 mm ID, 0.25 µm (cat.# 13620); **Sample:** Endrin (50 ng/mL) and DDT (100 ng/mL) in hexane; **Injection:** Inj. Vol.: 1 µL splitless (hold 0.75 min); **Liner:** Comparison of Sky® Single Taper Liner with Wool (cat.# 23303.5) and Agilent Single Taper Liner with Wool (cat.# 5062-3587); **Inj. Temp.:** 250 °C.; **Detector:** µ-ECD @ 300 °C.

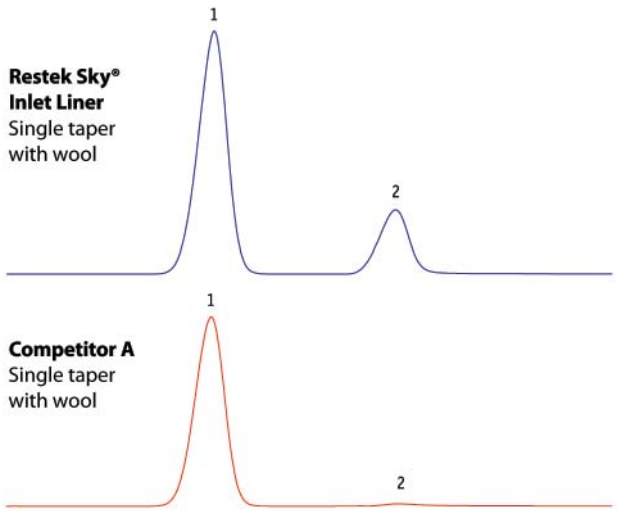
did you **know**?

Sky® inlet liners from Restek are extensively tested to ensure consistent product quality. The color and label have been shown not to interfere with analyses or contribute to background. Choose blue—the best liner for sensitive applications.

Greater Inertness Results in Higher Analyte Response

Another common probe used to illustrate inertness is 2,4-dinitrophenol (2,4-DNP), which functions as an indicator of acid compound interactions. It is used to monitor system suitability in semivolatiles methods, which benefit from the use of wool to assist in sample vaporization. As shown in Figure 2, the response of 2,4-DNP with the Sky® inlet liner, even at low concentrations, is superior to a competitor's liner. The competitor liner with wool has active sites that adsorb 2,4-DNP and reduce its response. In contrast, an excellent response is achieved using the Sky® liner, even in the presence of wool.

Figure 2: The state-of-the-art deactivation used for Sky® liners with wool results in higher responses for active acid compounds, such as 2,4-DNP.



GC_EV1204

Increase the response of active analytes with inert Sky® inlet liners!

	2,4-DNP Response Factor
Restek	**0.28**
Competitor A	0.02

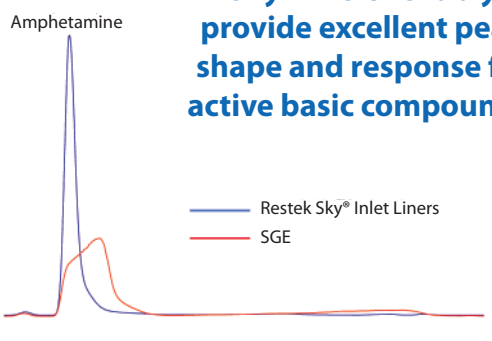
Peaks
1. Acenaphthene (IS)
2. 2,4-DNP

Column: Rxi®-5Sil MS, 15 m, 0.25 mm ID, 0.25 µm (cat.# 13620); **Sample:** 10 µg/mL each 2,4-dinitrophenol and acenaphthene standard in methylene chloride; **Injection:** Inj. Vol.: 1 µL splitless (hold 1 min); **Liner:** Comparison of Sky® Single Taper Inlet Liner with Wool (cat.# 23303.5) and Agilent Single Taper Inlet Liner with Wool (cat.# 5062-3587); **Inj. Temp.:** 250 °C; **Detector:** FID @ 300 °C.

Comprehensive Deactivation Ensures Excellent Peak Shape

In addition to providing excellent results for active pesticides and acidic compounds, Sky® inlet liners are also highly inert to active basic compounds, such as underivatized amphetamines. The exceptional inertness of Sky® liners produces much better peak shape than is typically seen on other liners, resulting in simpler quantification and more accurate results (Figure 3).

Figure 3: Sky® liners are completely passivated. Even when using wool, peak shape for highly active underivatized amphetamine is excellent.



Sky® liners reliably provide excellent peak shape and response for active basic compounds.

GC_CF1151

Peaks
1. Amphetamine

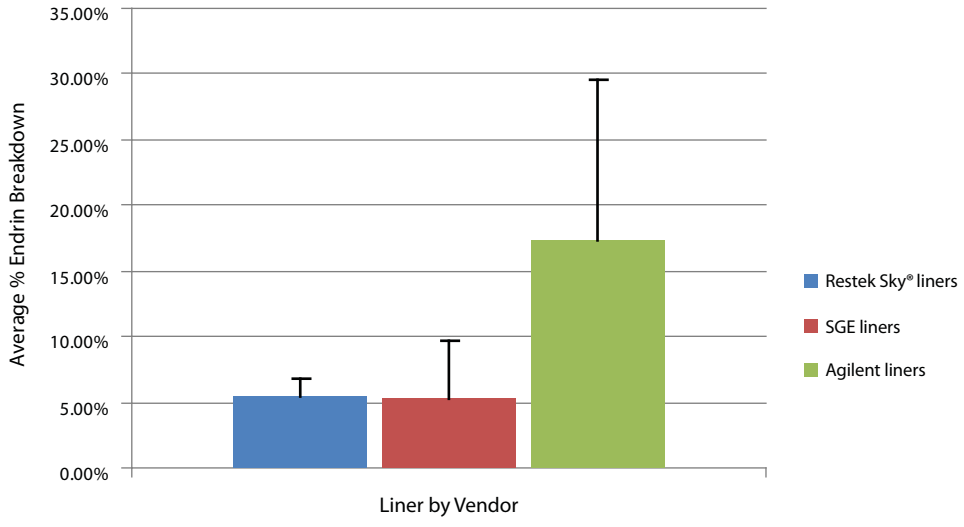
Column: Rxi®-5Sil MS, 30 m, 0.25 mm ID, 0.25 µm (cat.# 13623); **Sample:** Amphetamine; Diluent:1-chlorobutane; Conc.: ~10 µg/mL; **Injection:** Inj. Vol.: 1 µL splitless (hold 1 min); Liner: Comparison of Sky® Single Taper with Wool (cat.# 23303.5) and SGE Single Taper with Wool (cat.# 092019); Inj. Temp.: 250 °C; Purge Flow: 20 mL/min; **Oven Temp:** 45 °C to 250 °C at 20 °C/min; **Carrier Gas:** He, constant flow; Flow Rate: 2 mL/min; **Detector:** FID @ 350 °C.; Make-up Gas Flow Rate: 45 mL/min; Make-up Gas Type: N_2; **Instrument:** Agilent 7890A GC

Liner-to-Liner Reproducibility: A Measure of Consistent Quality

It's not good enough to have one quality liner. You have to be confident that every liner will give the same level of performance. We test Sky® liners extensively to ensure that each one is exceptionally inert and will provide optimal results. Using endrin breakdown as a measure of reproducibility, the data in Figure 4, based on multiple lots, illustrate that Sky® liners are more consistently inert than competitor products.

Sky® liners provide exceptional inertness across a wide range of active analytes. The consistent, comprehensive deactivation process results in the accuracy and precision you need for reliable trace-level analyses. Simplify liner selection with Sky® liners from Restek—**choose blue, the best choice for dependable results.**

Figure 4: Sky® inlet liners from Restek consistently show less endrin breakdown than comparable liners from other sources.



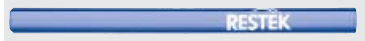
Error bars represent 3 standard deviations.

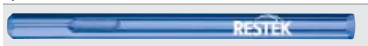
Sky® inlet liners are easily recognizable for your reordering convenience. All Sky® liners come in specially marked boxes and are packaged in ultra-clean blister packs.

Sky® Inlet Liners for Thermo Scientific GCs

Split/Splitless Liners for Thermo TRACE 1300, 1310	ID OD x Length	cat.# ea.	5-pk.	
	4.0 mm 6.3 mm x 78.5 mm	23444.1	23444.5	NEW!
Split/Splitless Straight w/Wool				

Splitless Liners for Thermo TRACE 1300, 1310	ID OD x Length	cat.# ea.	5-pk.	
	4.0 mm 6.3 mm x 78.5 mm	23445.1	23445.5	NEW!
Splitless Straight				
	4.0 mm 6.5 mm x 78.5 mm	23446.1	23446.5	NEW!
Splitless Single Taper				
	4.0 mm 6.5 mm x 78.5 mm	23447.1	23447.5	NEW!
Splitless Single Taper w/Wool				

Split Liners for Thermo TRACE, 8000, 8000 TOP, and Focus SSL	ID OD x Length	Similar to TS part #	ea.	cat.# 5-pk.	25-pk.	
	1.0 mm 6.3 mm x 78.5 mm		23448.1	23448.5		NEW!
Split						
	3.0 mm 8.0 mm x 105 mm	453 20031	23439.1	23439.5	23439.25	NEW!
Split Straight						
	3.0 mm 8.0 mm x 105 mm		23440.1	23440.5	23440.25	NEW!
Split Straight w/Wool						
	5.0 mm 8.0 mm x 105 mm	453 20030	23323.1	23323.5	23323.25	
5 mm Straight						
	5.0 mm 8.0 mm x 105 mm		23324.1	23324.5	23324.25	
5 mm Straight w/Wool						
	5.0 mm 8.0 mm x 105 mm		23327.1	23327.5		
5 mm Precision Liner w/Wool						

Splitless Liners for Thermo TRACE, 8000, 8000 TOP, and Focus SSL	ID OD x Length	Similar to TS part #	ea.	cat.# 5-pk.	25-pk.	
	3.0 mm 8.0 mm x 105 mm	453 20032	23441.1	23441.5	23441.25	NEW!
Splitless						
	3.0 mm 8.0 mm x 105 mm		23442.1	23442.5	23442.25	NEW!
Splitless w/Wool						
	5.0 mm 8.0 mm x 105 mm		23443.1	23443.5		
Splitless Precision Liner w/Wool						
	5.0 mm 8.0 mm x 105 mm	453 20033	23325.1	23325.5	23325.25	
5 mm Splitless						
	5.0 mm 8.0 mm x 105 mm		23326.1	23326.5	23326.25	
5 mm Splitless w/Wool						

Split Liners for Thermo Scientific TRACE PTV	ID OD x Length	Similar to TS part #	ea.	cat.# 5-pk.	
	1.0 mm 2.75 mm x 120 mm	453 22054	23436.1	23436.5	NEW!
Split PTV					
	2.0 mm 2.75 mm x 120 mm	453 22045	23437.1	23437.5	NEW!
Split PTV					
	2.0 mm 2.75 mm x 120 mm		23438.1	23438.5	NEW!
Baffled PTV					

Patent pending

Intermediate Polarity (IP)–Deactivation

- Phenylmethyl-deactivated surface for better recovery of polar and nonpolar compounds.
- Compatible with most common solvents.
- Our standard deactivation—every clear Restek liner is IP deactivated unless otherwise requested.

Siltek®-Deactivation

For Siltek®-deactivated inlet liners, add the corresponding suffix number to the liner catalog number.

- Maximizes the inertness of the sample pathway with proprietary deactivation.
- Minimizes breakdown.
- Low bleed.
- Thermally stable.
- "Clean and green"—manufactured without the use of harmful organic solvents.
- Ideal for chlorinated pesticides.

Siltek®-Deactivated Inlet Liners

The patented Siltek® deactivation process for liners produces a highly inert glass surface that features high temperature stability, extreme durability, and low bleed. Try Siltek® liners, guard columns, and connectors for better recovery of sample analytes.

qty.	Siltek Liner		Siltek Liner w/Wool		Siltek Liner w/CarboFrit	
each	-214.1	addl. cost	-213.1	addl. cost	-216.1	addl. cost
5-pk.	-214.5	addl. cost	-213.5	addl. cost	-216.5	addl. cost
25-pk.	-214.25	addl. cost	-213.25	addl. cost	-216.25	addl. cost

Base-Deactivation

For base-deactivated inlet liners, add the corresponding suffix number to the liner catalog number.

qty.	Base-Deactivated Liner		Base-Deactivated Liner w/ Base-Deactivated Wool		Base-Deactivated Liner w/CarboFrit	
each	-210.1	addl. cost	-211.1	addl. cost	-229.1	addl. cost
5-pk.	-210.5	addl. cost	-211.5	addl. cost	-229.5	addl. cost
25-pk.	-210.25	addl. cost	-211.25	addl. cost	-229.25	addl. cost

Don't Forget Routine Maintenance

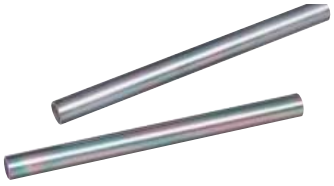
Inlet liners are the key to good injection port maintenance; changing them regularly helps prevent problems such as:

- Sample degradation resulting in poor response.
- Sample adsorption resulting in poor peak shape (tailing).
- Sample discrimination.
- Irreproducibility.
- Extraneous peaks from contamination or cored septum particles.

Finally, be sure to condition your liners at 20 °C higher than the operating inlet temperature for a minimum of 10 minutes to prepare them for use. By following these basic tips, you can avoid inlet problems and improve chromatographic performance.

Siltek®-Treated Metal Inlet Liners for Thermo Scientific GCs

- Won't crack, chip, or break like glass liners.
- Excellent response for pesticides, phenols, and other active compounds.



Liner Type (5.0 mm ID x 8.0 mm OD x 105 mm)	ea.	5-pk.
5 mm ID Split/Splitless w/Deact. Wool	—	21004
Liner Type (2.75 mm OD x 120 mm)	**ea.**	**5-pk.**
1 mm ID Split/Splitless*	21080	21081
2 mm ID Split/Splitless*	21082	21083
Liner Type (0.8 mm ID x 2.75 mm OD x 120 mm)	**ea.**	**5-pk.**
SPME for TRACE 2000 GCs & PTV Inlets	22598	22599

*Works with PTV injectors.

Split Liners for Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL	Benefits/Uses:	ID* OD x Length	Similar to TS part #	ea.	cat.# 5-pk.	25-pk.
 1 mm Split	purge & trap, fast GC	1.0 mm 8.0 mm x 105 mm	453 20075	20916	20917	—
 3 mm Split	universal	3.0 mm 8.0 mm x 105 mm	453 20031	20936	20937	20938
 5 mm Split	universal	5.0 mm 8.0 mm x 105 mm	453 20030	20939	20940	20941
 Laminar Cup Splitter	high MW compounds	4.0 mm 8.0 mm x 105 mm		20948	20949	—
 Cup Splitter	high & low MW compounds	4.0 mm 8.0 mm x 105 mm		20950	20951	—
 5 mm Split Precision Liner w/Deact. Wool	dirty samples, trace samples	5.0 mm 8.0 mm x 105 mm		22288	22289	—

Splitless Liners for Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL	Benefits/Uses:	ID* OD x Length	Similar to TS part #	ea.	cat.# 5-pk.	25-pk.
 Splitless (3 mm ID)	trace samples	3.0 mm 8.0 mm x 105 mm	453 20032	20942	20943	20944
 Splitless (5 mm ID)	trace samples	5.0 mm 8.0 mm x 105 mm	453 20033	20945	20946	20947
 Double Taper	trace, active samples up to 4 µL	4.0 mm 8.0 mm x 105 mm		20952	20953	—
 5 mm Splitless Precision Liner w/Deact. Wool	dirty samples, trace samples	5.0 mm 8.0 mm x 105 mm		21028	21029	—

Split Liners for Thermo Scientific TRACE PTV	Benefits/Uses:	ID* OD x Length	Similar to TS part #	ea.	cat.# 5-pk.
1 mm ID Glass Liner	trace samples, high recovery & linearity	1.0 mm 2.75 mm x 120 mm	453 22054	21114	21115
2 mm ID Glass Liner	universal	2.0 mm 2.75 mm x 120 mm	453 22045	21116	21117
Baffle Liner	trace samples	2.0 mm 2.75 mm x 120 mm		22074	22075

DI Liners for Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL (0.32 & 0.53mm ID columns)	Benefits/Uses:	ID* OD x Length	ea.	cat.# 5-pk.
 Uniliner w/Deact. Wool	trace, active samples, high recovery, & linearity	5.0 mm 8.0 mm x 105 mm	21005	21006
 Drilled Uniliner (hole near top)	trace, active samples, high recovery, & linearity	5.0 mm 8.0 mm x 105 mm	22411	22412
 Drilled Uniliner (hole near bottom)	trace, active samples, high recovery, & linearity	5.0 mm 8.0 mm x 105 mm	22413	22414

*Nominal ID at syringe needle expulsion point.

All liners are shipped with intermediate polarity (IP) deactivation unless otherwise requested.
See page 6.

Deactivated Wool

24324

- More inert than our traditional fused silica wool.
- Use to vaporize a sample in a liner prior to introduction into a capillary column.

Description	qty.	cat.#
Deactivated Wool	10 grams	24324

Base-Deactivated Wool

20999

Ideal for amines and other basic compounds.

Description	qty.	cat.#
Base-Deactivated Wool	10 grams	20999

Prepacked Inlet Liners

Let Restek do the work! Just add the appropriate suffix to the liner catalog number.

qty.	Wool	CarboFrit†	
ea.	-200.1	-209.1	addl. cost
5-pk.	-200.5	-209.5	addl. cost
25-pk.	-200.25	-209.25	addl. cost

†CarboFrit® inserts require a neck greater than 2 mm.

CarboFrit® Inlet Liner Packing Material

- Highly inert.
- Extends analytical column lifetime.
- Enhances reproducibility of split and splitless injections.
- Uniform pore size and consistent packing density guarantee consistent flow through the liner.
- Easy to install in any liner with an ID > 3.5 mm when using puller-inserter tool listed below.*

Add the corresponding suffix number to the liner catalog number.

qty.	suffix	
ea.	-209.1	addl. cost
5-pk.	-209.5	addl. cost
25-pk.	-209.25	addl. cost

*Liners with IDs less than 3.5 mm are difficult to pack. We will pack them on a custom basis (minimum neck ID of 2 mm required).

Replacement CarboFrit® Inserts

Description	qty.	cat. #
Frits for liner ID ≤ 4 mm	10-pk.	20295
Frits for liner ID > 4 mm	10-pk.	20294

CarboFrit® Puller/Inserter Tool

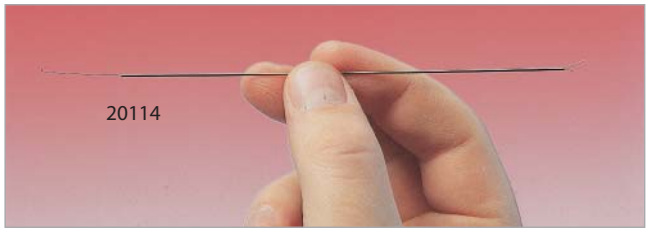
- Hook end for removing CarboFrit® inserts.
- Bent end (90°) for inserting CarboFrit® inserts.

Description	qty.	cat.#
CarboFrit Puller/Inserter Tool	ea.	21642

tech tip

Use of Packings With an Autosampler

We recommend using an injection port liner with wool or CarboFrit® packing when making injections with an autosampler. If there is no packing material in the liner, the solvent droplets act like water on a hot iron: they bounce around until vaporized (Leidenfrost phenomenon). Because autosamplers make rapid injections, samples can be incompletely vaporized, leading to nonreproducible peak response and tailing. You can prevent this by using wool or CarboFrit® packing material in the splitless liner to provide a surface for the solvent droplets to "sit" on until the heat from the injector vaporizes them.



Mini Wool Puller/Inserter

Insert and remove wool plugs easily. Order a spare pack so you'll always have one available.

Description	qty.	cat.#
Mini Wool Puller/Inserter	2-pk.	20114

Eliminates user variation!

Inlet Liner Packing Tool

- Position wool reproducibly every time.
- Accurate to a specific, measured depth.
- Can be used with all manufacturers' liners.

Loosen the nut on the side of the tool and adjust the gauge to the manufacturer's recommended depth.

Place a plug of loosely bound wool at the top of the inlet liner.

Insert the liner packing tool into the liner until the tool bottoms out. Remove the tool. The wool is now positioned correctly in the liner and the liner is ready for use.

Description	qty.	cat.#
Inlet Liner Packing Tool	ea.	20339

Recommended for inlet liners with an ID ≥ 2 mm.

No more burned fingers!

Inlet Liner Removal Tool

- Easily remove liner from injector—no more burned fingers.
- Made from high-temperature silicone.
- Won't chip or crack the liner.

Description	qty.	cat.#
Inlet Liner Removal Tool	3-pk.	20181

The Claw and The Claw Holder Kit

- Easily removes hot liners from injection ports.
- 4 mL vials (not included) can be replaced when dirty.

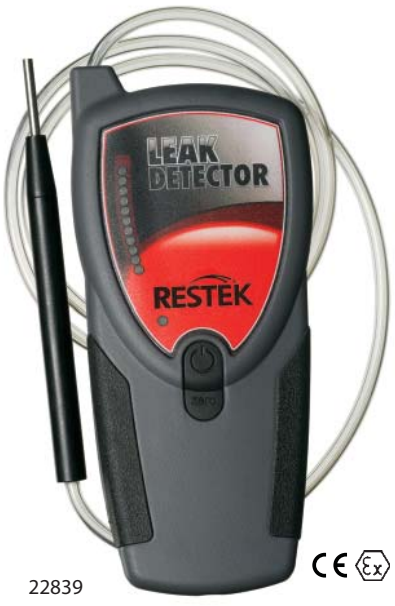
Never again will you burn your fingers removing a hot injection port liner. The Claw safely and cleanly removes liners, O-rings, or other small objects from the injection port. You can then place the hot objects in a clean 4 mL vial situated in The Claw holder until ready for reuse.

Description	qty.	cat. #
The Claw	ea.	26261
The Claw Holder Kit (includes The Claw and holder)	kit	26262
WISP 48 Snap Seal Vial	100-pk.	24658

tech tip

Injector Maintenance

Approximately ninety percent of "bad" chromatography is traceable to problems in the injection port. These problems include contaminated carrier gas, incorrect injector flows, active or dirty sites on inlet seals and liners, improper use of wool, leaks, backflash, discrimination, incorrect injector temperature, poor column installation, and use of the wrong injection technique. To minimize injection port problems, set up a routine maintenance schedule and be sure to investigate the injector first when troubleshooting.



22839

restek recommends

When your Leak Detector batteries need to be replaced, send the unit to us for a routine maintenance review to ensure continued sensitivity and reliability. We will replace not only the batteries, but also the probe and internal/external tubing. We will also recertify your unit. Contact Customer Service to send in your Leak Detector for maintenance (cat. #22839-R).

Carrying/storage case included with purchase of unit.

22658

Verify hard-to-reach leaks using the small probe adaptor (sold separately).

Restek Electronic Leak Detector

Don't let a small leak turn into a costly repair—protect your instrument and analytical column by using a Restek Leak Detector.

Features & benefits include:

- Optimized sample flow path.
- Ergonomic, handheld design.
- Rugged side grips for added durability.
- Handy probe storage for cleanliness and convenience.
- Long-lasting battery; up to 6 hours of continuous use.
- Automatic shutoff.
- A convenient carrying and storage case.
- Easy-to-clean probe assembly.
- A universal charger set (U.S., European, UK, and Australian plugs included).

Backed by a 1-year warranty, the Restek Leak Detector is the industry standard for performance and affordability in handheld leak detectors.

Leak Detector Facts

Detectable Gases:	Helium, nitrogen, argon, carbon dioxide, hydrogen
Battery:	Rechargeable Ni-MH internal battery pack (6 hours normal operation)
Operating Temperature Range:	32–120 °F (0–48 °C)
Humidity Range:	0–97%
Warranty:	One year
Certifications:	CE, Ex, Japan
Compliance:	WEEE, RoHS

Limits of Detection

These gases can be detected with the Restek Electronic Leak Detector at the following leak rates:

Minimum Detectable Gas Limits and Indicating LED Color:

- Helium, 1.0 x 10^{-5}, red LED
- Hydrogen*, 1.0 x 10^{-5}, red LED
- Nitrogen, 1.4 x 10^{-3}, yellow LED
- Argon, 1.0 x 10^{-4}, yellow LED
- Carbon Dioxide, 1.0 x 10^{-4}, yellow LED

Gas detection limits measured in atm cc/sec

Description	qty.	cat.#
Leak Detector With Hard-Sided Carrying Case and Universal Charger Set (U.S., UK, European, Australian)	ea.	22839
Leak Detector Routine Maintenance Review	ea.	22839-R
Soft-Side Storage Case	ea.	22657
Small Probe Adaptor	ea.	22658

Avoid using liquid leak detectors on a GC! Liquids can be drawn into the system.

*Caution: The Restek Electronic Leak Detector is designed to detect trace amounts of hydrogen in a noncombustible environment. It is NOT designed for determining leaks in a combustible environment. A combustible gas detector should be used for determining combustible gas leaks under any condition. When using it to detect hydrogen, the Restek Electronic Leak Detector may only be used for determining trace amounts in a GC environment.

Checking for leaks maintains the integrity of a GC system.

Restek ProFLOW 6000 Electronic Flowmeter

State-of-the-art features include:

- Measures volumetric flow for gases across a range of 0.5–500 mL/min.
- NIST traceable calibration.
- Ex rating (electrical apparatus for explosive gas atmospheres) for hydrogen and related gas types.
- Accuracy of ± 2% of flow reading or ± 0.2 mL/min, whichever is greater.
- Over-range warning indicator.
- Auto shutoff feature.
- Use as a benchtop or handheld unit.
- Ergonomic design and side grips for comfort.
- Measures most gas types.*
- Convenient carrying/storage case included.
- Uses 2-AA batteries (included).
- Data output via USB port.
- 1-year warranty.
- Recalibration service available.

Flowmeters that can measure flammable gases are becoming mandatory, due to the increased use of hydrogen in chromatography. With its Ex rating, the Restek ProFLOW 6000 Flowmeter is designed specifically with explosive and flammable gases in mind.

The Restek ProFLOW 6000 is the only flowmeter you need for any type of chromatography gas measurement because of its wide range of capabilities. The ProFLOW 6000 is an electronic device capable of measuring volumetric flow for most gases. Real-time measurements can be made for various types of flow paths, including continually changing gas types. This portable unit is designed for easy handheld use, and the stand adds benchtop convenience.

Flowmeter Facts:

Type of Flowmeter:	Volumetric
Battery:	2-AA
Operating Temp. Range:	32–120 °F (0–48 °C)
Warranty:	One year
Certifications:	CE, Ex
Compliance:	WEEE, RoHS

Description	qty.	cat.#
Restek ProFLOW 6000 Electronic Flowmeter With Hard-Sided Carrying Case	ea.	22656
ProFLOW 6000 Recalibration Service	ea.	22656-R
Soft-Side Storage Case	ea.	22657

*The flowmeter is designed to measure clean, dry, non-corrosive gases.

22656

restek recommends

Recalibrate your ProFLOW 6000 Flowmeter once every year. Prolonged failure to recalibrate your unit may result in increased error. To always get the most accurate flow measurements, contact Customer Service to send in your flowmeter for recalibration (cat.# 22656-R).

Inlet Liner Seals for Thermo Scientific TRACE PTV

Description	Max. temp.	Similar to TS part #	qty.	cat.#
Inlet Liner Seals for Thermo Scientific TRACE PTV	450 °C	29013417	2-pk.	21392

Graphite Sealing Ring for Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL Instruments

Description	Max. temp.	Similar to TS part #	qty.	cat.#
Graphite Sealing Ring for Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL	450 °C	290-334-06	ea.	21898
	450 °C	290-334-06	2-pk.	21899

BTO® septa

Septa for Thermo Scientific GCs Premium Non-Stick BTO® Septa

- Usable to 400 °C inlet temperature.
- New plasma coating eliminates sticking in the injection port.
- Precision molding ensures consistent, accurate fit.
- Partial predrilled CenterGuide design.
- Preconditioned and ready to use.
- Packaged in precleaned glass jars.
- Each batch is GC-FID tested.
- Bleed and temperature optimized; ideal for demanding GC and GC-MS applications.

Septum Diameter	50-pk.	100-pk.
Premium Non-Stick BTO Septa (usable to 400 °C inlet temp.)		
9 mm CenterGuide	27084	27085
9.5 mm (3/8")	27086	27087
17 mm CenterGuide*	27096	27097

Note: Due to differences in inlet design, the actual septum temperature for a given inlet setpoint can vary by manufacturer. Restek recommends using only BTO® septa in Thermo Scientific instruments.
*For 17 mm injectors, the maximum temperature is 330 °C. For all injectors, minimum recommended operating temperature is 250 °C.

HANDY septum size chart

Instrument	Septum Diameter (mm)
Thermo Scientific	
TRACE GC, 8000, 8000 TOP, GCQ w/TRACE, PTV, 8000 series17	17
Finnigan (TMQ)	
GC 9001, GCQ, QCQ, TRACE 2000	9.5

Septum Cap for Split/Splitless Injector on Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL

Description	Similar to TS part #	qty.	cat.#
Septum Cap for Split/Splitless Injector on Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL	350 01 050	ea.	24971

21299

24972

Septa Holder Kits for Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL

- Includes septum support and holder.
- Made from high-quality stainless steel.
- Silcosteel®-AC-treated version helps with septum removal.

Description	Similar to TS part #	qty.	cat.#
Septa Holder for Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL	233 030 15, 350 054 335	kit	21299
Silcosteel-AC-Treated Septa Holder for Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL	233 030 15, 350 054 33	kit	24972

22089

Gold-Plated Liner Cap for Split/Splitless Injector on Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL

Description	Similar to TS part #	qty.	cat.#
Gold-Plated Liner Cap for Split/Splitless Injector on Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL	290 042 90	ea.	22089

Adapters for Capillary Columns on Thermo Scientific TRACE & Focus SSL

- Use same installation distance as manufacturer's adaptors.
- Made of high-quality stainless steel.
- Siltek®-treated version available for additional inertness.

Description	Similar to TS part #	qty.	cat.#
For use with standard 1/16" ferrules.			
Adaptor for Capillary Column on Detector Base	—	ea.	24916
Adaptor for Capillary Column on Split/Splitless Injector	—	ea.	24917
Siltek Treated Adaptor for Capillary Column on Split/Splitless Injector	—	ea.	20543
For use with M4 ferrules.			
Adaptor for Capillary Column on Detector Base	347 25 436	2-pk.	24969
Adaptor for Capillary Column on Split/Splitless Injector	347 05 451	ea.	24970
Siltek Treated Adaptor for Capillary Column on Split/Splitless Injector	—	ea.	20544

Nut for Terminal Fitting for Thermo Scientific TRACE GCs


24896

Description	Similar to TS part #	qty.	cat.#
Nut for Terminal Fitting for Thermo Scientific TRACE GCs	350 221 25	2-pk.	24896

Fixing Nut for Capillary Column

for Split/Splitless Injector on Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL

Made of high-quality stainless steel.


24973

Description	Similar to TS part #	qty.	cat.#
Fixing Nut for Capillary Column for Split/Splitless Injector on Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL	350 32 423	5-pk.	24973

Graphite Ferrules (M4 Fittings) for Thermo Scientific TRACE, 8000, 8000 TOP & Focus GCs

Ferrule ID	Fits Column ID	Similar to TS part #	Graphite 2-pk.	Graphite 10-pk.
0.3 mm	0.10–0.15 mm	—	22221	22222
0.4 mm	0.18–0.28 mm	29013488 (2-pk.) 29053488 (10-pk.)	20280	20281
0.5 mm	0.32 mm	29013487 (2-pk.) 29053487 (10-pk.)	20282	20283
0.8 mm	0.45–0.53 mm	29013486 (2-pk.) 29053486 (10-pk.)	20284	20285

FID Jet for Thermo Scientific TRACE & Focus GCs

Meets or exceeds original manufacturer's performance.


23080

Description	Similar to TS part #	qty.	cat.#
FID Jet for Thermo Scientific TRACE and Focus GCs	404 043 01	ea.	23080

Silver Seals for Thermo Scientific TRACE, 8000, 8000 TOP & Focus SSL


23057

Description	Similar to TS part #	qty.	cat.#
Silver Seal	29033629	10-pk.	23057
for Split/Splitless Injector	29033629	20-pk.	23058

Liner Cap Removing Tool

for Thermo Scientific GCs: Focus GC, TRACE GC Ultra & TRACE GC x GC

24937

- Easily loosens the liner cap from the injector.
- Unique, ergonomic handle—easy to grip.

Remove septum cap, septum holder, septum, and septum support.

Place tool on liner cap. Align two pins on bottom of tool with two open slots on liner cap.

Turn counter-clockwise to loosen liner cap.

Use tweezers (cat.# 20101) to remove liner cap.

Description	Similar to TS part #	qty.	cat.#
Liner Cap Removing Tool for Thermo Scientific GCs	205 070 10	ea.	24937

22997

Metric Wrench Set

High-quality 6 x 7 mm, 8 x 10 mm, and 16 x 17 mm wrenches for tightening a wide variety of fittings.

Description	qty.	cat.#
Metric Wrench Set	set	22997

22999

Metric 9-Piece Ball-Point Hex Key Set

Includes 9 metric hex keys (Allen wrenches): 1.5, 2, 2.5, 3, 4, 5, 6, 8, and 10 mm.

Description	qty.	cat.#
Metric 9-Piece Ball-Point Hex Key Set	set	22999

22330

Capillary Installation Gauge for Thermo Scientific TRACE & Focus SSL (M4 Ferrules)

- Seats ferrule* onto column for consistent installations.
- Prevents crushed column ends.
- Made from high-quality stainless steel.

Install nut and ferrule onto column. Cut column end squarely. Slide column into installation gauge to recommended insertion distance. Finger-tighten column nut.

Tighten assembly to ensure a properly seated ferrule. Loosen assembly and remove column and column nut.

The ferrule will be properly seated, and should remain in place when light force is applied. If it slides loosely on the column, repeat procedure.

Description	qty.	cat.#
Capillary Installation Gauge for Thermo Scientific TRACE & Focus SSL (M4 ferrules)	ea.	22330

*For use with graphite ferrules only.

MLE Make Life Easier!

Everything you need in one complete kit!

22183

Make Life Easier (MLE) Capillary Tool Kit

for Thermo Scientific GCs

Includes:

- capillary installation gauge for Thermo Scientific GCs
- liner cap removing tool for Thermo Scientific GCs
- 1/8", 3/16", and 1/4" nylon brushes
- 1/4", 3/8", and 3/16" stainless steel wire tube brushes
- stainless steel surface brush
- 6 stainless steel jet reamers (0.25–0.65 mm OD)
- 1/4" x 5/16" open end wrench
- 3/8" x 7/16" open end wrench
- 6 mm x 7 mm open end wrench
- 8 mm x 10 mm open end wrench
- 16 mm x 17 mm open end wrench
- rubber-tipped slide-lock tweezers
- scoring wafers
- inlet liner removal tool
- septum puller
- mini wool puller/inserter tool
- 4-inch tapered needle file
- swivel head flashlight
- mini hand drill set
- 15 cm compact steel ruler
- pocket magnifier
- high-temperature string (1 meter)
- pipe cleaner (12 inch)
- cotton tip swabs (pk. of 25)

Description	qty.	cat.#
MLE Capillary Tool Kit	kit	22183

Scoring Wafer with Handle

- Ceramic wafer is straight-edged for cutting fused silica tubing cleanly.
- Unique, ergonomic handle is made of soft, comfortable rubber.

23015

Hold tubing firmly in one hand, allowing about two inches to extend freely. Hold the scoring wafer at a 45° angle to the tubing. Exert just enough pressure to put a slight arc in the tubing. Pull perpendicularly across the tubing.

The tubing should fall off on its own, or it should easily break at the score with a slight tap of the wafer.

Check the cut against the white of the scoring wafer. Look for a clean, square cut.

Description	qty.	cat.#
Scoring Wafer With Handle	2-pk.	23015

Ceramic Scoring Wafer

- Four straight scoring edges for cutting fused silica tubing and four serrated edges for cutting MXT® metal capillary columns.

20116

Exert just enough pressure to put a slight arc in the tubing. Pull perpendicularly across the tubing. The tubing should fall off or break with a slight tap of the wafer.

Check the cut against the white of the scoring wafer. Look for a clean, square cut.

Description	qty.	cat.#
Ceramic Scoring Wafers	5-pk.	20116

Septum Puller

- Use hooked end for removing septa and O-rings; pointed end works well for removing stuck ferrules or debris.
- Keep several on hand in your laboratory—can be used in many different ways.

Remove a septum without damaging an expensive weldment.

Dislodge a stuck ferrule quickly and easily—without scoring the fitting.

20117

Description	qty.	cat.#
Septum Puller	ea.	20117

27194

GC-MS Cleaning Kit

Poor sensitivity, loss of sensitivity at high masses, or high multiplier gain during an auto tune are all indicators that your mass spectrometer source may need to be cleaned. Restek has assembled all of the necessary components for cleaning and polishing your ion source.

The Restek GC-MS Cleaning Kit (cat.#s 27194, 27195) includes:

- lint-free nylon gloves (small-2 pair)
- lint-free nylon gloves (large-2 pair)
- lint-free cotton cloth, 9 x 9 (10-pk.)
- micro mesh 4 x 6 sheet (4-pk.)
- aluminum oxide (1-kg jar)
- cotton tip applicators
- tweezers, large
- tweezers, small
- septum puller
- Dremel® tool, battery-operated (optional, 27194)
- tool kit bag

Reorder Kit (cat.# 27196) includes:

- lint-free nylon gloves (small-2 pair)
- lint-free nylon gloves (large-2 pair)
- lint-free cotton cloth, 9 x 9 (10-pk.)
- micro mesh 4 x 6 sheet (4-pk.)

Description	qty.	cat.#
Mass Spec Cleaning Kit With Dremel Tool	kit	27194
Mass Spec Cleaning Kit Without Dremel Tool	kit	27195
Mass Spec Cleaning Kit Replacement Parts Kit Includes: cloths, micro mesh sheets, small and large gloves	kit	27196


22082

Transfer Line Reducing Kit for Thermo Scientific TRACE & Focus DSQ Mass Spectrometers

Meets or exceeds original manufacturer's performance.

Description	Similar to TS part #	qty.	cat.#
Transfer Line Reducing Kit for Thermo Scientific TRACE and Focus DSQ Mass Spectrometers	76458-2014s, 76458-2009s, A0101-03151	kit	22082

EZ No-Vent® GC Column-Mass Spectrometer Connector for Thermo Scientific Focus DSQ GC Mass Spectrometers


22454

- Change GC-MS columns in minutes without venting—100 µm transfer line maintains vacuum and prevents venting.
- Easy to install and maintain—no special tools or plumbing required.
- Gold-plated body for inertness.
- High-temperature polyimide ferrules eliminate leaks at the problematic transfer line fitting.
- Lower cost than other "no-vent" fittings.

We designed the EZ No-Vent® GC column-mass spectrometer connector to be simple and easy to use. A critical orifice in the EZ No-Vent® connector minimizes the amount of oxygen allowed into the MS source, eliminating the need for purge gas as is required for other manufacturers' vent systems. This enables you to skip the lengthy vent and pump-down cycle otherwise required when you make a column change, saving nearly a day of downtime with each column change. The EZ No-Vent® connector easily attaches to the MS source without special tools or extra plumbing.

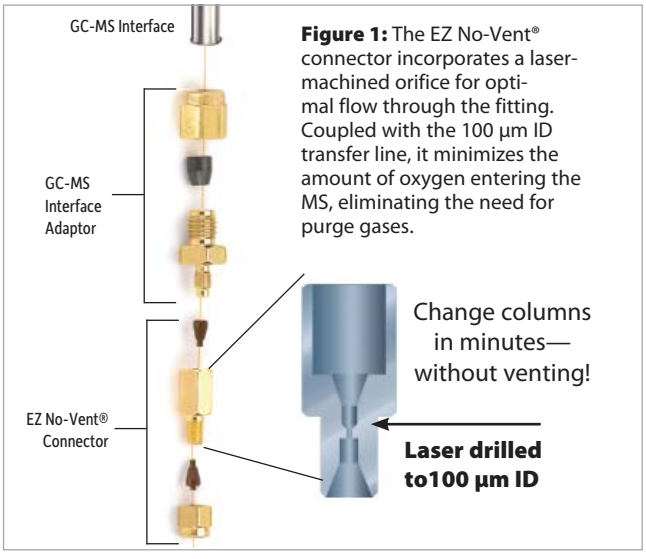


Figure 1: The EZ No-Vent® connector incorporates a laser-machined orifice for optimal flow through the fitting. Coupled with the 100 µm ID transfer line, it minimizes the amount of oxygen entering the MS, eliminating the need for purge gases.

Description	qty.	cat.#
EZ No-Vent Connector Kit for Thermo Scientific Focus DSQ GC Mass Spectrometers Includes: EZ No-Vent Connector, interface adaptor, two 0.4 mm ID adaptor ferrules for capillary column, two 0.4 mm ID ferrules for transfer line, 100 µm deactivated transfer line (3 ft.), column plug, column nut	kit	22454
Replacement Ferrules for connecting capillary column to EZ No-Vent Connector:		
0.4 mm (Polyimide)	2-pk.	21015
0.5 mm (Polyimide)	2-pk.	21016
Replacement Ferrules for connecting transfer line to EZ No-Vent Connector: 0.4 mm ID	2-pk.	21043
Replacement 100 µm Deactivated Transfer Line	3 ft.	21018
Replacement EZ No-Vent Column Nut	20-pk.	23100
Replacement EZ No-Vent Plug	5-pk.	23112
Open-End Wrenches, 1/4" x 5/16"	2-pk.	20110
Open-End Wrenches, 3/8" x 7/16"	2-pk.	22455

Vespel® Ferrules

- 100% high-temperature polyimide.
- Stable to 350 °C.
- Durable, leak-tight.

Vespel® ferrules

Graphite Ferrules

- Preconditioned to eliminate out-gassing.
- High-purity, high-density graphite.
- Smoother surface and cleaner edges than conventional graphite ferrules.
- Contain no binders that can off-gas or adsorb analytes.
- Stable to 450 °C.

Vespel®/Graphite Ferrules

- 60%/40% Vespel®/graphite blend offers the best combination of sealing and ease of workability.
- Seal with minimal torque, reusable, and preferred for vacuum and high-pressure uses.
- Stable to 400 °C.
- Recommended for mass spec transfer lines.

tech tip

Choosing the Right Ferrule

Graphite ferrules are soft, easy to seal, stable to 450 °C, and contain no binders that might off-gas. Vespel®/graphite ferrules work better for vacuum and high-pressure applications (e.g., GC-MS) because they will not fragment or allow oxygen to permeate into the system, whereas graphite ferrules will. Because Vespel®/graphite ferrules are made from a harder material, they might require retightening after several temperature cycles. Alumaseal® ferrules are ideal for GC-MS. They will not crack or fragment and require no retightening after temperature cycles.

Capillary Ferrules for 1/16-Inch Compression-Type Fittings

Available in Vespel®, graphite, or Vespel®/graphite material.

Ferrule ID	Fits Column ID	qty.	Vespel	Graphite	Vespel/Graphite
0.3 mm		10-pk.	22213	20233	20275
0.4 mm	0.10/0.15/0.18/0.25/0.28 mm	10-pk.	22214	20200	20211
0.4 mm	0.10/0.15/0.18/0.25/0.28 mm	50-pk.	—	20227	20229
0.5 mm	0.32 mm	10-pk.	22215	20201	20212
0.5 mm	0.32 mm	50-pk.	—	20228	20231
0.6 mm	0.28 mm**	10-pk.	—	—	20232
0.8 mm	0.45/0.53 mm	10-pk.	22216	20202	20213
0.8 mm	0.45/0.53 mm	50-pk.	—	20224	20230
1.0 mm	0.75 mm*	10-pk.	22217	21058	24912
1.2 mm	0.75 mm*	10-pk.	22218	—	—
1.6 mm	1.00 mm*	10-pk.	—	21060	—

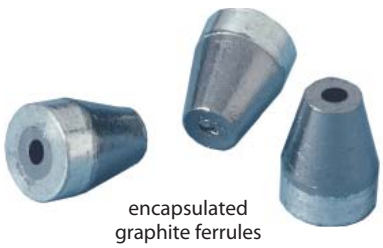
*For micropacked columns.
**For 0.28 mm MXT columns.

graphite ferrules

Encapsulated Ferrules for 1/16-Inch Compression Fittings

- Reusable—will not deform and stick in fittings.
- Less torque needed to seal ferrule.
- Restek's unique blend of graphite minimizes fragmentation and out-gassing.

Ferrule ID	Fits Column ID	qty.	cat.#
0.4 mm	0.25 mm	10-pk.	21036
0.5 mm	0.32 mm	10-pk.	21037
0.8 mm	0.53 mm	10-pk.	21038



encapsulated graphite ferrules

Standard Ferrules for 1/16-, 1/8-, and 1/4-Inch Fittings

Available in Vespel®, graphite, or Vespel®/graphite material.

Fitting Size	Ferrule ID	qty.	Vespel	Graphite	Vespel/Graphite
1/4"	3/16"	5-pk.	—	—	20258
1/16"	1/16"	10-pk.	22210	20207	20218
1/8"	1/8"	10-pk.	22211	20208	20219
1/8"	reduce to 1/16"	10-pk.	—	20209	20220
1/4"	1/4"	10-pk.	22212	20210	20221
1/4"	reduce to 1/8"	10-pk.	22219	20225	20222
1/4"	reduce to 1/16"	10-pk.	—	20226	20223

graphite ferrules

Two-Hole Ferrules for 1/8-Inch and 1/16-Inch Compression-Type Fittings

Fitting Size	Ferrule ID	Fits Column ID	qty.	Vespel/Graphite
1/16"	0.4 mm	0.25/0.28 mm	5-pk.	24848
1/16"	0.5 mm	0.32 mm	5-pk.	24849
1/8"	0.8 mm	0.45/0.53 mm	5-pk.	20246

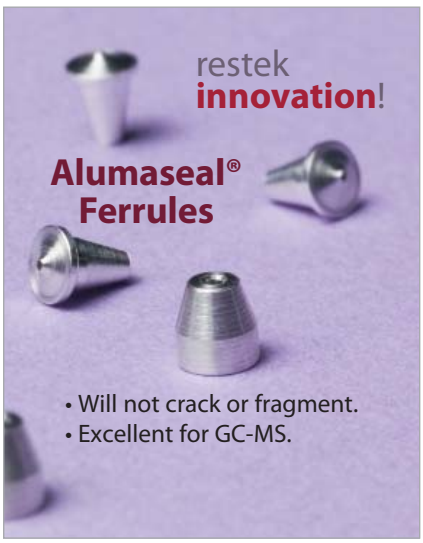
Reducing Ferrules

Available in graphite or Vespel®/graphite material.

Fitting Size	Ferrule ID	Fits Column ID	qty.	Graphite	Vespel/Graphite
1/8"	0.4 mm	0.25 mm	5-pk.	20205	20254
1/8"	0.5 mm	0.32 mm	5-pk.	20205	20255
1/8"	0.8 mm	0.53 mm	5-pk.	20206	20215
1/4"	0.4 mm	0.25 mm	5-pk.	20203	—
1/4"	0.5 mm	0.32 mm	5-pk.	20203	20257
1/4"	0.8 mm	0.45/0.53 mm	5-pk.	20204	20217

Blank Ferrules for 1/16-Inch Fittings

Fitting Size	Ferrule ID	qty.	Vespel/Graphite
1/16"	no hole	10-pk.	20240



Alumaseal® Ferrules

- Aluminum construction—will not crack or fragment.
- No retightening required after temperature cycles—excellent for GC-MS.
- Eliminate out-gassing and make leak-tight seals for less detector noise.
- Unique two-piece design permanently locks on fused silica tubing without causing breakage.
- Will not stick in fittings, unlike Vespel® or graphite ferrules.
- Stable to 550 °C.
- Use with any 1/16" compression-type fitting.

Ferrule ID	Fits Column ID	qty.	cat.#
0.4 mm	0.25 mm	10-pk.	21472
0.5 mm	0.32 mm	10-pk.	21473
0.8 mm	0.53 mm	10-pk.	21474

PTFE Ferrules

- Upper temperature limit 250 °C.
- 100% PTFE; completely inert.
- One-piece design requires no back ferrule.

Fitting Size	Ferrule ID	qty.	cat.#
1/16"	1/16"	10-pk.	21122
1/16"	0.4 mm	10-pk.	21123
1/16"	0.5 mm	10-pk.	21124
1/16"	0.8 mm	10-pk.	21125
1/8"	1/8"	10-pk.	21126
3/16"	3/16"	10-pk.	21127
1/4"	1/4"	10-pk.	21128

Graphite Ferrules

(M4 Fittings) for Thermo Scientific TRACE, 8000, 8000 TOP & Focus GCs

- Preconditioned to eliminate out-gassing.
- High-purity, high-density graphite.
- Smoother surface and cleaner edges than conventional graphite ferrules.
- Contain no binders that can off-gas or adsorb analytes.
- Stable to 450 °C.

Ferrule ID	Fits Column ID	Similar to TS part #	Graphite 2-pk.	Graphite 10-pk.
0.3 mm	0.10–0.15 mm	—	22221	22222
0.4 mm	0.18–0.28 mm	29013488 (2-pk.) 29053488 (10-pk.)	20280	20281
0.5 mm	0.32 mm	29013487 (2-pk.) 29053487 (10-pk.)	20282	20283
0.8 mm	0.45–0.53 mm	29013486 (2-pk.) 29053486 (10-pk.)	20284	20285

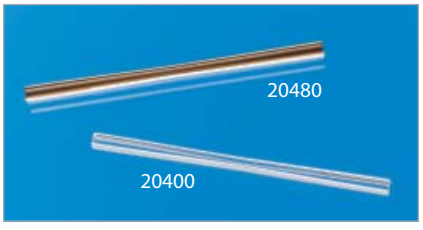
Press-Tight® Connectors

- Deactivated Press-Tight® connectors maintain complete inertness for the GC flow path.
- Siltek®-deactivated connectors are ideal for organochlorine pesticides analysis.
- Fit 0.33–0.74 mm OD columns (Restek 0.1–0.53 mm ID).

Universal Press-Tight® Connectors

- Connect a guard column to an analytical column.
- Repair a broken column.
- Connect a column outlet to a transfer line.

Description	5-pk.	25-pk.	100-pk.
Universal Press-Tight Connectors	20400	20401	20402
Universal Press-Tight Connectors, Deactivated	20429	20430	—
Universal Press-Tight Connectors, Siltek Deactivated	20480	20449	—

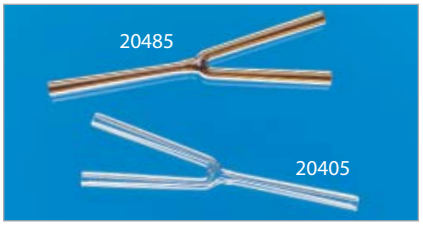


Universal "Y" Press-Tight® Connectors

An alternative method of performing dual-column confirmational analyses!

- Split sample flow onto two columns—perform confirmation analysis with a single injection.
- Split a single column flow to two detectors.

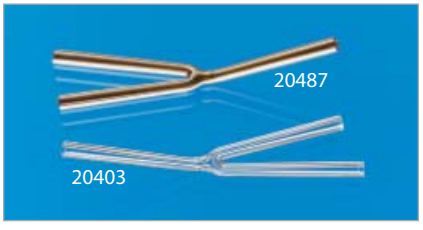
Description	ea.	3-pk.
Universal "Y" Press-Tight Connector	20405	20406
Universal "Y" Press-Tight Connector, Deactivated	20405-261	20406-261
Universal "Y" Press-Tight Connector, Siltek Deactivated	20485	20486



Universal Angled "Y" Press-Tight® Connectors

- Perform confirmation analysis with a single injection.
- Inlet and outlet ends conform to the column curvature—alleviates column-end connection strain.

Description	ea.	3-pk.
Universal Angled "Y" Press-Tight Connector	20403	20404
Universal Angled "Y" Press-Tight Connector, Deactivated	20403-261	20404-261
Universal Angled "Y" Press-Tight Connector, Siltek Deactivated	20487	20469



Polyimide Resin

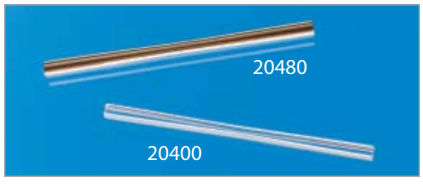
Securely connects a Press-Tight® connector to a fused silica column.

Description	Max. Temp.	qty.	cat.#
Polyimide Resin	350 °C	5 grams	20445

Fit both Restek cage designs.

Secure, reliable column-to-column connections!

NOTE: This product is not recommended for GC column-to-MS connections—use the Vacuum Vu-Union® union for this type of connection.

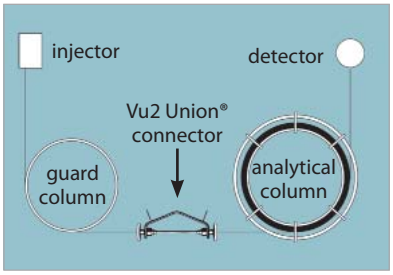


Vu2 Union® Connectors

- Connect a guard column to an analytical column.
- Connect a column to a transfer line.
- Connect two columns in series.
- Repair a broken column.
- Fit both Restek cage designs.

Restek's Vu2 Union® connector combines the simplicity of a Press-Tight® union with the strength of a metal union.

A guard column connected to an analytical column by a Vu2 Union® connector.

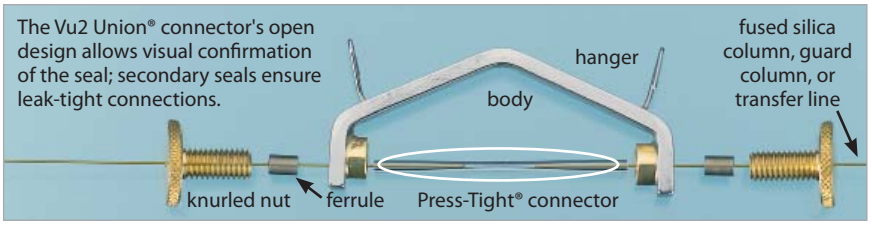


How does a Vu2 Union® connector work?

A Press-Tight® union in the Vu2 Union® connector joins the fused silica tubing ends together; the ferrule and knurled nut at each end of the connector hold the tubing in place via a secondary seal between the ferrule and the Press-Tight® union. Each knurled nut applies independent pressure to each ferrule to make leak-tight seals with the column ends. These ultra-strong connections will not unexpectedly disconnect under temperature changes, vibrations, or other stresses normally encountered in GC analyses. The open design allows visual confirmation of the seal between the column and the Press-Tight® union to ensure confidence in the connection. Hang the connector from the column cage to minimize stress on the connections.

Who will benefit from using Vu2 Union® connectors?

Any analyst using guard columns, transfer lines, or restrictor tubing; performing a dual-column analysis with columns connected in series; or seeking to repair a broken column will find Vu2 Union® connectors the simple, reliable, easy-to-use solution to their connection needs.



Kits include: Vu2 Union® body, 2 knurled nuts, 2 Press-Tight® unions, and 4 ferrules

Description	Ferrules Fit Column ID	qty.	cat.#
Vu2 Union Connector Kit	0.10–0.15 mm	kit	22220
Vu2 Union Connector Kit	0.18–0.28 mm	kit	21105
Vu2 Union Connector Kit	0.32 mm	kit	21106
Vu2 Union Connector Kit	0.45–0.53 mm	kit	21107
Knurled Nut		2-pk.	21108

Universal Press-Tight® Connectors

Description	5-pk.	25-pk.	100-pk.
Universal Press-Tight Connectors	20400	20401	20402
Universal Press-Tight Connectors, Deactivated	20429	20430	—
Universal Press-Tight Connectors, Siltek Deactivated	20480	20449	—

Graphite Ferrules for Vu2 Union® Connectors

- High-purity, high-density graphite.
- Stable to 450 °C.
- No binders that can off-gas or adsorb analytes.
- Smooth surface and clean edges.

Ferrule ID	Fits Column ID	Graphite 2-pk.	Graphite 10-pk.
0.3 mm	0.10–0.15 mm	22221	22222
0.4 mm	0.18–0.28 mm	20280	20281
0.5 mm	0.32 mm	20282	20283
0.8 mm	0.45–0.53 mm	20284	20285

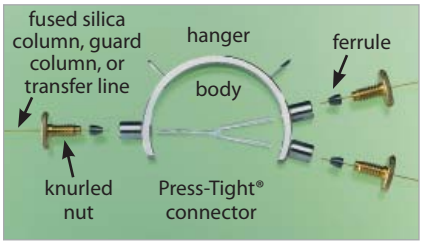
SeCure® "Y" Connector Kits

- Connect two analytical columns to a transfer line or guard column.
- Use standard "Y" Press-Tight® connectors and 1/16" graphite ferrules.
- Reliable seal integrity—will not unexpectedly disconnect during temperature-programmed analyses.
- Open design allows visual confirmation of the seal for added confidence in the connection.
- Fit both Restek cage designs.

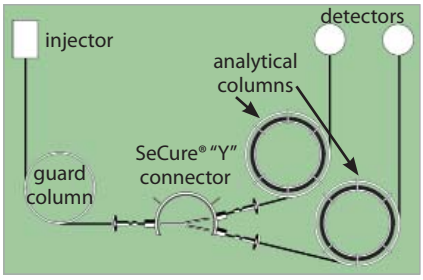
Combine the simplicity of a "Y" Press-Tight® connector with the strength of a metal union. The ferrules and knurled nuts hold the fused silica tubing in place, which prevents the tubing from unexpectedly disconnecting, even at temperatures as high as 400 °C.

Fit both Restek cage designs.

The SeCure® "Y" connector's open design allows visual confirmation of the seal.



Dual-column confirmational analysis with a single injection—one of the SeCure® "Y" connector's many uses.



Secure, reliable column-to-column connections!

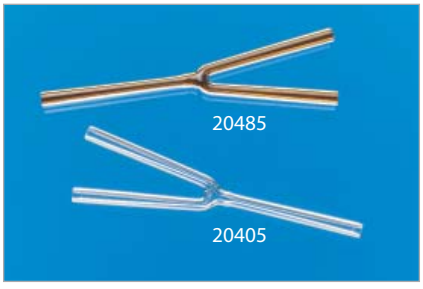
Kits include: SeCure® "Y" connector body, 3 knurled nuts, "Y" Universal Press-Tight® union, 3 ferrules.

Description	Ferrules Fit Column ID	qty.	cat.#
SeCure "Y" Connector Kit	0.18/0.25/0.28 mm	kit	20276
SeCure "Y" Connector Kit	0.32 mm	kit	20277
SeCure "Y" Connector Kit	0.45/0.53 mm	kit	20278
Knurled Nut		3-pk.	20279

Universal "Y" Press-Tight® Connectors

An alternative method of performing dual-column confirmational analyses!

- Split sample flow onto two columns—perform confirmation analysis with a single injection.
- Split a single column flow to two detectors.
- Deactivated Press-Tight® connectors maintain complete inertness for the GC flow path.
- Siltek®-deactivated connectors are ideal for organochlorine pesticides analysis.
- Fit 0.33–0.74 mm OD columns (Restek 0.1–0.53 mm ID).



Description	ea.	3-pk.
Universal "Y" Press-Tight Connector	20405	20406
Universal "Y" Press-Tight Connector, Deactivated	20405-261	20406-261
Universal "Y" Press-Tight Connector, Siltek Deactivated	20485	20486

Graphite Ferrules for SeCure® "Y" Connectors

- Preconditioned to minimize out-gassing.
- High-purity, high-density graphite.
- Stable to 450 °C.
- No binders that can off-gas or adsorb analytes.
- Smooth surface and clean edges.

Ferrule ID	Fits Column ID	Graphite 10-pk.	Graphite 50-pk.
0.4 mm	0.10/0.15/0.18/0.25/0.28 mm	20200	20227
0.5 mm	0.32 mm	20201	20228
0.8 mm	0.45/0.53 mm	20202	20224

MXT®-Union Connector Kits for Fused Silica Columns

- Low-dead-volume, leak-tight connection.
- Reusable.
- Siltek® treatment ensures maximum inertness.
- Ideal for connecting a guard column or transfer line to an analytical column.
- Use to oven temperatures of 360 °C.
- Available in union and "Y" configurations.
- Can also be used for connecting fused silica to metal.

These MXT® connectors can be used with fused silica tubing because of a Valcon polyimide, 1/32-inch, one-piece fused silica adaptor. This unique graphite-reinforced composite allows a capillary column to slide into the adaptor and be locked in place simply by loosening and tightening the fitting.

21386

MXT®-Union Connector Kits

for Fused Silica Columns

Each kit contains the MXT® union; two 1/32-inch nuts; and two, one-piece, fused silica adaptors.

Description	qty.	cat.#
For 0.25 mm ID Fused Silica Columns	kit	21386
For 0.32 mm ID Fused Silica Columns	kit	21385
For 0.53 mm ID Fused Silica Columns	kit	21384

21389

MXT® "Y"-Union Connector Kits for Fused Silica Columns

Each kit contains the MXT® union; three 1/32-inch nuts; and three, one-piece, fused silica adaptors.

Description	qty.	cat.#
For 0.25 mm ID Fused Silica Columns	kit	21389
For 0.32 mm ID Fused Silica Columns	kit	21388
For 0.53 mm ID Fused Silica Columns	kit	21387

20389

1/32-Inch Replacement Nut

Description	qty.	cat.#
1/32" Replacement Nut	5-pk.	20389

20140 20141 20389

Valco® Connectors—One-Piece Valcon Polyimide Adaptor Ferrule for Fused Silica

Fused silica adaptor ferrules are made from Valcon polyimide, a unique, graphite-reinforced composite specially prepared to maximize mechanical stability at temperatures up to 350 °C. The determining factor for selecting adaptor ferrule size is the fused silica tubing OD.

1/32-Inch Valco® Adaptor Ferrules (Valcon Polyimide)

Tubing OD	Tubing ID	Valco #	qty.	cat.#
0.25–0.40 mm	0.25 mm	FS.4-5	5-pk.	20137
0.40–0.50 mm	0.32 mm	FS.5-5	5-pk.	20140
0.50–0.80 mm	0.53 mm	ZF.5V-5	5-pk.	20141
1/32" Replacement Nut			5-pk.	20389

20146

Ferrule Removal Kit

The tapered tools in this kit have teeth designed to grip and remove fused silica adaptor ferrules that have become stuck in the fitting detail. Each kit has two tools: one for removing 1/32-inch adaptor ferrules and one for removing 1/16-inch adaptor ferrules.

Description	Valco #	qty.	cat.#
Ferrule Removal Kit	FRK1	kit	20146

Electronic Rechargeable Crimpers and Decappers

- Easy to use; comfortable grip.
- Hundreds of operations from one charge.
- Adjustable crimping force.
- Large battery allows for faster charge cycle.
- All kits include a universal plug set for the battery charger.
- For 11 mm and 20 mm caps.
- One-year warranty.

22358

Universal plug set for battery charger included in all kits.

These electronic crimpers and decappers have a rechargeable 6.4-volt battery installed. The large battery allows for quick, powerful operation and a faster charge cycle, minimizing downtime. Charging the battery takes thirty minutes to two hours. The universal plug set includes U.S., European, UK, and Australian plug clips.

Description	Size	qty.	cat.#
Electronic Crimper	11 mm	kit	22358
Electronic Crimper	20 mm	kit	22359
Electronic Decapper	11 mm	kit	22360
Electronic Decapper	20 mm	kit	22361
Replacement Battery for Electronic Crimpers and Decappers		ea.	22362

Easy Grip Manual Crimpers and Decappers

Our new Easy Grip Crimper and Decappers feature tough, light, glass-filled plastic bodies with curved handles that improve hand comfort during use. The bottom-pull handle allows for a steadier hold than top-push handles. An easily viewed adjustment knob is located at the head of the product. The clearly shown + and – symbols, along with directional arrows, simplify adjusting the intensity of the crimp/decap needed. The knob is also designed to indicate when the crimp setting has been reached, when it fully contacts the body of the product.

Crimper

Decapper

Safer than removing caps with pliers, knives, or screwdriver blades!

Description	Size	qty.	cat.#
Crimper	11 mm	ea.	23396
Crimper	20 mm	ea.	23398
Decapper	11 mm	ea.	23397
Decapper	20 mm	ea.	23399

24385

24383


21724

2.0 mL, 11 mm crimp-top vials are compatible with Thermo TRACE GC 2000 and AS2000 instruments.

2.0 mL Crimp-Top Vials, 12 x 32 mm, 11 mm

Choose with or without white graduated marking spots.

Description	Color	Material	100-pk.	1,000-pk.
Vial w/White Graduated Marking Spot	Clear	Glass	24383	24384
Vial w/White Graduated Marking Spot	Amber	Glass	24385	24386
Vial without Graduated Marking Spot	Clear	Glass	21152	21153

2.0 mL, 11 mm Aluminum Crimp Seals With Septa

Seal Color	Septa Material	100-pk.	500-pk.	1,000-pk.
Silver	PTFE/Natural Rubber	21174	—	21175
Blue	PTFE/Red Rubber	24351	—	24352
Green	PTFE/Red Rubber	24353	—	24354
Red	PTFE/Red Rubber	24355	—	24356
Yellow	PTFE/Red Rubber	24357	—	24358
Mixed	PTFE/Rubber	—	21724	—
Silver	PTFE/Silicone	24359	—	24360
Blue	PTFE/Silicone	24361	—	24362
Green	PTFE/Silicone	24363	—	24364
Red	PTFE/Silicone	24365	—	24366
Yellow	PTFE/Silicone	24367	—	24368
Mixed	PTFE/Silicone	—	21725	—
Silver	PTFE/Silicone/PTFE	24369	—	24370


24671

2.0 mL Crimp Vial Convenience Kits (Vials, Caps & Septa)

Vials packaged in a clear-lid tray. Caps with septa packaged in a plastic bag.

Description	100-pk.	1,000-pk.
Clear 2.0 mL Vial, Deactivated, Silver Seal, PTFE/Natural Rubber Septa	24671	24672
Amber 2.0 mL Vial, Deactivated, Silver Seal, PTFE/Natural Rubber Septa	24673	24674
Clear 2.0 mL Vial, Untreated, Silver Seal, PTFE/Natural Rubber Septa	21196	21197
Amber 2.0 mL Vial, Untreated, Silver Seal, PTFE/Natural Rubber Septa	21198	21199
Clear 2.0 mL Vial, Untreated, Silver Seal, PTFE/Silicone Septa	24646	24647
Amber 2.0 mL Vial, Untreated, Silver Seal, PTFE/Silicone Septa	24648	24649


21776


24692


24518A

Inserts for 2.0 mL, 11 mm Crimp-Top & 2.0 mL, 9 mm Short-Cap, Screw-Thread Vials

Description	Volume	Material	100-pk.	1,000-pk.
Big Mouth Insert w/Bottom Spring	50 µL	Glass	24513	21782
Big Mouth Insert w/Bottom Spring	250 µL	Glass	21776	21777
Big Mouth Insert w/Glass Flange (Step Design)*	250 µL	Glass	24516	21779
Insert, Flat Bottom	350 µL	Glass	21780	24517
Insert, Flat Bottom w/ID Ring	350 µL	Glass	24692	24693
Big Mouth Insert w/Bottom Spring	250 µL	Polypropylene	24518	—
Big Mouth Insert w/Bottom Spring & Graduated Markings	250 µL	Polypropylene	24518A	—
Big Mouth Insert, Top Flange	250 µL	Polypropylene	24519	—
Big Mouth Insert, No Spring	250 µL	Polypropylene	24520	—

*Big Mouth insert w/glass flange (step design) not to be used with 9 mm screw-thread vials.


24651

2.0 mL Crimp-Top Vial With 100 µL Insert

- Plastic vial.
- Choice of glass or polypropylene insert.

Description		100-pk.	1,000-pk.
Clear Plastic Vial	w/100 µL Polypropylene Insert	24651	24652
Clear Plastic Vial	w/100 µL Glass Insert	24653	—

2.0 mL, 11 mm Poly Crimp Seal Caps: Snap-On or Crimp

- Works on any crimp-style vial.

The Poly Crimp Seal is versatile, working as either a snap-on or crimp-top cap. Simply use a standard crimping tool to secure the Poly Crimp Seal onto any crimp-top vial. It's that easy!

Seal Color	Liner Material	100-pk.	400-pk.	1,000-pk.
Clear	PTFE/Butyl Rubber	24433	—	24434
Clear	PTFE/Silicone	24443	—	24444
Blue	PTFE/Silicone	24445	—	24446
Clear	PTFE/Silicone/PTFE	24453	—	24454
Blue	PTFE/Silicone/PTFE	24455	—	24456
Mixed	PTFE/Silicone/PTFE	—	21728	—

2.0 mL, 11 mm GC Snap Ring Cap With Septum

- Snaps on any crimp-style vial.
- Save money! Use this snap cap when you don't need to crimp.

21731

Description	Liner/Septa Material	100-pk.	1,000-pk.
Polypropylene Snap Ring Cap w/Liner	PTFE, 10 mil	21729	21730
Polypropylene Snap Ring Cap w/Septum	PTFE/Butyl Rubber	21731	21732
Polypropylene Snap Ring Cap w/Septum	PTFE/Silicone	21733	21734

Certified Autosampler Vial Kits

Certified Vials, 2.0 mL Screw-Thread Vials

- Certificates enclosed with each kit.
- Vials of clear or amber borosilicate glass with ID marking spots.
- Closures with pre-inserted septa.
- Each kit sealed for integrity.

Certification Parameters Include:

Vial Dimensions:	Height, diameter, bottom thickness, neck length, thread profile, and annealing	
Cap/Septum:	Diameter, height, thread integrity, center flash, septa insertion, sealing/resealing test, residue by headspace GC, and extractables	
Chemical Test:	LC Test:	nonvolatile residue
	GC Test:	volatile residue

22788

22792

Description	100-pk.
Assembled Clear 2.0 mL Vial w/Marking Spot, Cap, Bonded PTFE/Silicone Slit Septa	22789
Assembled Amber 2.0 mL Vial w/Marking Spot, Cap, Bonded PTFE/Silicone Slit Septa	22788
Unassembled Clear 2.0 mL Vial w/Marking Spot, Cap, Bonded PTFE/Silicone Septa	22792
Unassembled Amber 2.0 mL Vial w/Marking Spot, Cap, Bonded PTFE/Silicone Septa	22790
Unassembled Clear 2.0 mL High-Recovery Vial w/Marking Spot, Cap, Bonded PTFE/Silicone Slit Septa	22793
Unassembled Amber 2.0 mL Vial w/Marking Spot, Cap, Bonded PTFE/Silicone Slit Septa	22791

21140

2.0 mL, 9 mm Short-Cap, Screw-Thread Vials, 12 x 32 mm

- Fit all 2.0 mL, 12 x 32 mm, crimp-top vial-based autosamplers.

2.0 mL, 9 mm Short-Cap, Screw-Thread Vials (vial only)

Description	Color	100-pk.	1,000-pk.
Short-Cap Vial w/White Graduated Marking Spot	Clear	21140	21141
Short-Cap Vial w/White Graduated Marking Spot	Amber	21142	21143
Short-Cap Vial without Graduated Marking Spot	Clear	21154	21155

24668

2.0 mL, 9 mm short-cap, screw-thread vials are compatible with Thermo TRACE GC 2000 and AS2000 instruments.

2.0 mL, 9 mm Short-Cap, Screw-Vial Closures (Polypropylene, preassembled)

Cap Color	Liner Material	100-pk.	500-pk.	1,000-pk.
Blue	PTFE/Red Rubber	24473	—	24474
Mixed	PTFE/Red Rubber	—	24668	—
Blue	PTFE/Silicone	24485	—	24486
Green	PTFE/Silicone	24487	—	24488
Yellow	PTFE/Silicone	24493	—	24494
Mixed	PTFE/Silicone	—	24669	—
Blue	PTFE/Silicone/PTFE	24497	—	24498
Black	PTFE/Silicone/PTFE	24495	—	24496
Natural	PTFE/Silicone/PTFE	24501	—	24502
Red	PTFE/Silicone/PTFE	24503	—	24504
Yellow	PTFE/Silicone/PTFE	24505	—	24506
Mixed	PTFE/Silicone/PTFE	—	24670	—

22856

2.0 mL Sample Vial Racks

- Racks feature alphanumeric indexing for easier vial identification.
- Racks can be stacked for efficient storage.
- Fits most 2.0 mL, 12 x 32 mm vials (vials sold separately).

Description	Capacity	qty.	cat.#	qty.	cat.#
Polypropylene Storage Rack for 12 x 32 mm Vials	50 vials, 5 x 10	ea.	22856	5-pk.	22857

Autosampler Syringes for Thermo Scientific GCs

- Hamilton and SGE syringes are designed and tested to meet critical autosampler performance needs.
- Needle point styles are designed to withstand multiple, rapid injections through a septum.

Hamilton

Volume	Needle Term.	Needle Gauge	Needle Length	Point Style	Hamilton Model	cat.#	qty.	Restek cat.#
10 µL	N	25s	2"	2	701SN	80320	ea.	24961
10 µL	N	26s	3.15"	AS	701SN	80318	ea.	24962

SGE

Volume	Needle Term.	Needle Gauge	Needle Length	Point Style	SGE Model	cat.#	qty.	Restek cat.#
0.5 µL	R	23	50 mm	Cone	0.5BNR-C/F-0.63	000492	ea.	24928
0.5 µL	R	26	50 mm	Cone	0.5BNR-C/F-0.47	000490	ea.	24926
10 µL	F	23	50 mm	Cone	10F-VA8400-5/0.63C	002951	ea.	24923
10 µL	F	26	50 mm	Cone	10F-BT-5/0.47C	0029801	ea.	24922
10 µL	F	26	50 mm	Cone	5K-10F-BT-5/0.47C	0029861	6-pk.	24925
10 µL	R	26	50 mm	Cone	10R-VA8400-5/0-0.47C	002952	ea.	24930

Hamilton 10 µL Autosampler Syringe

24962

SGE 10 µL Autosampler Syringe

24923

Replacement Needles for Thermo Scientific Autosampler Syringes

SGE

Syringe Volume	Needle Gauge	Needle Length	Point Style	SGE cat.#	qty.	Restek cat.#
0.5 µL	26	50 mm	Cone	033770	ea.	24927
0.5 µL	23	50 mm	Cone	033772	ea.	24929
10 µL	26	80 mm	Cone	031535	3-pk.	24935
10 µL	23	50 mm	Cone	037787	2-pk.	24933

24933

instrument **reference**

Autosampler Syringes for Thermo Scientific GCs

Autosampler syringes for TriPlus, AS3000, AS2000, AS200/800 GCs. The following autosamplers are compatible with the respective SGE and Hamilton syringes. For further information or questions, contact your Restek representative or technical service.

SGE Syringes

TriPlus	AS3000	AS2000	AS200/800	Restek cat.#
•	•			24928
•	•			24926
•	•	•	•	24923
•	•	•	•	24922
•	•	•		24930

Replacement Needles for SGE Syringes for Thermo Scientific GCs

TriPlus	AS3000	AS2000	AS200/800	Restek cat.#
•	•			24927
•	•			24929
•	•	•	•	24935
•	•	•	•	24933

Hamilton Syringes

TriPlus	AS3000	AS2000	AS200/800	Restek cat.#
			•	24962

Guide to Needle Termination Codes

Hamilton:
(N) Cemented Needle

SGE:
(F) Fixed Needle
(R) Removable Needle

Syringes for Thermo Scientific RSH Autosampler

SGE

Volume	Needle Term.	Needle Gauge	Needle Length	Point Style	SGE Model	SGE cat.#	qty.	Restek cat.#
5 µL	F	23	57 mm	Cone	5F-RSH-5.7/0.63C	001861	ea.	23908
5 µL	F	23	85 mm	Cone	5F-RSH-8.5/0.63C	001863	ea.	23909
5 µL	F	26	57 mm	Cone	5F-RSH-5.7/0.47C	001865	ea.	23910
5 µL	F	26	85 mm	Cone	5F-RSH-8.5/0.47C	001867	ea.	23911
5 µL	R	23	57 mm	Cone	5R-RSH-5.7/0.63C	001871	ea.	23912
5 µL	R	23	85 mm	Cone	5R-RSH-8.5/0.63C	001873	ea.	23913
5 µL	R	26	57 mm	Cone	5R-RSH-5.7/0.47C	001875	ea.	23914
5 µL	R	26	85 mm	Cone	5R-RSH-8.5/0.47C	001877	ea.	23915
10 µL	F	23	57 mm	Cone	10F-RSH-5.7/0.63C	002861	ea.	23916
10 µL *	F	23	57 mm	Cone	10F-RSH-GT-5.7/0.63C	002862	ea.	23917
10 µL	F	23	85 mm	Cone	10F-RSH-8.5/0.63C	002863	ea.	23918
10 µL *	F	23	85 mm	Cone	10F-RSH-GT-8.5/0.63C	002864	ea.	23919
10 µL	F	26	57 mm	Cone	10F-RSH-5.7/0.47C	002865	ea.	23920
10 µL *	F	26	57 mm	Cone	10F-RSH-GT-5.7/0.47C	002866	ea.	23921
10 µL	F	26	85 mm	Cone	10F-RSH-8.5/0.47C	002867	ea.	23922
10 µL *	F	26	85 mm	Cone	10F-RSH-GT-8.5/0.47C	002868	ea.	23923
10 µL	R	23	57 mm	Cone	10R-RSH-5.7/0.63C	002871	ea.	23924
10 µL *	R	23	57 mm	Cone	10R-RSH-GT-5.7/0.63C	002872	ea.	23925
10 µL	R	23	85 mm	Cone	10R-RSH-8.5/0.63C	002873	ea.	23926
10 µL *	R	23	85 mm	Cone	10R-RSH-GT-8.5/0.63C	002874	ea.	23927
10 µL	R	26	57 mm	Cone	10R-RSH-5.7/0.47C	002875	ea.	23928
10 µL *	R	26	57 mm	Cone	10R-RSH-GT-5.7/0.47C	002876	ea.	23929
10 µL	R	26	85 mm	Cone	10R-RSH-8.5/0.47C	002877	ea.	23930
10 µL *	R	26	85 mm	Cone	10R-RSH-GT-8.5/0.47C	002878	ea.	23931
25 µL *	F	26	57 mm	Cone	25F-RSH-GT-5.7/0.47C 2	003866	ea.	23932
50 µL *	F	26	57 mm	Cone	50F-RSH-GT-5.7/0.47C	004866	ea.	23933
100 µL *	F	26	57 mm	Cone	100F-RSH-GT-5.7/0.47(0.11)C	005866	ea.	23934
250 µL *	F	26	57 mm	Cone	250F-RSH-GT-5.7/0.47C	006866	ea.	23935

*Gas-tight.

Guide to Needle Termination Codes

SGE:
(F) Fixed Needle
(R) Removable Needle

Replacement Needles for Thermo Scientific RSH Autosampler Syringes

SGE

Syringe Volume	Needle Gauge	Needle Length	Point Style	SGE Model	SGE cat.#	qty.	Restek cat.#
5 µL	23	57 mm	Cone	N5-RSH-5.7/0.63C 2-pk	036871	2-pk	23942
5 µL	23	85 mm	Cone	N5-RSH-8.5/0.63C 2-pk	036873	2-pk	23943
5 µL	26	57 mm	Cone	N5-RSH-5.7/0.47C 2-pk	036875	2-pk	23944
5 µL	26	85 mm	Cone	N5-RSH-8.5/0.47C 2-pk	036877	2-pk	23945
10 µL	23	57 mm	Cone	N10-RSH-5.7/0.63C 2-pk	037871	2-pk	23946
10 µL	23	85 mm	Cone	N10-RSH-8.5/0.63C 2-pk	037873	2-pk	23947
10 µL	26	57 mm	Cone	N10-RSH-5.7/0.47C 2-pk	037875	2-pk	23948
10 µL	26	85 mm	Cone	N10-RSH-8.5/0.47C 2-pk	037877	2-pk	23949

Replacement Plungers for Thermo Scientific RSH Autosampler Syringes

SGE

Syringe Volume	Needle Term.	SGE Model	SGE cat.#	qty.	Restek cat.#
10 µL	F	P10F-RSH-GT	032810	ea.	23936
10 µL	R	P10R-RSH-GT	032811	ea.	23937
25 µL	F	P25F-RSH-GT	032815	ea.	23938
50 µL	F	P50F-RSH-GT	032821	ea.	23939
100 µL	F	P100F-RSH-GT	032825	ea.	23940
250 µL	F	P250F-RSH-GT	032831	ea.	23941

Note: Compatible with Thermo Scientific gas-tight syringes only.

Supplies for Thermo Scientific 1300/1310 GCs

Replacement Inlet Seals With Washers

- Siltek® treatment provides inertness similar to fused silica.
- All seals include washers.

Replacement Inlet Seals for Thermo Scientific 1300/1310 GCs

NEW!

The inlet seal at the base of the GC injection port contacts the sample and must be changed frequently to prevent adsorption of active compounds. In addition, septum fragments and sample residue accumulate on the disk surface, requiring disk replacement.
Note: The 1.2 mm inlet seal is recommended when installing two columns using a two-hole Vespel®/graphite ferrule.

22231

22237

Single-Column Installation **0.8 mm ID (Opening)**	**Similar to Thermo part #**	**qty.**	**cat.#**
Gold-Plated	290GA082	2-pk.	22231
Gold-Plated	290GA081	10-pk.	22232
Siltek-Treated	290GA092	2-pk.	22237
Siltek-Treated	290GA091	10-pk.	22238
0.25/0.32 mm ID Dual-Column Installation **1.2 mm ID (Opening)**	**Similar to Thermo part #**	**qty.**	**cat.#**
Gold-Plated	290GA122	2-pk.	22233
Gold-Plated	290GA121	10-pk.	22234

Cross-Disk Inlet Seals for Thermo Scientific 1300/1310 GCs

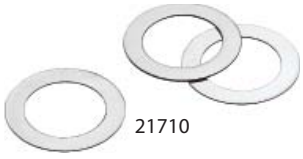
NEW!

22235

22239

0.8 mm ID Cross-Disk Inlet Seal	**Similar to Thermo part #**	**qty.**	**cat.#**
Gold-Plated	290GA083	2-pk.	22235
Gold-Plated	290GA084	10-pk.	22236
Siltek-Treated	290GA093	2-pk.	22239
Siltek-Treated	290GA094	10-pk.	22240

Replacement Inlet Seal Washers



21710

Description	**qty.**	**cat.#**
Replacement Inlet Seal Washers	15-pk.	21710

Septa (11 mm) for Thermo Scientific 1300/1310 GCs

Premium Non-Stick BTO® Septa

- Usable to 400 °C inlet temperature.
- New plasma coating eliminates sticking in the injection port.
- Precision molding ensures consistent, accurate fit.
- Partial predrilled CenterGuide design.
- Preconditioned and ready to use.
- Packaged in precleaned glass jars.
- Each batch is GC-FID tested.
- Bleed and temperature optimized; ideal for demanding GC and GC-MS applications.

BTO® septa

Description	**Diameter**	**Similar to Thermo part #**	**qty.**	**cat.#**
Premium Non-stick BTO Septa	11 mm (7/16") CenterGuide	31303233	50-pk.	27090
Premium Non-stick BTO Septa	11 mm (7/16") CenterGuide	—	100-pk.	27091

Note: Due to differences in inlet design, the actual septum temperature for a given inlet setpoint can vary by manufacturer. Restek recommends using only BTO® septa in Thermo Scientific instruments.

See Sky® Inlet Liners for 1300/1310 GCs on page 5.

Overview of Restek Ultra-High Purity (UHP) Gas Regulators

- Regulators feature metal-to-metal seals throughout for long-term leak-tightness.
- Metal diaphragm outlet valve ensures gas purity.
- Each regulator is helium leak-test-certifiable to 1x10-8 scc/sec.
- Temperature range: -40 °C to 60 °C.

Ultra-High Purity (UHP) Brass Body Gas Regulators

UHP brass regulators are the best choice when using ultra-high purity carrier gas for sensitive GC applications using MS, PID, or ECD detection methods. They feature reduced internal dead-volume relative to stainless steel bodies. The metal valve diaphragm ensures leak-free shutoff. Oxidation-resistant chrome plating maintains a like-new appearance.

Dual-Stage Ultra-High Purity Chrome-Plated Brass Gas Regulators

Inlet gauge: 0 to 4,000 psig (0–27,579 kPa)
Outlet assembly: diaphragm valve, 1/4" tube fitting

- Oxidation-resistant, chrome-plated.
- Most stable outlet pressure control.
- Secondary pressure regulation not needed.
- Most widely used regulator.
- Less internal volume than stainless steel gas regulators.

Fitting	Outlet Pressure	Outlet Gauge	qty.	cat.#
CGA 580 (N_2, He, Ar)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	21667
CGA 350 (H_2, P_5)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	21668
CGA 590 (Air)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	21669
DIN 477 #1 (H_2)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22369
DIN 477 #6 (He, Ar)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22368
DIN 477 #9 (Air)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22370
DIN 477 #10 (N_2)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22371

NOTE: CGA fittings are for U.S. use; DIN fittings are for European use.

Single-Stage Ultra-High Purity Chrome-Plated Brass Gas Regulators

- Oxidation-resistant, chrome-plated.
- Use when there is secondary pressure regulation downstream.
- Identical gas purity protection as with dual-stage gas regulators.

Inlet gauge: 0 to 4,000 psig (0–27,579 kPa)
Outlet assembly: diaphragm valve, 1/4" tube fitting

Fitting	Outlet Pressure	Outlet Gauge	qty.	cat.#
CGA 580 (N_2, He, Ar)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	20646
CGA 350 (H_2, P_5)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	20647
CGA 590 (Air)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	20648
DIN 477 #1 (H_2)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22373
DIN 477 #6 (He, Ar)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22372
DIN 477 #9 (Air)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22374
DIN 477 #10 (N_2)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22375

NOTE: CGA fittings are for U.S. use; DIN fittings are for European use.

Ultra-High Purity Chrome-Plated Brass Line Gas Regulator

Inlet connections: 1/4" FPT
Outlet assembly: 1/4" FPT port

- Oxidation-resistant, chrome-plated.
- Use where you need to reduce the line pressure by 20 psig (138 kPa) or more.
- Same purity protection as high-pressure cylinder regulators.

Fitting	Outlet Pressure	Outlet Gauge	qty.	cat.#
1/4" female NPT ports*	0-50 psig (0-345 kPa)	30" - 0 to 100 psig (0-689 kPa)	ea.	21666
1/4" female NPT ports*	0-100 psig (0-689 kPa)	30" - 0 to 200 psig (0-1,379 kPa)	ea.	22452

*Order appropriate male connector, pipe-to-tube fittings.

Swagelok® Male Connector, Pipe-to-Tube Fittings

23134

23179

Fitting Type	Size (inches)	Similar to Swagelok	Brass qty.	Brass cat.#	Stainless Steel qty.	Stainless Steel cat.#
Male Connector	1/4" to 1/4" NPT	400-1-4	10-pk.	23134	2-pk.	23184
Male Connector	1/8" to 1/4" NPT	200-1-4	10-pk.	23136	2-pk.	23186
Tube End Reducer	1/4" to 1/8"	200-R-4	5-pk.	23129	2-pk.	23179

Ultra-High Purity (UHP) Stainless Steel Body Gas Regulators

UHP stainless steel regulators are the standard for ultra-high-purity and corrosion-resistant pressure regulation. They are more easily purged of atmospheric components compared to brass gas regulators, making them ideal for the most demanding applications. Stainless steel is especially useful in atmospheres of dry corrosive gases such as hydrogen.

Dual-Stage Ultra-High Purity Stainless Steel Gas Regulators

- Most stable outlet pressure control.
- Secondary pressure regulation not needed.

Fitting	Outlet Pressure	Outlet Gauge	qty.	cat.#
CGA 580 (N_2, He, Ar)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	20662
CGA 350 (H_2, P_5)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	20663
CGA 590 (Air)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	20664
DIN 477 #1 (H_2)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22377
DIN 477 #6 (He, Ar)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22376
DIN 477 #9 (Air)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22378
DIN 477 #10 (N_2)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22379

NOTE: CGA fittings are for U.S. use; DIN fittings are for European use.

Inlet gauge: 0 to 4,000 psig (0–27,579 kPa)
Outlet assembly: diaphragm valve, 1/4" tube fitting

Single-Stage Ultra-High Purity Stainless Steel Gas Regulators

- Use when there is secondary pressure regulation downstream.
- Identical gas purity protection as with dual-stage gas regulators.

Fitting	Outlet Pressure	Outlet Gauge	qty.	cat.#
CGA 580 (N_2, He, Ar)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	20665
CGA 350 (H_2, P_5)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	20666
CGA 590 (Air)	0 to 100 psig (0–689 kPa)	30" – 0 to 200 psig (0–1,379 kPa)	ea.	20667
DIN 477 #1 (H_2)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22380
DIN 477 #6 (He, Ar)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22445
DIN 477 #9 (Air)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22446
DIN 477 #10 (N_2)	0 to 7 bar (0–100 psig)	30" – 0 to 14 bar (0–200 psig)	ea.	22447

NOTE: CGA fittings are for U.S. use; DIN fittings are for European use.

Inlet gauge: 0 to 4,000 psig (0–27,579 kPa)
Outlet assembly: diaphragm valve, 1/4" tube fitting

Flexible Stainless Steel Hoses

Description	Length	Fittings	qty.	cat. #
Flexible Stainless Steel Hose	36"	1/4" Female NPT	ea.	21339
Flexible Stainless Steel Hose	18"	1/4" Female NPT	ea.	21340

Flammable Gas Flash Arrestor—Factory Mutual Approved*

- Gas flow shuts off in the event of a flashback.
- Flame extinguished—flame front prevented from reaching the gas supply.
- No gas flow restriction under normal operating conditions.

Description	Fittings	qty.	cat.#
Flammable Gas Flash Arrestor, Brass Body	1/4" NPTF	ea.	21334

*Approved for brass body servicing hydrogen, acetylene, propane, or natural gas only.

21334

CGA Fittings

CGA-specified nuts and nipples with internal frit, 1/4-inch NPT nickel-plated brass.

Description	qty.	cat.#
CGA 580 Fitting (N_2, He, Ar)	ea.	21336
CGA 350 Fitting (H_2, P_5)	ea.	21337
CGA 590 Fitting (Air)	ea.	21338

21336

ordering **note**

International Fittings

All gas regulators are available with the following BS (British Standard) and DIN (German Industrial Standards Organization) connections. Please contact your local Restek representative for more information.

BS 341 #01	BS 341 #08	BS 341 #15	DIN 477 #06	DIN 477 #10	DIN 477 #14
BS 341 #02	BS 341 #10	DIN 477 #01	DIN 477 #07	DIN 477 #11	DIN 477 #15
BS 341 #03	BS 341 #13	DIN 477 #03	DIN 477 #08	DIN 477 #12	
BS 341 #04	BS 341 #14	DIN 477 #05	DIN 477 #09	DIN 477 #13	


nut


front ferrule


back ferrule


nut & ferrule set


plug


union


reducing union


tee


cross


tube end reducer


port connector


male connector


female connector


male quick coupling


female quick coupling

Swagelok® Fittings (Brass & Stainless Steel)

Restek is pleased to offer one of the premier lines of fittings available for chromatographers in the market today. We can supply the entire line of Swagelok® fittings. If you don't see the exact product you're looking for, please call us or contact your Restek representative for a quote.

			Brass		316 Grade Stainless Steel	
Fitting Type	**Size**	**Swagelok #**	**qty.**	**cat.#**	**qty.**	**cat.#**
Nut	1/16"	102-1	20-pk.	23100	5-pk.	23150
	1/8"	202-1	40-pk.	23101	10-pk.	23151
	1/4"	402-1	40-pk.	23102	10-pk.	23152
Front Ferrule	1/16"	103-1	20-pk.	23103	10-pk.	23153
	1/8"	203-1	40-pk.	23104	20-pk.	23154
	1/4"	403-1	40-pk.	23105	20-pk.	23155
Back Ferrule	1/16"	104-1	20-pk.	23106	10-pk.	23156
	1/8"	204-1	40-pk.	23107	20-pk.	23157
	1/4"	404-1	40-pk.	23108	20-pk.	23158
Nut & Ferrule Set	1/16"	—	10-pk.	23109	2-pk.	23159
	1/8"	—	20-pk.	23110	5-pk.	23160
	1/4"	—	20-pk.	23111	5-pk.	23161
Plug	1/16"	100-P	5-pk.	23112	2-pk.	23162
	1/8"	200-P	10-pk.	23113	4-pk.	23163
	1/4"	400-P	10-pk.	23114	4-pk.	23164
Union	1/16"	100-6	3-pk.	23115	ea.	23165
	1/8"	200-6	5-pk.	23116	2-pk.	23166
	1/4"	400-6	5-pk.	23117	2-pk.	23167
Reducing Union	1/8" to 1/16"	200-6-1	5-pk.	23118	ea.	23168
	1/4" to 1/16"	400-6-1	5-pk.	23119	2-pk.	23169
	1/4" to 1/8"	400-6-2	5-pk.	23120	2-pk.	23170
Tee	1/16"	100-3	2-pk.	23121	ea.	23171
	1/8"	200-3	2-pk.	23122	ea.	23172
	1/4"	400-3	2-pk.	23123	ea.	23173
Cross	1/8"	200-4	2-pk.	23124	ea.	23174
	1/4"	400-4	2-pk.	23125	ea.	23175
Tube End Reducer	1/8" to 1/16"	100-R-2	5-pk.	23126	2-pk.	23176
	1/4" to 1/16"	100-R-4	5-pk.	23127	2-pk.	23177
	1/8" to 1/4"	400-R-2	5-pk.	23128	2-pk.	23178
	1/4" to 1/8"	200-R-4	5-pk.	23129	2-pk.	23179
Port Connector	1/8"	201-PC	5-pk.	23130	2-pk.	23180
	1/4"	401-PC	10-pk.	23131	2-pk.	23181
	1/8" to 1/4"	401-PC-2	5-pk.	23132	2-pk.	23182
Male Connector	1/8" to 1/8" NPT	200-1-2	10-pk.	23133	2-pk.	23183
	1/4" to 1/4" NPT	400-1-4	10-pk.	23134	2-pk.	23184
	1/16" to 1/8" NPT	100-1-2	5-pk.	23135	2-pk.	23185
	1/8" to 1/4" NPT	200-1-4	10-pk.	23136	2-pk.	23186
	1/4" to 1/8" NPT	400-1-2	10-pk.	23137	2-pk.	23187
Female Connector	1/8" to 1/8" NPT	200-7-2	5-pk.	23138	2-pk.	23188
	1/4" to 1/4" NPT	400-7-4	5-pk.	23139	2-pk.	23189
	1/4" to 1/8" NPT	400-7-2	5-pk.	23140	2-pk.	23190
Male & Female Quick Couplings	1/8" male*	QC4D-200	—	—	ea.	23191
	1/8" male	QC4S-200	—	—	ea.	23192
	1/8" female*	QC4B-200	—	—	ea.	23193
	1/4" male*	QC4D-400	—	—	ea.	23194
	1/4" male	QC4S-400	—	—	ea.	23195
	1/4" female*	QC4B-400	—	—	ea.	23196

*Includes self-sealing shutoff valve.

Swagelok® Fittings (Siltek®/Sulfinert® & Silcosteel®-CR Treated)

- Full line of treated 1/16", 1/8", and 1/4" fittings.
- Silcosteel®-CR treatment enhances corrosion resistance by 10x or more.
- For custom treatment on any Swagelok® fitting or other system parts not listed here, call us or contact your Restek representative.

			Siltek/Sulfinert Treated		Silcosteel-CR Treated	
Fitting Type	**Size**	**Swagelok #**	**qty.**	**cat.#**	**qty.**	**cat.#**
Union	1/16"	SS-100-6	ea.	22540	ea.	22575
	1/8"	SS-200-6	ea.	22541	ea.	22576
	1/4"	SS-400-6	ea.	22542	ea.	22577
	3/8"	SS-600-6	ea.	22909	ea.	22904
Tee	1/16"	SS-100-3	ea.	22543	ea.	22578
	1/8"	SS-200-3	ea.	22544	ea.	22579
	1/4"	SS-400-3	ea.	22545	ea.	22580
	3/8"	SS-600-3	ea.	22910	ea.	22905
Reducing Union	1/8" to 1/16"	SS-200-6-1	ea.	22546	ea.	22581
	1/4" to 1/16"	SS-400-6-1	ea.	22547	ea.	22582
	1/4" to 1/8"	SS-400-6-2	ea.	22548	ea.	22583
	3/8" to 1/4"	SS-600-6-4	ea.	22911	ea.	22906
Elbow	1/8"	SS-200-9	ea.	22549	ea.	22584
	1/4"	SS-400-9	ea.	22550	ea.	22585
Plug	1/8"	SS-200-P	ea.	22573	ea.	22620
	1/4"	SS-400-P	ea.	22574	ea.	22597
Cross	1/8"	SS-200-4	ea.	22551	ea.	22586
	1/4"	SS-400-4	ea.	22552	ea.	22587
Tube End Reducer	1/8" tube to 1/16"	SS-100-R-2	ea.	22553	ea.	22588
	1/4" tube to 1/16"	SS-100-R-4	ea.	22554	ea.	22589
	1/8" tube to 1/4"	SS-400-R-2	ea.	22555	ea.	22590
	1/4" tube to 1/8"	SS-200-R-4	ea.	22556	ea.	22591
Port Connector	1/8"	SS-201-PC	ea.	22557	ea.	22592
	1/4"	SS-401-PC	ea.	22558	ea.	22593
	1/8" tube to 1/4"	SS-401-PC-2	ea.	22559	ea.	22594
Male Connector	1/8" to 1/8" NPT	SS-200-1-2	ea.	22561	ea.	22595
	1/4" to 1/4" NPT	SS-400-1-4	ea.	22562	ea.	22596
	1/16" to 1/8" NPT	SS-100-1-2	ea.	22563	ea.	22610
	1/8" to 1/4" NPT	SS-200-1-4	ea.	22564	ea.	22611
	1/4" to 1/8" NPT	SS-400-1-2	ea.	22565	ea.	22612
	3/8" to 3/8" NPT	SS-600-1-6	ea.	22912	ea.	22907
Female Connector	1/8" to 1/8" NPT	SS-200-7-2	ea.	22566	ea.	22613
	1/4" to 1/4" NPT	SS-400-7-4	ea.	22567	ea.	22614
	1/4" to 1/8" NPT	SS-400-7-2	ea.	22568	ea.	22615
	1/8" to 1/4" NPT	SS-200-7-4	ea.	22569	ea.	22616
Bulkhead Union	1/8"	SS-200-61	ea.	22570	ea.	22617
	1/4"	SS-400-61	ea.	22571	ea.	22618


union


tee


reducing union


elbow


plug


cross


tube end reducer


port connector


male connector


female connector


bulkhead union

Swagelok® Fitting Kits

Save more than 40% by purchasing a Restek Swagelok® fittings kit compared to paying full price for the individual parts!

- Includes the most common assortment of 1/8" and 1/4" brass or stainless steel fittings.
- Parts list makes reordering easy.
- Parts come in sturdy toolbox for easy and convenient storage.

40% savings

Swagelok® Fitting Kit (Brass)

Swagelok #	Description (qty included in kit)
B-202-1	1/8" brass nut (20)
B-402-1	1/4" brass nut (20)
B-203-1	1/8" brass front ferrule (20)
B-403-1	1/4" brass front ferrule (20)
B-204-1	1/8" brass back ferrule (20)
B-404-1	1/4" brass back ferrule (20)
B-200-C	1/8" brass cap (6)
B-400-C	1/4" brass cap (6)
B-200-P	1/8" brass plug (6)
B-400-P	1/4" brass plug (6)
B-200-6	1/8" brass union (2)
B-400-6	1/4" brass union (2)
B-400-6-2	1/4" to 1/8" brass reducing union (2)
B-200-3	1/8" brass tee (2)
B-400-3	1/4" brass tee (2)
B-400-R-2	1/8" to 1/4" brass tube end reducer (2)
B-200-R-4	1/4" to 1/8" brass tube end reducer (2)
MS-IG-200	1/8" inspection gauge (1)
MS-IG-400	1/4" inspection gauge (1)

Description	qty.	cat.#
Swagelok Fitting Kit, Brass	kit	23141

Swagelok® Fitting Kit (Stainless Steel)

Swagelok #	Description (qty included in kit
SS-202-1	1/8" SS nut (20)
SS-402-1	1/4" SS nut (20)
SS-203-1	1/8" SS front ferrule (20)
SS-403-1	1/4" SS front ferrule (20)
SS-204-1	1/8" SS back ferrule (20)
SS-404-1	1/4" SS back ferrule (20)
SS-200-C	1/8" SS cap (6)
SS-400-C	1/4" SS cap (6)
SS-200-P	1/8" SS plug (6)
SS-400-P	1/4" SS plug (6)
SS-200-6	1/8" SS union (2)
SS-400-6	1/4" SS union (2)
SS-400-6-2	1/4" to 1/8" SS reducing union (2)
SS-200-3	1/8" SS tee (2)
SS-400-3	1/4" SS tee (2)
SS-400-R-2	1/8" to 1/4" SS tube end reducer (2)
SS-200-R-4	1/4" to 1/8" SS tube end reducer (2)
MS-IG-200	1/8" inspection gauge (1)
MS-IG-400	1/4" inspection gauge (1)

Description	qty.	cat.#
Swagelok Fitting Kit, Stainless Steel	kit	23197

Restek provides the following total gas system solution:

- Restek gas purifiers provide cost-effective gas purity assurance.
- Restek stainless steel and copper tubing is precleaned and ready to use.
- Swagelok® and Parker A-Lok® tube fittings consistently deliver high-quality performance.
- Extensive line of hand tools, including Restek's Electronic Leak Detector, to make your work easier and faster.
- Gas generators offer an uninterrupted supply of gas.
- Gas regulators ensure optimum line pressure control of all your chromatography gases.

Restek Technical Service (1-814-353-1300, ext. 4 or support@restek.com) or your Restek representative can answer your questions and provide system-design advice. From the gas source to your point of use, we offer the products and services that ensure the purity of your gas.

Why do I need to use traps and where should I install them?

Carrier gas must contain less than 1 ppm of oxygen, water vapor, or any other trace contaminant to prevent column degradation, shortened column lifetime, and increased stationary phase bleed. Contaminants cause ghost peaks to appear during temperature programming and degrade the validity of analytical data. The expense of using high-purity gases in combination with carrier gas purifiers will be offset by longer column lifetime and less instrument maintenance.

Moisture Removal

Moisture in carrier gas lines will prematurely degrade oxygen and hydrocarbon traps and increase detector noise (particularly with ECDs). As a precaution, we highly recommend installing a moisture trap before the hydrocarbon and oxygen traps on all carrier gas lines. Our favorite trap is the Super-Clean Ultra-High Capacity Moisture Filter (cat.# 22028, pg. 36).

Hydrocarbon Removal

Use a hydrocarbon trap if your gas has a potential source of hydrocarbon contaminants (e.g., an oil pump in an air compressor) or if you suspect you are observing carrier gas ghost peaks. Install the hydrocarbon trap after the moisture trap to prevent moisture from degrading the hydrocarbon-trapping ability of the activated carbon in the hydrocarbon trap. We recommend the Super-Clean Ultra-High Capacity Hydrocarbon Filter (cat.# 22030, pg. 36).

Oxygen Removal

Oxygen is a column killer and can enter the system at any connection that is leaking. It is present even in ultra-high purity gases, as minute leaks at fittings allow oxygen to influx against the concentration gradient. There are many choices for oxygen removal—the Super-Clean Ultra-High Capacity Oxygen Filter (cat.# 22029, pg. 36) is popular with Restek chemists. Because oxygen can enter a gas line at any fitting, the oxygen trap should be the last connection before the gas line enters the chromatograph.

Leak Checking

To prevent column degradation, increase column lifetime, and decrease stationary phase bleed, carrier gas should always contain <1 ppm oxygen. This can be monitored by continually leak checking all gas system connections using the Restek Electronic Leak Detector (cat.# 22839, page 10).

for **more** info

Questions about which carrier gas purifier to use?

Call Restek Technical Service at 1-814-353-1300, ext. 4, or contact your Restek representative to discuss your application.


22022

Restek Super-Clean Gas Filters

- High-purity output ensures 99.9999% pure gas (at max. flow of 2 L/min).
- "Quick connect" fittings for easy, leak-tight cartridge changes.
- Glass inside to prevent diffusion; polycarbonate housing outside for safety.
- All traps measure 10 5/8" x 1 3/4" (27 x 4.4 cm).
- Each base plate unit measures 4" x 4" x 1 7/8" (10.2 x 10.2 x 4.8 cm).

Table I: Each Super-Clean gas filter provides high-purity outlet gas.

Type of Filter	Outlet Gas Quality (%)	Maximum Pressure/ Maximum Flow Rates	Use for:	Indicator Color Change	Capacity H_2O (g)	Capacity O_2 (mL)	Capacity Hydrocarbons (g)	Estimated Lifetime (years)
Moisture cat.# 22028	>99.9999	11 bar 159 psi/ 7 L/min	Inert carrier gas Air Hydrogen	Yellow/orange to clear	7.2	—	—	>2
Oxygen cat.# 22029	>99.9999	11 bar 159 psi/ 7 L/min	Inert carrier gas	Green to grey	NA	1,000	—	>2
Hydrocarbons cat.# 22030	>99.9999	11 bar 159 psi/ 7 L/min	Inert carrier gas Air Hydrogen	No indicator	NA	—	12[3]	>2
Fuel Gas[1] cat.# 22022	>99.9999	11 bar 159 psi/ 7 L/min	Inert carrier gas Air Hydrogen	Yellow/orange to clear	3.5	—	24[3]	>1.5
Triple[2] cat.# 22020	>99.9999	11 bar 159 psi/ 7 L/min	Inert carrier gas	Yellow/orange to clear Green to grey	1.8	500	4[3]	>1
Helium Specific[2] cat.# 21982	>99.9999	11 bar 159 psi/ 7 L/min	Helium	Yellow/orange to clear Green to grey	1.8	500	—	>1

[1] Removes hydrocarbons and moisture.
[2] Removes hydrocarbons, moisture, and oxygen.
[3] As *n*-butane.

did you **know**?

All Restek Super-Clean gas filter cartridges (except hydrocarbon filter cat.# 22030) feature easy-to-read indicators. The indicator code is shown on every trap, so there is no confusion about when to replace it.


22020


21982


base plate

Restek Super-Clean Gas Filter Kits and Replacements

Description	qty.	cat.#
Carrier Gas Cleaning Kit Includes: mounting base plate, 1/8" inlet/outlet fittings, and oxygen/moisture/hydrocarbon triple gas filter	kit	22019
Fuel Gas Purification Kit Includes: mounting base plate, 1/8" inlet/outlet fittings, and hydrocarbon/moisture fuel gas filter	kit	22021
Ultra-High Capacity Hydrocarbon Filter	ea.	22030
Ultra-High Capacity Moisture Filter	ea.	22028
Ultra-High Capacity Oxygen Filter	ea.	22029
Replacement Triple Gas Filter (removes oxygen, moisture, and hydrocarbons)	ea.	22020
Replacement Fuel Gas Filter (removes moisture and hydrocarbons)	ea.	22022
Helium-Specific Carrier Gas Cleaning Kit Includes: mounting base plate, 1/8" inlet/outlet fittings, and oxygen/moisture/hydrocarbon helium-specific filter	kit	21983
Replacement Helium-Specific Gas Filter (removes oxygen, moisture, and hydrocarbons)	ea.	21982
Gas Filter Bundle Kit Includes: one triple gas filter (cat.# 22020) and two fuel gas filters (cat.# 22022)	kit	22031

tech tip

Oxygen and Moisture Traps

Restek highly recommends oxygen and moisture traps for make-up gas when operating sensitive detectors such as electron capture detectors (ECD). The hydrogen reaction gas for sensitive electrolytic conductivity detectors (ELCD) also requires a hydrocarbon trap to remove trace impurities.


22025


22026


22027

Restek Filter Base Plates

- Standard base plate fittings are 1/8". To adapt to 1/4", order 1/8" to 1/4" tube-end unions.
- End fittings available in brass or stainless steel.
- Base plates fit all stand alone Super-Clean gas filters offered.

		Brass		Stainless Steel
Description	**qty.**	**cat.#**	**qty.**	**cat.#**
Filter Base Plate, Single-Position	ea.	22025	ea.	22344
Filter Base Plate, 2-Position	ea.	22026	ea.	22345
Filter Base Plate, 3-Position	ea.	22027	ea.	22346

Wall Mounting Bracket

Base plates can be mounted by using screws and the mounting holes on the base plate, or by using this optional wall mounting bracket.


21984

Description	qty.	cat.#
Wall Mounting Bracket for Super-Clean Base Plates	ea.	21984

Replacement O-Rings for Cartridge Base Plates

Pack includes 10 large O-rings and 10 small O-rings.


22023

Description	qty.	cat.#
Replacement O-Rings for Cartridge Base Plates	20-pk.	22023

Restek Super-Clean Gas Trapping System for LC-MS

A Super-Clean quick-change cartridge system efficiently removes hydrocarbons from nitrogen!

- Changing filters is quick and easy.
- Up to 20 L of hydrocarbon-free nitrogen per minute.
- Filters connected in parallel to handle high flows of LC-MS.

20 L of purified nitrogen per minute!

Super-Clean Gas Filters provide high-purity outlet gas	
Type of filter:	Hydrocarbon (charcoal)
Max. Flow:	20 L/min
Outlet Gas Quality %:	99.9999%
Maximum Pressure:	11 bar/159 psi
Estimated Lifetime:	3 to 6 months

Description	qty.	cat.#
Super-Clean Gas-Trapping System (2-position base plate, 2 charcoal filters)	ea.	22062
Replacement Hydrocarbon (Charcoal) Filters	2-pk.	22061

1/8-Inch to 1/4-Inch Tube-End Unions

To adapt 1/8" Super-Clean base plate fittings to 1/4", use 1/8" to 1/4" tube-end unions.


21833

		Brass		Stainless Steel
Description	**qty.**	**cat.#**	**qty.**	**cat.#**
Tube-End Reducer, 1/8" tube to 1/4"	5-pk.	21833	2-pk.	21933

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