



The next level of **True Blue Performance**

Topaz GC inlet liners feature revolutionary technology and inertness to deliver the next level of:

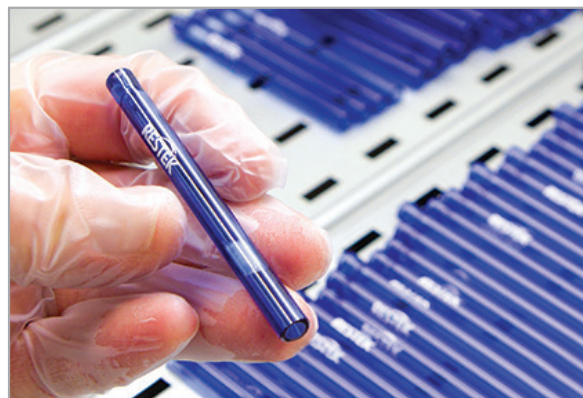
- Deactivation
- Reproducibility
- Productivity

www.restek.com/topaz



* For details see back page.





Topaz GC Inlet Liners

Topaz GC inlet liners feature revolutionary technology and inertness to deliver the next level of True Blue Performance:

- **Deactivation**—unbelievably low breakdown for accurate and precise low-level GC analyses.
- **Reproducibility**—unbeatable manufacturing controls and QC testing for superior reliability across compound classes.
- **Productivity**—unparalleled cleanliness for maximized GC uptime and lab throughput.
- **100% Satisfaction**—if a liner doesn't perform to your expectations, we will replace it or credit your account.

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Topaz inlet liners feature a 100% satisfaction guarantee.

All Topaz inlet liners are produced with proprietary Restek processes and apply some of the tightest testing specifications in the industry. The exceptionally inert Topaz liners analysts want most are in stock now and are guaranteed to deliver outstanding performance that exceeds your expectations.



The next level of True Blue Deactivation

As the demand for lower detection limits continues to grow, even the smallest amount of activity in your liner can cause analyte breakdown and impact your results—tailing peaks, loss of response, and other issues we've all experienced. In developing Topaz GC inlet liners, our chemists created a new deactivation that yields unbelievably low breakdown.

Figure 1: High inertness is important, especially when using wool. Comparatively testing liners using highly reactive 2,4-DNP shows the competition simply can't compete.

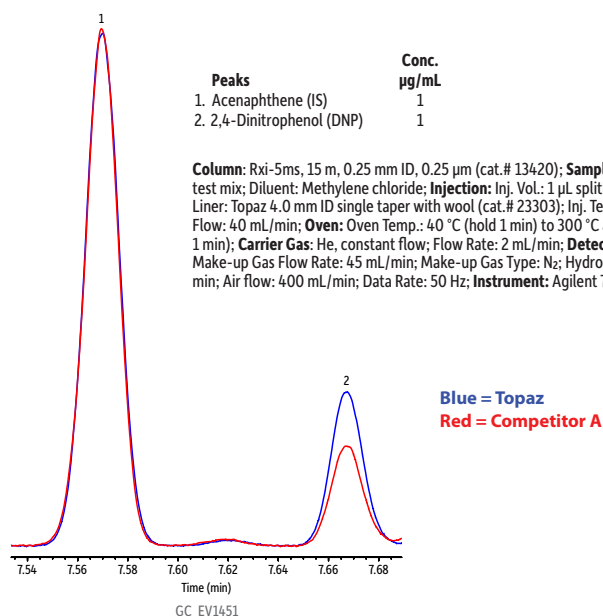


Figure 2: Regardless of your industry, carbaryl is an indicator of whether a liner has the inertness needed for trace-level work. Once again, Topaz outperforms the competition.

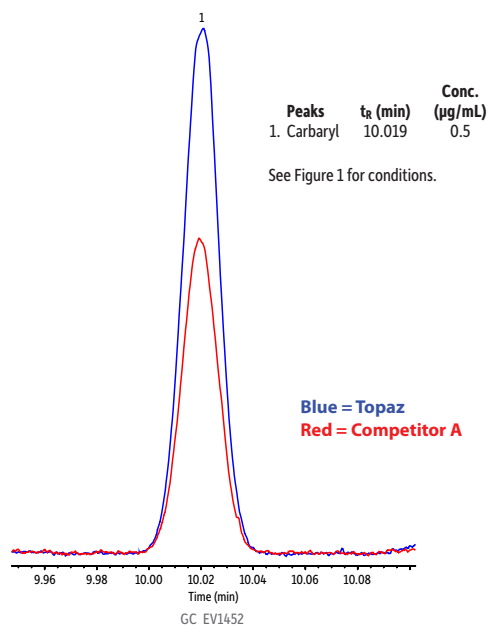
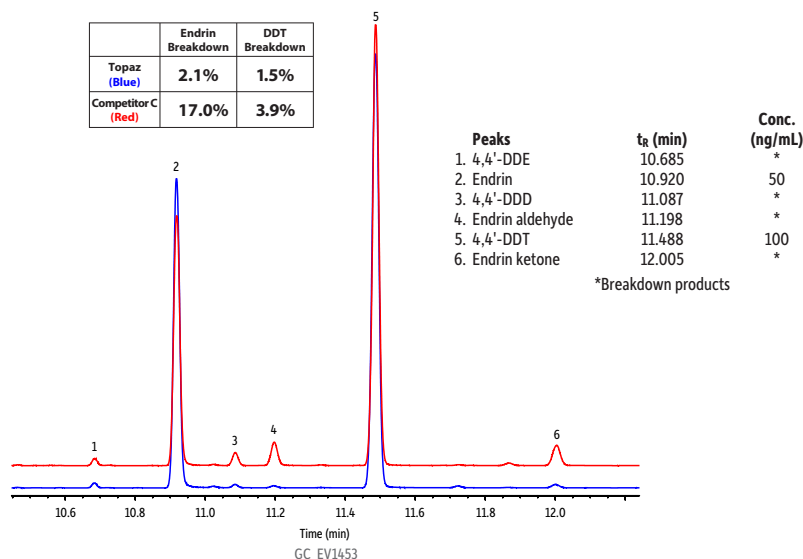


Figure 3: Government regulations can have very strict requirements for maximum analyte breakdown. For example, EPA method 8081 requires no more than 15% endrin and DDT breakdown. No problem with Topaz liners.



Column: Rxi-5ms, 15 m, 0.25 mm ID, 0.25 µm (cat.# 13420); **Sample:** Endrin (50 ng/mL) and DDT (100 ng/mL); **Diluent:** n-Hexane; **Injection:** Inj. Vol.: 1 µL splitless (hold 1.2 min); **Liner:** Topaz 4.0 mm single taper with wool (cat.# 23303); **Inj. Temp.:** 250 °C; **Purge Flow:** 20 mL/min; **Oven:** Oven Temp.: 50 °C (hold 1.2 min) to 240 °C at 20 °C/min to 265 °C at 6 °C/min; **Carrier Gas:** He, constant flow; **Flow Rate:** 1.5 mL/min; **Detector:** ECD @ 300 °C; **Make-up Gas Flow Rate:** 60 mL/min; **Make-up Gas Type:** N₂; **Data Rate:** 20 Hz; **Instrument:** Agilent 7890A GC.

Liner inertness can be described as the reduction in unwanted reactions between a liner and active compounds (and, therefore, a reduction in analyte breakdown and adsorption). Topaz deactivation technology thoroughly passivates the liner—and the wool inside—so that your liner is highly inert to a wide array of reactive analytes. This inertness increases peak symmetry and response, leading to better quantitation, accuracy, and precision.

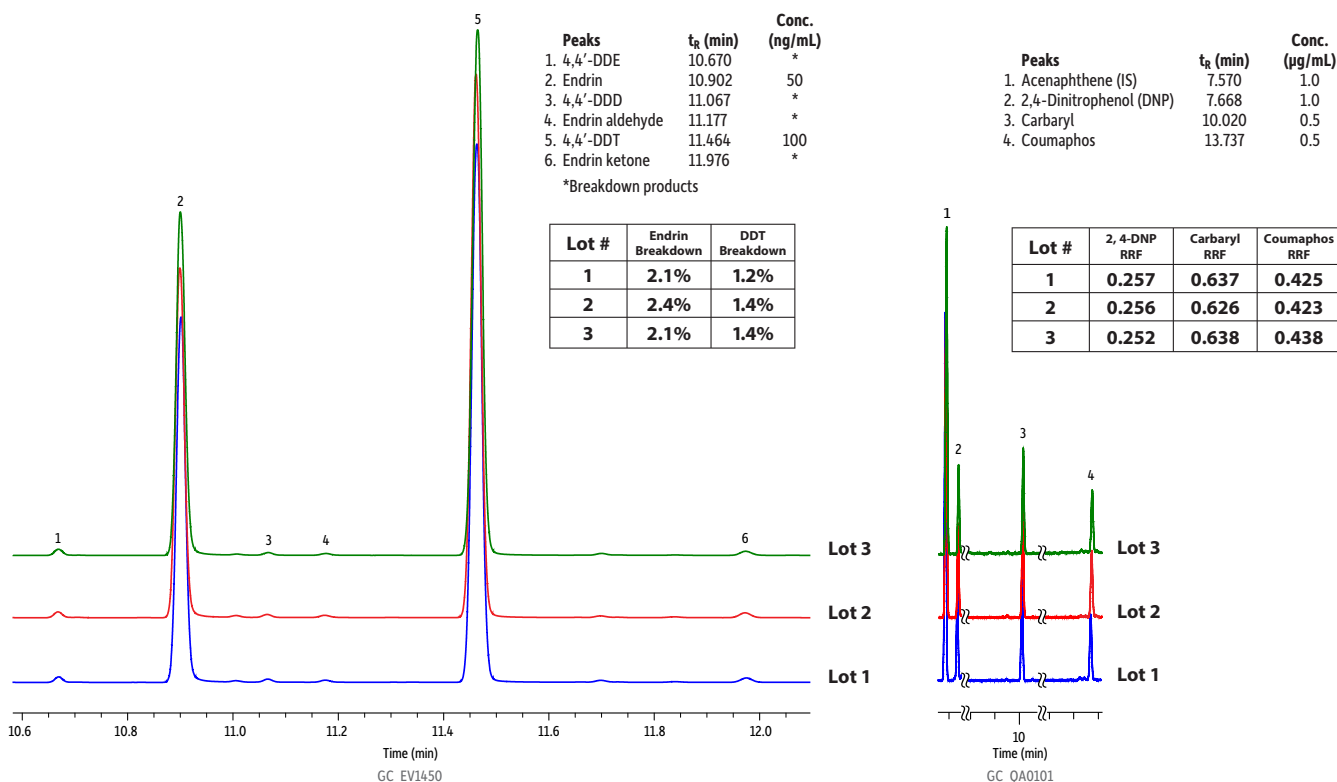
With deactivated Topaz liners, you prevent unwanted chemical interactions and minimize breakdown, which improves your data quality and dependability, and reduces instrument downtime. Even for low-level GC analysis of highly sensitive compounds—like 2,4-DNP, carbaryl, endrin, and DDT—these highly inert liners provide high-quality results that you'll have to see for yourself to believe.

The next level of **True Blue Reproducibility**

New Topaz inlet liners are made under strict manufacturing controls, followed by a battery of industry-specific QC tests, to prove that every lot we produce maintains superior reliability and outstanding inertness across a broad range of compound classes. By ensuring the utmost reproducibility in our liners, we help eliminate frustration and uncertainty in your work.

In the end, we don't test Topaz liners to exceed method requirements. We don't test Topaz liners to exceed industry norms. We manufacture and QC test Topaz liners to exceed your expectations and bring you the peace of mind that you can always depend on the quality and consistency of your data. Expect more—every time—with Topaz GC inlet liners.

Figure 4: As shown with the low breakdown of notoriously reactive compounds like endrin and DDT—as well as high response factors for 2,4-DNP, carbaryl, and coumaphos—you can expect the same great results from one lot to the next.



Instrument Conditions for GC_EV1450:

Column: Rxi-5ms, 15 m, 0.25 mm ID, 0.25 µm (cat.# 13420); **Sample:** Endrin (50 ng/mL) and DDT (100 ng/mL); **Diluent:** *n*-Hexane; **Injection:** Inj. Vol.: 1 µL splitless (hold 1.2 min); **Liner:** Topaz 4.0 mm single taper with wool (cat.# 23303); **Inj. Temp.:** 250 °C; **Purge Flow:** 20 mL/min; **Oven:** Oven Temp.: 50 °C (hold 1.2 min) to 240 °C at 20 °C/min to 265 °C at 6 °C/min; **Carrier Gas:** He, constant flow; **Flow Rate:** 1.5 mL/min; **Detector:** Micro-ECD @ 300 °C; **Make-up Gas Flow Rate:** 60 mL/min; **Make-up Gas Type:** N₂; **Data Rate:** 20 Hz; **Instrument:** Agilent 7890A GC.

Instrument Conditions for GC_QA0101:

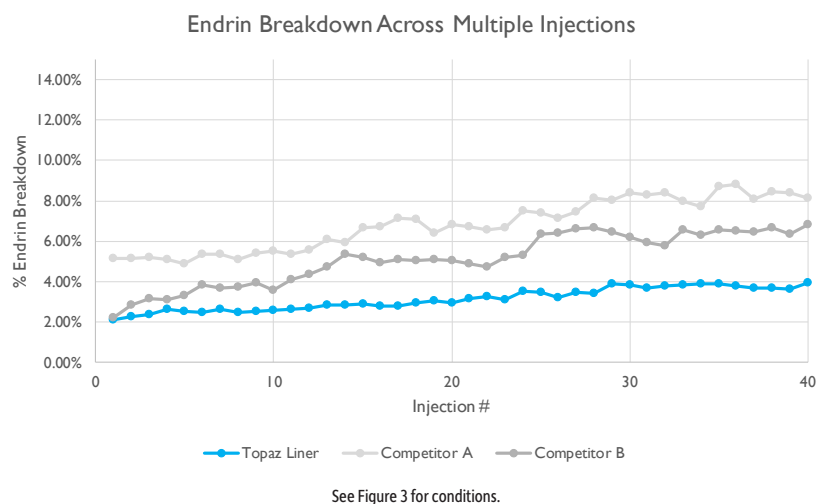
Column: Rxi-5ms, 15 m, 0.25 mm ID, 0.25 µm (cat.# 13420); **Sample:** Topaz liner FID test mix; **Diluent:** Methylene chloride; **Injection:** Inj. Vol.: 1 µL splitless (hold 1 min); **Liner:** Topaz 4.0 mm single taper liner with wool; **Inj. Temp.:** 250 °C; **Purge Flow:** 40 mL/min; **Oven:** Oven Temp.: 40 °C (hold 1 min) to 300 °C at 18.5 °C/min (hold 1 min); **Carrier Gas:** He, constant flow; **Flow Rate:** 2 mL/min; **Detector:** FID @ 340 °C; **Make-up Gas Flow Rate:** 45 mL/min; **Make-up Gas Type:** N₂; **Hydrogen flow:** 40 mL/min; **Air flow:** 400 mL/min; **Data Rate:** 50 Hz; **Instrument:** Agilent 7890A GC.

The next level of **True Blue Productivity**

Any time spent with your instrument offline—such as when changing your GC inlet liner or conditioning it afterward—directly ties to increased cost per analysis and decreased revenue for your lab... and raises the odds of yet another evening at the bench catching up on backlogged work for you. Whether you're standing in Restek's applications lab or at your own bench, it is imperative to keep running samples as long as possible, and when you do need to perform maintenance, to get back up and running as quickly as possible.

With the stability and inertness of a Topaz liner, you can analyze more samples before your data quality declines and you have to stop to replace your liner.

Figure 5: The stability of a Topaz liner shines compared to leading competitors. Breakdown of a reactive compound like endrin starts low and stays low, even after 40 injections.



Topaz liners also feature blister packaging developed for superior cleanliness. The cleaner the liner, the less time you spend conditioning after changing your liner.



Greater instrument uptime translates into more samples run and more profit for your lab. Get it with the unparalleled stability and cleanliness of Topaz inlet liners.






Turn to the Ultimate in **Deactivation, Reproducibility, and Productivity**

Give yourself, your lab, and your customers the confidence you need in the data you generate—and the ability to keep your instruments running longer. Order your Topaz GC inlet liners today.

www.restek.com/topaz

Topaz Inlet Liners for Agilent GCs




Split Liners for Agilent GCs

	ID OD x Length	Similar to Agilent Part #	qty.	cat. #
 1 mm Split	1.0 mm 6.3 mm x 78.5 mm		5-pk.	23333
 4 mm Straight w/Wool	4.0 mm 6.3 mm x 78.5 mm	5183-4691, 5190-3164	5-pk.	23300
 2 mm Precision Liner w/Wool	2.0 mm 6.3 mm x 78.5 mm		5-pk.	23468
 4 mm Precision Liner w/Wool	4.0 mm 6.3 mm x 78.5 mm	210-4004-5	5-pk.	23305
 4 mm Cyclo	4.0 mm 6.3 mm x 78.5 mm		5-pk.	23312

Splitless Liners for Agilent GCs

	ID OD x Length	Similar to Agilent Part #	qty.	cat. #
 2 mm Splitless	2.0 mm 6.5 mm x 78.5 mm	5183-4703	5-pk.	23313
 2 mm Splitless w/Wool	2.0 mm 6.5 mm x 78.5 mm		5-pk.	23314
 2 mm Single Taper	2.0 mm 6.5 mm x 78.5 mm		5-pk.	23315
 2 mm Single Taper w/Wool	2.0 mm 6.5 mm x 78.5 mm		5-pk.	23316
 4 mm Straight	4.0 mm 6.3 mm x 78.5 mm	210-3003-05	5-pk.	23301
 4 mm Straight w/Wool	4.0 mm 6.3 mm x 78.5 mm	5183-4691, 5190-3164	5-pk.	23300
 4 mm Single Taper	4.0 mm 6.5 mm x 78.5 mm	5183-4695	5-pk.	23302
 4 mm Single Taper w/Wool	4.0 mm 6.5 mm x 78.5 mm	5183-4693, 5190-3163	5-pk.	23303
 4 mm Double Taper	4.0 mm 6.5 mm x 78.5 mm	5183-4705	5-pk.	23308
 4 mm Cyclo Double Taper	4.0 mm 6.5 mm x 78.5 mm		5-pk.	23310





Split/Splitless Liners for Agilent GCs




	ID OD x Length	Similar to Agilent Part #	qty.	cat. #
 4 mm Straight w/Wool	4.0 mm 6.3 mm x 78.5 mm	5183-4691, 5190-3164	5-pk.	23300
 Low Pressure Drop Precision Liner w/Wool	4.0 mm 6.3 mm x 78.5 mm		5-pk.	23309
 Low Pressure Drop Liner w/Wool	4.0 mm 6.3 mm x 78.5 mm	5183-4701, 5183-4712, 5190-3165	5-pk.	23467



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Topaz Inlet Liners for Agilent GCs




COLUMN INSTALLS THIS END

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

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

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


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


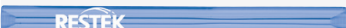
Direct Injection Liners for Agilent GCs (for 0.25/0.32/0.53 mm ID Columns)	ID OD x Length	qty.	cat.#
 Drilled Uniliner (hole near bottom)	4.0 mm 6.3 mm x 78.5 mm	5-pk.	23306
 Drilled Uniliner (hole near bottom) w/Wool	4.0 mm 6.3 mm x 78.5 mm	5-pk.	23307
 Drilled Uniliner (hole near top)	4.0 mm 6.3 mm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

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Topaz Inlet Liners for Bruker/Varian GCs

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









SPI Liners for Bruker/Varian S/SL Injection Ports	ID OD x Length	Similar to Bruker/Varian Part #	qty.	cat.#
 SPI Liner	0.53 mm 4.6 mm x 54 mm		5-pk.	23460
 SPI Liner	0.80 mm 4.6 mm x 54 mm	4984, 5122991	5-pk.	23461

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






Topaz Inlet Liners for DANI GCs

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

Topaz Inlet Liners for PerkinElmer GCs

Split Liners for PerkinElmer GCs	ID OD x Length	qty.	cat.#
 Splitter w/Wool	4.0 mm 6.2 mm x 92.1 mm	5-pk.	23449
 4 mm Split Precision Liner w/Wool	4.0 mm 6.2 mm x 92.1 mm	5-pk.	23450
Splitless Liners for PerkinElmer GCs	ID OD x Length	qty.	cat.#
 2 mm Splitless w/Wool	2.0 mm 6.2 mm x 92.1 mm	5-pk.	23451
PSS Liners for PerkinElmer GCs	ID OD x Length	qty.	cat.#
 Auto SYS XL PSS Split/Splitless w/Wool	2.0 mm 4.0 mm x 86.2 mm	5-pk.	23317
DI Liners for PerkinElmer GCs	ID OD x Length	qty.	cat.#
 Open-Top Uniliner w/Wool	4.0 mm 6.2 mm x 92.1 mm	5-pk.	23452
 PSS Drilled Uniliner (hole near top)	2.0 mm 4.0 mm x 86.2 mm	5-pk.	23281
 Drilled Uniliner (hole near top)	4.0 mm 6.2 mm x 92.1 mm	5-pk.	23453
 Drilled Uniliner (hole near bottom)	4.0 mm 6.2 mm x 92.1 mm	5-pk.	23454

Topaz Inlet Liners for Shimadzu GCs

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

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Topaz
INLET LINERS













Perfect Installation Every Time

There is never a question about which way to install a Topaz liner—simply orient it so that the column installs toward the "R" in the Restek logo.








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

Topaz Inlet Liners for Shimadzu GCs





Splitless Liners for Shimadzu 17A, 2010, and 2014 GCs	ID OD x Length	qty.	cat.#
 3.5 mm Single Taper	3.5 mm 5.0 mm x 95 mm	5-pk.	23321
 3.5 mm Single Taper w/Wool	3.5 mm 5.0 mm x 95 mm	5-pk.	23336
 3.5 mm Single Taper w/Wool	3.5 mm 5.0 mm x 95 mm	5-pk.	23322
 Double Taper	3.5 mm 5.0 mm x 95 mm	5-pk.	23457
Split/Splitless Liners for Shimadzu 17A, 2010, and 2014 GCs	ID OD x Length	qty.	cat.#
 Split/Splitless w/Wool	3.5 mm 5.0 mm x 95 mm	5-pk.	23458
Liners for Shimadzu 17A PTV GCs	ID OD x Length	qty.	cat.#
 PTV w/Wool	1.6 mm 4.0 mm x 95 mm	5-pk.	23435
SPME Liners for Shimadzu 17A, 2010, and 2014 GCs	ID OD x Length	qty.	cat.#
 SPME Liner	1.8 mm 5.0 mm x 95 mm	5-pk.	23279
DI Liners for Shimadzu 17A, 2010, and 2014 GCs	ID OD x Length	qty.	cat.#
 Uniliner w/Wool	3.5 mm 5.0 mm x 95 mm	5-pk.	23459
Liners for Shimadzu 2010 PTV GCs	ID OD x Length	qty.	cat.#
 PTV 2010	1.5 mm 3.5 mm x 95 mm	10-pk.	23471
 PTV 2010 w/Wool	1.5 mm 3.5 mm x 95 mm	10-pk.	23472

Topaz Inlet Liners for Thermo Scientific GCs






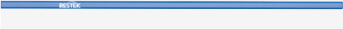


Split Liners for Thermo TRACE, 8000, 8000 TOP, and Focus SSL	ID OD x Length	qty.	cat.#
 Split Straight	3.0 mm 8.0 mm x 105 mm	5-pk.	23439
 Split Straight w/Wool	3.0 mm 8.0 mm x 105 mm	5-pk.	23440
 5 mm Straight	5.0 mm 8.0 mm x 105 mm	5-pk.	23323
 5 mm Straight w/Wool	5.0 mm 8.0 mm x 105 mm	5-pk.	23324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

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Topaz Inlet Liners for Thermo Scientific GCs

Splitless Liners for Thermo TRACE, 8000, 8000 TOP, and Focus SSL	ID OD x Length	qty.	cat.#
 Splitless	3.0 mm 8.0 mm x 105 mm	5-pk.	23441
 Splitless w/Wool	3.0 mm 8.0 mm x 105 mm	5-pk.	23442
 Splitless Precision Liner w/Wool	5.0 mm 8.0 mm x 105 mm	5-pk.	23443
 5 mm Splitless	5.0 mm 8.0 mm x 105 mm	5-pk.	23325
 5 mm Splitless w/Wool	5.0 mm 8.0 mm x 105 mm	5-pk.	23326
Split Liners for Thermo TRACE 1300/1310	ID OD x Length	qty.	cat.#
 Split	1.0 mm 6.3 mm x 78.5 mm	5-pk.	23448

Topaz Inlet Liners for Thermo Scientific GCs

Splitless Liners for Thermo TRACE 1300/1310	ID OD x Length	qty.	cat.#
 Splitless Straight	4.0 mm 6.3 mm x 78.5 mm	5-pk.	23445
 4 mm Splitless Single Taper	4.0 mm 6.5 mm x 78.5 mm	5-pk.	23446
 4 mm Splitless Single Taper w/Wool	4.0 mm 6.5 mm x 78.5 mm	5-pk.	23447
Split/Splitless Liners for Thermo TRACE 1300/1310	ID OD x Length	qty.	cat.#
 4 mm Split/Splitless Straight w/Wool	4.0 mm 6.3 mm x 78.5 mm	5-pk.	23444
Split Liners for Thermo Scientific TRACE PTV	ID OD x Length	qty.	cat.#
 Split PTV	1.0 mm 2.75 mm x 120 mm	5-pk.	23436
 Split PTV	2.0 mm 2.75 mm x 120 mm	5-pk.	23437
 Baffled PTV	2.0 mm 2.75 mm x 120 mm	5-pk.	23438
SPME Liner for Thermo TRACE 1300/1310	ID OD x Length	qty.	cat.#
 SPME Liner	1.8 mm 6.5 mm x 78.5 mm	5-pk.	23278

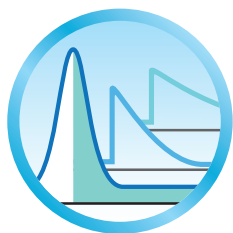
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What Will You Lose When You Switch to **Topaz Liners**?

Revolutionary Topaz deactivation results in unbelievably low breakdown and higher responses for active compounds—with each and every liner you order. These liners will help you generate more accurate and more precise low-level GC analyses and help prevent common data issues.



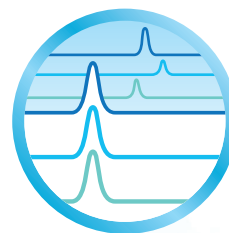
**Eliminate
Tailing Peaks**



**Avoid Loss
in Response**



**Stop Analyte
Breakdown**



**Reduce Liner-to-
Liner Variability**

What Will You Gain? **Productivity.**

Extend your uptime and generate more revenue with Topaz liners. *Learn how inside.*

* 100% SATISFACTION GUARANTEE: If your Topaz inlet liner does not perform to your expectations for any reason, simply contact Restek Technical Service or your local Restek representative and provide a sample chromatogram showing the problem. If our GC experts are not able to quickly and completely resolve the issue to your satisfaction, you will be given an account credit or replacement product (same cat.#) along with instructions for returning any unopened product. (Do not return product prior to receiving authorization.) For additional details about Restek's return policy, visit www.restek.com/warranty.