

# G C

## Inlet Liners



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...breaking with tradition<sup>SM</sup>



# Inlet Liners

## LINER SELECTION GUIDE



Liner Style*	Function	Advantages	Disadvantages	Recommended For
<b>Straight</b>				
	Low surface area for less activity	<ul style="list-style-type: none"> <li>Simple to use</li> <li>Least expensive</li> <li>Low activity</li> </ul>	<ul style="list-style-type: none"> <li>Possible inlet discrimination</li> <li>More frequent gold seal maintenance from exposure to sample contamination</li> <li>Possible inconsistency if sample injection bypasses split ratio</li> </ul>	Volatiles
<b>Glass Wool</b>				
In the middle 	Traps non-volatiles; mixes sample; vaporizes sample above the column	<ul style="list-style-type: none"> <li>Reduces gold seal/column contamination and maintenance</li> <li>More reproducible results</li> <li>Can help focus analytes</li> <li>Extends column life</li> </ul>	<ul style="list-style-type: none"> <li>Higher surface area that can become active</li> <li>Glass wool can become dislodged</li> </ul>	Dirty samples, volatiles, high initial oven temperatures
At the bottom 	Traps non-volatiles; mixes sample; vaporizes sample above the column	<ul style="list-style-type: none"> <li>Reduces gold seal/column contamination and maintenance</li> <li>More reproducible results</li> <li>Can provide higher responses than wool in middle</li> </ul>	<ul style="list-style-type: none"> <li>Higher surface area that can become active</li> <li>Glass wool can become dislodged</li> </ul>	Dirty samples
At the top / FocusLiner™ 	Keeps glass wool in place; wipes syringe needle clean	<ul style="list-style-type: none"> <li>Reduces gold seal/column contamination and maintenance</li> <li>More reproducible results</li> <li>Can help focus analytes</li> <li>Extends column life</li> </ul>	<ul style="list-style-type: none"> <li>Higher surface area that can become active</li> </ul>	Pressure pulsed injections, dirty samples, volatiles, high initial oven temperatures
<b>Taper / Gooseneck</b>				
At the top 	Limits the expansion of the solvent to the inlet	<ul style="list-style-type: none"> <li>Allows for larger injection volumes</li> <li>Decrease backflash</li> </ul>	<ul style="list-style-type: none"> <li>Higher risk of needle breakage</li> <li>Increased cost</li> <li>Cannot self-pack with glass wool</li> </ul>	Water injections
At the bottom 	Directs flow onto column; low surface area	<ul style="list-style-type: none"> <li>Reduces gold seal/column contamination and maintenance</li> <li>Improved sensitivity</li> <li>Lower activity</li> </ul>	<ul style="list-style-type: none"> <li>Increased cost</li> </ul>	Pesticides (without wool), semi-volatiles (with wool)
<b>Direct Connect</b>				
	Connects directly to column to aid transfer of analytes	<ul style="list-style-type: none"> <li>Better sensitivity for splitless injections</li> <li>Decreases inlet discrimination</li> </ul>	<ul style="list-style-type: none"> <li>Only used for splitless injections</li> <li>Increased cost</li> <li>One-time use</li> </ul>	Trace analysis, splitless injections, separation from solvent peak (with top hole), aqueous samples (with bottom hole)
<b>Internal Diameter (ID)</b>				
Small 	Small internal volume and surface area; restricts sample diffusion	<ul style="list-style-type: none"> <li>Better peak shape of gaseous samples</li> <li>Less activity for small injections of active compounds</li> </ul>	<ul style="list-style-type: none"> <li>Very small internal volume is easy to overload with normal injection volumes</li> </ul>	Headspace, purge and trap, or gas injections; active samples with low expansion solvents
<b>Outer Diameter (OD) / Splitless</b>				
Large OD / Splitless 	Fits tightly inside the inlet and limits sample contact with inlet components	<ul style="list-style-type: none"> <li>Better sensitivity for long splitless hold times</li> </ul>	<ul style="list-style-type: none"> <li>Not very amenable for changing to large split ratios</li> </ul>	Splitless injections of active compounds
<b>Cup Liner</b>				
	Cup traps non-volatiles but has lower surface area than wool; vaporizes sample above the column	<ul style="list-style-type: none"> <li>Good sample mixing</li> <li>Reduces gold seal/column contamination and maintenance</li> <li>More reproducible results</li> <li>Improves results for active compounds</li> <li>Provides receptacle for multiple injections</li> </ul>	<ul style="list-style-type: none"> <li>Increased cost</li> <li>Higher surface area than straight liner can result in increased activity for very active compounds</li> </ul>	Multiple or large volume injections, active samples, dirty samples

\*Examples given are only one possible option. Other available options may be better suited for your analysis.





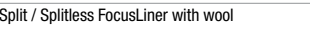
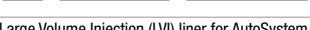
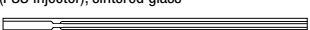
Contact Phenomenex or your local Phenomenex distributor for additional GC products and applications.

# Inlet Liners (CONT'D)

## LINERS FOR PERKINELMER® GC SYSTEMS

Don't see what you need?  
Contact Phenomenex or your local Phenomenex distributor to cross-reference your current part number!

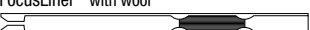



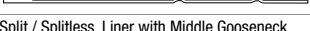
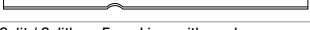

### Ordering Information

Description	Benefits / Uses	GC Model No.	Dimensions		Units	Similar to Mfr. No.**	Part No.	Unit	Price
			ID x L x OD (mm)						
Split / Splitless Single Taper / Gooseneck Tapered FocusLiner™ with wool 	General use or dirty samples	AutoSystem™ & Clarus® 500	4 x 92 x 6.2		–	092095 09209525	–	<b>AG0-4681</b>	5/pk
Split / Splitless Tapered FocusLiner™ with wool 	Dirty samples, trace samples	AutoSystem & Clarus 500	4 x 92 x 6.2		–	092092 09209225	–	<b>AG0-7639</b> <b>AG0-7865</b>	5/pk 25/pk
Split / Splitless Liner* 	General use and trace samples	AutoSystem	4 x 92 x 6.2		5/pk	N610-1052 20833-214.5	–	<b>AG0-4665</b>	5/pk
Split / Splitless Single Taper FocusLiner 	Large injection, trace analysis	AutoSystem & Clarus 500	4 x 92 x 6.2		5/pk	092095	–	<b>AG0-8656</b>	5/pk
Split / Splitless FocusLiner with wool 	General use or dirty samples	AutoSystem & Clarus 500 (PSS Injector)	2 x 86.2 x 4		5/pk	092101	–	<b>AG0-8657</b>	5/pk
Large Volume Injection (LVI) liner for AutoSystem XL (PSS injector), sintered glass 	Large injection, trace analysis	AutoSystem & Clarus 500 (PSS Injector)	2 x 86.2 x 4		5/pk	092244	–	<b>AG0-8658</b>	5/pk
Split, Straight Liner 	Large injection, trace analysis	AutoSystem / Clarus 500	4 x 92 x 6.2		5/pk	092100	–	<b>AG0-8659</b>	5/pk


Note: Large injection ≥ 2 µL. Small injection ≤ 2 µL. \*Liner is not deactivated \*\* Similar to but not always an exact equivalent to the original manufacturer's product.

## LINERS FOR SHIMADZU® GC SYSTEMS

### Ordering Information

Description	Benefits / Uses	GC Model No.	Dimensions		Units	Similar to Mfr. No.**	Part No.	Unit	Price
			ID x L x OD (mm)						
Split/Splitless Single Taper / Gooseneck Tapered FocusLiner™ with wool 	Great recovery and linearity for trace analysis of active compounds	17A, 17B, 2010, 2014	3.4 x 95 x 5		–	092068	–	<b>AG0-4683</b>	5/pk
Splitless Straight Liner 	Small injection, trace analysis	17A, 17B, 2010, 2014	2.6 x 95 x 5		–	–	–	<b>AG0-4667</b>	5/pk
Splitless Liner 	Trace analysis	9A/15A/16A	3.4 x 139 x 5		5/pk 25/pk	20749 20750	–	<b>AG0-4669</b> –	5/pk
Split / Splitless, Single Focus Taper Liner 	General use or dirty samples	14/15A/16	3.4 x 99 x 5		5/pk	092066	–	<b>AG0-4682</b>	5/pk
Split / Splitless, Liner with Middle Gooseneck 	General use or dirty samples	17A/2014	3.4 x 95 x 5		5/pk	092085	–	<b>AG0-8661</b>	5/pk
Split / Splitless, FocusLiner with wool 	Large injection, trace analysis	17A/2014	3.4 x 95 x 5		5/pk	092062	–	<b>AG0-8662</b>	5/pk
Split / Splitless, Recessed Gooseneck Liner with quartz wool 	General use or dirty samples	17A/2014	3.4 x 95 x 5		5/pk	092061	–	<b>AG0-8663</b>	5/pk


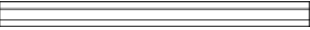
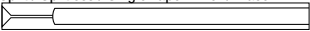


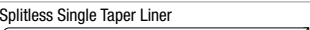
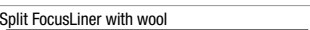
Note: Large injection ≥ 2 µL. Small injection ≤ 2 µL. \*\* Similar to but not always an exact equivalent to the original manufacturer's product.

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# Inlet Liners (CONT'D)

## LINERS FOR THERMO SCIENTIFIC® GC SYSTEMS


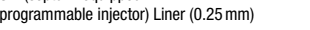

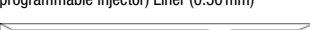
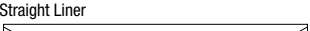
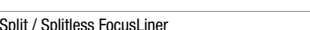

### Ordering Information

Description	Benefits / Uses	GC Model No.	Dimensions ID x L x OD (mm)	Units	Similar to Mfr. No.**	Part No.	Unit	Price
Split / Splitless Double Taper FocusLiner™ with wool 	Trace analysis of dirty samples	TRACE™ / FOCUS™	5 x 105 x 8.0	–	092046 09204625	<b>AG0-4679</b> <b>AG0-7863</b>	5/pk 25/pk	
Splitless Liner 	General use	TRACE™ / FOCUS™	3 x 105 x 8.0	5/pk 25/pk	– –	<b>AG0-4645</b> –	5/pk	
Split / Splitless / Single Taper Liner / Trace 	Trace analysis	TRACE™ / FOCUS™	5 x 105 x 8.0	ea 5/pk 25/pk	20945 20946 20947	– <b>AG0-7852</b>	5/pk	
Split, Straight Liner 	General use	TRACE™ / FOCUS™	5 x 105 x 8.0	5/pk	092150	<b>AG0-8669</b>	5/pk	
Splitless, FocusLiner 	General use or dirty samples	TRACE™ / FOCUS™	5 x 105 x 8.0	5/pk	092045	<b>AG0-8671</b>	5/pk	
Splitless Single Taper Liner 	Small injection, trace analysis	TRACE™ / FOCUS™	3 x 105 x 8.0	5/pk	092141	<b>AG0-8672</b>	5/pk	
Split FocusLiner with wool 	General use or dirty samples	TRACE™ / FOCUS™	5 x 105 x 8.0	5/pk	092048	<b>AG0-8673</b>	5/pk	

Column Installs This End

## LINERS FOR AGILENT TECHNOLOGIES® (VARIAN®) GC SYSTEMS

### Ordering Information

Description	Benefits / Uses	GC Model No.	Dimensions ID x L x OD (mm)	Units	Similar to Mfr. No.**	Part No.	Unit	Price
Split / Splitless Liner 	Large injection, trace analysis	1075/1077	4 x 75 x 6.3	ea 5/pk 25/pk	16-000830-00 01-900109-05 –	20904 20905 20906	– <b>AG0-4673</b> –	5/pk
SPI (septum-equipped programmable injector) Liner (0.25 mm) 	Great linearity for 0.25 & 0.32 mm IDs	1093/1094	0.5 x 54 x 4.6	ea 5/pk 25/pk	– 01-900109-06 –	20775 20776 20777	– <b>AG0-4675</b> –	5/pk
SPI (septum-equipped programmable injector) Liner (0.50 mm) 	Great linearity for 0.53 mm ID	1093/1094	0.8 x 54 x 4.6	ea 5/pk 25/pk	– – 01-900109-07	20778 20779 20780	– <b>AG0-4677</b> –	5/pk
Straight Liner 	Trace analysis	1078/1079	0.5 x 54 x 5.0	5/pk	092031	<b>AG0-8665</b>	5/pk	
Split / Splitless FocusLiner 	General use or dirty samples	1078/1079	3.4 x 54 x 5.0	5/pk	092037	<b>AG0-8666</b>	5/pk	
Split / Splitless, Single Taper Liner 	Large injection, trace analysis	1078/1079	3.4 x 54 x 5.0	5/pk	092038	<b>AG0-8667</b>	5/pk	
Splitless, Single Taper Liner 	Small injection, trace analysis	1078/1079	2 x 54 x 5.0	5/pk	092039	<b>AG0-8668</b>	5/pk	

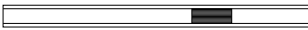
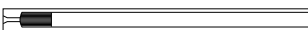

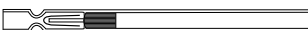
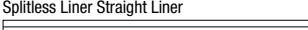
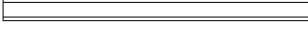
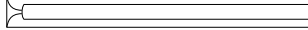
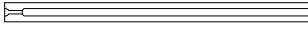
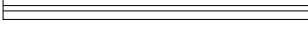

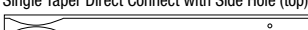







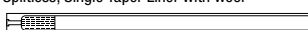


Column Installs This End

Note: Large injection ≥ 2 µL. Small injection ≤ 2 µL. \*\* Similar to but not always an exact equivalent to the original manufacturer's product.


# Inlet Liners

## LINERS FOR AGILENT TECHNOLOGIES® (HP) GC SYSTEMS

### Ordering Information

Description	Benefits / Uses	GC Model No.	Dimensions ID x L x OD (mm)	Units	Similar to Mfr. No.**	Part No.	Unit	Price
	Large injection, trace analysis	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	19251-60540	-	-	-
				5/pk	5183-4691	20782	AGO-4655	5/pk
				25/pk	5183-4692	20783	AGO-4656	25/pk
	Large injection, trace analysis	5880/5890/ 6890/7890	4 x 78.5 x 6.45	ea	5062-3587	22405	-	-
				5/pk	5183-4693	22406	AGO-4657	5/pk
				25/pk	5183-4694	22407	AGO-4658	25/pk
	High and low MW compounds and large volume injections	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	HP 18740-80190	20709	-	-
				5/pk	5183-4699	20710	AGO-4647	5/pk
				25/pk	5183-4700	-	AGO-4648	25/pk
	Large volume injection of dirty samples	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	18740-60840	-	-	-
				5/pk	5183-4697	20710	AGO-7853	5/pk
				25/pk	5183-4698	-	-	-
	Small injection, trace analysis	5880/5890/ 6890/7890	2 x 78.5 x 6.45	not deactivated	HP 18740-80220	-	-	-
				ea	5181-8818	20712	-	-
				5/pk	5183-4703	20713	AGO-4649	5/pk
	Large injection, trace analysis	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	210-3003	20772	-	-
				5/pk	210-3003-5	20773	AGO-4651	5/pk
				25/pk	-	20774	AGO-4652	25/pk
	Large injection, trace analysis	5880/5890/ 6890/7890	4 x 78.5 x 6.45	ea	5181-3316	20798	-	-
				5/pk	5183-4695	20799	AGO-7516	5/pk
				25/pk	5183-4696	20800	AGO-7640	25/pk
	Small injection, trace analysis	5880/5890/ 6890/7890	2 x 78.5 x 6.45	ea	-	20795	-	-
				5/pk	-	20796	AGO-4653	5/pk
				25/pk	-	20797	-	-
	Injection < 1 µL or Purge & Trap/ Headspace	5880/5890/ 6890/7890	1.5 x 78.5 x 6.45	ea	18740-80200	20972	-	-
				5/pk	5183-4709	20973	AGO-4659	5/pk
				25/pk	5183-4710	-	-	-
	Large injection of dirty samples	5880/5890/ 6890/7890	4 x 78.5 x 6.45	ea	19251-60540	-	-	-
				ea	5183-4647	22408	-	-
				5/pk	5183-4691	22409	AGO-4661	5/pk
	Great recovery and linearity for trace analysis of active compounds	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	G1544	21054	-	-
				5/pk	-	21055	AGO-7850	5/pk
				25/pk	-	20998	-	-
	Great recovery and linearity for trace analysis of active compounds	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	-	20756	-	-
				5/pk	G1544-80730	20771	AGO-7851	5/pk
				-	-	-	-	-
	General use or dirty samples	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	5183-4647	21032	-	-
				5/pk	5183-4701	21033	AGO-8172	5/pk
				25/pk	5183-4702	-	-	-
	Large injection, trace analysis of active compounds	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	5181-3315	20784	-	-
				5/pk	5183-4705	20785	AGO-8173	5/pk
				25/pk	5183-4706	20786	-	-
	Trace analysis of dirty samples	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	210-4004	21022	-	-
				5/pk	-	21023	AGO-7515	5/pk
				25/pk	-	20979	AGO-7582	25/pk
	General use or dirty samples	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	5183-4711	20994	-	-
				5/pk	5183-4712	20995	AGO-4680	5/pk
				25/pk	5183-4713	20996	AGO-7514	25/pk
	General use or dirty samples	5880/5890/ 6890/7890	4 x 78.5 x 6.3	5/pk	092003	22406	AGO-8175	5/pk
				-	-	-	-	-
				-	-	-	-	-
	Great recovery and linearity for trace analysis of active compounds	5880/5890/ 6890/7890	4 x 78.5 x 6.3	ea	G1544-80700	20989	-	-
				5/pk	-	20954	AGO-8430	5/pk
				-	-	-	-	-
	Large injection, trace analysis	5880/5890/ 6890/7890	4 x 78.5 x 6.3	5/pk	5183-4693	-	AGO-8499	5/pk
				25/pk	5183-4694	-	AGO-9170	25/pk
				-	-	-	-	-
	Large injection, trace analysis	5880/5890/ 6890/7890	4 x 78.5 x 6.3	5/pk	5183-4691	-	AGO-8653	5/pk
				25/pk	5183-4692	-	AGO-8654	25/pk
				-	-	-	-	-
	Small injection, trace analysis of dirty samples	5880/5890/ 6890/7890	2.3 x 78.5 x 6.3	5/pk	-	-	AGO-8379	5/pk
				-	-	-	-	-
				-	-	-	-	-

Note: Large injection ≥ 2 µL. Small injection ≤ 2 µL. \*Liner is not deactivated \*\* Similar to but not always an exact equivalent to the original manufacturer's product.

 Contact Phenomenex or your local Phenomenex distributor for additional GC products and applications.

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