OPTIMIZING THE PERFORMANCE OF YOUR SHIMADZU GC WITH AGILENT COLUMNS & SUPPLIES

Agilent Technologies

Table of Contents

Get the most from your Shimadzu GC – let the experts in gas chromatography show you how

At Agilent, we recognize that when it comes to achieving the goals of your laboratory, a high performing instrument is critical to your success. We've spent the last 50 years providing the industry with state of the art instruments, supplies, and columns that improve your laboratory's performance and lead to greater productivity. Now, you can put that same expertise to work on your Shimadzu GC instruments to keep your entire lab running at peak performance.

The same technology and innovation we've built into our GC parts is now available to Shimadzu customers in the Agilent portfolio. We know what it takes to make your GC run at optimal performance. That's why we've introduced novel Ultra Inert liners, and Self Tightening column nuts that preserve a leak-free seal over more than 150 heat cycles without the need for retightening.

Improving the efficiency of your lab is not just about optimizing the performance of your instrument; it's also about improving the entire workflow. Our sample prep solutions streamline the first step of your workflow to ensure accurate and precise results from the beginning. Agilent J&W has the broadest portfolio of innovative GC columns, with over 3,000 part numbers. You can have the utmost confidence in your column, and in every separation. Agilent Gas Clean filters prevent dirty gas from jeopardizing your analysis. Inserting a gas clean filter immediately before your GC inlet greatly reduces the level of impurities, improving trace analysis.

Finally, optimizing the performance of your instrument requires regular servicing. You can rely on Agilent GC experts to troubleshoot and fix issues, so you can minimize downtime. The Agilent services organization is comprised of GC specialists around the world with years of experience in instruments from all major brands.

Your time is precious. Consolidate and streamline the work of your lab by ordering all your supplies and services for your entire lab through Agilent.

IMPROVE THE PERFORMANCE OF YOUR SHIMADZU QP2010 WITH AGILENT GC SUPPLIES

We compared Agilent for Shimadzu GC with OEM components to highlight the benefits of using Agilent, using a Shimadzu QP2010 GC/MS as the platform. **Figure 1** shows an overlay of the TIC for the QP2010 equipped with standard OEM flow path components (in red) and Agilent for Shimadzu GC components in blue. You can see the dramatic improvements in signal response for most of the analytes in a semivolatile short mix using Agilent components. More signal response means easier, more reliable integration, and fewer false negative results.

The Agilent J&W DB-UI 8270 D column significantly improvement the bleed profile compared to the competitor column. Recent advances in column manufacturing processes and the absence of column damage from leaks caused by the shrinking of polyimide blend ferrules with repeated heat cycling, contributed strongly to the bleed performance improvement from the DB-UI 8270D column and Agilent Self Tightening Column Nuts. The superior inertness achieved with Agilent Ultra Inert glass wool liners and touchless clean packaging of Agilent supplies also played a key role in keeping the flow path clean and free of contamination.

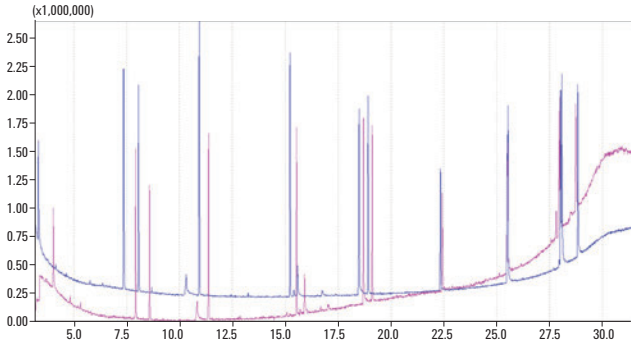


Figure 1. Total ion chromatogram overlay of semivolatile short mix plus internal standard.

Figure 2 is an overlay of the TIC from the QP2010 equipped with standard OEM flow path components (in red) and Agilent components for Shimadzu GC (in blue) in the analysis of a pesticide checkout mix. Column stability of the DB-UI 8270 D was much improved over the competitor column, enabling better integration and quantitation for the late-eluting pesticides in this mix.

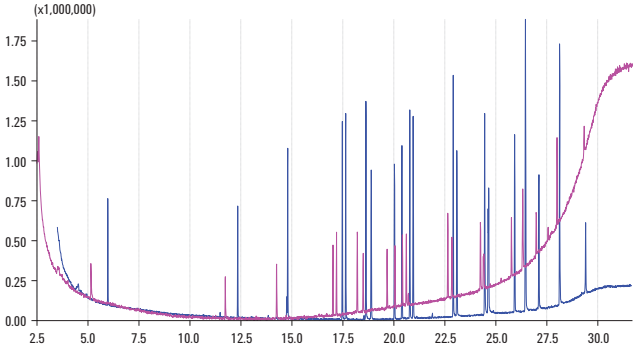


Figure 2. Total ion chromatogram overlay of a pesticide checkout mix using OEM components in (red) versus Agilent flow path components (blue).

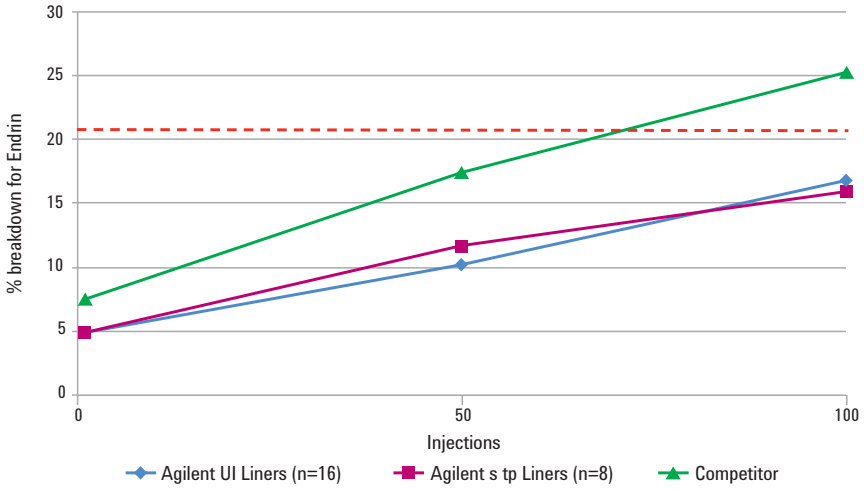
You can read full details of these experiments in Agilent publication 5991-5522EN.

INERT FLOW PATH COMPONENTS

By minimizing activity along every step of the GC and GC/MS flow path, Inert Flow Path solutions help ensure an inert GC flow path for higher sensitivity, accuracy, linearity, and reproducibility, especially at trace levels. They also minimize the need for frequent inlet maintenance and system recalibration.

Agilent Ultra Inert Liners for Shimadzu GCs

With or without deactivated glass wool, certified Agilent Ultra Inert liners provide both low surface activity and highly reproducible sample vaporization, facilitating best-in-class delivery for active analytes.



Ultra Inert Liners with wool are superior, as shown in this endrin breakdown comparison. Whether you are analyzing active compounds for the environmental industry or screening for drugs of abuse, Ultra Inert deactivated inlet liners help ensure an inert GC flow path for higher sensitivity, accuracy, and reproducibility.

Confidence comes from consistent quality provided by proprietary manufacturing processes to produce ultra inert liners. These liners are rigorously tested and certified to ensure:

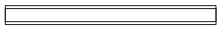
- Exceptional batch-to-batch uniformity to provide reproducible results
- Low to no bleed or background contamination for better peak integration
- Superior coverage, even with highly active compounds, gives sharper peaks and improves quantitation

Ultra Inert Inlet Liners

Liners are the centerpiece of the inlet system where sample is vaporized and mixed with the carrier gas. Agilent GC inlet liners have the perfect mix of liner configurations and chemistries to solve your application challenges.

Choose from split, splitless, PTV, and other inlet liner designs in either innovative Ultra Inert deactivation or Agilent's popular proprietary deactivation, now referred to as Agilent Original deactivation. With part number and lot number silk-screened on Agilent liners, identification and re-ordering has never been easier. Every Ultra Inert deactivation liner comes with a certificate of performance ensuring batch-to-batch reproducibility.

Liners for 17A, 2010, and 2014 Systems

	Description	ID (mm)	OD (mm)	Length (mm)	Volume (µL)	Unit	Similar to Shimadzu Part No.	Agilent Ultra Inert Deactivation
Splitless Liners								
	Single taper, wool	3.5	5.0	95		5/pk	221-48335-01 221-48876-02	8001-0160
	Double taper, drilled hole near top	3.5	5.0	95		5/pk	220-94734-01	8001-0158
	Double taper, drilled hole near bottom	3.5	5.0	95		5/pk	220-94734-02	8001-0159
	Straight-through	2.6	5.0	95	500	5/pk	220-94767-00	8001-0151
Split Liners								
	Straight with middle restriction	3.5	5.0	95	800	5/pk	221-41444-01	8001-0156
	Straight with middle restriction, wool	3.5	5.0	95	800	5/pk	220-90784-00	8001-0157
	Straight-through	3.4	5.0	95	860	5/pk		8001-0153
Direct Liners								
	For 0.53 mm id column	2.6	5.0	95	450	5/pk	220-94768-00	8001-0152
Split/Splitless Liners								
	Single taper	3.4	5.0	95		5/pk	961-01480-07	8001-0154
Other Liners								
	PTV	1.25	3.5	95	100	5/pk	221-49300-00	8001-0163
	SPME or Purge and Trap, straight	0.75	5.0	95	50	5/pk	220-94769-00	8001-0162

Liners for 14 Systems						
Description	ID (mm)	OD (mm)	Length (mm)	Volume (µL)	Unit	Agilent Ultra Inert Deactivation
Split/Splitless Liners						
2.0 mm middle gooseneck	3.4	5.0	99	850	5/pk	8001-0155

The cross references to the Shimadzu part numbers listed here serve as a recommendation that the Agilent products are viable alternatives to Shimadzu products. Agilent products are compatible with the corresponding Shimadzu instruments, although in some cases, the Agilent products may have slightly different designs as compared to the Shimadzu counterparts. All Agilent supplies are backed by Agilent's 90-day money-back warranty.

Non-stick fluoroelastomer liner O-ring for Flip Top, 8001-0201

Non-stick O-rings

Non-stick fluoroelastomer liner O-rings address problems of contamination and unscheduled inlet maintenance experienced with other O-rings. First, these O-rings are pre-cleaned, then conditioned to eliminate out-gassing of contaminants. This is especially important for trace, ECD, and MSD analyses. The chromatographically clean O-rings are then plasma-treated for a non-stick, contaminant-free surface that won't stick to the hot inlet metal surface. Finally, the ready-for-GC O-rings are packaged for convenience and cleanliness in a novel dial package that delivers one clean O-ring at a time. All saving your time and eliminating frustration.

Non-stick Liner O-rings			
Description	Unit	Similar to Shimadzu Part No.	Part No.
Non-stick fluoroelastomer O-ring	10/pk	036-11203-84	8001-0201

The cross references to the Shimadzu part numbers listed here serve as a recommendation that the Agilent products are viable alternatives to Shimadzu products. Agilent products are compatible with the corresponding Shimadzu instruments, although in some cases, the Agilent products may have slightly different designs as compared to the Shimadzu counterparts. All Agilent supplies are backed by Agilent's 90-day money-back warranty.

UltiMetal Plus Flexible Metal ferrules, G3188-27501

UltiMetal Ferrules and Ultimate Unions

UltiMetal Plus Flexible Metal ferrules and Ultimate Unions let you make leak-free guard column connections with complete confidence. These inert components fix the problems of column breakage during installation, poor fit, and damage to the fitting while maximizing ease-of-use and inertness.

UltiMetal Plus Flexible Metal Ferrules	
Description	**2010+ Ultimate Union (10/pk)**
UltiMetal Plus Flexible Metal ferrule with 0.4 mm id	G3188-27501
UltiMetal Plus Flexible Metal ferrule with 0.5 mm id	G3188-27502
UltiMetal Plus Flexible Metal ferrule with 0.8 mm id	G3188-27503

Ultimate Union

Ultimate Union	
Description	**Part No.**
Ultimate union kit, deactivated Includes 1 UltiMetal Plus deactivated union, 5/pk UltiMetal Plus Flexible Metal ferrules for 0.25 mm column and nuts to make secure connections	G3182-61580

Deactivated Fused Silica

If you work in an environmental, food safety, or forensic lab running heavy matrix samples, Ultimate Plus Deactivated Fused Silica is engineered for optimum inertness and peak shape performance with active trace level compounds. Use this inert tubing for guard columns, retention gaps, transfer lines, or restrictors and improve the performance of your GC flow path.

Ultimate Plus Deactivated Fused Silica Tubing		
ID (mm)	**Length (m)**	**Part No.**
0.12	6	CP801206
0.15	5	CP801505
0.15	10	CP801510
0.18	5	CP801805
0.18	6	CP801806
0.18	10	CP801810
0.25	5	CP802505
0.25	10	CP802510
0.25	30	CP802530
0.32	5	CP803205
0.32	10	CP803210
0.32	30	CP803230
0.53	5	CP805305
0.53	6	CP805306
0.53	10	CP805310
0.53	30	CP805330

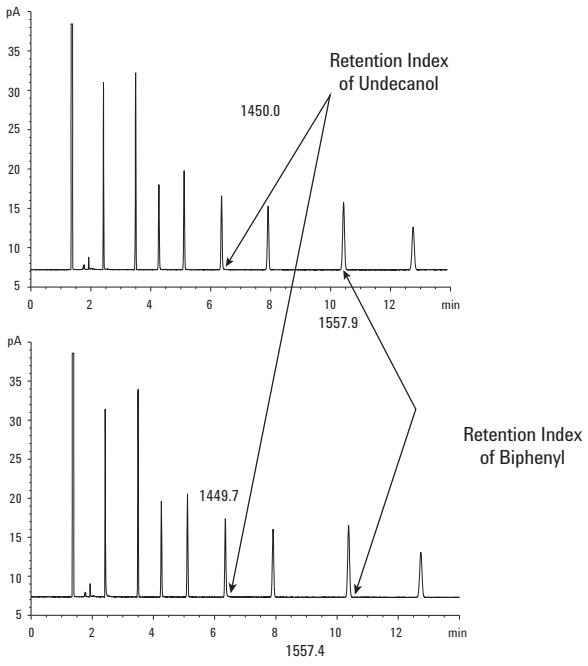
Agilent J&W Ultra Inert GC Columns

With Agilent J&W Ultra Inert GC columns you can perform trace-level analysis with the utmost confidence, in every GC. The Agilent J&W Ultra Inert GC column family pushes industry standards for consistent column inertness and exceptionally low column bleed, resulting in lower detection limits and more accurate data for difficult analytes. Each Ultra Inert GC column is tested with the industry's most demanding test probe mixture – and we prove it with a performance summary sheet shipped with each column. You can confidently analyze active compounds, trace-level samples, and unknowns without changing selectivity. Our leading-edge manufacturing processes – combined with Agilent optimization of chemistries and manufacturing design advancements – improve the inertness of our Ultra Inert columns while maintaining the selectivity of their non-ultra inert counterparts.

In addition, every Agilent J&W Ultra Inert GC column is tested using probes with varying chemical characteristics to avoid subtle polymer-selectivity variations. This ensures that Agilent J&W Ultra Inert GC columns have the same selectivity as Agilent MS columns – eliminating the need for method revalidation, as you can see in the following figure.

DB-35ms Ultra Inert

DB-35ms

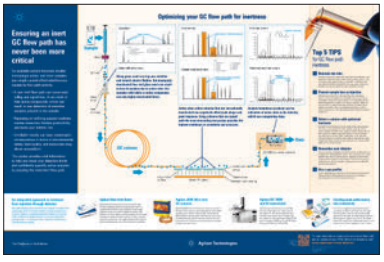


With Agilent J&W Ultra Inert GC columns, selectivity remains the same, allowing you to confidently integrate Ultra Inert columns into your current methods.

TIPS & TOOLS

Clearly Better Inertness

To learn more and order your free poster, visit **www.agilent.com/chem/inert**



See pages 23-46 for a collection of popular Agilent J&W GC columns.

The industry's most rigorous test probe mixture ensures consistent column inertness – and results

A strong test probe mixture can highlight deficiencies in column activity, while a weak mixture can actually mask such deficiencies.

The test probes in Agilent's Ultra Inert test probe mixture have low molecular weights, low boiling points and no steric shielding of their active groups. These characteristics allow the probative portion of the test molecules to penetrate – and fully interact with – the stationary phase and column surface.

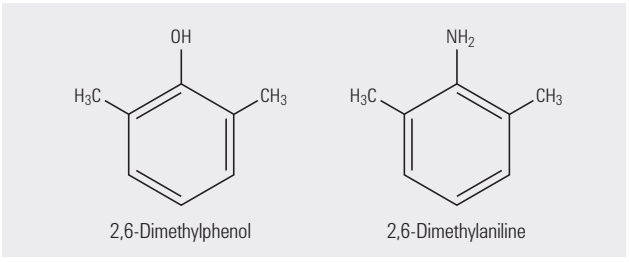
Commonly used, less demanding test probes

1. 1-Octanol	4. 2,6-Dimethylaniline	7. 1-Decanol
2. n-Undecane	5. n-Dodecane	8. n-Tridecane
3. 2,6-Dimethylphenol	6. Naphthalene	9. Methyldecanoate

Agilent's more demanding Ultra Inert test probe mixture for 5ms, 1ms, and 35ms Ultra Inert columns

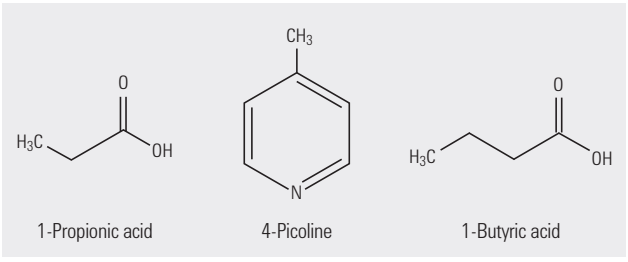
Ultra Inert 5ms Columns			Ultra Inert 1ms Columns			Ultra Inert 35ms Columns		
Elution Order	**Test Probe**	**Functional Test**	**Elution Order**	**Test Probe**	**Functional Test**	**Elution Order**	**Test Probe**	**Functional Test**
1.	1-Propionic acid	Basicity	1.	1-Propionic acid	Basicity	1.	1-Octene	Polarity
2.	1-Octene	Polarity	2.	1-Octene	Polarity	2.	1-Butyric acid	Basicity
3.	n-Octane	Hydrocarbon marker	3.	n-Octane	Hydrocarbon marker	3.	n-Nonane	Hydrocarbon marker
4.	4-Picoline	Acidity	4.	1,2-Butanediol	Silanol	4.	4-Picoline	Acidity
5.	n-Nonane	Hydrocarbon marker	5.	4-Picoline	Acidity	5.	n-Propylbenzene	Polarity
6.	Trimethyl phosphate	Acidity	6.	Trimethyl phosphate	Acidity	6.	1-Heptanol	Silanol, Polarity
7.	1,2-Pentanediol	Silanol	7.	n-Propylbenzene	Hydrocarbon marker	7.	1,2-Pentanediol	Silanol
8.	n-Propylbenzene	Hydrocarbon marker	8.	1-Heptanol	Silanol	8.	3-Octanone	Polarity
9.	1-Heptanol	Silanol	9.	3-Octanone	Polarity	9.	Trimethyl phosphate	Acidity
10.	3-Octanone	Polarity	10.	tert-Butylbenzene	Hydrocarbon marker	10.	tert-Butylbenzene	Hydrocarbon marker
11.	n-Decane	Efficiency	11.	n-Decane	Efficiency	11.	n-Undecane	Efficiency

Chemical Structures



2,6-Dimethylphenol 2,6-Dimethylaniline

Weak probe molecules: The acidic and basic portions of these molecules are shielded by the two methyl groups on their phenyl rings, making them less probative.



1-Propionic acid 4-Picoline 1-Butyric acid

Strong probe molecules: The probes in Agilent's Ultra Inert test probe mixture are highly probative of the stationary phase and surface. Note, too, that the active end of each compound is available to interact with any active sites on the column.

See pages 23-46 for a collection of popular Agilent J&W GC columns.

Agilent J&W Ultra Inert GC Columns					
Phase	**ID (mm)**	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
DB-1ms Ultra Inert	*0.18*	*20*	*0.18*	*-60 to 325/350*	*121-0122UI*
	0.25	15	0.25	-60 to 325/350	122-0112UI
	0.25	30	0.25	-60 to 325/350	122-0132UI
	0.25	60	0.25	-60 to 325/350	122-0162UI
	0.32	15	0.25	-60 to 325/350	123-0112UI
	0.32	30	0.25	-60 to 325/350	123-0132UI
HP-1ms Ultra Inert	*0.18*	*20*	*0.18*	*-60 to 325/350*	*19091S-677UI*
	0.25	15	0.25	-60 to 325/350	19091S-931UI
	0.25	30	0.50	-60 to 325/350	19091S-633UI
	0.32	15	0.25	-60 to 325/350	19091S-911UI
	0.32	25	0.52	-60 to 325/350	19091S-612UI
	0.32	30	0.25	-60 to 325/350	19091S-913UI
DB-5ms Ultra Inert	*0.18*	*20*	*0.18*	*-60 to 325/350*	*121-5522UI*
	0.18	20	0.36	-60 to 325/350	121-5523UI
	0.25	15	0.25	-60 to 325/350	122-5512UI
	0.25	15	1.00	-60 to 325/350	122-5513UI
	0.25	30	0.25	-60 to 325/350	122-5532UI
	0.25	60	0.25	-60 to 325/350	122-5562UI
	0.32	30	0.25	-60 to 325/350	123-5532UI
	0.32	30	0.50	-60 to 325/350	123-5536UI
	0.32	60	1.00	-60 to 325/350	123-5563UI
HP-5ms Ultra Inert	*0.18*	*20*	*0.18*	*-60 to 325/350*	*19091S-577UI*
	0.25	15	0.25	-60 to 325/350	19091S-431UI
	0.25	30	0.25	-60 to 325/350	19091S-433UI
	0.25	30	0.50	-60 to 325/350	19091S-133UI
	0.25	60	0.25	-60 to 325/350	19091S-436UI
	0.32	30	0.25	-60 to 325/350	19091S-413UI

Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers

(Continued)

See pages 23-46 for a collection of popular Agilent J&W GC columns.

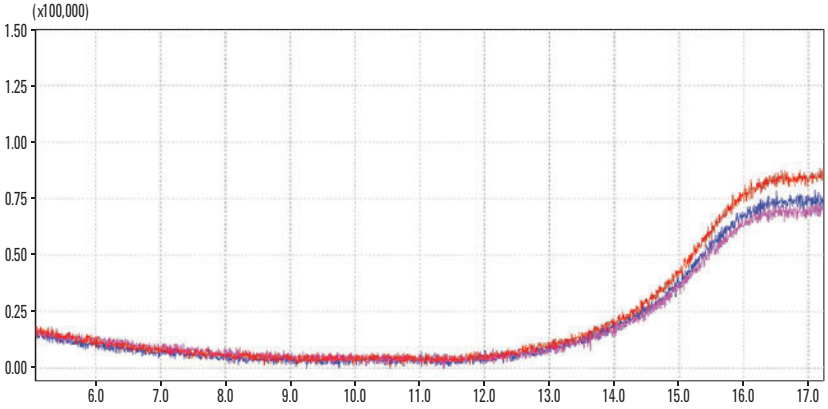
Agilent J&W Ultra Inert GC Columns					
Phase	**ID (mm)**	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
DB-35ms Ultra Inert	*0.18*	*20*	*0.18*	*50 to 340/360*	*121-3822UI*
	0.25	15	0.25	50 to 340/360	122-3812UI
	0.25	30	0.25	50 to 340/360	122-3832UI
	0.32	30	0.25	50 to 340/360	123-3832UI
DB-624 Ultra Inert	*0.18*	*20*	*1.00*	*-20 to 260*	*121-1324UI*
	0.25	30	1.40	-20 to 260	122-1334UI
	0.25	60	1.40	-20 to 260	122-1364UI
	0.32	30	1.80	-20 to 260	123-1334UI
	0.32	60	1.80	-20 to 260	123-1364UI
	0.53	30	3.00	-20 to 260	125-1334UI
	0.53	75	3.00	-20 to 260	125-1374UI
DB-Select 624 Ultra Inert	*0.25*	*30*	*1.40*	*40 to 260/260*	*122-0334UI*
	0.25	60	1.40	40 to 260/260	122-0364UI
	0.32	30	1.80	40 to 260/260	123-0334UI
	0.32	60	1.80	40 to 260/260	123-0364UI
	0.53	30	3.00	40 to 260/260	125-0334UI
DB-UI 8270D Ultra Inert	*0.18*	*20*	*0.36*	*-60 to 325/350*	*121-9723*
	0.25	30	0.25	-60 to 325/350	122-9732
	0.25	30	0.50	-60 to 325/350	122-9736

Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers

See pages 23-46 for a collection of popular Agilent J&W GC columns.

SELF TIGHTENING COLUMN NUTS

Innovative Agilent Self Tightening Column Nuts maintain leak-free GC/MS connections for Shimadzu GC and GC/MS systems. These nuts have a novel spring-loaded design that maintains constant pressure on recommended polyimide/graphite ferrules, which expand and contract through repeated heat cycling from 38 to 325 ºC. The nuts preserve a leak-free seal over more than 150 heat cycles without the need for retightening. Self Tightening column nuts are especially well suited for oxygen-sensitive detectors, such as mass spec and ECD. Tight column connections provide more reliable results due to reduced background noise, and improved productivity as analyst time is not wasted retightening fittings.



Total ion chromatogram of 150 successive 38 to 325 ºC heat cycles using Agilent for Shimadzu Self Tightening Column Nuts, with a Shimadzu QP-2010 GC/MS with typical OEM consumable components. The column was a competitor, 30 m x 0.25 mm, 0.25 µm.

Self Tightening column nuts provide additional value:

- Ease-of-use: the finger-tight design lets anyone make quality, consistent connections without tools
- Faster maintenance: the low-torque seal prevents ferrules from sticking or crumbling in the fitting or nut
- Lower column bleed: by preventing exposure to oxygen from leaks, column lifetime is extended

Self Tightening column nut for Shimadzu GC/MS

Agilent Self Tightening Column Nuts Compatibility Table

Shimadzu	Column id	Split/Splitless Inlet/ Standard Detector	Split/Splitless Inlet/ MS Connections
GC14A SSL; GC17A; GC2014; GC-2010 Plus	0.25 µm	8001-0016	
	0.32 µm	8001-0017	
	0.53 µm	8001-0018	
GCMS-QP2010 Series	0.25 µm		8001-0015
2010plus SQ, QQQ, MSMS	0.25 µm		8001-0020

Self Tightening Column Nuts

Description	Part No.
Agilent Self Tightening column nut for Shimadzu GC. Includes nut for SPL inlet, nut for standard detector connection, 0.4 mm graphite/polyimide ferrules (10/pk) for 250 µm columns	8001-0016
Agilent Self Tightening column nuts for Shimadzu GC system. Includes nut for SPL inlet, nut for standard detector connection, 0.5 mm graphite/polyimide ferrules (10/pk) for 320 µm columns	8001-0017
Agilent Self Tightening column nuts for Shimadzu GC system. Includes nut for SPL inlet and nut for standard detector connection, 0.8 mm graphite/polyimide ferrules (10/pk) for 530 µm columns	8001-0018
Agilent Self Tightening column nut for Shimadzu GC/MS. Includes nut for SPL inlet, nut for MS transfer line connection, 0.4 mm graphite/polyimide ferrules (10/pk) for 250 µm columns	8001-0015
Agilent Self Tightening column nut, for Shimadzu QP-2010 MS with MS adaptor on the inlet. Includes 2 nuts for MS system connections, 0.4 mm graphite/polyimide ferrules (10/pk) for 250 µm columns	8001-0020

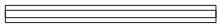
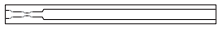
AGILENT GC SUPPLIES

Inlet Liners

Liners are the centerpiece of the inlet system where sample is vaporized and mixed with the carrier gas. Agilent GC inlet liners have the perfect mix of liner configurations and chemistries to solve your application challenges.

Choose from split, splitless, PTV, and other inlet liner designs in either innovative Ultra Inert deactivation or Agilent's popular proprietary deactivation, now referred to as Agilent Original deactivation. With part number and lot number silk-screened on Agilent liners, identification and re-ordering has never been easier.

Liners for 17A, 2010, and 2014 Systems

	Description	ID (mm)	OD (mm)	Length (mm)	Volume (µL)	Unit	Similar to Shimadzu Part No.	Agilent Original Deactivation
Splitless Liners								
	Straight-through	2.6	5.0	95	500	5/pk	220-94767-00	8001-0101
Split Liners								
	Straight with middle restriction	3.5	5.0	95	800	5/pk	221-41444-01	8001-0106
	Straight-through	3.4	5.0	95	860	5/pk		8001-0103
Direct Liners								
	For 0.53 mm id column	2.6	5.0	95	450	5/pk	220-94768-00	8001-0102
Split/Splitless Liners								
	Single taper	3.4	5.0	95		5/pk		8001-0104

Liners for 14 Systems

	Description	ID (mm)	OD (mm)	Length (mm)	Volume (µL)	Unit	Agilent Original Deactivation
Split/Splitless Liners							
	2.0 mm middle gooseneck	3.4	5.0	99	850	5/pk	8001-0105

The cross references to the Shimadzu part numbers listed here serve as a recommendation that the Agilent products are viable alternatives to Shimadzu products. Agilent products are compatible with the corresponding Shimadzu instruments, although in some cases, the Agilent products may have slightly different designs as compared to the Shimadzu counterparts. All Agilent supplies are backed by Agilent's 90-day money-back warranty.

Graphite liner O-rings, 8001-0202

Liner O-Rings

Agilent liners are sealed in the inlet with fluoroelastomer or graphite O-rings. Use graphite O-rings when inlet temperatures exceed 350 °C. Fluoroelastomer O-rings are easier to replace than graphite O-rings, which deform and flake apart more easily.

Liner O-rings

Description	Unit	Similar to Shimadzu Part No.	Part No.
Graphite O-ring, split	10/pk	221-48393-91	8001-0202
Graphite O-ring, splitless	10/pk	221-47222-91	8001-0203

Column nut, slotted, 6-sided, 8001-0311

Column Nuts

Agilent capillary column nuts for GC fittings facilitate good column installation. They are manufactured and rigorously tested to ensure robust performance in daily use, so keep some spares handy to limit downtime in your lab.

Column Nuts

Description	Unit	Similar to Shimadzu Part No.	Part No.
Column nut, slotted, 6-sided	2/pk	221-32705-00	8001-0311
Column nut, no slot, 6-sided	2/pk	221-41533-00	8001-0312

The cross references to the Shimadzu part numbers listed here serve as a recommendation that the Agilent products are viable alternatives to Shimadzu products. Agilent products are compatible with the corresponding Shimadzu instruments, although in some cases, the Agilent products may have slightly different designs as compared to the Shimadzu counterparts. All Agilent supplies are backed by Agilent's 90-day money-back warranty.

Ferrules

Using the wrong ferrule or a worn-out ferrule to seal your column connection can result in inconsistent and unreliable chromatography. An improper ferrule can cause leaks, which allow air and other contaminants to enter the instrument through the column seal, causing major interference with column and detector performance.

Agilent ferrules provide a leak-free seal and accommodate various column outer diameters. What's more, they seal with minimum torque, withstand temperature cycling, and do not stick to the column or fittings. For optimum performance, ferrules should be replaced every time the column is replaced and when performing column maintenance.

Capillary Column Ferrules

Model	Fitting Size (in)	Ferrule ID (mm)	Column ID (mm)	Hole	Unit	Similar to Shimadzu Part No.	Part No.
85% Polyimide/15% Graphite Capillary Column Ferrules							
QP5000/5050 Standard MS	1/16	0.3	0.18 or smaller	1	10/pk	220-90700-01	8001-0224
	1/16	0.4	0.25	1	10/pk	220-90700-02	8001-0221*
	1/16	0.5	0.32	1	10/pk	220-90700-03	8001-0222*
	1/16	0.8	0.53	1	10/pk	220-90700-04	8001-0223*
QP2010	1/16	0.4	0.25	1	10/pk	220-90418-14	8010-0310
	1/16	0.4	0.25	2	10/pk	225-19056-00	8010-0312
	1/16	0.5	0.32	1	10/pk	220-90418-15	8010-0311
	1/16	0.8	0.53	1	10/pk	220-90418-18	8010-0313
Graphite Capillary Column Ferrules							
2010, 2010 Plus, 2014, 17A, 14A	1/16	0.4	0.25	1	10/pk	220-90765-00	8001-0211
	1/16	0.5	0.32	1	10/pk	221-32126-05	8001-0212
	1/16	0.8	0.53	1	10/pk	221-32126-08	8001-0213

*Compatible for use with Self Tightening column nuts for Shimadzu.

The cross references to the Shimadzu part numbers listed here serve as a recommendation that the Agilent products are viable alternatives to Shimadzu products. Agilent products are compatible with the corresponding Shimadzu instruments, although in some cases, the Agilent products may have slightly different designs as compared to the Shimadzu counterparts. All Agilent supplies are backed by Agilent's 90-day money-back warranty.

1/16 inch 85% Polyimide/15% graphite, 8001-0221

Graphite capillary column ferrules, 8001-0213

Packed Column Ferrules

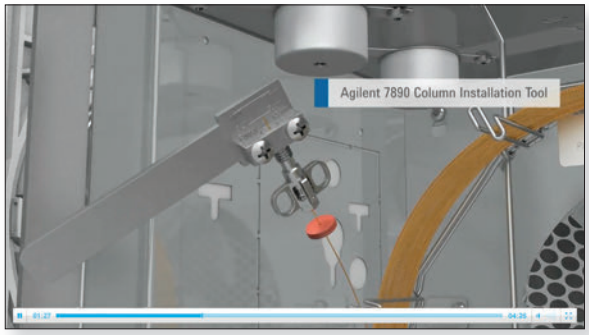
Model	Fitting Size (in)	Ferrule ID (in)	Column OD (in)	Hole	Unit	Similar to Shimadzu Part No.	Part No.
85% Polyimide/15% Graphite Packed Column Ferrules							
QP5000/5050 Standard MS	1/4	1/4	1/4	1	10/pk	225-09028-00	8010-0314
QP5000/5050 Wide Bore MS	1/16	1/16	1/16	1	10/pk	220-90418-28	8010-0315
QP2010	1/16	1/16	1/16	1	10/pk		8010-0315
17A	5 mm	5 mm	5 mm	1	10/pk	221-46403-92	8001-0214

The cross references to the Shimadzu part numbers listed here serve as a recommendation that the Agilent products are viable alternatives to Shimadzu products. Agilent products are compatible with the corresponding Shimadzu instruments, although in some cases, the Agilent products may have slightly different designs as compared to the Shimadzu counterparts. All Agilent supplies are backed by Agilent's 90-day money-back warranty.

TIPS & TOOLS

Tips and tricks for making better connections...

- It's important to use ferrules and nuts appropriate for your application, so graphite/polyimide ferrules and Agilent Self Tightening column nuts for oxygen sensitive detectors, such as ECD or Mass Spec
- Never over tighten fittings to avoid soft ferrules extruding into the fitting, contaminating or creating active sites in the flow path
- Install column at the correct and consistent height, critical for accurate and reproducible results
- Reduce and eliminate leaks at the MS interface with the Agilent Self Tightening column nuts that give you a tight connection without expensive upgrades or adaptors



Watch the animation that shows how to make better column connections in a GC or GC/MS, at **www.agilent.com/chem/mbcvideo**

Autosampler Syringes

Agilent autosampler syringes provide what you need for accurate and effective sampling. They meet all fit, form, and function criteria for specific autosampler models. Lot numbers are printed directly on the barrel with a corresponding Certificate of Conformance.

The illuminating backing strip gives effortless viewing of the volume scale, and the syringes are individually packaged for contaminant-free use right out of the box.

Autosampler Syringes for Shimadzu GC Systems

Model	Volume (µL)	Description	Needle Gauge/ Length (mm)/ Tip	Similar to Shimadzu Syringe Part No.	Syringe Part No.	Similar to Shimadzu Replacement Needle and Plunger Repair Kit Part No.	Replacement Needle and Plunger Repair Kit Part No.
AOC-14, AOC-17, AOC-20	5	Removable needle	23/42/cone tip		8001-0010		8001-0011, 2/pk
AOC-14, AOC-17, AOC-20	10	Removable needle	23/42/cone tip	220-90282-20	8001-0004	220-90281-20	8001-0005, 2/pk
AOC-14, AOC-17, AOC-20	10	Removable needle	26/42/cone tip	220-90282-21	8001-0006	220-90281-21	8001-0007, 2/pk
AOC-14, AOC-17, AOC-20	50	Removable needle	23/42/cone tip	221-45243-00	8001-0012		8001-0014
AOC-14, AOC-17, AOC-20	250	Removable needle, gas tight	23/42/cone tip	221-45244-00	8001-0013		8001-0014

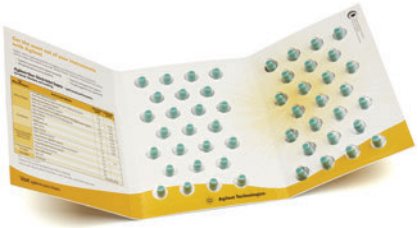
The cross references to the Shimadzu part numbers listed here serve as a recommendation that the Agilent products are viable alternatives to Shimadzu products. Agilent products are compatible with the corresponding Shimadzu instruments, although in some cases, the Agilent products may have slightly different designs as compared to the Shimadzu counterparts. All Agilent supplies are backed by Agilent's 90-day money-back warranty.

Autosampler syringe for Shimadzu GC, 10 µL, removable needle, 8001-0004

Inlet Septa

Agilent septa for Shimadzu GC are ideal for use with low-bleed, "Mass Spec" capillary columns. They have an extended temperature range, with a maximum injection port temperature of 400 °C. Even at these high temperatures, plasma treatment eliminates sticking in the injection port. The septa have the lowest bleed and are pre-conditioned so they are ready to use. Blister packaging maintains cleanliness and convenience.

Non-stick BTO inlet septum, Shimadzu Plug, 8010-0231



Non-stick Advanced Green inlet septum, Shimadzu Plug, 8010-0215

Non-Stick Bleed and Temperature Optimized (BTO) Septa

Description	Part No. 50/pk	Part No. 100/pk
Shimadzu plug	8010-0231	8010-0232

Non-Stick Advanced Green Septa

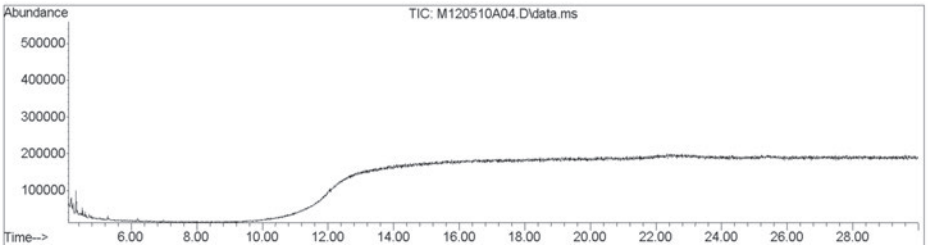
Description	Similar to Shimadzu Part No.	Part No. 50/pk	Part No. 100/pk
Shimadzu plug	220-90547-00 220-94781-00	8010-0215	8010-0216

General Purpose Septa

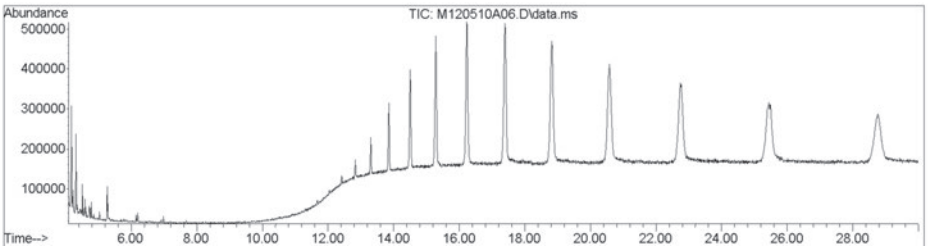
Description	Part No. 50/pk	Part No. 100/pk
Shimadzu plug	8010-0263	8010-0264

The cross references to the Shimadzu part numbers listed here serve as a recommendation that the Agilent products are viable alternatives to Shimadzu products. Agilent products are compatible with the corresponding Shimadzu instruments, although in some cases, the Agilent products may have slightly different designs as compared to the Shimadzu counterparts. All Agilent supplies are backed by Agilent's 90-day money-back warranty.

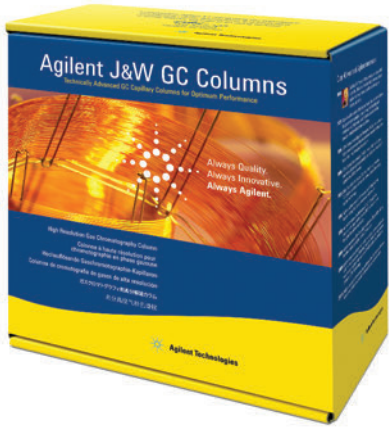
Comparison of septum purity: TIC profile of isooctane extractions



Agilent BTO Septa with CenterGuide



Competitor's High-Temperature Septa without CenterGuide



AGILENT J&W GC CAPILLARY COLUMNS

More than just essential products... reliable results!

With the highest inertness, lowest bleed levels, and the tightest column-to-column reproducibility, Agilent J&W GC Capillary columns perform better than any columns on the market.

Ultra Inert Columns – allow you to perform trace level analysis – including the analysis of acids, bases, or other active compounds – with the utmost confidence. They also help ensure an inert GC flow path that is essential for sensitivity, performance, and the integrity of your analytical results.

High Efficiency Columns – are ideal for applications that require reduced analysis time, such as high-throughput screening, fast process monitoring, fast QC analyses, and fast method development.

Low-bleed GC/MS Columns – are specifically designed to chromatograph a broad range of trace-level samples, and offer low bleed and high inertness even at higher temperatures.

Premium Polysiloxane Columns – are stable, robust, and versatile and are available in a wide variety of stationary phases.

Polyethylene Glycol (PEG) Columns – offer a variety of unique phase characteristics to meet the varying needs of your laboratory, thanks to Agilent's strict quality control of the cross-linking and deactivation processes.

Specialty Columns – meet Agilent's uncompromising standards for high-temperature, life science, pesticide, petroleum, semivolatile, and volatile applications.

PLOT Columns – deliver superior separation for compounds that are gases at room temperature. They are also ideal for analyzing fixed gases, low molecular weight hydrocarbon isomers, volatile polymer compounds, and reactive analytes such as gases, amines, and hydrides.

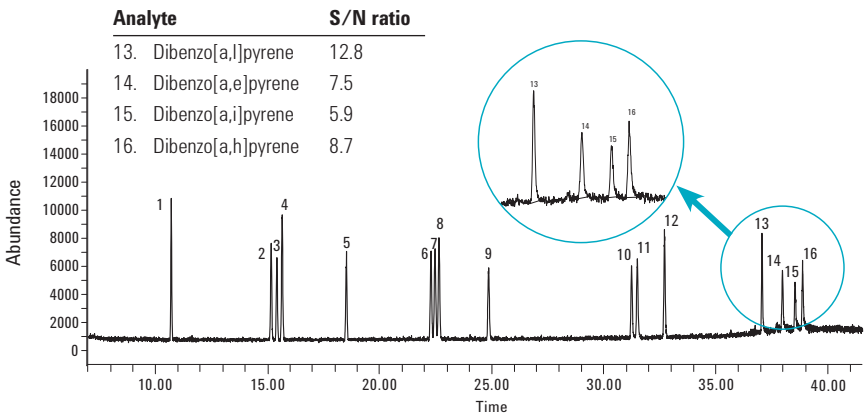
Note: On the following pages, you will find details on range of innovative Agilent J&W GC columns. The following part numbers and configurations represent only a portion available. For more information, contact your local Agilent representative or Agilent Authorized Distributor. Or you can order online at **www.agilent.com/chem/store**.

Performance Comparison for 15+1 EU Regulated Priority PAHs

Column A: **DB-EUPAH**
121-9627
20 m x 0.18 mm, 0.14 µm

Column B: Competitor A 20 m x 0.18 mm, 0.18 µm

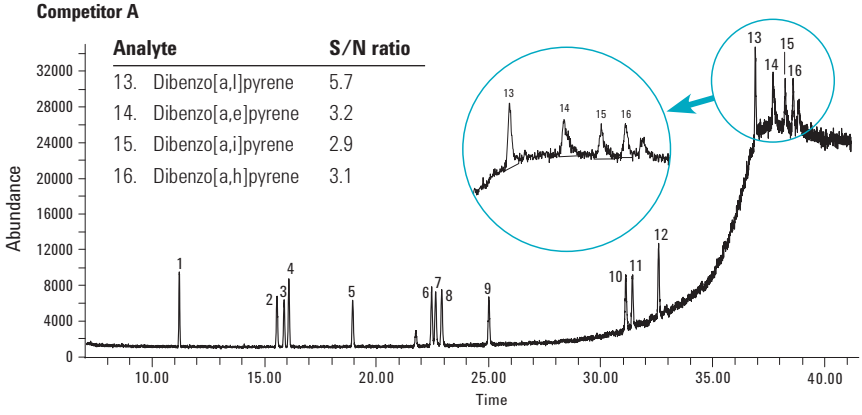
Agilent J&W DB-EUPAH



1. Benzo[c]fluorene
2. Benz[a]anthracene
3. Cyclopenta[c,d]pyrene
4. Chrysene
5. 5-Methylchrysene
6. Benzo[b]fluoranthene
7. Benzo[k]fluoranthene
8. Benzo[j]fluoranthene
9. Benz[a]pyrene
10. Indeno[1,2,3-cd]pyrene
11. Dibenzo[a,h]anthracene
12. Benzo[g,h,i]perylene
13. Dibenzo[a,l]pyrene
14. Dibenzo[a,e]pyrene
15. Dibenzo[a,i]pyrene
16. Dibenzo[a,h]pyrene

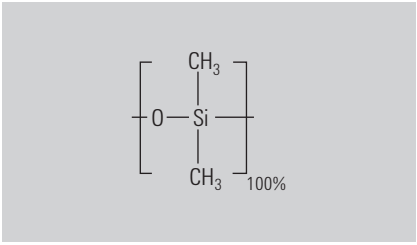
In the chromatogram above, all 15+1 EU-regulated priority PAHs are well resolved with the Agilent J&W DB-EUPAH column. Challenging Benzo[b,k,j]fl uoranthene isomers are baseline resolved, allowing accurate quantitation of each isomer. Baseline resolution is also achieved for three critical pairs: benz[a]anthracene and cyclopenta[c,d]pyrene, cyclopenta[c,d]pyrene and chrysene, and indeno[1,2,3-cd]pyrene and dibenzo[a,h]anthracene.

Competitor A



Here, the Competitor A column shows significantly higher bleed than the DB-EUPAH column, even at 320 °C. As a result, the signal-to-noise ratios are less than half of those achieved by the DB-EUPAH columns. The Competitor A column's excess bleed at higher temperatures makes trace-level detection difficult and unreliable for the four late-eluting dibenzopyrene isomers.

Agilent J&W DB-EUPAH GC columns clearly surpass the competition in detecting dangerous PAHs



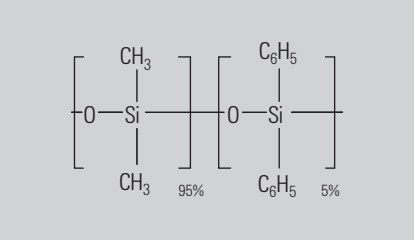
Structure of DB-1

DB-1

- 100% Dimethylpolysiloxane
- Excellent general purpose column
- Low bleed
- Equivalent to USP Phase G2

DB-1				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.18	*10*	*0.18*	*-60 to 325/350*	*121-1012*
	20	*0.18*	*-60 to 325/350*	*121-1022*
0.25	15	0.25	-60 to 325/350	122-1012
		1.00	-60 to 325/350	122-1013
	30	0.25	-60 to 325/350	122-1032
		0.50	-60 to 325/350	122-103E
		1.00	-60 to 325/350	122-1033
	60	0.25	-60 to 325/350	122-1062
		0.50	-60 to 325/350	122-106E
0.32	15	0.25	-60 to 325/350	123-1012
		3.00	-60 to 280/300	123-1014
	30	0.25	-60 to 325/350	123-1032
		1.00	-60 to 325/350	123-1033
		3.00	-60 to 280/300	123-1034
	60	0.25	-60 to 325/350	123-1062
		1.00	-60 to 325/350	123-1063
		3.00	-60 to 280/300	123-1064
		5.00	-60 to 280/300	123-1065
0.53	15	0.50	-60 to 300/320	125-1017
		1.50	-60 to 300/320	125-1012
		3.00	-60 to 260/280	125-1014
	30	0.50	-60 to 300/320	125-1037
		1.50	-60 to 300/320	125-1032
		3.00	-60 to 260/280	125-1034
		5.00	-60 to 260/280	125-1035
	60	1.50	-60 to 300/320	125-1062
		3.00	-60 to 260/280	125-1064

Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers



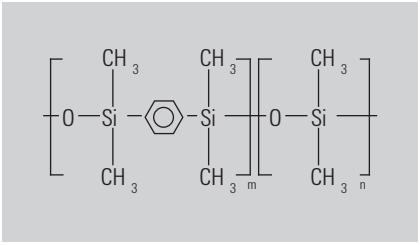
Structure of DB-5

DB-5

- (5%-Phenyl)-methylpolysiloxane
- Excellent general purpose column
- Low bleed
- Equivalent to USP Phase G27

DB-5				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.18	*10*	*0.18*	*-60 to 325/350*	*121-5012*
	20	*0.18*	*-60 to 325/350*	*121-5022*
0.25	15	1.00	-60 to 325/350	122-5013
	25	0.25	-60 to 325/350	122-5022
	30	0.25	-60 to 325/350	122-5032
		1.00	-60 to 325/350	122-5033
	60	0.25	-60 to 325/350	122-5062
		1.00	-60 to 325/350	122-5063
0.32	15	0.25	-60 to 325/350	123-5012
	30	0.25	-60 to 325/350	123-5032
		0.50	-60 to 325/350	123-503E
		1.00	-60 to 325/350	123-5033
	60	0.25	-60 to 325/350	123-5062
		1.00	-60 to 325/350	123-5063
0.53	15	0.50	-60 to 300/320	125-5017
		1.50	-60 to 300/320	125-5012
	30	0.50	-60 to 300/320	125-5037
		1.00	-60 to 300/320	125-503J
		1.50	-60 to 300/320	125-5032
		3.00	-60 to 260/280	125-5034
	60	1.50	-60 to 300/320	125-5062
		5.00	-60 to 260/280	125-5065

Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers



Structure of DB-17ms

DB-17ms

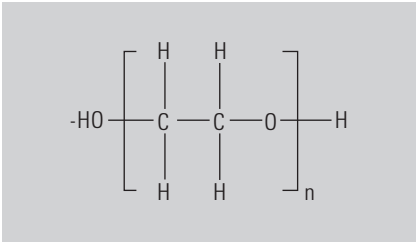
- Virtually equivalent to (50%-phenyl)-methylpolysiloxane
- Very low bleed mid-polarity column, ideal for GC/MS
- Excellent inertness for active compounds
- Enhanced mass spectral integrity
- Excellent choice for CLP pesticides

DB-17ms				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.18	*20*	*0.18*	*40 to 320/340*	*121-4722*
0.25	15	0.25	40 to 320/340	122-4712
		0.25	40 to 320/340	122-4732
	60	0.25	40 to 320/340	122-4762
0.32	15	0.25	40 to 320/340	123-4712
	30	0.25	40 to 320/340	123-4732

Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers

TIPS & TOOLS

View the latest GC column focused applications, products and educational resources at **www.agilent.com/chem/myGCcolumns**



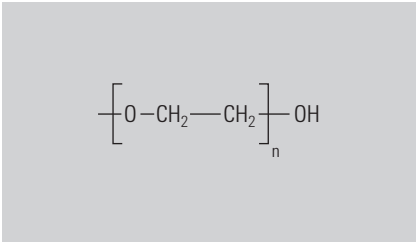
Structure of polyethylene glycol (PEG)
This structure is applicable for all WAX and FFAP phases.

DB-WAX

- Polyethylene glycol (PEG)
- Equivalent to USP Phase G16
- High polarity
- Lower temperature limit of 20 °C is the lowest of any bonded PEG phase; improves resolution of low boiling point analytes
- Solvent rinsable

DB-WAX				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.18	*20*	*0.18*	*20 to 250/260*	*121-7022*
	40	*0.18*	*20 to 250/260*	*121-7042*
0.25	15	0.25	20 to 250/260	122-7012
	30	0.15	20 to 250/260	122-7031
		0.25	20 to 250/260	122-7032
	60	0.15	20 to 250/260	122-7061
		0.25	20 to 250/260	122-7062
0.32	15	0.25	20 to 250/260	123-7012
	30	0.15	20 to 250/260	123-7031
		0.25	20 to 250/260	123-7032
	60	0.25	20 to 250/260	123-7062
0.53	15	1.00	20 to 230/240	125-7012
	30	0.25	20 to 230/240	125-7031
		1.00	20 to 230/240	125-7032
	60	1.00	20 to 230/240	125-7062

Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers



Structure of VF-WAXms

VF-WAXms

- Specially designed WAX phase designed for accurate MS results with polar compounds
- Improves signal-to-noise ratio for trace analyses
- Ideal for GC/MS food, flavor and fragrance applications, especially where trace analyses are required
- Ultra low bleed provides increased sensitivity and extended column lifetime at higher temperatures
- Improved performance with no change in the typical selectivity of PEG

VF-WAXms

ID (mm)	Length (m)	Film (µm)	Temp Limits (°C)	Part No.
0.15	*15*	*0.15*	*20 to 250/260*	*CP9201*
0.25	15	0.25	20 to 250/260	CP9203
	30	0.25	20 to 250/260	CP9205
		1.00	20 to 240	CP9206
	60	0.25	20 to 250/260	CP9207
0.32	30	0.25	20 to 250/260	CP9212
	60	0.25	20 to 250/260	CP9214
0.53	15	1.00	20 to 250/260	CP9226
	30	1.00	20 to 240	CP9215
	60	1.00	20 to 230	CP9228

Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers

TIPS & TOOLS

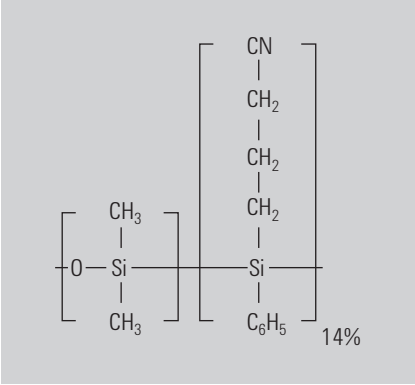
As a special MS-type phase, the VF-WAXms column generates less bleed, and therefore less noise and higher signal-to-noise ratios for critical components.

DB-FFAP

- Nitroterephthalic acid modified polyethylene glycol
- Designed for the analysis of volatile fatty acids and phenols
- Replaces OV-351
- Close equivalent to USP Phase G35

Note: We do not recommend the use of water or methanol to rinse DB-FFAP GC columns.

DB-FFAP				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.25	15	0.25	40 to 250	122-3212
	30	0.25	40 to 250	122-3232
		0.50	40 to 250	122-3233
	60	0.25	40 to 250	122-3262
0.32	30	0.25	40 to 250	123-3232
		0.50	40 to 250	123-3233
	60	0.25	40 to 250	123-3262
		0.50	40 to 250	123-3263
0.53	15	1.00	40 to 250	125-3212
	30	0.25	40 to 250	125-3231
		1.00	40 to 250	125-3232
	60	1.00	40 to 250	125-3262



Structure of DB-1701

DB-1701

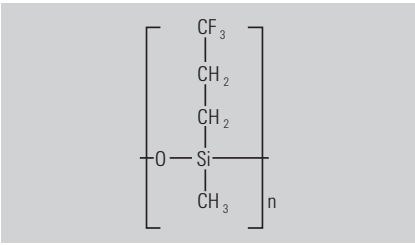
- (14% Cyanopropyl-phenyl)-methylpolysiloxane
- Low/mid polarity
- Solvent rinsable

DB-1701				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.18	*20*	*0.18*	*-20 to 280/300*	*121-0722*
0.25	15	0.25	-20 to 280/300	122-0712
	30	0.25	-20 to 280/300	122-0732
	60	0.25	-20 to 280/300	122-0762
0.32	15	0.25	-20 to 280/300	123-0712
		0.25	-20 to 280/300	123-0732
	60	0.25	-20 to 280/300	123-0762
0.53	15	1.00	-20 to 260/280	125-0712
	30	1.00	-20 to 260/280	125-0732
	60	1.00	-20 to 260/280	125-0762

Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers

TIPS & TOOLS

Agilent also offers DB-624 columns for the analysis of volatile priority pollutants and residual solvents.

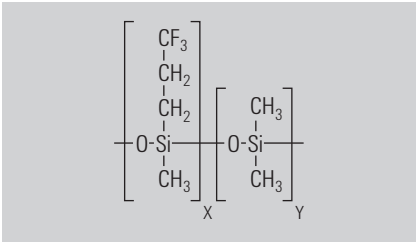


Structure of DB-200

DB-200

- (35% Trifluoropropyl)-methylpolysiloxane
- Mid polarity – more polar than DB-1701 or DB-17
- Ideal for difficult-to-separate positional isomers
- Unique interactions with compounds containing nitro, halogen and carbonyl groups
- Low ECD bleed
- Close equivalent to USP Phase G6

DB-200				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.25	30	0.25	30 to 300/320	122-2032
		0.50	30 to 300/320	122-2033
0.32	30	0.25	30 to 300/320	123-2032
		0.50	30 to 300/320	123-2033
0.53	30	1.00	30 to 280/300	125-2032

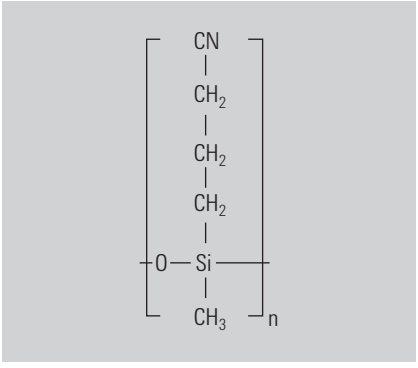


Structure of VF-200ms

VF-200ms

- Trifluoropropyl phase has very high temperature stability and can be used routinely up to 350 °C
- Ideally suited for analyses of ketones, aldehydes, nitro- or chloro-containing compounds, PAHs, unsaturated compounds, silanes, and CFCs
- Optimized deactivation for symmetrical peak shape
- Ultra-low bleed for trace analysis
- 0.15 mm id columns available for high efficiency GC and GC/MS analyses
- Supplied with an EZ-GRIP to simplify column installation, coupling and operation

VF-200ms				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**7 in Cage**
0.25	15	0.25	0 to 325/350	CP8855
	30	0.25	0 to 325/350	CP8858
	60	0.25	0 to 325/350	CP8861
0.32	30	1.00	0 to 325/350	CP8865
0.53	30	0.50	0 to 300/325	CP8867



Structure of DB-23

DB-23

- (50%-Cyanopropyl)-methylpolysiloxane
- Designed for separation of fatty acid methyl esters (FAMEs)
- Excellent resolution for cis- and trans-isomers
- Close equivalent to USP Phase G5

DB-23				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.25	15	0.25	40 to 250/260	122-2312
	30	0.25	40 to 250/260	122-2332
	60	0.25	40 to 250/260	122-2362
0.32	30	0.25	40 to 250/260	123-2332
	60	0.25	40 to 250/260	123-2362
0.53	15	0.50	40 to 230/240	125-2312
	30	0.50	40 to 230/240	125-2332

DB-XLB

- Exceptionally low bleed
- Low polarity, unique selectivity
- Excellent inertness for active compounds
- Ideal for confirmational analyses
- Excellent for pesticides, herbicides, PCBs and PAHs

Note: DB-XLB is designed for inhibiting column bleed at high temperatures. It also appears to have inadvertently inherited an exceptional ability for separating many PCB congeners when used with MS detection. This stellar performance was maximized after careful optimization of the column dimensions, temperature programs, and carrier gas flow conditions.

(Frame, G. *Analytical Chemistry News & Features*, Aug. 1, 1997, 468A-475A)

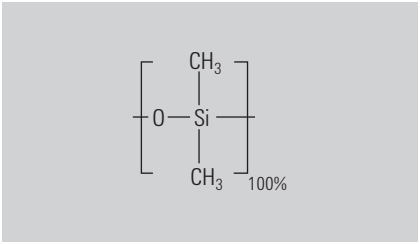
DB-XLB				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.18	*20*	*0.18*	*30 to 340/360*	*121-1222*
0.25	15	0.25	30 to 340/360	122-1212
	30	0.25	30 to 340/360	122-1232
		0.50	30 to 340/360	122-1236
	60	0.25	30 to 340/360	122-1262
0.32	30	0.25	30 to 340/360	123-1232
		0.50	30 to 340/360	123-1236
	60	0.25	30 to 340/360	123-1262
0.53	30	1.50	30 to 320/340	125-1232

Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers

Lowox

- Unique selectivity for a wide range of oxygenates
- Minimal particle loss preserves detector performance
- Industry proven for process and portable GC applications (ASTM D7059)
- Analyze trace level oxygenate impurities in gas and liquid hydrocarbon streams
- High polarity
- Ideal for monitoring catalyst contamination by oxygenates

Lowox				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.53	10	10.00	0 to 350/350	CP8587



Structure of CP-Sil PONA CB

CP-Sil PONA CB

- High resolution analysis of paraffins, olefins, naphthalenes and aromatics in complex hydrocarbon mixtures
- Engineered for hydrocarbon analysis according to ASTM (DHA method)
- Inert to polar compounds for example low molecular weight for highly accurate data

CP-Sil PONA CB				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.21	50	0.50	250/275	CP7531
0.25	100	0.50	250/275	CP7530
	150	1.00	250/275	CP7945

DB-HT SimDis

- 100% Dimethylpolysiloxane
- "Boiling point" phase for high temperature simulated distillation
- Durable stainless steel tubing
- Distillation range of C_6 to C_{110+}
- Low bleed, even at 430 °C

DB-HT SimDis				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.53	5	0.10	-60 to 400/430	145-1009
		0.15	-60 to 400/430	145-1001

Select Low Sulfur

- Highest degree of column inertness provides excellent peak shape for active compounds
- Low detection limits for sulfur compounds
- Unique selectivity prevents co-elution and matrix interferences in propylene streams
- Highly permeable PLOT stationary phase provides high retention of volatile compounds
- Mechanical stability results in no particle loss

Select Low Sulfur			
ID (mm)	**Length (m)**	**Temp Limits (°C)**	**Part No.**
0.32	60	185	CP8575

DB-Sulfur SCD

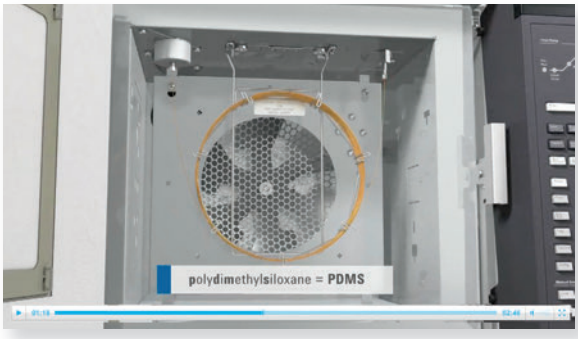
- Engineered for sulfur chemiluminescence detection (SCD) to provide low bleed performance and reduced SCD ceramic tube fouling
- Extends SCD signal stability which greatly reduces instrument downtime and operational cost for detector maintenance
- Excellent peak shape for a wide range of reactive sulfur compounds from H_2S, COS, mercaptans and thiophenes
- 100% Dimethyl polysiloxane stationary phase (PDMS) as specified in ASTM methods such as D5623 and D5504
- Custom configurations are available through the custom column shop, **www.agilent.com/chem/CustomColumn**

DB-Sulfur SCD

ID (mm)	Length (m)	Film (µm)	Temp Limits (°C)	Part No.
0.32	40	0.75	-60 to 270/290	G3903-63002
	40	3.00	-60 to 250/270	G3903-63004
	60	4.20	-60 to 250/270	G3903-63001
0.53	70	4.30	-60 to 250/270	G3903-63003

TIPS & TOOLS

J&W DB-Sulfur SCD GC Columns are optimized for low bleed and enhanced SCD signal stability. To view a video with more information, visit **www.agilent.com/chem/db-sulfur_scd**



Select PAH

- Full separation for all PAH isomers avoids false positives and inaccurate results
- Full separation of EPA PAHs in less than 7 minutes and EU PAHs in less than 30 minutes, including separation of chrysene, triphenylene and benzofluoranthene (type b, j, and k)
- Fast results with no need for further analysis
- Low bleed enhances sensitivity

Select PAH				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.15	*15*	*0.10*	*40 to 325/350*	*CP7461*
0.25	30	0.15	40 to 325/350	CP7462

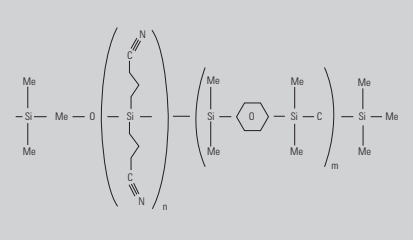
Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers

DB-EUPAH

- Specially designed for analysis of EU regulated PAHs
- Individually tested with application-specific QC test probe mixture
- Great resolution of critical isomers, e.g. benzo(b,j,k)fluoranthenes
- Superb thermal stability for accurate analysis of high boiling PAHs, e.g. dibenzopyrenes
- Excellent signal-to-noise ratio
- Optimized column dimensions for proven performance

DB-EUPAH				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.18	*20*	*0.14*	*40 to 320/340*	*121-9627*
0.25	60	0.25	40 to 320/340	122-96L2
0.32	15	0.25	40 to 320/340	123-9612

Agilent J&W High Efficiency GC columns are displayed using italicized descriptions and part numbers



Structure of HP-88

HP-88

- (88%-Cyanopropyl)aryl-polysiloxane
- Designed for separation of cis-trans fatty acid methyl esters (FAMEs)
- Even better separation than DB-23 of cis-trans isomers
- High polarity

Note: Because HP-88 is not bonded or cross-linked, we do not recommend solvent rinsing.

HP-88				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.25	30	0.20	0 to 250/260	112-8837
	60	0.20	0 to 250/260	112-8867
	100	0.20	0 to 250/260	112-88A7

CP-Sil 88

- High selectivity towards positional and geometric isomers for ease-of-use
- Highly substituted cyanopropyl phase
- Highest polarity, non-chemically bonded and stabilized

CP-Sil 88				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.25	25	0.20	50 to 225/240	CP6172
	50	0.20	50 to 225/240	CP6173
0.32	25	0.20	50 to 225/240	CP6174
	50	0.20	50 to 225/240	CP6175

DB-CLP1 and DB-CLP2

- Universal column pair designed for pesticides analyses
- EPA Methods: CLP (Contract Lab Program) pesticides, 504.1, 505, 508.1, 551, 552.3, 8081B, 8082A, 8154A
- Ideal for dual column, dual ECD GC analyses
- DB-CLP1 and DB-CLP2 columns are regularly used in sets. Connect them together easily with an Agilent Ultra Inert, universal press fit Y-splitter (5190-6980), or an UltiMetal Plus deactivated CFT un-purged splitter (G3184-60065)
- Mid polarity stabilized phases provide fast and low bleed reliable analyses
- Special testing includes pesticides for proof of performance and column to column reproducibility
- DB-CLP1 primary, DB-CLP2 confirmation

DB-CLP1 and DB-CLP2

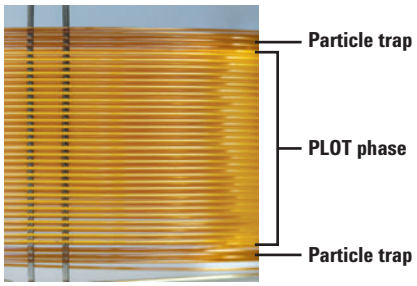
Description	ID (mm)	Length (m)	Film (µm)	Temp Limits (°C)	Part No.
DB-CLP1	0.32	30	0.25	50 to 340/360	123-8232
DB-CLP2	0.32	30	0.50	50 to 340/360	123-8336

GS-GasPro

- Unique bonded silica PLOT column technology
- Excellent choice for light hydrocarbons
- Retention stability not affected by water
- Separates CO and CO_2 on a single column
- Ideal PLOT column for GC/MS – no particles

GS-GasPro

ID (mm)	Length (m)	Temp Limits (°C)	Part No.
0.32	5	-80 to 260/300	113-4302
	15	-80 to 260/300	113-4312
	30	-80 to 260/300	113-4332
	60	-80 to 260/300	113-4362



PLOT PT

Agilent J&W PLOT PT columns are engineered to improve lab operations. Unlike current techniques used to prevent PLOT stationary phase particles from shedding downstream, the integral particle traps of the PLOT PT columns remove the aggravation of connecting separate traps. Operation is more convenient and there is no risk from leaks. The integrated particle-trapping technology on both ends of PLOT PT GC columns reduces downtime. What's more, with PLOT PT you can now use GC/MS for detailed, qualitative and quantitative analysis and due to the dual ended particle traps the PLOT PT columns can also be used for backflush applications. No other PLOT column offers this level of worry-free operation for your GC or GC/MS system.

Agilent J&W PLOT PT columns are available in porous polymers Q and U, Aluminum oxide and Molesieve stationary phases.

PoraBOND Q

- Bonded PLOT column for more reliable results for analysis of volatile solvents and hydrocarbons
- Extended analysis offers broad application range
- Engineered for high stability, withstands repeated water injections
- Proprietary manufacturing technique results in very pure porous polymer with virtually no catalytic activity, allowing operation to 320 °C without decomposition
- Bonding technology results in greatly reduced particle shedding, reduces the needs for particle traps
- Integrated particle trapping technology on both ends of the column

PoraBOND Q				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.25	10	3.00	-100 to 300/300	CP7348PT
0.32	25	5.00	-100 to 300/320	CP7351PT
	50	5.00	-100 to 300/320	CP7352PT
0.53	25	10.00	-100 to 300/320	CP7354PT

HP-PLOT Q

- Bonded polystyrene-divinylbenzene based column
- Polarity between Porapak-Q and Porapak-N
- Excellent column for C_1-C_3 isomers and alkanes to C_{12}, CO_2, methane, air/CO, oxygenated compounds, sulfur compounds and solvents
- Separates ethane, ethylene and ethyne (acetylene)
- Minimal conditioning time required – 1 hour
- Preferred "Q" column due to its robust nature
- Integrated particle trapping technology on both ends of the column

HP-PLOT Q				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.32	15	20.00	-60 to 270/290	19091P-QO3PT
	30	20.00	-60 to 270/290	19091P-QO4PT
0.53	15	40.00	-60 to 270/290	19095P-QO3PT
	30	40.00	-60 to 270/290	19095P-QO4PT

Alumina PLOT KCl Deactivated

- Least "polar" alumina phase
- Aluminum oxide deactivated with KCl
- Standard column choice for light hydrocarbon analysis – C_1-C_8 hydrocarbon isomers
- Low retention of olefins relative to comparable paraffin
- Excellent for quantitation of dienes, especially propadiene and butadiene from ethylene and propylene streams
- Recommended phase for many ASTM methods
- Integrated particle trapping technology on both ends of the column

Alumina PLOT KCl Deactivated				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.32	50	5.00	-100 to 200/200	CP7515PT
	50	8.00	-60 to 200	19091P-K15PT
0.53	25	10.00	-100 to 200/200	CP7517PT
	30	15.00	-60 to 200	19095P-K23PT
	50	10.00	-100 to 200/200	CP7518PT
	50	15.00	-60 to 200	19095P-K25PT
	50		-60 to 200	115-3352PT

Alumina PLOT Na_2SO_4 Deactivated

- Middle range of "polarity" for alumina phases
- Aluminum oxide deactivated with sodium sulfate
- Excellent general use column for light hydrocarbon analysis – C_1-C_8 hydrocarbon isomers
- Best for resolving acetylene from butane and propylene from isobutane
- Integrated particle trapping technology on both ends of the column

Alumina PLOT Na_2SO_4 Deactivated				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.32	25	8.00	-60 to 200	19091P-S12PT
	50	5.00	-100 to 200/200	CP7565PT
	50	8.00	-60 to 200	19091P-S15PT
0.53	30	15.00	-60 to 200	19095P-S23PT
	50	10.00	-100 to 200/200	CP7568PT
	50	15.00	-60 to 200	19095P-S25PT

Molsieve PLOT

- A PLOT column for the analysis of permanent gases
- O_2, N_2, CO and CH_4 resolve in less than 5 min
- Select a thick film for Ar/O_2 separation without cryogenic cooling
- Select thin film HP-PLOT Molesieve columns for routine air monitoring applications
- Integrated particle trapping technology on both ends of the column

Note: Molecular sieve columns will absorb water, which, over time results in changes in retention time. We use an advanced, proprietary deactivation process which allows for rapid regeneration. Fully saturated HP-PLOT Molesieve columns regenerate in 7 hours or less at 200 °C.

Molsieve PLOT				
ID (mm)	**Length (m)**	**Film (µm)**	**Temp Limits (°C)**	**Part No.**
0.32	25	30.00	-200 to 300	CP7536PT
	30	10.00	-200 to 300	CP7534PT
0.53	25	50.00	-200 to 300	CP7538PT
	50	50.00	-200 to 300	CP7539PT

Note:
To obtain an optimal fit and seal of any vial and closure, we strongly recommend buying an entire Agilent vial assembly (including a vial, cap, and septum, as well as a vial insert if needed).

VIALS AND CLOSURES

Agilent vials and closures are thoroughly tested to ensure the highest level of quality.

They are manufactured in a facility certified to ISO 9001 and made from first hydrolytic Type 1 Class A or Class B borosilicate glass, which conforms to US FDA, USP, and EU Pharmacopeia standards. The proprietary packaging material is also tested and selected for cleanliness. In addition, the packaging includes a crush barrier to reduce vial breakage in transit.

Screw Top Vials and Closures

2 mL Wide Opening (9 mm) Screw Top Glass Vials		
Description	**Unit**	**Part No.**
Clear	100/pk	8010-0015
Clear, write-on spot	100/pk	8010-0014
	1000/pk	8010-0175
Amber	100/pk	8010-0017
Amber, write-on spot	100/pk	8010-0016
	1000/pk	8010-0176
Screw Top Vials with Fixed Inserts		
Clear, 300 µL insert volume	100/pk	8010-0008
Amber, 300 µL insert volume	100/pk	8010-0009

TIPS & TOOLS

For a comprehensive vial compatibility chart, identification guide, septum recommendations, visit **www.agilent.com/chem/vialsposter**

Note:
To obtain an optimal fit and seal of any vial and closure, we strongly recommend buying an entire Agilent vial assembly (including a vial, cap, and septum, as well as a vial insert if needed).

Clear, 2 mL wide opening (9 mm) screw top glass vials, 8010-0015

Screw Caps for Wide Opening (9 mm) Vials

Color	Septa Type	Unit	Similar to Shimadzu Part No.	Part No.
Blue	PTFE/silicone	100/pk	228-45454-91	8010-0086
	PTFE/silicone/PTFE	100/pk		8010-0087
	Pre-slit PTFE/silicone	100/pk		8010-0078
	Bonded PTFE/silicone	100/pk		8010-0077
	PTFE lined	100/pk		8010-0080
	Open top, no septa	100/pk		8010-0079
Red	PTFE/silicone	100/pk		8010-0088
	PTFE/silicone/PTFE	100/pk		8010-0089
	Pre-slit PTFE/silicone	100/pk		8010-0082
	Bonded PTFE/silicone	100/pk		8010-0081
	Open top, no septa	100/pk		8010-0083
Orange	PTFE/silicone	100/pk		8010-0084
		1000/pk		8010-0186
	PTFE/silicone/PTFE	100/pk		8010-0085
		1000/pk		8010-0187
	Pre-slit PTFE/silicone	100/pk		8010-0075
	Bonded PTFE/silicone	100/pk		8010-0074
	Open top, no septa	100/pk		8010-0076

Innovative, easy-to-use packaging

Agilent GC supplies improve overall lab productivity and throughput with:

- Individual blister packs for non-stick plasma-treated inlet septa.
- Touchless packaging of inlet liners.
- Individual dial packs for liner O-rings and column ferrules.
- Proprietary crush barrier for vials.

Septa for Wide Opening (9 mm) Screw Caps

Septa Type	Color	Unit	Part No.
PTFE/red silicone	Ivory	100/pk	8010-0093
PTFE/white silicone/red PTFE	Red	100/pk	8010-0091
		1000/pk	8010-0188
Pre-slit PTFE/white silicone	Blue	100/pk	8010-0094
PTFE/white silicone	Red	100/pk	8010-0092

The cross references to the Shimadzu part numbers listed here serve as a recommendation that the Agilent products are viable alternatives to Shimadzu products. Agilent products are compatible with the corresponding Shimadzu instruments, although in some cases, the Agilent products may have slightly different designs as compared to the Shimadzu counterparts. All Agilent supplies are backed by Agilent's 90-day money-back warranty.

For additional help in selecting vials, caps, and septa, go to **www.agilent.com/chem/SelectVials**

Note:
To obtain an optimal fit and seal of any vial and closure, we strongly recommend buying an entire Agilent vial assembly (including a vial, cap, and septum, as well as a vial insert if needed).

Clear 2 mL standard opening (8 mm) screw top glass vials, 8010-0011

2 mL Wide Opening (9 mm) Screw Top Vial Convenience Packs

Vial Type	Septa Type	Cap Color	Unit	Similar to Shimadzu Part No.	Part No.
Clear, write-on spot	PTFE/silicone	Orange	100/pk	228-45450-91	8010-0198
Amber, write-on spot	PTFE/silicone	Orange	100/pk	228-45452-91	8010-0199

2 mL Standard Opening (8 mm) Screw Top Glass Vials

Description	Unit	Similar to Shimadzu Part No.	Part No.
Clear	100/pk	038-00165-06	8010-0011
Clear, write-on spot	100/pk		8010-0010
Amber	100/pk		8010-0013
Amber, write-on spot	100/pk		8010-0012

2 mL Standard Opening (8 mm) Screw Top Glass Vial Convenience Packs

Vial Type	Septa Type	Cap Color	Unit	Part No.
Clear	PTFE/silicone	Black	100/pk	8010-0414
Amber	PTFE/silicone	Black	100/pk	8010-0415

The cross references to the Shimadzu part numbers listed here serve as a recommendation that the Agilent products are viable alternatives to Shimadzu products. Agilent products are compatible with the corresponding Shimadzu instruments, although in some cases, the Agilent products may have slightly different designs as compared to the Shimadzu counterparts. All Agilent supplies are backed by Agilent's 90-day money-back warranty.

Note:
To obtain an optimal fit and seal of any vial and closure, we strongly recommend buying an entire Agilent vial assembly (including a vial, cap, and septum, as well as a vial insert if needed).

Orange screw caps with PTFE/silicone septa for standard opening vials, 8010-0056

Screw Caps for Standard Opening (8 mm) Vials

Color	Septa Type	Unit	Similar to Shimadzu Part No.	Part No.
Blue	PTFE/silicone	100/pk		8010-0061
	Pre-slit PTFE/silicone	100/pk		8010-0062
	PTFE/silicone/PTFE	100/pk		8010-0063
	PTFE/butyl	100/pk		8010-0064
	Open top, no septa	100/pk		8010-0065
Red	PTFE/silicone	100/pk		8010-0066
	Pre-slit PTFE/silicone	100/pk		8010-0067
	PTFE/silicone/PTFE	100/pk		8010-0068
	PTFE/butyl	100/pk		8010-0069
	Open top, no septa	100/pk		8010-0070
Orange	PTFE/silicone	100/pk	221-34271-92	8010-0056
	Pre-slit PTFE/silicone	100/pk		8010-0057
	PTFE/silicone/PTFE	100/pk		8010-0058
	PTFE/butyl	100/pk		8010-0059
	Open top, no septa	100/pk		8010-0060
Black	PTFE/silicone	100/pk	221-34271-92	8010-0054
	Open top, no septa	100/pk	220-90384-00	8010-0055
Flanged Caps (Compatible with Shimadzu Autosamplers)				
Orange	PTFE/silicone	100/pk		8010-0141
	Pre-slit PTFE/silicone	100/pk		8010-0142
	No septa	100/pk		8010-0166

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Septa for Standard Opening (8 mm) Vials

Septa Type	Unit	Similar to Shimadzu Part No.	Part No.
Red PTFE/white silicone/red PTFE	100/pk		8010-0071
Red PTFE/white silicone	100/pk	221-34271-92	8010-0072
PTFE/butyl	500/pk		8010-0073

For additional help in selecting vials, caps, and septa, go to **www.agilent.com/chem/SelectVials**

Note:
To obtain an optimal fit and seal of any vial and closure, we strongly recommend buying an entire Agilent vial assembly (including a vial, cap, and septum, as well as a vial insert if needed).

Black screw caps with red PTFE/silicone septa for 4 mL (13 mm) vials, 8010-0095

4 mL (13 mm) Screw Top Glass Vials

Description	Unit	Similar to Shimadzu Part No.	Part No.
Clear	100/pk	220-90393-00	8010-0020
Amber	100/pk		8010-0021

Screw Caps for 4 mL (13 mm) Vials

Color	Septa Type	Unit	Similar to Shimadzu Part No.	Part No.
Black	Red PTFE/silicone	100/pk	220-91521-14	8010-0095
	Open top, no septa	100/pk	220-90394-00	8010-0096

Septa for 4 mL (13 mm) Vials

Septa Type	Unit	Similar to Shimadzu Part No.	Part No.
Red PTFE/white silicone	100/pk	228-21290-91	8010-0098
White PTFE	100/pk		8010-0099

6 mL (16 mm) Screw Top Glass Vials

Description	Unit	Part No.
Clear	100/pk	8010-0022

Screw caps for 6 mL (16 mm) vials

Septa Type	Unit	Part No.
PTFE/silicone	100/pk	8010-0101
Pre-slit PTFE/silicone	100/pk	8010-0102
Open top, no septa	100/pk	8010-0100

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Note:
To obtain an optimal fit and seal of any vial and closure, we strongly recommend buying an entire Agilent vial assembly (including a vial, cap, and septum, as well as a vial insert if needed).

Crimp top glass vials with write-on spot, 8010-0001

Crimp Top Vials and Closures

2 mL (11 mm) Crimp Top Glass Vials

Description	Unit	Part No.
Clear	100/pk	8010-0002
Clear, write-on spot	100/pk	8010-0001
	1000/pk	8010-0170
Amber	100/pk	8010-0003
	1000/pk	8010-0172
Crimp Top Vials with Fixed Inserts		
Clear, 300 µL insert volume	100/pk	8010-0006
Amber, 300 µL insert volume	100/pk	8010-0007

Crimp Caps with 11 mm Septa

Cap Color	Septa Type	Unit	Part No.
Silver aluminum	PTFE/silicone/PTFE	100/pk	8010-0049
		1000/pk	8010-0182
	PTFE/silicone	100/pk	8010-0050
		1000/pk	8010-0183
	PTFE/butyl	100/pk	8010-0051
	Thin membrane rubber	25/pk	8010-0053
	PTFE/red rubber	100/pk	8010-0045
		1000/pk	8010-0181
Blue aluminum	PTFE/red rubber	100/pk	8010-0046
Green aluminum	PTFE/red rubber	100/pk	8010-0047
Red aluminum	PTFE/red rubber	100/pk	8010-0048
Gold aluminum	Magnetic	100/pk	8010-0052

Amber, flat bottom crimp top micro vials, 8010-0153

Crimp Top Micro Vials

Description	Volume	Unit	Part No.
Amber, flat bottom	0.8 mL	100/pk	8010-0153
Clear, tapered bottom	0.1 mL	500/pk	8010-0154
Clear, rounded bottom	0.3 mL	500/pk	8010-0155

2 mL (11 mm) Crimp Top Vial Convenience Packs

Vial Type	Septa Type	Cap Color	Unit	Part No.
Clear, write-on spot	PTFE/silicone	Silver aluminum	100/pk	8010-0195
Amber, write-on spot	PTFE/silicone	Silver aluminum	100/pk	8010-0196

Note:
To obtain an optimal fit and seal of any vial and closure, we strongly recommend buying an entire Agilent vial assembly (including a vial, cap, and septum, as well as a vial insert if needed).

Snap top vials with write-on spot, 8010-0025

Snap Top Vials and Closures

2 mL (11 mm) Snap Top Glass Vials

Description	Unit	Part No.
Clear	100/pk	8010-0024
Clear, write-on spot	100/pk	8010-0023
	1000/pk	8010-0177
Amber	100/pk	8010-0026
Amber, write-on spot	100/pk	8010-0025
	1000/pk	8010-0178

2 mL (11 mm) Snap Top Vial Convenience Packs

Vial Type	Septa Type	Cap Color	Unit	Part No.
Clear, write-on spot	PTFE/silicone	Orange	100/pk	8010-0200
Amber, write-on spot	PTFE/silicone	Orange	100/pk	8010-0411

Snap Top Solvent Vial Convenience Packs

Vial Type	Septa Type	Cap Color	Unit	Part No.
5 mL Snap Top Solvent Vial Convenience Pack				
Clear	PTFE/silicone	Clear	100/pk	8010-0416
10 mL Snap Top Solvent Vial Convenience Pack				
Clear	Red PTFE/white silicone	Clear	100/pk	8010-0422

Note:
To obtain an optimal fit and seal of any vial and closure, we strongly recommend buying an entire Agilent vial assembly (including a vial, cap, and septum, as well as a vial insert if needed).

Clear, crimp top Micro-V vial, 8010-0004

Micro-V Vials

Micro-V Vials		
Description	**Unit**	**Part No.**
Clear, screw top	100/pk	8010-0018
Clear, crimp top	100/pk	8010-0004
Clear, snap top	100/pk	8010-0027
Amber, screw top	100/pk	8010-0019
Amber, crimp top	100/pk	8010-0005
Amber, snap top	100/pk	8010-0028

Microvolume Inserts

Microvolume Inserts for 8 mm Screw Top Vials				
Description	**Unit**	**Recommended Fill Volume**	**Max Fill Volume**	**Part No.**
Glass conical insert with polymer feet	100/pk	150 µL	200 µL	8010-0124
Glass pulled-point insert	100/pk	150 µL	200 µL	8010-0125
Flat bottom insert	100/pk	200 µL	200 µL	8010-0126

Microvolume Inserts for 11 mm Crimp Top or 9 mm Screw Top Vials				
Description	**Unit**	**Recommended Fill Volume**	**Max Fill Volume**	**Part No.**
Conical insert with polymer feet	100/pk	250 µL	350 µL	8010-0131
Pulled-point insert	100/pk	250 µL	350 µL	8010-0132
Flat bottom insert	500/pk	400 µL	440 µL	8010-0136

For additional help in selecting vials, caps, and septa, go to **www.agilent.com/chem/SelectVials**

Note:
To obtain an optimal fit and seal of any vial and closure, we strongly recommend buying an entire Agilent vial assembly (including a vial, cap, and septum, as well as a vial insert if needed).

Amber, rounded bottom 10 mL headspace crimp top glass vials, 8010-0032

Headspace Vials and Closures

Headspace Crimp Top Glass Vials

Description	Unit	Part No.
6 mL Headspace Crimp Top Glass Vials		
Clear	100/pk	8010-0151*
10 mL Headspace Crimp Top Glass Vials		
Clear, Flat bottom	100/pk	8010-0029
Clear, flat bottom	1000/pk	8010-0179
Clear, rounded bottom	100/pk	8010-0030
Amber, flat bottom	100/pk	8010-0031
Amber, rounded bottom	100/pk	8010-0032
20 mm Headspace Crimp Caps and Septa		
Clear, flat bottom	100/pk	8010-0033
Clear, flat bottom	1000/pk	8010-0180
Clear, rounded bottom	100/pk	8010-0034
Amber, flat bottom	100/pk	8010-0035
Amber, rounded bottom	100/pk	8010-0036
22 mL Headspace Crimp Top Glass Vials		
Clear	100/pk	8010-0152*

*Use 20 mm crimp caps with 6 mL and 22 mL headspace vials

Clear, rounded bottom 20 mL headspace screw top glass vials, 8010-0042

Headspace Screw Top Glass Vials

Description	Unit	Similar to Shimadzu Part No.	Part No.
10 mL Headspace Screw Top Glass Vials			
Clear, flat bottom	100/pk		8010-0037
Clear, round bottom	100/pk	220-94796-07	8010-0038
Amber, flat bottom	100/pk		8010-0039
Amber, rounded bottom	100/pk		8010-0040
20 mL Headspace Screw Top Glass Vials			
Clear, flat bottom	100/pk		8010-0041
Clear, rounded bottom	100/pk	220-94796-01	8010-0042
Amber, flat bottom	100/pk		8010-0043
Amber, rounded bottom	100/pk		8010-0044

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Note:
To obtain an optimal fit and seal of any vial and closure, we strongly recommend buying an entire Agilent vial assembly (including a vial, cap, and septum, as well as a vial insert if needed).

Silver, magnetic 18 mm headspace screw caps with PTFE/butyl septa, 8010-0140

Headspace Caps and Septa

Cap Color	Septa Type	Unit	Similar to Shimadzu Part No.	Part No.
18 mm Headspace Crimp Caps and Septa				
Silver, magnetic	Blue PTFE/silicone	100/pk	220-94796-02	8010-0119
20 mm Headspace Crimp Caps and Septa				
Silver aluminum	Tan PTFE/silicone	100/pk		8010-0116
	PTFE/white silicone	1000/pk		8010-0191
	Gray PTFE/butyl	1000/pk		8010-0117
	No septa	100/pk		8010-0120
Silver aluminum with safety feature	PTFE/butyl	100/pk		8010-0143
	PTFE/silicone	100/pk		8010-0144
Silver, magnetic	Tan PTFE/silicone	100/pk		8010-0165
Bimetal, magnetic	PTFE/silicone	100/pk		8010-0420
Steel	High performance	100/pk		8010-0429*
Septa only	Gray PTFE/butyl	100/pk		8010-0121
	Tan PTFE/silicone	100/pk		8010-0122
	Tan PTFE/silicone	1000/pk		8010-0192
18 mm Headspace Screw Caps and Septa				
Silver, magnetic	PTFE/silicone	100/pk		8010-0139**
	PTFE/butyl	100/pk		8010-0140
Steel	High performance	100/pk		8010-0428*
Septa only	Blue PTFE/silicone	1000/pk		8010-0418

*Recommended for high temperature applications up to 300 °C for up to one hour

**This cap is suitable for use in SPME applications

Headspace Vial Convenience Packs

Vial Type	Septa Type	Cap Color	Unit	Similar to Shimadzu Part No.	Part No.
10 mL, crimp top, clear, flat bottom	PTFE/silicone	Silver, aluminum	100/pk	220-94562-00	8010-0412
20 mL, crimp top, clear, flat bottom	PTFE/silicone	Silver, aluminum	100/pk	220-94563-00	8010-0413
20 mL, screw top, clear, rounded bottom	PTFE/silicone	Silver, magnetic	100/pk		8010-0417

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For additional help in selecting vials, caps, and septa, go to **www.agilent.com/chem/SelectVials**

Bond Elut Certify VersaPlate cartridges

SAMPLE PREPARATION

Bond Elut Certify for Forensics Applications

In testing for drugs of abuse in biological fluids, Bond Elut Certify mixed-mode sorbent takes advantage of nonpolar, polar, and ion-exchange properties to ensure rapid, reproducible, simple, and clean extraction of many drug classes. Because Bond Elut Certify exhibits various sorbent-analyte interactions, you can use it for general cleanup across a range of drug classes, or for specific extractions for instrumental confirmation of drugs and metabolites.

The multifaceted performance of Bond Elut Certify arises from its mixed-mode composition. The use of a bonded phase containing a medium length hydrocarbon chain allows for some exposure of the polar silica surface. This optimizes polar and nonpolar interactions of the drugs and matrix interferences with the sorbent. The second bonded phase, a strong cation-exchanger, is optimized for capacity. Too many ion-exchange sites result in high background and difficult elution, whereas too few produce low recoveries. The complex sorbent is specially tested, first through rigorous ion-exchange and nonpolar chromatographic checks of the component phases, then through a final recovery using the completed product. Because the three modes of retention – polar, nonpolar, and ion-exchange – are precisely matched, Bond Elut Certify is ideal for general drug analysis or the extraction of specific basic, acidic, or neutral drugs.

Guide to develop and implement an SPE method – quickly and successfully

The NEW *Agilent Bond Elut Certify and Certify II Methods Manual* (publication 5991-4939EN) features sample preparation methods using Bond Elut Certify and Certify II solid phase extraction. The comprehensive, 84-page manual focuses on extraction protocols covering controlled substances, drugs of abuse, and pharmaceuticals in a range of sample types. The manual addresses challenges of different sample types, unpredictable sample consistency, and an ever-changing drug threat that includes controlled substances, synthetic designer drugs, and `legal highs'.

Agilent Bond Elut Certify has been the SPE product of choice for forensic scientists for decades.

This new manual walks you through:

- Reagents and buffers
- Equipment and accessories
- Extraction methods - the heart of the guide, explaining principles and mechanisms, extraction method, and analysis for an extensive range of analytes
- Tips and tricks
- How to prepare serum, plasma, and whole blood
- Derivatization

Bond Elut Certify			
Description	**Unit**	**40 µm Particle Size**	**120 µm Particle Size**
Large Reservoir Capacity (LRC) Cartridges			
130 mg, 10 mL	50/pk	12113050	14113050
130 mg, 10 mL	500/pk	52113050	14113055
200 mg, 10 mL	500/pk	52113051	
200 mg, 10 mL	50/pk	12113054	14113054
300 mg, 10 mL	50/pk	12113052	14113052
Straight Barrel Cartridges			
50 mg, 3 mL	50/pk	12105030	
130 mg, 1 mL	100/pk	12102083	14102083
130 mg, 3 mL	50/pk	12102051	14102051
130 mg 3 mL	500/pk	52102051	
130 mg, 3 mL tabless	50/pk	12102051T	
130 mg, 6 mL	30/pk	12256146	
130 mg, 6 mL tabless	500/pk	12256146TJ	
200 mg, 3 mL	50/pk	12102145	
200 mg, 6 mL	30/pk	12256145	
300 mg, 3 mL	50/pk	12102081	
300 mg, 3 mL	500/pk	52102081	
300 mg, 3 mL tabless	50/pk	12102081T	14102081T
300 mg, 6 mL	30/pk	12102082	
500 mg, 6 mL	30/pk	12102093	14102093
1 g, 6 mL	30/pk	12102085	14102085
Other Formats			
Prospekt cartridge, 800 Series	96/pk	12281101	

Bond Elut Certify VersaPlate Formats

Description	Particle Size (µm)	25 mg	50 mg	100 mg
Preassembled 96-well plate	40		75409050	7540901C
VersaPlate tubes*	40	75509025	75509050	7550901C

*Tubes need to be inserted into a VersaPlate base plate, p/n 75400000

Bond Elut Certify 96-well Plates

Description	25 mg	50 mg	100 mg
1 mL round-well plates	A4960925	A4960950	A496091C
2 mL square-well plates	A3960925	A3960950	A396091C

Bond Elut Certify II

Description	Unit	40 µm Particle Size	120 µm Particle Size
Large Reservoir Capacity (LRC) Cartridges			
100 mg, 10 mL	50/pk	12113063	
200 mg, 10 mL	50/pk	12113051	14113051
Straight Barrel Cartridges			
50 mg, 3 mL	50/pk	12105031	
100 mg, 1 mL	100/pk	102818C	
200 mg, 3 mL	50/pk	12102080	14102080
500 mg, 6 mL	30/pk	12102084	14102084
1 g, 6 mL	30/pk	12102088	14102088
Other Formats			
Prospekt cartridge, 800 Series	96/pk	12281102	

TIPS & TOOLS

To view a demonstration of the VersaPlate format, visit **agilent.com/chem/versaplatevideo**

Captiva Filtration

Filtering samples before analysis can deliver longer column lifetime, less downtime, and optimal instrument performance, because even small amounts of particulate can clog your column inlet or contaminate your system. You can remove damaging particulates with Agilent Captiva Premium Syringe filters – a great choice for simple mechanical filtration.

Captiva Premium syringe filters are designed to give you:

- **Greater productivity:** The unique design produces the industry's fastest flow rates
- **High loading capacity:** Handle more particulates and greater volumes than other manufacturers' products
- **Lowest extractable levels:** Virtually free of extractables under conditions specified by the certificate

All Premium syringe filters are certified by LC. What's more, the polyethersulfone and glass fiber filters are certified using LC/MS.

Premium Filters, 100/pk

Description	Diameter (mm)	Pore Size (µm)	Certification	Housing	Part No.
PTFE	4	0.2	LC	Polypropylene	5190-5082
	4	0.45	LC	Polypropylene	5190-5083
	15	0.2	LC	Polypropylene	5190-5084
	15	0.45	LC	Polypropylene	5190-5085
	25	0.2	LC	Polypropylene	5190-5086
	25	0.45	LC	Polypropylene	5190-5087
Nylon	15	0.2	LC	Polypropylene	5190-5088
	15	0.45	LC	Polypropylene	5190-5091
	25	0.2	LC	Polypropylene	5190-5092
	25	0.45	LC	Polypropylene	5190-5093
PES	4	0.2	LC/MS	Polypropylene	5190-5094
	4	0.45	LC	Polypropylene	5190-5095
	15	0.2	LC/MS	Polypropylene	5190-5096
	15	0.45	LC	Polypropylene	5190-5097
	25	0.2	LC/MS	Polypropylene	5190-5098
	25	0.45	LC	Polypropylene	5190-5099
Regenerated Cellulose	4	0.2	LC	Polypropylene	5190-5106
	4	0.45	LC	Polypropylene	5190-5107
	15	0.2	LC	Polypropylene	5190-5108
	15	0.45	LC	Polypropylene	5190-5109
	25	0.2	LC	Polypropylene	5190-5110
	25	0.45	LC	Polypropylene	5190-5111
Cellulose Acetate	28	0.2	LC	MBS	5190-5116
	28	0.45	LC	MBS	5190-5117
Glass Microfiber	15		LC/MS	Polypropylene	5190-5120
	28		LC	MBS	5190-5122

Econofilters, PES, 5190-5272

Econofilters, 1000/pk

Description	Diameter (mm)	Pore Size (µm)	Housing	Part No.
PVDF	13	0.2	Polypropylene	5190-5261
	13	0.45	Polypropylene	5190-5262
	25	0.2	Polypropylene	5190-5263
	25	0.45	Polypropylene	5190-5264
PTFE	13	0.2	Polypropylene	5190-5265
	13	0.45	Polypropylene	5190-5266
	25	0.2	Polypropylene	5190-5267
	25	0.45	Polypropylene	5190-5268
Nylon	13	0.2	Polypropylene	5190-5269
	13	0.45	Polypropylene	5190-5270
	25	0.2	Polypropylene	5190-5271
	25	0.45	Polypropylene	5190-5272
PES	13	0.2	Polypropylene	5190-5273
	13	0.45	Polypropylene	5190-5274
	25	0.2	Polypropylene	5190-5275
	25	0.45	Polypropylene	5190-5276
Polypropylene	13	0.2	Polypropylene	5190-5277
	13	0.45	Polypropylene	5190-5278
	25	0.2	Polypropylene	5190-5279
	25	0.45	Polypropylene	5190-5280
Regenerated Cellulose*	15	0.2	Polypropylene	5190-5310
	15	0.45	Polypropylene	5190-5308
	25	0.2	Polypropylene	5190-5309
	25	0.45	Polypropylene	5190-5307

*Premium Syringe filter in 1,000/pk

Captiva filter cartridges, glass fiber, A500401000

Captiva Filter Cartridges

Pore Size (µm)	Filter Material	Volume (mL)	Unit	Part No.
0.2	Polyvinyldifluoride and polypropylene	3	100/pk	A5300002
0.45	Polyvinyldifluoride and polypropylene	3	100/pk	A5307045
		6	100/pk	A5060045
10	Glass fiber	10	100/pk	A500401000

Captiva Non-Drip Filter Cartridges

Pore Size (µm)	Filter Material	Volume (mL)	Unit	Part No.
Non-Drip				
0.22	Polypropylene	3	100/pk	A5300063
Non-Drip Lipids				
0.22	Polypropylene	3	100/pk	A5300635

Captiva 96-well filter plates, A5960045

Captiva 96-well Filter Plates

Pore Size (µm)	Filter Material	Quantity	Part No.
0.2	Polypropylene	5/pk	A5960002
	Polypropylene	100/pk	A5960002B
0.45	Polyvinyldifluoride and polypropylene	5/pk	A5967045
	Polypropylene	5/pk	A5960045
	Polypropylene	100/pk	A5960045B
10	Glass fiber	5/pk	A596401000
20	Polypropylene	5/pk	A596002000
	Polypropylene Bulk Pack	100/pk	A596002000B

TIPS & TOOLS

For more information on Agilent Captiva ND Plates, please visit **www.agilent.com/chem/captiva**

Captiva ND 96-well Filter Plates

Description	Unit	Part No.
Captiva ND plate, 0.2 µm, polypropylene Recommended for both methanol and acetonitrile	5/pk	A5969002
Captiva ND plate, 0.45 µm, polypropylene Suitable for acetonitrile only	5/pk	A5969045

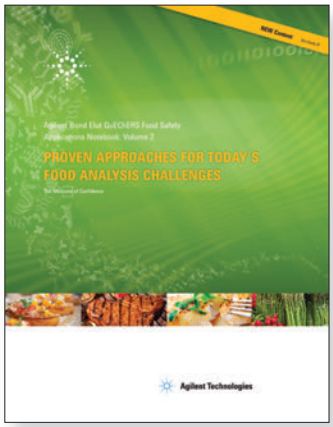
TIPS & TOOLS

Using Captiva ND Lipids with methanol is an excellent replacement for acetonitrile as the precipitation solvent. Methods with methanol show better removal of lipids than with acetonitrile. Converting to methanol is advantageous when the supply or cost of acetonitrile is restrictive. Methanol can now be your solvent of choice for lipid removal.

For more information about solvents, reference Application Note *"Agilent Captiva ND Lipids Sample Prep Choice of Precipitation Solvent: Acetonitrile versus Methanol"* (publication 5991-0445EN).

Captiva ND Lipids 96-well Filter Plates

Description	Part No.
Captiva ND Lipids 96-well filtration plate, 100/pk	A59640002B
Captiva ND Lipids 96-well filter plate, 1 mL well, 1/pk	A59640002I
Captiva ND Lipids 96-well filter plates, 1 mL well, 5/pk	A59640002V
DuoSeal 96 96-well plate seals, 10/pk	A8961008



Bond Elut QuEChERS

Agilent Bond Elut QuEChERS Kits make sample prep as easy as 1- 2- 3. Prepackaged QuEChERS kits are an easy way to capture the time saving benefits of QuEChERS sample preparation.

- **Extraction kits** with pre-weighed anhydrous salts in sealed packets allow you to add salts after you add organic solvent to your sample – avoiding an exothermic reaction that can compromise analyte recovery.
- **Dispersive kits** with sorbents and salts supplied in 2 or 15 mL centrifuge tubes accommodate the aliquot volumes specified by current AOAC and EN methodologies.
- **Universal dispersive kits** provide excellent recoveries and reproducibility for all types of fruits and vegetables.
- **Ceramic homogenizers** break up salt agglomerates, promoting consistent sample extraction and increasing product recovery during extraction and dispersion; shaking time reduced from 60 to 20 seconds.

To support the wide range of QuEChERS product options, we offer many applications featuring the QuEChERS approach. *The Agilent Bond Elut QuEChERS Food Safety Applications Notebook: Volume 2* (publication 5990-4977EN) includes many of these applications. You will find the applications grouped according to the standard method associated with the application, such as AOAC, EN, or the original method, along with a section for other approaches. A handy index also lets you search this guide based on matrix type and analyte class.

QuEChERS AOAC 2007.01 extraction kit, 5982-5755

Ceramic homogenizer for 50 mL tubes, 5982-9313

QuEChERS Extraction Kits

Step 1: Extraction

Choose the extraction salt packet based on your method of analysis, AOAC or EN. The buffered extraction salts are amenable for more labile pesticides. Adding solvent and then salts to a comminuted fruit or vegetable sample (10 or 15 g) enables you to extract the pesticides of interest into the organic layer. Agilent pre-packages its QuEChERS salts and buffers in anhydrous packages. This allows you to add them after adding your solvent to the sample, as specified in QuEChERS methodologies.

In the table below, the "CH" products contain the appropriately sized ceramic homogenizer for those particular kits.

QuEChERS Extraction Kits

Method	Buffered	Contents	Ceramic Homogenizers	With 50 mL Tubes 50/pk	Packets Only 50/pk	Packets Only 200/pk
AOAC 2007.01	Yes	6 g $MgSO_4$; 1.5 g NaAcetate	Yes	5982-5755CH		
			No	5982-5755	5982-6755	5982-7755
Original (10 g samples)	No	4 g $MgSO_4$; 1 g NaCl	Yes	5982-5550CH		
			No	5982-5550	5982-6550	5982-7550
Original (15 g samples)	No	6 g $MgSO_4$; 1.5 g NaCl	Yes	5982-5555CH		
			No	5982-5555	5982-6555	5982-7555
EN 15662	Yes	4 g $MgSO_4$; 1 g NaCl; 1 g NaCitrate; 0.5 g disodium citrate sesquihydrate	Yes	5982-5650CH		
			No	5982-5650	5982-6650	5982-7650
Acrylamides*	No	4 g $MgSO_4$; 0.5 g NaCl	No	5982-5850		
Veterinary Drugs**	No	4g Na2SO4, 1 g NaCl	No	5982-0032		

*Katerina Mastovaka and Steven J. Lehotay have done work to extend the scope of QuEChERS beyond fruits and vegetables(1), using it to extract acrylamides in potato chips and other fried foods.

**See Application Note Screening 36 Veterinary Drugs in Animal Origin Food by LC/MS/MS Combined with Modified QuEChERS Method (publication 5991-0013EN).

1: "Rapid Sample Preparation Method for LC-MS/MS or GC-MS Analysis of Acrylamides in Various Food Matrices", *J. Agric. Food Chem*, 2006, 54, 7001-7008.

QuEChERS dispersive kit, 5982-5022

QuEChERS dispersive kit, 5982-5022CH

QuEChERS Dispersive Kits, Fruits and Vegetables

Step 2: Dispersive SPE Cleanup

Select the Dispersive SPE kit suited to the type of food being analyzed and the method you are following. In this step, an aliquot of the sample extract from Step One is added to a 2 or 15 mL centrifuge tube containing a small amount of SPE sorbent and $MgSO_4$. The sorbent will extract interfering matrix materials from the sample, while the $MgSO_4$ helps remove excess water and improves analyte partitioning. Select kits are now available with ceramic homogenizers (2 per tube). Their part numbers are designated by a CH.

QuEChERS Dispersive Kits, Fruits and Vegetables

			AOAC 2007.01 Method	European Method EN 15662
Kit	**Size**	**Unit**	**Kit Contents Part No.**	**Kit Contents Part No.**
General fruits and vegetables: Removes polar organic acids, some sugars and lipids	2 mL	100/pk	50 mg PSA 150 mg $MgSO_4$ 5982-5022 5982-5022CH	25 mg PSA 150 mg $MgSO_4$ 5982-5021 5982-5021CH
	15 mL	15 mL	400 mg PSA 1200 mg $MgSO_4$ 5982-5058 5982-5058CH	150 mg PSA 900 mg $MgSO_4$ 5982-5056 5982-5056CH
Fruits and vegetables with fats and waxes: Removes polar organic acids, some sugars, more lipids and sterols	2 mL	100/pk	50 mg PSA 50 mg C18EC 150 mg $MgSO_4$ 5982-5122 5982-5122CH	25 mg PSA 25 mg C18EC 150 mg $MgSO_4$ 5982-5121 5982-5121CH
	15 mL	50/pk	400 mg PSA 400 mg C18EC 1200 mg $MgSO_4$ 5982-5158 5982-5158CH	150 mg PSA 150 mg C18EC 900 mg $MgSO_4$ 5982-5156 5982-5156CH

Part numbers ending in CH indicate tubes containing ceramic homogenizers.

(Continued)

QuEChERS Dispersive Kits, Fruits and Vegetables

Kit	Size	Unit	AOAC 2007.01 Method Kit Contents Part No.	European Method EN 15662 Kit Contents Part No.
Pigmented fruits and vegetables: Removes polar organic acids, some sugars and lipids, and carotenoids and chlorophyll; not for use with planar pesticides	2 mL	50/pk	50 mg PSA 50 mg GCB 150 mg $MgSO_4$ 5982-5222 5982-5222CH	25 mg PSA 2.5 mg GCB 150 mg $MgSO_4$ 5982-5221 5982-5221CH
	15 mL		400 mg PSA 400 mg GCB 1200 mg $MgSO_4$ 5982-5258 5982-5258CH	150 mg PSA 15 mg GCB 885 mg $MgSO_4$ 5982-5256 5982-5256CH
Highly pigmented fruits and vegetables: Removes polar organic acids, some sugars and lipids, plus high levels of carotenoids and chlorophyll; not for use with planar pesticides	2 mL	100/pk		25 mg PSA 7.5 mg GCB 150 mg $MgSO_4$ 5982-5321 5982-5321CH
	15 mL	50/pk		150 mg PSA 45 mg GCB 855 mg $MgSO_4$ 5982-5356 5982-5356CH
Fruits and vegetables with pigments and fats: Removes polar organic acids, some sugars and lipids, plus carotenoids and chlorophyll; not for use with planar pesticides	2 mL	100/pk	50 mg PSA 50 mg GCB 150 mg $MgSO_4$ 50 mg C18EC 5982-5421 5982-5421CH	
	15 mL	50/pk	400 mg PSA 400 mg GCB 1200 mg $MgSO_4$ 400 mg C18EC 5982-5456 5982-5456CH	

Part numbers ending in CH indicate tubes containing ceramic homogenizers.

(Continued)

QuEChERS Dispersive Kits, Fruits and Vegetables

Kit	Size	Unit	AOAC 2007.01 Method Kit Contents Part No.	European Method EN 15662 Kit Contents Part No.
QuEChERS Dispersive Kits: Other Food Methods				
Other Food Methods Removes biological matrix interferences, including hydrophobic substances (fats, lipids) and proteins	2 mL	100/pk	25 mg C18 150 mg $MgSO_4$ 5982-4921 5982-4921CH	
	15 mL	50/pk	150 mg C18 900 mg $MgSO_4$ 5982-4956 5982-4956CH	
All Food Types Removes all matrix interfering materials including polar organic acids, lipids, sugars, proteins, carotenoids and chlorophyll	2 mL	100/pk	50 mg PSA 50 mg C18 7.5 mg GCB 150 mg $MgSO_4$ 5982-0028 5982-0028CH	
	15 mL	50/pk	400mg PSA 400 mg C18 45 mg GCB 1200 $MgSO_4$ 5982-0029 5982-0029CH	
Animal Origin Food Removes matrix interferences such as polar organic salts, sugars, lipids and proteins	15 mL	50/pk	50 mg PSA 150 mg C18EC 900 mg Na_2SO_4 5982-4950	

TIPS & TOOLS

View the core concepts surrounding the QuEChERS method at **www.agilent.com/chem/QuEChERSvideo**

AGILENT GAS CLEAN FILTERS

The Agilent Gas Clean Filter System delivers clean gases, reducing the risks of column damage, sensitivity loss, and instrument downtime. Inserting a Gas Clean Filter System in the gas line immediately before the instrument inlet greatly reduces the level of impurities, thus improving trace analysis. Contaminants entering your GC column are reduced, which is critical for high temperature analysis and essential for longer column lifetime.

Replacing the filters when they have reached absorption capacity ensures maximum protection of your GC columns and analytical hardware. The sensitive indicators change color, letting you know when you need a new filter.

A Gas Clean Filter System allows you to use 99.996% (4.6) pure helium instead of the more expensive 99.999% (5.0) or 99.9999% (6.0) grade, while still yielding high-quality analytical results. The expected cost savings are 30%.

The unique connection design allows fast, leak-free replacement of the Gas Clean Filter

Gas Clean Filter Technical Specifications

Description	Oxygen Filter	Moisture Filter/ Process Moisture Filter	Charcoal Filter	Carrier Gas Filter	CO_2 Filter
Function	Removes oxygen and traces of sulfur and chlorine compounds from carrier gas	Removes water, oil, and other foreign material from the carrier gas	Removes organic compounds from gas streams	Single combination filter; removes water, oxygen, and organic compounds	Removes CO_2 from gas stream; use with Moisture Filter
Indicator color change	From green to gray	From green to pale brown	No indicator	Oxygen: from green to gray Moisture: from green to pale brown	From white to violet
Capacity	150 mL oxygen	7.2 g water	Approximately 7 g, depending on impurities	100 mL oxygen, 1 g water, organics depending on impurities	9 g CO_2
Outlet concentration at operating flow of 1 to 10 L/min	<50 ppb	<0.1 ppm	<0.1 ppm	Oxygen <50 ppb Moisture <0.1 ppm Organics <0.1 ppm	<1 ppm

Agilent Gas Clean Carrier Gas Filter Kit, CP17976

Gas Clean Filter Kits

Description	Part No.
Agilent Gas Clean Filter Kit, 1/8 inch Includes a 4-position 1/8 inch connecting unit, two charcoal filters, one oxygen filter, and one moisture filter	CP736530
Agilent Gas Clean Carrier Gas Filter Kit Includes 1-position connecting unit 1/8 inch and two GC/MS filters	CP17976

Connecting unit for:

Description	Part No.
1 Filter, 1/4 inch tube	CP7980
1 Filter, 1/8 inch tube	CP7988
2 Filters, 1/4 inch tube	CP738406
2 Filters, 1/8 inch tube	CP738407
4 Filters, 1/4 inch tube	CP7989
4 Filters, 1/8 inch tube	CP736520
Agilent Gas Clean Process Moisture Filter:	
1 Filter, stainless steel, 1/4 inch tube	CP7980P4
1 Filter, stainless steel, 1/8 inch tube	CP7988P8
1 Filter, stainless steel, 3 mm tube	CP7988P3
1 Filter, stainless steel, 6 mm tube	CP7980P6

TIPS & TOOLS

Please note that using the Gas Clean Filter System with 3 or 6 mm tubing requires ordering two stainless steel male connectors for each connecting unit listed under accessories. Installation instructions for 3 and 6 mm tubing can be found at **www.agilent.com/chem/gasclean**

Agilent Gas Clean Moisture filter, CP17971

Replacement Gas Clean Filters	
Description	**Part No.**
Agilent Gas Clean CO_2 filter	CP17969
Agilent Gas Clean Oxygen filter	CP17970
Agilent Gas Clean Moisture filter	CP17971
Agilent Gas Clean Process Moisture filter	CP17971P
Agilent Gas Clean Charcoal filter	CP17972
Agilent Gas Clean Carrier Gas filter	CP17973

Wall mounting bracket for connecting unit, for CP7980 and CP7988, CP7981

Accessories and Fittings	
Description	**Part No.**
Wall mounting bracket for connecting unit For CP7980 and CP7988	CP7981
Flush head for connecting unit	CP7987
Male connector, 1/4 inch with dust filter	CP7986
Male connector, 1/8 inch with dust filter	CP82117
Viton O-rings, 2 sets	CP7983
Gas Clean filter ring nut	5043-0403
1/8 inch ball valve	0100-2144
Male connector for Agilent Gas Clean Process Moisture Filter:	
Male connector, stainless steel, 1/4 inch with dust filter	CP7986SS
Male connector, stainless steel, 1/8 inch with dust filter	CP82117SS
Male connector, stainless steel, 3 mm with dust filter	CP82117SS3
Male connector, stainless steel, 6 mm with dust filter	CP7986SS6

AGILENT INSTRUMENT SERVICES

Traditional service models are more expensive, involve multiple points of contact with different vendors, and require in-house metrology teams to remain current on all the instrumentation. Agilent Instrument Services delivers solutions that help improve results, reduce costs, and raise productivity – all with a single, dependable contact point for all service and reporting that gives you:

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Comprehensive Agilent Instrument Services optimize productivity by increasing performance across the whole of your laboratory.

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- **Preventive Maintenance** – The cost-effective solution for peak performance and prolonged instrument life.

Agilent Service Contracts

	Gold	Silver	Bronze	Preventive Maintenance
Services Included in All Agilent Service Agreements				
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Hardware Telephone Support	✓	✓	✓	
Onsite Repair Services				
Unlimited Onsite Repair Visits (travel & labor)	✓	✓	✓	
Parts Required for Repair	✓	✓	✓	
Consumables/Supplies Required for Repair,* including liners, seals, tubing, assemblies, and multipliers	✓	✓	✓	
Maintenance Services				
Annual Onsite Preventive Maintenance	✓	✓		✓
Advanced Diagnostics and Reporting				
Agilent Remote Advisor-Assist*	✓	✓	✓	
Agilent Remote Advisor-Report**	✓	✓	✓†	
Agilent Remote Advisor-Alert	✓	✓		
High-Availability Services				
Extended Coverage Hours Discount	✓			
Compliance Services (optional)				
Discount when Bundling Operational Qualification (OQ)	✓	✓		
Guaranteed Pass (OQ)	✓	✓		
Discount when Bundling Re-qualification (RQ)	✓	✓		

*Per local parts replacement policy.

**Where available. Installation required. Installation fees waived when connecting minimum number of systems.

†Selected reports available.

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