

Genuine Restek Replacement Parts for Agilent GCs



Chromatography Products

www.restek.com 800-356-1688 • 814-353-1300

From Injector to Detector

Restek is your #1 source for consumables and supplies for Agilent GC and GC/MS systems!

Restek designs, develops, and markets OEM-equivalent parts and supplies for Agilent systems—even difficult-to-find parts for older models. A team of Restek chemists and engineers is dedicated to creating innovative tools to make your work easier, your system work faster, your analyses more reproducible, and your data more accurate. And, as always, we back our products with friendly, knowledgeable technical service and customer service.

We also offer an extensive selection of capillary, packed, micropacked, and PLOT columns to use in your Agilent system, plus analytical reference materials, vials, syringes, and much more. We also manufacture HPLC columns and accessories. If you don't have a copy of our current catalog, simply call us and ask for one—or request one from our website. Whether you want to order a product, discuss an application or chromatography in general, we look forward to talking with you.



Donna Lidgett
Product Marketing Manager, GC Accessories
20+ Years of Service

Donna Lidgett

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Restek Performance Coatings

As needs for improved performance of system components increase, coatings often are an effective solution. Restek's Performance Coatings Division specializes in innovative surface treatments for steel, stainless steel, alloys, glass, and other materials. Our surface treatments increase resistance to corrosion, reduce interactions between steel surfaces and active (e.g., sulfur) compounds, inhibit coking on process system surfaces, and offer many other advantages.

Restek's involvement in coatings began in 1987. The focus of our initial work was to produce a coating on stainless steel that would be inert to low levels of reactive organic compounds, such as explosives and volatile organic compounds (VOCs). The end product from this work was the Silcosteel® surface treatment for stainless steel tubing. Silcosteel® treated tubing currently is used for constructing analytical testing equipment by all major manufacturers of gas chromatography sampling and testing instruments.

Since this initial project, our coatings experts have developed a family of surface treatments to address other specific needs, and thereby enhance the performance of system components. Products of our processes are more correctly described as surface treatments, rather than as coatings, because, unlike coatings, the introduced layer permeates and chemically bonds to the treated surface. And unlike coatings, this layer cannot chip, flake, or blister. In brief, these treatments are:

- **Silcosteel®**—A general purpose passivation layer for steel and stainless steel. US Patent 6,511,760.
- **Siltek®**—The ultimate passivation of treated surfaces, from glass to high nickel alloys of steel. US Patent 6,444,326.
- **Silcosteel®-AC**—Dramatically reduces carbon buildup on stainless steel components. US Patent 6,444,326.
- **Silcosteel®-CR**—A corrosion resistant layer that increases the lifetime of system components in acidic environments containing hydrochloric acid, nitric acid, or seawater. US Patent 7,070,833.
- **Silcosteel®-UHV**—Greatly reduces outgassing from components of ultra-high vacuum systems. US Patent 7,070,833.
- **Sulfinert®**—A required treatment for metal components when analyzing for parts-per-billion levels of organo-sulfur compounds. US Patent 6,444,326.

Restek surface treatments are now used in many applications, spanning multiple industries and market areas. Restek coated components increase the lifetime of stack monitoring equipment. Treated injector nozzles have longer service life because coking is inhibited. Sulfinert® treated sampling equipment increases the reliability of process measurements in refineries and petrochemical plants. A mass spectrometer manufacturer demands Silcosteel® treated parts to increase instrument sensitivity for analyzing pesticides. Restek coated air sampling equipment is used in applications as diverse as sampling city air and monitoring submarine cabins.

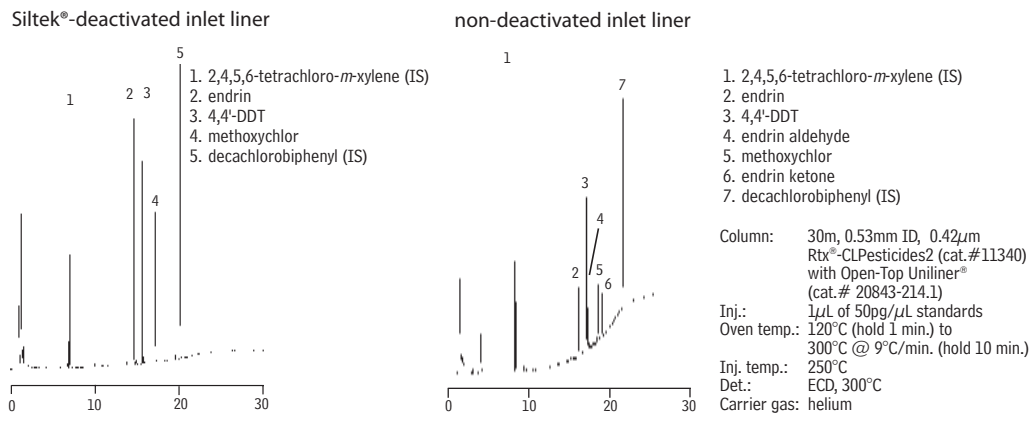
Siltek® Surface Deactivation

- Eliminate activity by using the most advanced surface treatment available.
- Increase component lifetime—the non-stick surface cleans easily with solvent sonication.
- Ideal for acidic conditions. Siltek® treatment will improve reproducibility and protect hardware.
- Stable to 600°C. A no-bleed deactivation treatment, ideal for all analytical methods.
- Custom service available.

Endrin is more prone to break down on glass surfaces than metal, and DDT is more prone to break down on metal surfaces. Siltek® deactivation of sample-contacting surfaces minimizes endrin and DDT breakdown, to less than 1%!

In addition to our many stock Siltek®-treated products, custom coating service is available. Contact our Technical Service Team at 800-356-1688 or 814-353-1300, ext. 4, or contact your Restek representative.

A Siltek®-deactivated Uniliner® inlet liner reduces endrin breakdown to less than 1%; DDT and methoxychlor breakdown are undetectable.



Industries currently benefiting from the reliability of Restek's performance coatings include:

- petroleum, petrochemical, and refineries
- analytical instrument manufacturers
- analytical labs



Silcosteel® is a general purpose passivation for metals.



Silcosteel®-CR treatment improves the corrosion resistance of stainless steel 10X or more.



Siltek® treatment provides the ultimate passivation for many surfaces, from glass to high nickel alloys of steel.



A Sulfinert® layer on metal components is required when analyzing for parts-per-billion levels of organosulfur compounds.

Leak Detector



Small, compact unit—
easy to hold and operate.

Restek Electronic Leak Detector

- Reliable thermal conductivity leak detector.
- Responds to leaks in less than 2 seconds.
- Audible alarm plus LED readout.
- Auto zeros with the touch of a button.
- Built-in rechargeable 9 volt battery.

Improve GC Performance; Save Your Column!

Avoid poor chromatography caused by leaks—leak check your GC system with the Restek Electronic Leak Detector, the affordable, reliable tool for detecting leaks. Features include internal battery charge capability, a low-battery indicator, a battery charge indicator light, yellow lights to signal a nitrogen leak, a repositioned on/off switch to eliminate accidentally powering on the unit, and a probe tip design that prevents debris from entering the unit. The leak detector's microchip technology enables high sensitivity in a compact unit, the autozero feature allows instantaneous zeroing with the touch of a button, and the ergonomic design puts all controls at your fingertips, for maximum ease of use.

Leaks can cause detector noise and baseline instability, waste carrier gas, and shorten column lifetimes, so leak checks should be a regular part of a GC maintenance program. The Restek Electronic Leak Detector responds in less than 2 seconds to leaks of gases with thermal conductivities different from air, indicating leaks with both an audible alarm and an LED readout. The leak detector detects minute gas leaks that can go undetected by liquid leak detectors. Never use liquid leak detectors on a capillary GC system; liquids drawn into the system through the leaks will contaminate the system.

How does the Restek Electronic Leak Detector work?

The Restek Electronic Leak Detector detects minute leaks of any gas with a thermal conductivity different from air. The reference gas inlet draws in ambient air for comparison to air drawn into the sample probe. A thermal conductivity difference between the two indicates a leak, and the leak is revealed to the user by both an LED bar graph and an audible tone. The leak detector operates on one rechargeable 9-volt Ni-MH battery (included).

tech tip

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

Leak Detector Facts

Detectable gases:	helium, nitrogen, argon, carbon dioxide
Battery:	Rechargeable Ni-MH, 9 volt
Operating	
Temperature Range:	32°-120°F (0°-48°C)
Humidity Range:	0-97%
CE Approved:	Yes



Easy-to-clean probe assembly



Mike Goss

Instrument Innovations
Specialist
7+ years of service!

Description	qty.	cat.#
Leak Detector with 110Volt Battery Charger	ea.	22451
Leak Detector with 220Volt European Battery Charger	ea.	22451-EUR
Leak Detector with 220Volt UK Battery Charger	ea.	22451-UK

Caution: The Restek Electronic Leak Detector is NOT designed for determining leaks of combustible gases. A combustible gas detector should be used for determining combustible gas leaks under any condition. The Restek Electronic Leak Detector may be used for determining trace amounts of hydrogen in a GC environment only.

Leak Detector Accessory Kit

The kit includes an adaptor fitting to detect leaks in hard-to-reach locations, and a mounting bracket that can be affixed to the wall or GC.



Verify hard-to-reach leaks with the adaptor fitting.



Leak Detector is easily accessed when stored in the mounting bracket.

Description	qty.	cat.#
Leak Detector Accessory Kit (adaptor fitting for probe, mounting bracket)	kit	22453

Liner Deactivations**Intermediate Polarity (IP) Deactivation**

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

Siltek® Deactivation

- Revolutionary deactivation for difficult matrices and reactive compounds.
- Inertness retained over a wide sample pH range.
- Minimal bleed.
- Ideal for chlorinated pesticide analysis; lowers endrin breakdown to less than 1%.
- Recommended for use with Rtx®-CLPesticides, Stx™-CLPesticides, Stx™-1HT, and Rtx®-TNT columns.

Base Deactivation

- Excellent inertness for basic compounds.
- Recommended for use with Rtx®-5 Amine, Rtx®-35 Amine, and Stabilwax®-DB columns.

Siltek® Deactivation—The Next Generation

- Maximizes the inertness of the sample pathway.
- Minimizes breakdown.
- Low bleed.
- Thermally stable.
- “Clean and green”—manufactured without the use of harmful organic solvents.



All liners are
100%
deactivated

All liners are shipped intermediate polarity (IP) deactivated unless otherwise requested.

Our Siltek® deactivation process (US Patent 6,444,326) 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.

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

qty.	Siltek® Liner		Siltek® Liner with Wool		Siltek® Liner with 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-Deactivated Inlet Liners

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

qty.	Base-Deactivated Liner		Base-Deactivated Liner with Base-Deactivated Wool		Base Deactivated Liner with 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

← Ideal for amines and basic compounds!

a plus 1 story

“I installed Siltek® liners on one of our GCs to replace standard quartz liners that required deactivating daily. I found the results to be excellent, saving many hours of instrument time with no detrimental effects on the analysis.”

Matthew Turner, Laboratory Manager—food contaminants, Global Analysis (UK)

Liner Packing Materials & Accessories



Matt Lininger
Instrument Innovations
Engineer
2+ years of service!

Why Use Deactivated Wool for a Liner Packing?

- Ensure uniform vaporization in split or splitless liners.
- Prolong column life by trapping septum particles.
- Recommended for autosamplers with fast injection rates.
- Inertness tested for endrin breakdown.



Deactivated Wool

Further improving our proprietary deactivation process, we make this deactivated wool more inert than our traditional fused silica wool, yet it is as flexible as our traditional borosilicate glass wool.

Description	qty.	cat.#
Deactivated Wool	10 grams	24324

Base-Deactivated Wool

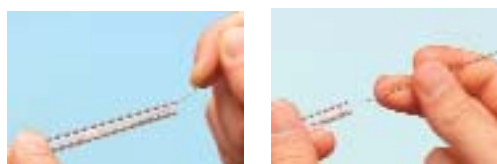
Ideal for amines and other basic compounds.

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



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

Not recommended for use with double gooseneck liners.



Inlet Liner Packing Tool

- Easy to use—position wool reproducibly every time.
- Accurate to a specific, measured depth.

Eliminates user variation!



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

Prepacked Inlet Liners

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

qty.	Wool	FS Beads	CarboFrit™†
ea.	-200.1	-201.1	-209.1
5-pk.	-200.5	-201.5	-209.5
25-pk.	-200.25	-201.25	-209.25

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

CarboFrit™ Inlet Liner Packing Material

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

Add the corresponding suffix number to the liner catalog number.

Description	suffix	
each	-209.1	addl. cost
5-pk.	-209.5	addl. cost
25-pk.	-209.25	addl. cost

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



Replacement CarboFrit™ Inserts

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



a plus 1 story

"Restek sent us some carbon material (CarboFrit™ packing) with the suggestion to test it as liner packing. Initially, I didn't even want to try it because carbon is usually highly retentive and catalytically active. As we nevertheless gave it a chance, we were highly surprised...it exhibited low retentive power and good inertness."

excerpt from: *Sample Evaporation in Hot GC Injectors*
Dr. Konrad Grob, *The Restek Advantage*, Winter 1996.

Deactivated Fused Silica Beads

- Increase sample vaporization surface and minimize splitter discrimination to improve quantitation of compounds having dissimilar boiling points.
- Trap non-volatile or inorganic residue to prevent column inlet contamination.
- Deactivated, heat-treated, and tested to ensure complete inertness.

Description	Mesh	qty.	cat.#
Deactivated Fused Silica Beads	60-80	25 grams	20791



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.



No more burned fingers!

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


























tech tip

Use of Packings with Splitless Liners

We recommend using an injection port liner with wool or CarboFrit™ packing when making splitless 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 non-reproducible 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.

Inlet Liners

C O L U M N I N S T A L L S T H I S E N D

Splitless Liners for Agilent GCs	Benefits/Uses	ID*/OD & Length (mm)	Similar to Agilent part #	ea.	cat.# 5-pk.	25-pk.
 2mm Splitless	trace samples <2µL	2.0 ID 6.5 OD x 78.5	5181-8818 (ea.) 5183-4703 (5-pk.) 5183-4704 (25-pk.)	20712	20713	20714
 4mm Splitless	trace samples >2µL	4.0 ID 6.5 OD x 78.5	210-3003 (ea.) 210-3003-5 (5-pk.)	20772	20773	20774
 Siltek® 4mm Splitless	trace samples >2µL	4.0 ID 6.5 OD x 78.5	—	20772-214.1	20773-214.5	20774-214.25
 4mm Splitless w/ Wool	trace samples >2µL	4.0 ID 6.5 OD x 78.5	19251-60540 (ea.) 5183-4691 (5-pk.) 5183-4692 (25-pk.)	22400	22401	22402
 2mm Splitless (quartz)	trace samples <2µL	2.0 ID 6.5 OD x 78.5	18740-80220 (ea.) 5183-4707 (5-pk.)	20914	20915	—
 4mm Splitless (quartz)	trace samples >2µL	4.0 ID 6.5 OD x 78.5	—	20912	20913	—
 4mm Splitless (quartz) w/ Wool	trace samples >2µL	4.0 ID 6.5 OD x 78.5	—	22403	22404	—
 Gooseneck Splitless (2mm)	trace samples <2µL	2.0 ID 6.5 OD x 78.5	—	20795	20796	20797
 Siltek® Gooseneck Splitless (2mm)	trace samples <2µL	2.0 ID 6.5 OD x 78.5	—	20795-214.1	20796-214.5	20797-214.25
 Gooseneck Splitless (4mm)†	trace samples >2µL	4.0 ID 6.5 OD x 78.5	5181-3316 (ea.) 5183-4695 (5-pk.) 5183-4696 (25-pk.)	20798	20799	20800
 Siltek® Gooseneck Splitless (4mm)†	trace samples >2µL	4.0 ID 6.5 OD x 78.5	—	20798-214.1	20799-214.5	20800-214.25
 Gooseneck Splitless (4mm) w/ Wool†	trace samples >2µL	4.0 ID 6.5 OD x 78.5	5062-3587 (ea.) 5183-4693 (5-pk.) 5183-4694 (25-pk.)	22405	22406	22407
 Siltek® Gooseneck Splitless (4mm) w/ Wool†	trace samples >2µL	4.0 ID 6.5 OD x 78.5	—	22405-213.1	22406-213.5	22407-213.25
 Double Gooseneck Splitless (4mm)	trace, active samples >2µL	4.0 ID 6.5 OD x 78.5	5181-3315 (ea.) 5183-4705 (5-pk.) 5183-4706 (25-pk.)	20784	20785	20786
 Siltek® Double Gooseneck Splitless (4mm)	trace, active samples >2µL	4.0 ID 6.5 OD x 78.5	—	20784-214.1	20785-214.5	20786-214.25
 Cyclo Double Gooseneck (2mm)	trace, active, dirty samples <2µL	2.0 ID 6.5 OD x 78.5	—	20907	20908	—
 Cyclo Double Gooseneck (4mm)	trace, active, dirty samples >2µL	4.0 ID 6.5 OD x 78.5	—	20895	20896	20997
 Siltek® Cyclo Double Gooseneck (4mm)	trace, active, dirty samples >2µL	4.0 ID 6.5 OD x 78.5	—	20895-214.1	20896-214.5	20997-214.25
 Recessed Gooseneck (2mm)**	base easily packs with wool for dirty samples <2µL	2.0 ID 6.5 OD x 78.5	—	20980	20981	20982
 Recessed Gooseneck (4mm)**	base easily packs with wool for dirty samples >2µL	4.0 ID 6.5 OD x 78.5	—	20983	20984	20985
 Siltek® Recessed Gooseneck (4mm)**	base easily packs with wool for dirty samples >2µL	4.0 ID 6.5 OD x 78.5	—	20983-214.1	20984-214.5	20985-214.25
 Recessed Gooseneck (4mm) w/ Wool**	base easily packs with wool for dirty samples >2µL	4.0 ID 6.5 OD x 78.5	—	22408	22409	22410
 Recessed Double Gooseneck (4mm)**	base easily packs with wool for dirty, active samples >2µL	4.0 ID 6.5 OD x 78.5	—	20986	20987	20988



















*Nominal ID at syringe needle expulsion point.

**Use with two-hole ferrule for dual-column analysis.

†Use this liner for increased sensitivity.

All liners are
100%
deactivated

All liners are shipped intermediate polarity (IP) deactivated unless otherwise requested.

Split Liners for Agilent GCs	Benefits/Uses	ID*/OD & Length (mm)	Similar to Agilent part#	ea.	cat.# 5-pk.	25-pk.
 1mm Split**	for purge & trap inlet splitting or sample <1µL	1.0 ID 6.3 OD x 78.5	18740-80200 (ea.) 5183-4709 (5-pk.)	20972	20973	—
 4mm Split w/ Wool	universal, use with Agilent 7673 autosampler	4.0 ID 6.3 OD x 78.5	19251-60540 (ea.) 5183-4691 (5-pk.) 5183-4692 (25-pk.)	20781	20782	20783
 Siteltek® 4mm Split w/ Wool	universal, use with Agilent 7673 autosampler	4.0 ID 6.3 OD x 78.5	—	20781-213.1	20782-213.5	20783-213.25
 Laminar Cup Splitter	high MW compounds	4.0 ID 6.3 OD x 78.5	—	20801	20802	—
 mini-Lam™ Split	high MW compounds	4.0 ID 6.3 OD x 78.5	—	20990	20991	—
 Cup Splitter	high & low MW compounds	4.0 ID 6.3 OD x 78.5	18740-80190 (ea.) 5183-4699 (5-pk.)	20709	20710	—
 Siteltek® Cup Splitter	high & low MW compounds	4.0 ID 6.3 OD x 78.5	—	20709-214.1	20710-214.5	—
 Cycloplitter®	dirty samples, many injections before cleaning required	4.0 ID 6.3 OD x 78.5	—	20706	20707	20708
 2mm Split Precision™ Liner w/ Wool	dirty samples, trace samples	2.0 ID 6.3 OD x 78.5	—	20823	20824	—
 4mm Split Precision™ Liner w/ Wool	dirty samples, trace samples	4.0 ID 6.3 OD x 78.5	210-4004-5 (5-pk.)	21022	21023	20979
 Siteltek® 4mm Split Precision™ Liner w/ Wool	dirty samples, trace samples	4.0 ID 6.3 OD x 78.5	—	21022-213.1	21023-213.5	20979-213.25
Split/Splitless Liners for Agilent GCs	Benefits/Uses	ID*/OD & Length (mm)	Similar to Agilent part #	ea.	cat.# 5-pk.	25-pk.
 Low Pressure Drop Liner w/ Wool	universal, use with Agilent 6890 GCs	4.0 ID 6.3 OD x 78.5	5183-4647 (ea.) 5183-4701 (5-pk.)	21032	21033	—
 Low Pressure Drop Liner w/ Wool	universal, use with Agilent 6850 GCs	4.0 ID 6.3 OD x 78.5	5183-4711 (ea.) 5183-4712 (5-pk.) 5183-4713 (25-pk.)	20994	20995	20996
CIS4 and PTV Liners for Agilent GCs	Benefits/Uses	ID*/OD & Length (mm)	Similar to Agilent part#	ea.	cat.# 10-pk.	
 Straight Glass	general use	2.0 ID 3.0 OD x 71	5183-2036		21157	
 Baffled Glass	active compounds, drugs, pesticides	1.5 ID 3.0 OD x 71	5183-2037		21704	
 Siteltek® Baffled Glass	active compounds, drugs, pesticides	1.5 ID 3.0 OD x 71	—		21704-214.10	
 Glass w/ Wool	large volume injections	2.0 ID 3.0 OD x 71	5183-2038		21156	
SPME Liners for Agilent GCs	Benefits/Uses	ID*/OD & Length (mm)		ea.	cat.# 5-pk.	
 SPME Liner	ideal for low-volume SPME applications	0.75 ID 6.35 OD x 78.5			21110	21111

*Nominal ID at syringe needle expulsion point.

**Use this liner for increased sensitivity.

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.

ordering note







For descriptions of liner deactivations, packings, and tools, see [pages 3-5](#).

Inlet Liners

C O L U M N I N S T A L L S T H I S E N D

DI Liners for Agilent GCs (For 0.32/0.53mm ID Columns)	Benefits/Uses	ID*/OD & Length (mm)	cat.# ea.	cat.# 5-pk.
 1mm Uniliner [®] ***†	trace, active samples, samples <1µL	1.0 ID 6.3 OD x 78.5	21052	21053
 Siltek [®] 1mm Uniliner [®] ***†	trace, active samples, samples <1µL	1.0 ID 6.3 OD x 78.5	21052-214.1	21053-214.5
 Uniliner [®] **	trace, active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	20335	20336
 Siltek [®] Uniliner [®] **	trace, active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	20335-214.1	20336-214.5
 Cyclo-Uniliner [®] **	trace, dirty, high MW active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	20337	20338
 Siltek [®] Cyclo-Uniliner [®] **	trace, dirty, high MW active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	20337-214.1	20338-214.5
 Open-top Uniliner [®] w/ Wool**	trace, dirty, active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	20843	20844
 Siltek [®] Open-top Uniliner [®] w/ Wool**	trace, dirty, active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	20843-213.1	20844-213.5

All liners are **100% deactivated**
All liners are shipped intermediate polarity (IP) deactivated unless otherwise requested.

DI Liners for Agilent 5890 & 6890 GCs (For 0.25/0.32/0.53mm ID Columns)	Benefits/Uses***	ID*/OD & Length (mm)	Similar to Agilent part #	ea.	cat.# 5-pk.	25-pk.
 Drilled Uniliner [®] (hole on top)	trace, active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	—	21054	21055	20998
 Siltek [®] Drilled Uniliner [®] (hole on top)	trace, active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	—	21054-214.1	21055-214.5	20998-214.25
 Drilled Uniliner [®] (hole on bottom)	trace, active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	G1544-80730	20756	20771	—
 Double Gooseneck Drilled Uniliner [®] (hole on top)	trace, active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	—	20508	20509	—
 Double Gooseneck Drilled Uniliner [®] (hole on bottom)	trace, active samples, high recovery & linearity	4.0 ID 6.3 OD x 78.5	G1544-80700	20954	20989	—
 Siltek [®] 1mm Drilled Uniliner [®] (hole on top)	trace, active samples, high recovery & linearity	1.0 ID 6.3 OD x 78.5	—	21390-214.1	21391-214.5	—

***Hole in Drilled Uniliner[®] makes direct injection possible with EPC-equipped 6890 GCs!

*Nominal ID at syringe needle expulsion point.
**These Uniliner[®] liners are for split/splitless injection ports.
†This liner for use with 0.25, 0.32, or 0.53mm ID columns.

tech tip

Drilled Uniliner[®]

Use the Drilled Uniliner[®] with the hole near the bottom for analysis in which compounds of interest could be affected by a tailing solvent peak. Use the Drilled Uniliner[®] with the hole near the top for aqueous injections, as well as for analysis in which the compounds of interest elute away from the solvent peak.



Siltek[®] Metal Inlet Liners for Agilent GCs

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

Liner Type (5.2mm ID x 6.3mm OD x 78.5mm)	5-pk.	25-pk.
Cyclo/Single Gooseneck	20974	20975
Single Gooseneck	21702	21703
Cycloplitter [®]	20726	20729
Split/Splitless w/Wool	21700	21701

Viton® O-Rings for Agilent GCs

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

Description	Max. temp.	Similar to Agilent part #	qty.	cat.#
Viton® O-Rings for Agilent GCs	250°C	5180-4182	25-pk.	20377



Graphite O-Rings for Agilent and Varian 1177 GCs

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

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



Liner Seals for CIS4 and PTV

Description	Max. temp.	Similar to Agilent part #	Similar to Gerstel part #	qty.	cat.#
Liner Seals for CIS4 and PTV	450°C	5182-9749	007541-005-00	5-pk.	22684



HANDY septum size chart

Agilent Instrument	Septum Diameter (mm)
5880A, 5890, 6890, 6850, PTV	11
5700, 5880	9.5/10
On-Column Injection	5

Thermolite® Septa for Agilent GCs

- Usable to 340°C inlet temperature; precision molded for consistent fit.

Septum Diameter	25-pk.	50-pk.	100-pk.
5mm (3/16")	27120	27121	27122
9.5mm (3/8")	27135	27136	27137
10mm	27138	27139	27140
11mm (7/16")	27141	27142	27143



IceBlue™ Septa for Agilent GCs

- Usable to 250°C inlet temperature; precision molded for consistent fit.

Septum Diameter	50-pk.	100-pk.
9.5mm (3/8")	27158	27159
10mm	27160	27161
11mm (7/16")	27162	27163



BTO® Septa for Agilent GCs

- Usable to 400°C inlet temperature; precision molded for consistent fit.

Septum Diameter	50-pk.	100-pk.
5mm CenterGuide™	27100	27101
9.5mm (3/8")	27106	27107
10mm	27108	27109
11mm (7/16") CenterGuide™	27110	27111



Septum Puller

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



Description	qty.	cat.#
Septum Puller	ea.	20117



Septum Nuts, Injection Port Tools



Knurled Septum Nuts for Agilent 5890/6890/6850 GC Split/Splitless Injectors

- Tighten easily without the use of a wrench.
- Ensure a leak-tight injection port, increase septum lifetime, and decrease maintenance requirements.
- Thread design and needle guide allow easy penetration and prevent premature septum coring.
- High-quality stainless steel construction.

Description	qty.	cat.#
Knurled Septum Nut, Autosampler (for 23-gauge needles)	ea.	21479
Knurled Septum Nut, Manual Injection (for 26-gauge needles)	ea.	21478



Septum Nuts for use with Agilent 5890/6890/6850 Split/Splitless Injectors

- Ensure a leak-tight injection port, increase septum lifetime, and decrease maintenance requirements.
- Thread design and needle guide allow easy penetration and prevent premature septum coring.
- Manual injection septum nut allows use of 26-gauge needles for on-column injections.
- Made of high-quality stainless steel.

tech tip

Always use the Manual Injection Septum Nut (for 26-gauge needles) for on-column injections.

Description	Similar to Agilent part #	qty.	cat.#
Autosampler & PTV Septum Nut (for 23-gauge needles)	18740-60835	ea.	20631
Manual Injection Septum Nut (for 26-gauge needles)	18740-60835	ea.	21309



Septum Nut Removal Tool for Agilent 5890/6890/6850 GCs

- Easily remove the septum nut without touching the heated nut—no more burned fingers!
- Unique, ergonomic handle—easy to grip.

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



Injector Wrench for Agilent 5890/6890/6850 GCs

- Use to remove the septum nut and weldments during GC maintenance.
- High-quality stainless steel construction.
- Meets original equipment performance.

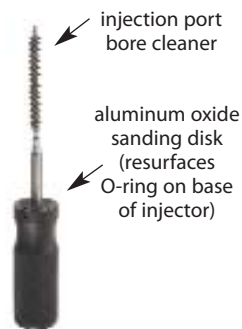


Use the smaller end to remove the septum nut.



Use the larger end to tighten the split/splitless weldment nut.

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



injection port bore cleaner

aluminum oxide sanding disk (resurfaces O-ring on base of injector)

Injection Port Repair Tool for Agilent Split/Splitless Injection Ports

- Remove contaminants, achieve a better seal.
- Resurface critical inlet seal areas.



Description	qty.	cat.#
Injection Port Repair Tool for Agilent Split/Splitless Injection Ports	ea.	21393
Replacement Sanding Disks (5 fine & 5 medium)	10-pk.	22689
Replacement Bore Brushes (one 6.5mm & one 7mm)	2-pk.	21353



Make your injection port threads like new!

Rethreading Tool

- Repair worn or damaged threads in injection ports, fittings, etc.
- Built-in guide to prevent cross-threading.



- 1) Worn & damaged threads can allow oxygen into the system—compromising analytical results and destroying columns.
- 2) Screw the tool completely onto the injection port in a clockwise direction. Unscrew the tool and inspect the threads, repeat as necessary. When done, wipe threads with methanol to remove any debris.

Description	qty.	cat.#
Rethreading Tool for 1/4" compression fittings (Agilent split/splitless injection ports)	ea.	23018

Capillary Column Nuts, Installation Gauge

Capillary Column Nuts for Agilent 5890/6890 GCs

Available in brass or stainless steel.



for use with "compact" Agilent-style ferrules



for use with standard ferrules

Description	Similar to Agilent part #	qty.	cat.#
For use with "compact" Agilent-style ferrules.			
Stainless Steel Capillary Column Nut	5181-8830	2-pk.	21884
Brass Capillary Column Nut	5181-8830	2-pk.	21878
For use with standard 1/16"-type ferrules.*			
Stainless Steel Capillary Column Nut	05921-21170	2-pk.	20883
Brass Capillary Column Nut	05921-21170	2-pk.	21879

*Designed to fit a wider variety of 1/16" ferrules

Capillary Column Nuts for Agilent 6850 GCs

- Meet or exceed original equipment performance.
- High-quality stainless steel.



Description	Similar to Agilent part #	qty.	cat.#
Capillary Column Nuts for Agilent 6850 GCs	5183-4732	2-pk.	21882

Finger-Tight Capillary Column Nut

- Rapidly tighten without wrenches; avoid stripped threads.
- Either version can be used with 0.25, 0.32, or 0.53mm ID columns.



Description	Similar to Agilent part #	qty.	cat.#
For use with "compact" Agilent-style ferrules.*			
Finger-Tight Capillary Column Nut	5020-8293	ea.	21311
Finger-Tight Capillary Column Nut	5020-8292	ea.	21312
For use with standard ferrules.			
Finger-Tight Capillary Column Nut	5020-8293	ea.	21312

*Similar to Agilent part # 5020-8293 and 5020-8292, except that the Restek nut can be used with Vespel® ferrules.

also **available**

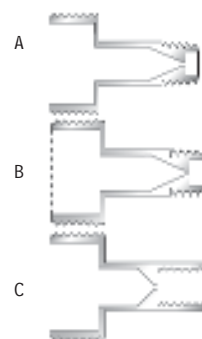
Ferrules
See [pages 31-32](#) for our listing of ferrules.

Finger-Tight Capillary Column Nuts

- Allow wrench-free column installations.
- Work with standard or compact (Agilent-style) ferrules.
- Made from high-quality stainless steel.



Description	qty.	cat.#
For use with "compact" Agilent-style ferrules.		
A) Finger-Tight Capillary Column Nuts	2-pk.	21040
For use with standard 1/16"-type ferrules.		
B) Finger-Tight Capillary Column Nuts	2-pk.	21041
For use with standard 1/16" compression fittings		
C) Finger-Tight Capillary Column Nuts	2-pk.	21042



Capillary Installation Gauge

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



A
B



Thread . . .



. . . tighten. . .



. . . done.

Easily seat ferrules for consistent installations!

Description	qty.	cat.#
A) Capillary Installation Gauge for Agilent-style fittings (compact ferrules)	ea.	21034
B) Capillary Installation Gauge for 1/16" fittings (1/16" ferrules)	ea.	21399

*Recommended for use with graphite ferrules.



A Dual VespeL® Ring Inlet Seal eliminates the need for a washer!



Dual VespeL® Ring Inlet Seals

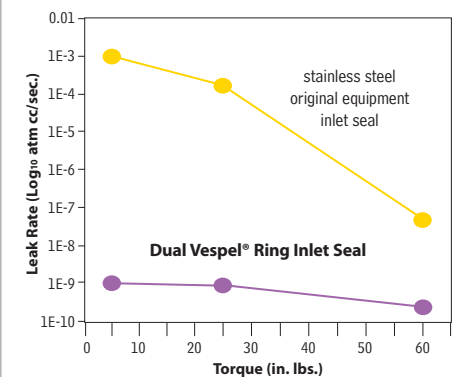
- VespeL® ring embedded in bottom surface eliminates need for washer.
- VespeL® ring embedded in top surface reduces operator variability by requiring minimal torque to seal.
- Prevents oxygen from permeating into the carrier gas, increasing column lifetime.

In Agilent split/splitless injection ports, it can be difficult to make and maintain a good seal with a conventional metal inlet disk. The metal-to-metal seal dictates that you apply considerable torque to the reducing nut, and, based on our testing, this does not ensure a leak-tight seal. Over the course of oven temperature cycling, metal seals are prone to leaks, which ultimately can degrade the capillary column and cause other analytical difficulties.

Our 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. Tests using a high sensitivity helium leak detector show Dual VespeL® Ring Inlet Seals will seal equally effectively at torques from 5 in. lb. to 60 in. lb. (Figure 1).

Why trust a metal-to-metal seal when you can make leak-tight seals quickly and easily—and more reliably—without a washer, with a Restek Dual VespeL® Ring Inlet Seal. Use a stainless steel seal for analyses of unreactive compounds. To reduce breakdown and adsorption of active compounds, use a gold-plated or Siltek®-treated seal. The gold surface offers better inertness than untreated stainless steel; Siltek® treatment provides inertness similar to that of a fused silica capillary column.

Figure 1 The Dual VespeL® Ring Inlet Seal achieves leak-tight seals even at low torque, reducing the chance of leak-related problems.



Dual VespeL® Ring Inlet Seals are available in gold plating, stainless steel, and Siltek® treated.



Patent pending.

0.8mm ID Dual VespeL® Ring Inlet Seal	2-pk.	10-pk.
Gold-Plated	21240	21241
Siltek® Treated	21242	21243
Stainless Steel	21238	21239
1.2mm ID Dual VespeL® Ring Inlet Seal	2-pk.	10-pk.
Gold-Plated	21246	21247
Siltek® Treated	21248	21249
Stainless Steel	21244	21245

Replacement Inlet Seals with Washers

- Special grade of stainless steel that is softer and deforms more easily, creating a better seal.
- Increases column lifetime because oxygen cannot permeate into the carrier gas.
- Reduced noise benefits high-sensitivity detectors (e.g., ECDs, MSDs).
- Siltek® treatment provides inertness similar to fused silica.
- All seals include washers.

Replacement Inlet Seals for Agilent 5890/6890/6850 Split/Splitless Injection Ports

The inlet seal at the base of the Agilent 5890/6890 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.

The Restek inlet seal design increases column lifetime because oxygen cannot permeate into the carrier gas. Detector noise also is reduced with high-sensitivity detectors (e.g., ECDs or MSDs). To reduce breakdown and adsorption of active compounds, use Siltek® or gold-plated seals.



Note: The 1.2mm inlet seal is recommended for use with VespeI®/graphite ferrules or when installing two columns using a two-hole ferrule.

Single-Column Installation, 0.8mm Opening*		0.25/0.32mm ID Dual-Column Installation, 1.2mm Opening		0.53mm ID Dual-Column Installation (¹ / ₁₆ -inch opening)	
2-pk.	10-pk.	2-pk.	10-pk.	2-pk.	10-pk.
Stainless Steel Inlet Seal					
21315	21316	20390	20391	20392	20393
Gold-Plated Inlet Seal					
21317	21318	21305	21306	—	—
Siltek® Treated Inlet Seal					
21319	21320	21307	21308	—	—

*0.8mm ID stainless steel inlet seal is similar to Agilent part #18740-20880,
0.8mm ID gold-plated inlet seal is similar to Agilent part #18740-20885.

All seals include washers.

Replacement Inlet Seal Washers

Description	Similar to Agilent part #	qty.	cat.#
Replacement Inlet Seal Washers	5061-5869	15-pk.	21710



Replacement Inlet Cross-Disk Seal for Agilent GCs

- Ideal for high-flow split applications on Agilent 5890 GCs.
- All seals include washers.

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



Silver PTV Seals for Agilent 6890 GCs

Description	Similar to Agilent part #	qty.	cat.#
Silver PTV Seals for Agilent 6890 GCs	5182-9763	5-pk.	21409

