Restek GC Accessories

GC Inlet Maintenance:
Restek's Quick-Reference Guide

- Help ensure quality data by selecting the right GC inlet supplies.
- Prevent unwanted downtime with a preventative GC inlet maintenance program.
- Easily order the GC inlet supplies you need for your specific instrument.

RESTEK Pure Chromatography www.restek.com/GCacc

GC Inlet Maintenance:
Restek's Quick-Reference Guide

Liners, septa, inlet seals... when compared to your analytical column, your instrument, or a customer lost due to missed deadlines or inaccurate data, these small consumables carry an almost nonexistent price. And yet, the impact they can have on your analysis—not to mention your livelihood—is huge: breakdown of active compounds, loss in response, and other performance issues. In extreme cases, improperly selected or poorly maintained inlet supplies can mean the difference between detecting your compounds or not.

With Restek's guidance and our comprehensive line of high-quality GC inlet supplies, performing proper GC inlet maintenance to help maximize your lab's uptime and ensure accurate, reproducible data is as easy as replacing a liner (and a few other items).

Selecting the Right GC Inlet Supplies

Using the wrong liner or septa can have just as negative an impact on your data as a fouled inlet. So, even if you are a seasoned GC veteran, it pays to take the time to be sure that you are using the right GC inlet supplies before worrying about how or when to perform GC inlet maintenance.

Inlet Liners

In gas chromatography, the inlet is the first part of the instrument that your sample comes in contact with. Using the right liner will aid in sample vaporization; promote efficient, loss-free analyte transfer; and protect your column from contamination—so choosing the correct GC inlet liner is critical for ensuring accurate and precise data. Liners differ in geometric configuration/design, volume, base material, deactivation, and packing. But, choosing the right liner can be greatly simplified by looking at the type of injection. Variations in sample and method may necessitate a different liner, but the following are great initial selections for any analysis.

- Split injection:
  - Topaz Precision split liner with wool.
- Splitless injection:
  - Topaz single taper liner with wool.
- Direct injection:
  - *For semivolatiles or compounds that could be affected by a tailing solvent peak:* Topaz Uniliner liner with the hole drilled near the bottom.
  - *For aqueous injections or compounds that elute away from the solvent peak:* Topaz Uniliner liner with the hole drilled near the top.
- Gas samples via sample loop injection:
  - Topaz straight liner with a 1.0 mm ID.
- PTV injection:
  - Instrument-specific Topaz liner with a small inner diameter and at least one baffle or dimple.

For more information about liner selection, visit **www.restek.com/liner-choice**

Topaz INLET LINERS

Septa

Choosing the right septum for your inlet is even easier. Restek offers several options that are designed to avoid septum bleed and coring, which can damage your column and your data:

- For temperatures up to 350 °C*:
  - Thermolite Plus Septa
- For temperatures up to 400 °C*:
  - Premium Non-Stick BTO Septa
- When coring is an issue (can create unwanted activity):
  - Thermolite Plus or Premium Non-Stick BTO Septa with CenterGuide dimple
  - Merlin Microseal Septa

For more information choosing the right septum for your analysis, as well as a handy size chart and septum choice guidelines, visit **www.restek.com/septum-choice**

*For 17 mm inlets, the maximum temperature for Thermolite Plus septa is 300 °C and the maximum temperature for BTO septa is 330 °C. For all injectors, minimum recommended operating temperature for BTO septa is 250 °C.

Inlet Seals

Choosing the right inlet seal is more a matter of convenience and preference than data integrity.

As a general rule, however, especially for sensitive or splitless analyses, you want to avoid bare stainless steel and, instead, use highly inert gold-plated seals to reduce breakdown and adsorption of active compounds.

Restek offers several models of gold-plated inlet seals with washerless installation, including the customer favorite Dual Vespel Ring inlet seal. Its patented design features two soft Vespel rings—embedded in both the top and bottom surfaces—to help ensure a low-torque, leak-tight seal, even after repeated temperature cycles.

Preventative GC Inlet Maintenance

Only after you have confirmed that you are using the right GC inlet supplies is it time to think about GC inlet maintenance. Even within a single industry like environmental testing—let alone across separate industries such as petrochemical, food safety, and clinical diagnostics—there are simply too many variables in samples, injection techniques, instruments, detectors, etc., to be able to recommend a single general schedule to all analysts for replacing all liners, septa, and inlet seals. Your GC inlet maintenance schedule could be twice a day if you are running particularly dirty samples, or once a year if you are using headspace GC. You need to determine your preventative maintenance (PM) schedule on an analysis-by-analysis basis.

When establishing a PM schedule specific to an analysis, the key term is "preventative." You are trying to ***prevent*** unwanted downtime by replacing your inlet supplies ***before*** you have a problem. This way, you can plan for the downtime and choose a time that is not disruptive to your lab. You can also avoid lengthy troubleshooting sessions and missed deadlines.

Simply keep track of how long it generally takes after maintenance to begin seeing data problems commonly associated with the inlet, and then schedule your PM for that analysis and instrument to occur ***before*** data problems tend to arise.

Common data problems that can alert you to the need for GC inlet maintenance are:

- Loss of signal / loss of response
  - Inlet activity
  - Inlet discrimination
  - Inlet leaks (e.g., seals around septa, O-rings, ferrules, etc.)
- Extraneous signal
  - Contamination
    - O-ring bleed
    - Septum particles in the liner
    - Matrix buildup in the liner (off-gassing)
  - Inlet activity
    - Analyte breakdown creating new compounds (extra peaks)
- Distorted signal / deteriorating peak shape (e.g., peak tailing)
  - Inlet activity
  - Inlet leaks (e.g., seals around septa, O-rings, ferrules, etc.)

Once you've set your preventative maintenance schedule, you will also want to plan ahead for the components you will be replacing and order your GC inlet supplies in advance. Restek's chromatography experts recommend replacing septa, liners, O-rings, and inlet seals at the same time when you perform GC inlet maintenance. After all, you could unknowingly have issues with multiple components, and the cost of each of these items is minimal compared to having to take your instrument offline more often than you needed.

Which One to Choose...

Do you need additional assistance with selecting the right GC inlet supplies or with GC inlet maintenance? Contact Restek Technical Service (support@restek.com) or your local Restek representative.

Peak Performance Ensured by Proper GC Inlet Supplies, Maintained Properly

Choosing the right GC inlet supplies—Restek Topaz liners, septa, inlet seals—and implementing a rigorous and timely preventative GC inlet maintenance schedule can help ensure optimum performance, maximum reproducibility, and minimized downtime for your lab.

The inlet supplies you need to get started are right here, and you can also find them at **www.restek.com/GCacc**

Inlet Supplies for Agilent GCs

Topaz Inlet Liners for Agilent GCs

COLUMN INSTALLS THIS END

Split Liners for Agilent GCs	Description	ID x OD x Length	Similar to Agilent Part #	qty.	cat.#
	1 mm Split	1.0 mm x 6.3 mm x 78.5 mm		5-pk.	23333
	4 mm Straight w/Wool	4.0 mm x 6.3 mm x 78.5 mm	19251-60540, 5190-2294 (ea.), 5183-4691, 5190-3164 (5-pk.), 5183-4692 (25-pk.)	5-pk.	23300
	2 mm Precision Liner w/Wool	2.0 mm x 6.3 mm x 78.5 mm		5-pk.	23468
	4 mm Precision Liner w/Wool	4.0 mm x 6.3 mm x 78.5 mm	210-4004-5	5-pk.	23305
	4 mm Cyclo	4.0 mm x 6.3 mm x 78.5 mm		5-pk.	23312

Splitless Liners for Agilent GCs	Description	ID x OD x Length	Similar to Agilent Part #	qty.	cat.#
	2 mm Splitless	2.0 mm x 6.5 mm x 78.5 mm	5181-8818 (ea.), 5183-4703 (5-pk.), 5183-4704 (25-pk.)	5-pk.	23313
	2 mm Splitless w/Wool	2.0 mm x 6.5 mm x 78.5 mm		5-pk.	23314
	2 mm Single Taper	2.0 mm x 6.5 mm x 78.5 mm		5-pk.	23315
	2 mm Single Taper w/Wool	2.0 mm x 6.5 mm x 78.5 mm		5-pk.	23316
	4 mm Straight	4.0 mm x 6.3 mm x 78.5 mm	210-3003 (ea.), 210-3003-05 (5-pk.)	5-pk.	23301
	4 mm Straight w/Wool	4.0 mm x 6.3 mm x 78.5 mm	19251-60540, 5190-2294 (ea.), 5183-4691, 5190-3164 (5-pk.), 5183-4692 (25-pk.)	5-pk.	23300
	4 mm Single Taper	4.0 mm x 6.5 mm x 78.5 mm	5181-3316 (ea.), 5183-4695 (5-pk.), 5183-4696 (25-pk.)	5-pk.	23302
	4 mm Single Taper w/Wool	4.0 mm x 6.5 mm x 78.5 mm	5062-3587, 5190-2293 (ea.), 5183-4693, 5190-3163 (5-pk.), 5183-4694 (25-pk.)	5-pk.	23303
	4 mm Double Taper	4.0 mm x 6.5 mm x 78.5 mm	5181-3315 (ea.), 5183-4705 (5-pk.), 5183-4706 (25-pk.)	5-pk.	23308
	4 mm Cyclo Double Taper	4.0 mm x 6.5 mm x 78.5 mm		5-pk.	23310

Split/Splitless Liners for Agilent GCs	Description	ID x OD x Length	Similar to Agilent Part #	qty.	cat.#
	4 mm Straight w/Wool	4.0 mm x 6.3 mm x 78.5 mm	19251-60540, 5190-2294 (ea.), 5183-4691, 5190-3164 (5-pk.), 5183-4692 (25-pk.)	5-pk.	23300
	Low Pressure Drop Precision Liner w/Wool	4.0 mm x 6.3 mm x 78.5 mm		5-pk.	23309
	Low Pressure Drop Liner w/Wool	4.0 mm x 6.3 mm x 78.5 mm	5183-4647, 5183-4711, 5190-2295 (ea.), 5183-4701, 5183-4712, 5190-3165 (5-pk.), 5183-4713 (25-pk.)	5-pk.	23467

COLUMN INSTALLS THIS END

CIS4 and PTV Liners for Agilent GCs	Description	ID x OD x Length	Similar to Agilent Part #	qty.	cat.#
	On Column PTV	1.7 mm x 3.0 mm x 71 mm		5-pk.	23430
	Single Baffle PTV	2.0 mm x 3.0 mm x 71 mm	5183-2036	10-pk.	23431
	Single Baffle PTV w/Wool	2.0 mm x 3.0 mm x 71 mm	5183-2038	10-pk.	23432
	Baffled PTV	1.5 mm x 3.0 mm x 71 mm	5183-2037	10-pk.	23433

CIS4/TDU Liners for Agilent GCs	Description	ID x OD x Length	Similar to Gerstel Part #	qty.	cat.#
	Single Baffle CIS4/TDU	2.0 mm x 3.0 mm x 78 mm	013775-010-00	10-pk.	23283
	Single Baffle CIS4/TDU w/Wool	2.0 mm x 3.0 mm x 78 mm	012742-010-00	10-pk.	23284
	Baffled CIS4/TDU	2.0 mm x 3.0 mm x 78 mm	012436-010-00	10-pk.	23282

Analytical Controls TPI Inlet Liners for Agilent GCs	Description	ID x OD x Length	qty.	cat.#
	TPI for 0.53 mm ID columns	2.4 mm x 4.0 mm x 71 mm	10-pk.	23429
	TPI for 0.25/0.32 mm ID columns	2.4 mm x 4.0 mm x 71 mm	10-pk.	23428

SPME Liners for Agilent GCs	Description	ID x OD x Length	qty.	cat.#
	SPME Liner	0.75 mm x 6.35 mm x 78.5 mm	5-pk.	23434
	SPME Liner	1.8 mm x 6.5 mm x 78.5 mm	5-pk.	23280

Direct Injection Liners for Agilent GCs (for 0.25/0.32/0.53 mm ID Columns)	Description	ID x OD x Length	qty.	cat.#
	Drilled Uniliner (hole near bottom)	4.0 mm x 6.3 mm x 78.5 mm	5-pk.	23306
	Drilled Uniliner (hole near bottom) w/Wool	4.0 mm x 6.3 mm x 78.5 mm	5-pk.	23307
	Drilled Uniliner (hole near top)	4.0 mm x 6.3 mm x 78.5 mm	5-pk.	23311

QUANTITY DISCOUNTS AVAILABLE *for orders of five or more 5-packs!*

Inlet Supplies for Agilent GCs

Note: Merlin Microseal septa require a 23-gauge (0.63 mm, 0.025") needle or probe with a blunt, truncated conical tip. Compatible syringes and replacement needles are available at www.restek.com.

Merlin Microseal Septa

for Agilent GCs

- Allow operation from 3 to 100 psi (general-purpose Microseal septa) or 1 to 45 psi (low-pressure Microseal septa).
- 400 °C max injection port temperature.

The advantages of the Merlin Microseal septum include elimination of septum coring; longer life; and consistent, low needle-insertion force. The Microseal septum incorporates two separate sealing mechanisms. These sliding seals eliminate septum coring and the resulting accumulation of septum crumbs in the injection port liner.

The Microseal septum uses a 23-gauge (0.63 mm, 0.025") needle or probe with a blunt, truncated conical tip. Since the syringe plunger end details are determined by manual or autosampler compatibility, often a removable needle syringe is an effective way to match both of these requirements. No adapter is required for the Agilent inlet. Installation is simple, requiring no modification of the injection port.

Description	Merlin #	Similar to Agilent Part #	qty.	cat.#
General Purpose Kit for Agilent GCs (3 to 100 psi)				
Nut (1), and general-purpose (#410) Microseals (2)	404	5181-8833	kit	22810
Nut (1), and general-purpose (#410) Microseal (1)	405	5182-3442	kit	22811
Low Pressure Kit for Agilent GCs (1 to 45 psi)				
Nut (1), and low-pressure (#310) Microseals (2)	304		kit	22813
Nut (1), and low-pressure (#310) Microseal (1)	305	5181-8816	kit	22814
Replacement Microseals				
General-Purpose Microseal (most applications, 3 to 100 psi)	410	5182-3444	ea.	22812
Low-Pressure Microseal (1 to 45 psi)	310	5181-8815	ea.	22815
Microseal for SPME Applications (3 to 100 psi)	21-01		ea.	22782
Replacement Microseal Nut	403	5182-3445	ea.	22809

Dual Vespel Ring Inlet Seals

Washerless, Leak-Tight Seals for Agilent GCs

Patented

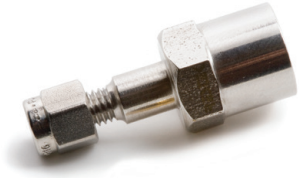
- Does not require a separate washer.
- Requires less torque to seal.
- Does not require retightening of reducing nut after several oven cycles.
- Extends column lifetime by preventing oxygen from reaching the column.
- Same price as the regular inlet seals with washers.
- Gold plating provides enhanced inertness.

0.8 mm ID Dual Vespel Ring Inlet Seal	2-pk. cat.#	10-pk. cat.#	50-pk. cat.#
Gold-Plated	21240	21241	23418
Siltek-Treated	21242	21243	23419
Stainless Steel	21238	21239	23420

1.2 mm ID Dual Vespel Ring Inlet Seal	2-pk. cat.#	10-pk. cat.#
Gold-Plated	21246	21247
Siltek-Treated	21248	21249
Stainless Steel	21244	21245

Flip Seal Dual Vespel Ring Inlet Seals

Restek Innovation! Patented.



Restek innovation!
Patented

- Reversible, two-sided design allows significantly more analyses than other seals, at the same price—simply use, flip, then use again!
- Vespel ring embedded in top and bottom surface eliminates need for a washer.
- Highly inert gold seals reduce breakdown and adsorption of active compounds, maximizing component transfer to GC column.
- Very little torque required to make seal—reduces operator variability.

Flip Seal Dual Vespel Ring Inlet Seal	2-pk. cat.#	10-pk. cat.#
Gold-Plated	23411	23413
Siltek-Deactivated	23412	23414

Flip Seal Dual Vespel Ring Inlet Seal Kit	qty.	cat.#
Includes: gold-plated inlet seal, reducing nut adaptor, 1/16" SS nut	kit	23406

Note: The Flip Seal inlet seal requires a special reducing nut adaptor fitting, which is included in the kit.
The Flip Seal Adaptor can be used with standard 1/16" ferrules.

Dual Vespel Ring Cross-Disk Inlet Seals

for Agilent GCs

- Ideal for high-flow split applications >500 mL/min.
- Washerless, leak-tight seals.

0.8 mm ID Dual Vespel Ring Cross-Disk Inlet Seal	2-pk. cat.#	10-pk. cat.#
Gold-Plated	22083	22084
Siltek-Treated	22085	22086

Replacement Inlet Seals with Washers

for Agilent GCs

Note: The 1.2 mm inlet seal is recommended when installing two columns using a two-hole Vespel/graphite ferrule.

Single-Column 0.8 mm ID (Opening)	Similar to Agilent Part #	2-pk. cat.#	10-pk. cat.#	50-pk. cat.#
Gold-Plated	5188-5367	21317	21318	23415
Siltek-Treated		21319	21320	23416
Stainless Steel	18740-20880	21315	21316	23417
0.25/0.32 mm ID Dual-Column 1.2 mm ID (Opening)		**2-pk. cat.#**	**10-pk. cat.#**	
Gold-Plated		21305	21306	
Siltek-Treated		21307	21308	
Stainless Steel		20390	20391	
0.53 mm ID Dual-Column 1/16-inch ID (Opening)		**2-pk. cat.#**	**10-pk. cat.#**	
Stainless Steel		20392	20393	

Cross-Disk Inlet Seals

for Agilent GCs

- Ideal for high-flow split applications >500 mL/min on Agilent 5890 GCs.
- Gold plating provides enhanced inertness versus stainless steel.
- All seals include washers.

0.8 mm ID Cross-Disk Inlet Seal	Similar to Agilent Part #	2-pk. cat.#	10-pk. cat.#
Gold-Plated	5182-9652	20477	20476
Siltek-Treated	—	20475	20474
1.2 mm ID Cross-Disk Inlet Seal	**Similar to Agilent Part #**	**2-pk. cat.#**	**10-pk. cat.#**
Gold-Plated	—	21009	21010
Siltek-Treated	—	21011	21012

Warm Up Before You Run!

Topaz liners, O-rings, inlet seals, and other Restek GC inlet supplies are manufactured in strictly controlled environments and feature packaging developed specifically for superior cleanliness and chromatographic performance. Despite providing you with incredibly clean and inert inlet supplies, we still recommend that you condition your system after performing GC inlet maintenance to help guarantee the best results possible from the very first injections, so schedule your maintenance accordingly.

Inlet Supplies for Agilent GCs

Replacement Viton O-Rings

for use with the Agilent Flip Top Inlet Sealing System

Description	Similar to Agilent Part #	qty.	cat.#
Viton Replacement O-Rings for use with the Agilent Flip Top Inlet Sealing System	5188-5366	10-pk.	22336

Viton O-Rings

For Agilent and Thermo TRACE 1300/1310 GCs

Fit split (6.3 mm OD) or splitless (6.5 mm OD) liners.

Description	Max Temp	Similar to Part #	10-pk. cat.#	50-pk. cat.#
Viton O-Rings Agilent and Thermo TRACE 1300/1310 GCs	300 °C	Agilent 5188-5365, Thermo 29001320	22241	22242

Graphite O-Rings

for Agilent and Bruker/Varian 1177 Injectors

Excellent thermal stability at injection port temperatures up to 450 °C!

Description	Max Temp	Similar to Agilent Part #	10-pk. cat.#	50-pk. cat.#
6.35 mm ID Graphite O-Rings for split liners	450 °C	5180-4168	20296	20297
6.5 mm ID Graphite O-Rings for splitless liners	450 °C	5180-4173	20298	20299

Viton O-Rings

for Apex Liners

Description	Max. temp.	qty.	cat.#
Viton O-Rings for APEX liners	250 °C	25-pk.	22067

Inlet Wrench

for Agilent 5890/6850/6890 GCs

- Use to remove the septum nut and weldments during GC maintenance.
- Use the smaller end to remove the septum nut.
- Use the larger end to tighten the split/splitless weldment nut.
- High-quality stainless steel construction.
- Meets original equipment performance.

Description	Similar to Agilent Part #	qty.	cat.#
Inlet Wrench for Agilent 5890/6850/6890 GCs	19251-00100	ea.	22065

Septum Nut Removal Tool

for Agilent 5890/6850/6890/7890 GCs

- Easily remove the septum nut without touching the heated nut—no more burned fingers!
- Unique, ergonomic handle—easy to grip.
- Nut remains in tool for quick reattachment.

Description	qty.	cat.#
Septum Nut Removal Tool for Agilent 5890/6850/6890/7890 GCs	ea.	24918

restek **innovation**!

Inlet Maintenance Kit

for Agilent GCs

- Includes the most common consumable GC supplies and tools.
- All parts meet or exceed performance of instrument manufacturer's parts.
- Parts list makes reordering easy.

Inlet kit includes:

- 0.4, 0.5, and 0.8 mm ID graphite ferrules
- Viton O-rings
- Capillary nuts
- Inlet seals
- Reducing nut
- Scoring wafer
- 11 mm Thermolite Plus septa with CenterGuide
- Topaz 4.0 mm ID single taper liner with wool
- Topaz 4.0 mm ID straight liner with wool
- Capillary column caps
- 1/4" x 5/16" wrench
- Septum puller
- Installation gauge
- Wire cleaning brush
- Jet reamers/ferrule removers
- Inlet liner removal tool
- Septa nut removal tool

Description	qty.	cat.#
Inlet Maintenance Kit	kit	22181

Make Life Easier (MLE) Capillary Tool Kit

for Agilent GCs

Includes:

- Capillary installation gauge for Agilent GCs
- Inlet wrench for Agilent GCs
- Septum nut removal tool
- 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
- 7/16" x 1/2" open end wrench
- 1/2" x 9/16" 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 for Agilent GCs	kit	22186

FastPack Inlet Kits for Agilent GCs

- Convenient: all the parts you need in one package—no hunting for individual items.
- Economical: costs less than the sum of the individual parts.
- Clean: Mylar bag is factory sealed; no contamination of the products from weeks in the lab.

Routine Maintenance with FastPack Inlet Kits (1 pack includes 5 maintenance kits.)

Deactivated Liner	Liner Dimensions (ID x OD x Length)	cat.#
4 mm Topaz Straight	4 mm x 6.3 mm x 78.5 mm	21101
4 mm Topaz Single Taper	4 mm x 6.5 mm x 78.5 mm	21102
4 mm Topaz Straight with Wool	4 mm x 6.3 mm x 78.5 mm	21104
4 mm Topaz Gooseneck Splitless with Wool	4 mm x 6.5 mm x 78.5 mm	23258
4 mm Topaz Precision with Wool	4 mm x 6.3 mm x 78.5 mm	23259

Inlet Supplies for Bruker/Varian GCs

COLUMN INSTALLS THIS END

Topaz Inlet Liners for Bruker/Varian GCs

Liners for Bruker/Varian 1177 S/SL Injection Ports	Description	ID x OD x Length	qty.	cat.#
	4 mm Split Liner w/Glass Frit	4.0 mm x 6.3 mm x 78.5 mm	5-pk.	23330
	4 mm Precision Liner w/Wool	4.0 mm x 6.3 mm x 78.5 mm	5-pk.	23328
	4 mm Single Taper	4.0 mm x 6.5 mm x 78.5 mm	5-pk.	23331
	4 mm Single Taper w/Wool	4.0 mm x 6.5 mm x 78.5 mm	5-pk.	23332

SPI Liners for Bruker/Varian S/SL Injection Ports	Description	ID x OD x Length	Similar to Bruker/Varian Part #	qty.	cat.#
	SPI Liner	0.53 mm x 4.6 mm x 54 mm		5-pk.	23460
	SPI Liner	0.80 mm x 4.6 mm x 54 mm	190010907	5-pk.	23461

Liners for Bruker/Varian 1078/1079 Injection Ports	Description	ID x OD x Length	qty.	cat.#
	3.4 mm Split–No Frit	3.4 mm x 5.0 mm x 54 mm	5-pk.	23329
	Split w/Glass Frit	3.4 mm x 5.0 mm x 54 mm	5-pk.	23462
	Splitless	2.0 mm x 5.0 mm x 54 mm	5-pk.	23463
	SPME Liner	0.75 mm x 5.0 mm x 54 mm	5-pk.	23465
	Split Precision Liner w/Wool	3.4 mm x 5.0 mm x 54 mm	5-pk.	23466

Note: Merlin Microseal septa require a 23-gauge (0.63 mm, 0.025") needle or probe with a blunt, truncated conical tip. Compatible syringes and replacement needles are available at www.restek.com

Merlin Microseal Septa

for Bruker/Varian GCs

400 °C max injection port temperature.

The advantages of the Merlin Microseal septum include elimination of septum coring, longer life, and consistently low needle-insertion force. The Microseal septum incorporates two separate sealing mechanisms. These sliding seals eliminate septum coring and the resulting accumulation of septum crumbs in the injection port liner.

The Microseal septum uses a 23-gauge (0.63 mm, 0.025") needle or probe with a blunt, truncated conical tip. Since the syringe plunger end details are determined by manual or autosampler compatibility, often a removable needle syringe is an effective way to match both of these requirements. Installation is simple, requiring no modification of the injection port.

Description	Merlin#	cat.#
General Purpose Kit for Bruker/Varian 1078/1079 GCs Includes: nut (1); adapter (1); O-ring; and general-purpose (#410) Microseal (1)	21-11	22779
General Purpose Kit for Bruker/Varian 1177 GCs Includes nut (1); adapter (1); O-ring; and general-purpose (#410) Microseal (1)	22-11	22780
Replacement Microseals		
General-Purpose Microseal (most applications, 3 to 100 psi)	410	22812
Low-Pressure Microseal (1 to 45 psi)	310	22815
Microseal for SPME Applications (3 to 100 psi)	21-01	22782

Liner Seals

for Bruker/Varian 1078/1079 GCs

Description	Max. Temp.	Similar to Bruker/ Varian Part #	qty.	cat.#
5 mm Graphite Liner Seals for Bruker/Varian 1078/1079 GCs	450 °C	392611919, 392534201	10-pk.	22683

Inlet Liner Seals

for Bruker/Varian 1177 Injectors

Meets or exceeds original manufacturer's performance.

Description	Max. Temp.	Similar to Bruker/Varian Part #	10-pk. cat.#	50-pk. cat.#
6.35 mm ID Graphite O-Rings for split liners	450 °C	—	20296	20297
6.5 mm ID Graphite O-Rings for splitless liners	450 °C	39-26119-40	20298	20299

Make Life Easier (MLE) Capillary Tool Kit

for Bruker/Varian GCs

Includes:

- Capillary installation gauge for Bruker/Varian 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
- 7/16" x 1/2" open end wrench
- 1/2" x 9/16" open end wrench
- Rubber-tipped slide-lock tweezers
- Scoring wafers
- 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)
- Inlet liner removal tool

Description	qty.	cat.#
MLE Capillary Tool Kit	kit	22184

Everything you need in one complete kit!

Leak-Free is the Way to Be

A high-quality leak detector—like the Restek Electronic Leak Detector (cat.# 22655)—is a must for every GC lab. Every time you install a new column or perform GC inlet maintenance, be sure to leak-check your GC system before you condition or run an analysis. Minimizing the chances of damaging your column or detector will be well worth the time.

Get yours now at **www.restek.com/leakdetector**

Inlet Supplies for DANI GCs

Topaz Inlet Liners for DANI GCs

Liners for DANI GCs	Description	ID x OD x Length	qty.	cat.#
	0.8 mm ID Straight Liner	0.8 mm x 6.0 mm x 70 mm	5-pk.	23293
	0.8 mm ID Straight Liner (includes: ferrule set)	0.8 mm x 6.0 mm x 70 mm	5-pk.	23286
	2.0 mm ID Straight Liner	2.0 mm x 6.0 mm x 70 mm	5-pk.	23292
	2.0 mm ID Straight Liner (includes: ferrule set)	2.0 mm x 6.0 mm x 70 mm	5-pk.	23285
	2.2 mm ID Straight Liner w/Wool	2.2 mm x 4.0 mm x 85.7 mm	5-pk.	23291
	2.2 mm ID Dimpled Liner w/Wool	2.2 mm x 4.0 mm x 55 mm	5-pk.	23296
	2.2 mm ID Dimpled Liner w/Wool (includes: ferrule set)	2.2 mm x 4.0 mm x 55 mm	5-pk.	23289
	4.0 mm ID Straight Liner	4.0 mm x 6.0 mm x 70 mm	5-pk.	23294
	4.0 mm ID Straight Liner (includes: ferrule set)	4.0 mm x 6.0 mm x 70 mm	5-pk.	23287
	4.0 mm ID Straight Liner w/Wool	4.0 mm x 6.0 mm x 70 mm	5-pk.	23295
	4.0 mm ID Straight Liner w/Wool (includes: ferrule set)	4.0 mm x 6.0 mm x 70 mm	5-pk.	23288
	4.0 mm ID Single Taper Liner w/Wool	4.0 mm x 6.0 mm x 70 mm	5-pk.	23297
	4.0 mm ID Single Taper Liner w/Wool (includes: ferrule set)	4.0 mm x 6.0 mm x 70 mm	5-pk.	23290

Inlet Supplies for PerkinElmer GCs

Topaz Inlet Liners for PerkinElmer GCs

Split Liners for PerkinElmer GCs	Description	ID x OD x Length	qty.	cat.#
	Splitter w/Wool	4.0 mm x 6.2 mm x 92.1 mm	5-pk.	23449
	4 mm Split Precision Liner w/Wool	4.0 mm x 6.2 mm x 92.1 mm	5-pk.	23450

Splitless Liners for PerkinElmer GCs	Description	ID x OD x Length	qty.	cat.#
	2 mm Splitless w/Wool	2.0 mm x 6.2 mm x 92.1 mm	5-pk.	23451

PSS Liners for PerkinElmer GCs	Description	ID x OD x Length	qty.	cat.#
	Auto SYS XL PSS Split/Splitless w/Wool	2.0 mm x 4.0 mm x 86.2 mm	5-pk.	23317

DI Liners for PerkinElmer GCs	Description	ID x OD x Length	qty.	cat.#
	Open-Top Uniliner w/Wool	4.0 mm x 6.2 mm x 92.1 mm	5-pk.	23452
	PSS Drilled Uniliner (hole near top)	2.0 mm x 4.0 mm x 86.2 mm	5-pk.	23281
	Drilled Uniliner (hole near top)	4.0 mm x 6.2 mm x 92.1 mm	5-pk.	23453
	Drilled Uniliner (hole near bottom)	4.0 mm x 6.2 mm x 92.1 mm	5-pk.	23454

COLUMN INSTALLS THIS END

Merlin Microseal Septa

for PerkinElmer GCs

400 °C max injection port temperature.

The advantages of the Merlin Microseal septum include elimination of septum coring, longer life, and consistent low needle insertion force. The Microseal septum incorporates two separate sealing mechanisms. These sliding seals eliminate septum coring and the resulting accumulation of septum crumbs in the injection port liner.

The Microseal septum uses a 23-gauge (0.63 mm, 0.025") needle or probe with a blunt, truncated conical tip. Since the syringe plunger end details are determined by manual or autosampler compatibility, often a removable needle syringe is an effective way to match both of these requirements. Installation is simple, requiring no modification of the injection port.

Note: Merlin Microseal septa require a 23-gauge (0.63 mm, 0.025") needle or probe with a blunt, truncated conical tip. Compatible syringes and replacement needles are available at www.restek.com

Description	Merlin#	Similar to PE#	cat.#
General Purpose Kit for PerkinElmer GCs (3 to 100 psi) Includes: nut (1); adapter (1); O-ring; and general-purpose (#410) Microseals (2)	51-12	N9303344	22781
Replacement Microseals			
General-Purpose Microseal (most applications, 3 to 100 psi)	410	N9303345	22812
Low-Pressure Microseal (1 to 45 psi)	310		22815
Microseal for SPME Applications (3 to 100 psi)	21-01		22782

Make Life Easier (MLE) Capillary Tool Kit

for PerkinElmer GCs

Includes:

- 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
- 7/16" x 1/2" open end wrench
- 1/2" x 9/16" 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	22185

Viton O-Rings

for PerkinElmer PSS Injector

Fits 4 mm OD liners.

Description	Max. Temp.	Similar to PE Part #	qty.	cat.#
Viton O-Rings for PerkinElmer PSS Injector	250 °C	N6101747	10-pk.	20366

Silicone O-Rings

for PerkinElmer Auto SYS XL or Clarus With CAP Injector

Fits 6.2 mm OD liners.

Description	Max. Temp.	Similar to PE Part #	qty.	cat.#
Silicone O-Rings for PerkinElmer Auto SYS XL or Clarus w/CAP Injector	250 °C	N6101374	10-pk.	20262

Inlet Supplies for Shimadzu GCs

Topaz Inlet Liners for Shimadzu GCs

COLUMN INSTALLS THIS END

Split Liners for Shimadzu 17A, 2010, and 2014 GCs	Description	ID x OD x Length	qty.	cat.#
	3.5 mm Split	3.5 mm x 5.0 mm x 95 mm	5-pk.	23318
	3.5 mm Split w/Wool	3.5 mm x 5.0 mm x 95 mm	5-pk.	23319
	3.5 mm Precision Liner w/Wool	3.5 mm x 5.0 mm x 95 mm	5-pk.	23320
	Single Taper Precision Liner w/Wool	3.5 mm x 5.0 mm x 95 mm	5-pk.	23455
	Cyclo	3.5 mm x 5.0 mm x 95 mm	5-pk.	23456

Splitless Liners for Shimadzu 17A, 2010, and 2014 GCs	Description	ID x OD x Length	qty.	cat.#
	3.5 mm Single Taper	3.5 mm x 5.0 mm x 95 mm	5-pk.	23321
	3.5 mm Single Taper w/Wool	3.5 mm x 5.0 mm x 95 mm	5-pk.	23336
	3.5 mm Single Taper w/Wool	3.5 mm x 5.0 mm x 95 mm	5-pk.	23322
	Double Taper	3.5 mm x 5.0 mm x 95 mm	5-pk.	23457

Split/Splitless Liners for Shimadzu 17A, 2010, and 2014 GCs	Description	ID x OD x Length	qty.	cat.#
	Split/Splitless w/Wool	3.5 mm x 5.0 mm x 95 mm	5-pk.	23458

Liners for Shimadzu 17A PTV GCs	Description	ID x OD x Length	qty.	cat.#
	PTV w/Wool	1.6 mm x 4.0 mm x 95 mm	5-pk.	23435

SPME Liners for Shimadzu 17A, 2010, and 2014 GCs	Description	ID x OD x Length	qty.	cat.#
	SPME Liner	1.8 mm x 5.0 mm x 95 mm	5-pk.	23279

DI Liners for Shimadzu 17A, 2010, and 2014 GCs	Description	ID x OD x Length	qty.	cat.#
	Uniliner w/Wool	3.5 mm x 5.0 mm x 95 mm	5-pk.	23459

Liners for Shimadzu 2010 PTV GCs	Description	ID x OD x Length	qty.	cat.#
	PTV 2010	1.5 mm x 3.5 mm x 95 mm	10-pk.	23471
	PTV 2010 w/Wool	1.5 mm x 3.5 mm x 95 mm	10-pk.	23472

No More Burned Fingers!

Instead of reaching for a hot inlet liner or septa, reach for The Claw (cat.# 26261). This finger-saving tool lets you safely and cleanly remove liners, O-rings, and other hot objects from your inlet! Our inlet liner removal tool (cat.# 20181) is another option for easy and burn-free liner removal.

Merlin Microseal Septa

for Shimadzu GCs

- Compatible with Shimadzu models GC-2010 and GC-2025 only.
- 450 °C maximum injection port temperature.
- For use with 23-gauge (0.63 mm, 0.025") needle or probe with blunt, truncated conical tip.

A Merlin Microseal septum provides several distinct advantages: elimination of septum coring, long lifetime, and consistently low needle-insertion force. The Microseal septum incorporates two separate sealing mechanisms; these sliding seals prevent septum coring and the associated accumulation of septum crumbs in the injection port liner. Installation is simple, requiring no modification of the injection port.

Description	Merlin #	cat.#
General Purpose Kit for Shimadzu GCs (3 to 100 psi) Includes: nut (1); adapter (1); O-ring (1); and general-purpose (#410) Microseals (2)	61-12	22972
Replacement Microseals		
General-Purpose Microseal (most applications, 3 to 100 psi)	410	22812
Low-Pressure Microseal (1 to 45 psi)	310	22815
Microseal for SPME Applications (3 to 100 psi)	21-01	22782

Viton O-Rings

for Shimadzu 17A, 2010, and 2014 GCs

Description	Max. Temp.	Similar to Shimadzu Part #	qty.	cat.#
Viton O-Rings for Shimadzu 17A, 2010, and 2014 GCs	250 °C	036-11203-84	10-pk.	24899

Make Life Easier (MLE) Capillary Tool Kit

for Shimadzu GCs

Includes:

- Capillary installation gauge for Shimadzu GCs
- Inlet wrench for Shimadzu 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)

Everything you need in one complete kit!

Description	qty.	cat.#
MLE Capillary Tool Kit for Shimadzu GCs	kit	22182

Inlet Supplies for Thermo Scientific GCs

Topaz Inlet Liners for Thermo Scientific GCs

COLUMN INSTALLS THIS END

Split Liners for Thermo TRACE, 8000, 8000 TOP, and Focus SSL	Description	ID x OD x Length	qty.	cat.#
	Split Straight	3.0 mm x 8.0 mm x 105 mm	5-pk.	23439
	Split Straight w/Wool	3.0 mm x 8.0 mm x 105 mm	5-pk.	23440
	5 mm Straight	5.0 mm x 8.0 mm x 105 mm	5-pk.	23323
	5 mm Straight w/Wool	5.0 mm x 8.0 mm x 105 mm	5-pk.	23324
	5 mm Precision Liner w/Wool	5.0 mm x 8.0 mm x 105 mm	5-pk.	23327

Splitless Liners for Thermo TRACE, 8000, 8000 TOP, and Focus SSL	Description	ID x OD x Length	qty.	cat.#
	Splitless	3.0 mm x 8.0 mm x 105 mm	5-pk.	23441
	Splitless w/Wool	3.0 mm x 8.0 mm x 105 mm	5-pk.	23442
	Splitless Precision Liner w/Wool	5.0 mm x 8.0 mm x 105 mm	5-pk.	23443
	5 mm Splitless	5.0 mm x 8.0 mm x 105 mm	5-pk.	23325
	5 mm Splitless w/Wool	5.0 mm x 8.0 mm x 105 mm	5-pk.	23326

Split Liners for Thermo TRACE 1300/1310	Description	ID x OD x Length	Similar to TS Part #	qty.	cat.#
	Split	1.0 mm x 6.3 mm x 78.5 mm		5-pk.	23448
	4 mm Precision Liner w/Wool	4.0 mm x 6.3 mm x 78.5 mm	453A1255UI	5-pk.	23267
	4 mm Cyclo	4.0 mm x 6.3 mm x 78.5 mm		5-pk.	23269

Splitless Liners for Thermo TRACE 1300/1310	Description	ID x OD x Length	qty.	cat.#
	Splitless Straight	4.0 mm x 6.3 mm x 78.5 mm	5-pk.	23445
	4 mm Splitless Single Taper	4.0 mm x 6.5 mm x 78.5 mm	5-pk.	23446
	4 mm Splitless Single Taper w/Wool	4.0 mm x 6.5 mm x 78.5 mm	5-pk.	23447
	4 mm Cyclo Double Taper	4.0 mm x 6.5 mm x 78.5 mm	5-pk.	23270

Split/Splitless Liners for Thermo TRACE 1300/1310	Description	ID x OD x Length	qty.	cat.#
	4 mm Split/Splitless Straight w/Wool	4.0 mm x 6.3 mm x 78.5 mm	5-pk.	23444
	Low Pressure Drop Precision Liner w/Wool	4.0 mm x 6.3 mm x 78.5 mm	5-pk.	23268

Split Liners for Thermo Scientific TRACE PTV	Description	ID x OD x Length	qty.	cat.#
	Split PTV	1.0 mm x 2.75 mm x 120 mm	5-pk.	23436
	Split PTV	2.0 mm x 2.75 mm x 120 mm	5-pk.	23437
	Baffled PTV	2.0 mm x 2.75 mm x 120 mm	5-pk.	23438

SPME Liner for Thermo TRACE 1300/1310	Description	ID x OD x Length	qty.	cat.#
	SPME Liner	1.8 mm x 6.5 mm x 78.5 mm	5-pk.	23278

Merlin Microseal Septa

for Thermo TRACE 1300/1310 GCs

- Allow operation from 3 to 100 psi.
- 400 °C max injection port temperature.

The advantages of the Merlin Microseal septum include elimination of septum coring; longer life; and consistent, low needle-insertion force. The Microseal septum incorporates two separate sealing mechanisms. These sliding seals eliminate septum coring and the resulting accumulation of septum crumbs in the injection port liner.

The Microseal septum uses a 23-gauge (0.63 mm, 0.025") needle or probe with a blunt, truncated conical tip. Because the syringe plunger end details are determined by manual or autosampler compatibility, often a removable needle syringe is an effective way to match both of these requirements. No adapter is required for the Thermo 1300/1310 inlet. Installation is simple, requiring no modification of the injection port.

Description	Merlin #	qty.	cat.#
General Purpose Kit for Thermo 1300/1310 GCs (3 to 100 psi) Includes: nut (1), and general-purpose (#410) Microseals (2)	81-12	kit	22642
Replacement Microseals			
General-Purpose Microseal (most applications, 3 to 100 psi)	410	ea.	22812
Low-Pressure Microseal (1 to 45 psi)	310	ea.	22815
Microseal for SPME Applications (3 to 100 psi)	21-01	ea.	22782

Note: Merlin Microseal septa require a 23-gauge (0.63 mm, 0.025") needle or probe with a blunt, truncated conical tip. Compatible syringes and replacement needles are available at www.restek.com

Dual Vespel Ring Inlet Seals

Washerless, Leak-Tight Seals for Thermo TRACE 1300/1310 GCs

- Does not require a separate washer.
- Requires less torque to seal.
- Does not require retightening of reducing nut after several oven cycles.
- Extends column lifetime by preventing oxygen from reaching the column.
- Same price as the regular inlet seals with washers.
- Gold plating provides enhanced inertness versus stainless steel.

Patented

Our patented dual Vespel ring inlet seal greatly improves injection port performance—it stays sealed, even after repeated temperature cycles, without retightening the reducing nut! This seal features two soft Vespel rings, one embedded in its top surface and the other embedded in its bottom surface. These rings eliminate the need for a washer and ensure very little torque is needed to make a leak-tight seal. The rings will not harm the critical seal in the injector body, or any other surface, and are outside the sample flow path.

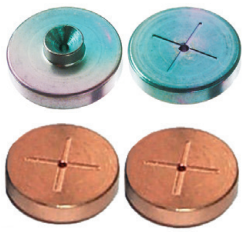
0.8 mm ID Dual Vespel Ring Inlet Seal	2-pk. cat.#	10-pk. cat.#
Gold-Plated	22243	22244
Siltek-Treated	22247	22248
1.2 mm ID Dual Vespel Ring Inlet Seal	**2-pk. cat.#**	**10-pk. cat.#**
Gold-Plated	22245	22246
Siltek-Treated	22249	22250

Cross-Disk Inlet Seals

for Thermo TRACE 1300/1310 GCs

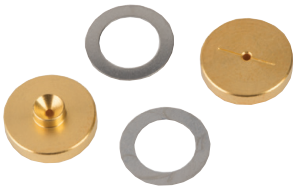
Ideal for high-flow split injections.

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



Patented

Inlet Supplies for Thermo Scientific GCs



Replacement Inlet Seals With Washers

for Thermo TRACE 1300/1310 GCs

Note: The 1.2 mm inlet seal is recommended when installing two columns using a two-hole Vespel/graphite ferrule.

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

Everything you need in one complete kit!

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

Liner Cap Removing Tool

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

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

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

General Instrument Supplies and Tools

Flashlight

This high-power, 170-lumen LED light features a rotating magnetic clip that attaches securely to give you convenient, hands-free lighting in almost any location. The reinforced plastic body design is water- and impact-resistant, making it reliable and virtually indestructible.

Description	qty.	cat.#
Flashlight	ea.	22187

GC Installation Kit

This kit contains the tubing and fittings needed to add an additional GC to your lab bench. Kit includes: tubing cutter, one 1/8-inch x 1/4-inch reamer, one 1/4-inch x 1/8-inch brass tube end reducer, one 7/16-inch wrench, one 1/2-inch wrench, four 1/8-inch brass tees, ten 1/8-inch brass nuts, ten brass front and back ferrules, and 50 feet (15.2 meters) of our instrument-grade cleaned 1/8-inch copper tubing.

Description	qty.	cat.#
GC Installation Kit	kit	21325

Ceramic Scoring Wafer

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

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

General Instrument Supplies and Tools

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

Restek Electronic Leak Detector

Features & benefits include:

- Audible tone indicates the severity of a leak.
- Redesigned circuitry offers 12 hours of operation between charges.
- Detects a broad range of gases; Ex rated for use with hydrogen and other explosive gases.*
- Ergonomic, handheld design.
- Rugged side grips for added durability.
- Handy probe storage for cleanliness and convenience.
- 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 one-year warranty, the Restek leak detector is the industry standard for performance and affordability in handheld leak detectors.

Leak Detector Specifications

Detectable Gases: Helium, nitrogen, argon, carbon dioxide, hydrogen
Battery: Rechargeable lithium ion internal battery pack (12 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.	22655
Small Probe Adaptor for Leak Detector	ea.	22658
Dynamic Duo Combo Pack (Restek Leak Detector and ProFLOW 6000 Flowmeter)	kit	22654
Soft-Sided Storage Case for Leak Detector or ProFLOW 6000 Flowmeter	ea.	22657
Car Charger/Adaptor	ea.	22652
Universal AC Power Adaptor	ea.	22653

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

*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.

Restek Recommends: If you think that your Restek electronic leak detector needs service or repair, please contact Restek Customer Service before sending your unit in (cat.# 22655-R). Leak detector service/repair will include inspection and testing of the unit.

Thermolite Plus Septa

- Usable to 350 °C inlet temperature.*
- Ultra-low bleed minimizes background signal.
- New plasma coating eliminates sticking in the injection port.
- Precision molding ensures consistent, accurate fit.
- Septa have a CenterGuide design to minimize coring. (Not available on 6 mm, 7 mm, 8 mm, 9.5 mm, 10 mm and Shimadzu plug.)
- 5 mm septa are partially predrilled for improved puncturability.
- Preconditioned and ready to use.
- Packaged in ultra-clean blister packs.
- Each batch GC-FID tested.

Septum Diameter	48-pk. cat.#	50-pk. cat.#	100-pk. cat.#
5 mm (3/16"), with CenterGuide, predrilled		23860	23861
6 mm (1/4")		23874	
7 mm		23875	
8 mm		23876	
9 mm, with CenterGuide		23862	23863
9.5 mm (3/8")		23877	
10 mm		23878	
11 mm (7/16"), with CenterGuide		23864	23865
11.5 mm, with CenterGuide		23866	23867
12.7 mm (1/2"), with CenterGuide	23868		
17 mm, with CenterGuide	23870		
Shimadzu Plug		23872	23873

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 TRACE and Focus GCs.
*For 17 mm inlets, the maximum temperature for Thermolite Plus septa is 300 °C.

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.
- Septa have a CenterGuide design to minimize coring. (Not available on 9.5 mm, 10 mm, and Shimadzu Plug.)
- 5 mm and 11 mm septa are partially predrilled.
- Preconditioned and ready to use.
- Packaged in ultra-clean blister packs.**
- Each batch GC-FID tested.
- Bleed and temperature optimized; ideal for demanding GC and GC-MS applications.

Septum Diameter	50-pk. cat.#	100-pk. cat.#
5 mm, with CenterGuide, predrilled	27082	27083
9 mm, with CenterGuide	27084	27085
9.5 mm (3/8")	27086	27087
10 mm	27088	27089
11 mm (7/16"), with CenterGuide, predrilled	27090	27091
11.5 mm, with CenterGuide	27092	27093
12.7 mm (1/2"), with CenterGuide	27094	27095
17 mm, with CenterGuide	27096	27097
Shimadzu Plug	27098	27099

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 TRACE and Focus GCs.
*For 17 mm inlets, the maximum temperature for BTO septa is 330 °C. For all injectors, minimum recommended operating temperature for BTO septa is 250 °C.
**12.7 mm and 17 mm septa packaged in precleaned glass jars.

Tips for Handling Septa

All GC septa, regardless of their composition, puncturability, or resistance to thermal degradation, will be a source of problems if they are mishandled. Always use clean forceps, or wear clean powderless or cotton gloves when handling septa. Do not handle them with bare fingers or with powdered latex gloves—contaminants such as finger oils, perfumes, make-up, fingernail polish, skin creams, hand soaps, and talcum can be absorbed into the septum and will bleed out during your analyses.

Also, always follow septum and instrument manufacturer's recommendations when installing a septum. Overtightening a septum nut will invariably reduce septum lifetime by increasing coring and splitting problems.

For more tips on preventing GC septum problems, visit **www.restek.com** and search for GNAR2671-UNV

General Instrument Supplies and Tools

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

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

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 for other uses, too.

Description	qty.	cat.#
Septum Puller	ea.	20117

The GC inlet supplies and tools you need are at
www.restek.com/GCacc

RESTEK
Pure Chromatography

Questions about this or any other Restek product?
Contact us or your local Restek representative (www.restek.com/contact-us).

www.restek.com

Lit. Cat.# GNSS2704-UNV