

Chromatographic Specialties Inc.

Catalogue Supplement 2011/12



AGILENT ULTRA INERT GC COLUMNS

AGILENT MS CERTIFIED LINERS



- Glass wool is pre-qualified with mass spectrometry, then inserted using a unique manufacturing procedure to improve reproducibility.
- Deactivated MS Certified Liners are treated with Agilent's proven proprietary deactivation process developed to last longer than other commercially available treatment.

Product Number	Description	Price
CS51886576	Liner, Split, Single Taper, Deactivated, Glass Wool, MS Certified, Each	\$44.80
CS51886568	Liner, Splitless, Single Taper, Deactivated, Glass Wool, MS Certified, Each	39.00

Cut through the noise and stop worrying about peak tailing for active compounds with Agilent's J&W Ultra Inert and GC/MS GC Columns.



Contact our Technical Support Team at 1-800-267-8103 to request a FREE copy of the **Agilent Ultra Inert Columns Brochure**, literature code AG13.

AGILENT J&W ULTRA INERT CAPILLARY GC COLUMNS

Agilent J&W Ultra Inert capillary GC columns raise the bar on consistent column inertness performance. They 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.

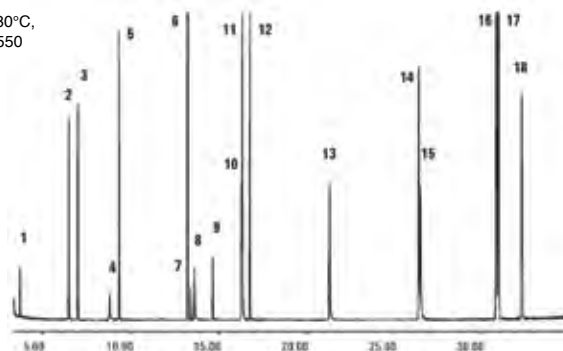
- Available in DB-1ms, HP-1ms, DB-5ms and HP-5ms Ultra Inert
- Individually tested with Agilent's more challenging Über One test probe mixture
- Consistent column inertness performance
- Exceptionally low column bleed
- Great peak shapes for challenging active analytes
- Excellent signal-to-noise ratios
- Minimum compound adsorption or degradation
- Support of 0.18 mm ID column configuration for higher sample throughput

US EPA Method 8270 Short Mix DB-5ms Ultra Inert

Column: DB-5ms Ultra Inert, 30m x 0.25mm ID, 0.25µm (J1225532UI)
GC: Agilent 6890N/5975B MSD
Sampler: Agilent 7683B, 5.0 µL syringe (CS51885246)
 1.0µL splitless injection, 5 ng each component on column
Carrier: Helium, constant flow 30 cm/s
Inlet: Split/splitless, 260°C, 53.7 mL/min. total flow, purge flow 50 mL/min. on at 0.5 min., gas saver flow 80 mL/min. on at 3.0 min.
Inlet Liner: Direct Connect Single Taper Deactivated Inlet Liner (CSG154480730)
Oven: 40°C (1 min.) to 100°C (15°C/min.), 10°C to 210°C (1 min.) 5°C/min. to 310°C (8 min.)
Detection: MSD source at 300°C, quadrapole at 180°C, transfer line at 290°C, full scan m/z 50-550

Peaks

1. N-nitrosodimethylamine
2. Aniline
3. 1,4-dichlorobenzene-D4
4. Benzoic acid
5. Naphthalene-D8
6. Acenaphthene-D10
7. 2,4-dinitrophenol
8. 4-nitrophenol
9. 2-methyl-4,6-dinitrophenol
10. Pentachlorophenol
11. 4-aminobiphenyl
12. Phenanthrene-D10
13. Benzidine
14. Chrysene-D12
15. 3,3-dichlorobenzidine
16. Benzo [b] fluoranthene
17. Benzo [k] fluoranthene
18. Perylene-D12



Injected a "short mix" of the most active analytes in a semi-volatile set to demonstrate application-specific column inertness.

Product Number	Description	Price
J1210122UI	DB-1ms Ultra Inert, 20m x 0.18mm x 0.18 µm	\$527.00
J1220112UI	DB-1ms Ultra Inert, 15m x 0.25mm x 0.25 µm	377.00
J1220132UI	DB-1ms Ultra Inert, 30m x 0.25mm x 0.25 µm	617.00
J1215522UI	DB-5ms Ultra Inert, 20m x 0.18mm x 0.18 µm	524.00
J1225512UI	DB-5ms Ultra Inert, 15m x 0.25mm x 0.25 µm	375.00
J1225532UI	DB-5ms Ultra Inert, 30m x 0.25mm x 0.25 µm	613.00
CS19091S931UI	HP-1ms Ultra Inert, 15m x 0.25mm x 0.25 µm	\$377.00
CS19091S933UI	HP-1ms Ultra Inert, 30m x 0.25mm x 0.25 µm	617.00
CS19091S633UI	HP-1ms Ultra Inert, 30m x 0.25mm x 0.50 µm	621.00
CS19091S431UI	HP-5ms Ultra Inert, 15m x 0.25mm x 0.25 µm	375.00
CS19091S433UI	HP-5ms Ultra Inert, 30m x 0.25mm x 0.25 µm	613.00
CS19091S133UI	HP-5ms Ultra Inert, 30m x 0.25mm x 0.50 µm	613.00

AGILENT CAPILLARY GC COLUMNS

"Select" COLUMNS*

"Select" columns offer separation solutions and guaranteed performance for specific chemical, petrochemical, environmental, food and beverage and chiral applications.



GC Analysis of 37 FAME Mixture on CP-Select for FAME Column

Column: CP-Select for FAME, 100m x 0.25mm (CSCP7420)

Sample Volume: 1 µL
Concentration: ca. 250 ng / µL in dipropylene glycol
Carrier Gas: 1 mL/min. helium, constant flow
Injector: 220°C, split, 1:50
Temperature: 80°C (1 min.), 20°C/min., 160°C, 1°C/min., 198°C, 5°C/min., 250°C (15 min.)
Detector: FID, 275°C

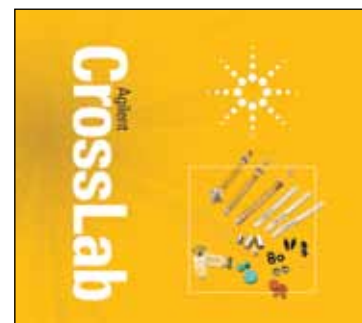
Peak	RT (min)	Compound	Peak	RT (min)	Compound
1	10.76	C4:0	20	41.25	C18:2n6c
2	11.69	C6:0	21	43.31	C18:3n6
3	13.09	C8:0	22	44.81	C18:3n3
4	15.06	C10:0	23	45.36	C20:0
5	16.35	C11:0	24	46.86	C20:1
6	17.93	C12:0	25	48.75	C21:0
7	19.87	C13:0	26	49.08	C20:2
8	22.25	C14:0	27	50.38	C20:3n6
9	23.87	C14:1	28	51.24	C20:4n6
10	25.10	C15:0	29	51.33	C20:3n3
11	27.03	C15:1	30	51.49	C22:0
12	28.45	C16:0	31	52.55	C22:1
13	30.19	C16:1	32	53.27	C20:5
14	32.23	C17:0	33	53.76	C23:0
15	34.20	C17:1	34	54.14	C22:0
16	36.43	C18:0	35	55.83	C24:0
17	37.53	C18:1n9t	36	56.80	C24:1n9
18	38.22	C18:1n9c	37	58.53	C22:6n-3
19	39.61	C18:2n6t			



Available "Select" Columns

Select PAH
Select Biodiesel
Select Silanes
Select Mineral Oil
Select Al2O2 MAPD
Select Permanent Gases
Select 28/31
CP Select 624 CB
Select FAME
Select MTBE

* Formerly a Varian product



Get one source of supplies for all your different analytical instruments, regardless of make or model.

When you choose Agilent **CrossLab™**, you know you'll get:

- Over 40 years of chromatography expertise and ongoing innovation
- The same commitment to quality, inherent in Agilent products
- Optimal performance for both routine and challenging applications
- Convenience of consolidated purchasing

See page 12 for more information.

Product Number	Description	Price
CSCP7461	Select PAH, 15m x 0.15mm, 0.10 µm	\$755.00
CSCP7462	Select PAH, 30m x 0.25mm, 0.15 µm	709.00
CSCP7434	Select Silanes, 30m x 0.32mm, 1.80 µm	675.00
CSCP7435	Select Silanes, 60m x 0.32mm, 1.80 µm	1,235.00
CSCP7437	Select Silanes, 60m x 0.53mm, 3.00 µm	1,421.00
CSCP7491	Select Mineral Oil, 15m x 0.32mm, 0.10 µm	416.00
CSCP7431	Select Al2O3 for MAPD, 50m x 0.32mm, 5.00 µm	1,302.00
CSCP7432	Select Al2O3 for MAPD, 50m x 0.53mm, 10 µm	1,182.00
CSCP7429	Select Permanent Gases/CO2, 30m x 0.53mm	2,248.00
CSCP7430	Select Permanent Gases/CO2 HR, 40m x 0.53mm	2,411.00
CSCP7479	Select 28/31, 10m x 0.32mm, 0.05 µm	533.00
CSCP7411	Select 624 CB, 25m x 0.15mm, 0.84 µm	578.00
CSCP7412	Select 624 CB, 30m x 0.25mm, 1.40 µm	578.00
CSCP7413	Select 624 CB, 60m x 0.25mm, 1.40 µm	1,005.00
CSCP7414	Select 624 CB, 30m x 0.32mm, 1.80 µm	638.00
CSCP7415	Select 624 CB, 60m x 0.32mm, 1.80 µm	1,082.00
CSCP7416	Select 624 CB, 30m x 0.53mm, 3.00 µm	725.00
CSCP7417	Select 624 CB, 75m x 0.53mm, 3.00 µm	1,375.00
CSCP7418	Select 624 CB, 105m x 0.53mm, 3.00 µm	1,480.00
CSCP7419	Select FAME, 50m x 0.25mm, 0.25 µm	1,171.00
CSCP7420	Select FAME, 100m x 0.25mm, 0.25 µm	1,639.00
CSCP7421	Select FAME, 200m x 0.25mm, 0.25 µm	2,726.00
CSCP7528	Select MTBE, 50 m x 0.25 mm, 0.25 µm	1,171.00

For application assistance, product numbers and pricing on other Select phases, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

AGILENT CAPILLARY GC COLUMNS



FactorFour Columns

Lowest Bleed – Highest Sensitivity

VF-1ms
VF-5ms
VF-5 Pesticides
VF-1701 Pesticides
VF-5ht
VF-Xms
VF-624ms
VF-1301ms
VF-1701ms
VF-35ms
VF-17ms
VF-200ms
VF-23ms
VF-WAXms

* Formerly a Varian product

EZ-Guard



Protect Your GC Column

Many FactorFour phases are also available with integrated EZ-Guard columns which have a built-in guard column.

- No risk of leakage, saving downtime
- Easy and fast to install and operate, boosting productivity
- Integrated transfer line delivers faster detector stabilization, improving efficiency

Did you know...

that the selectivity of polar phases changes with oven temperature, and that this can change compound elution order?

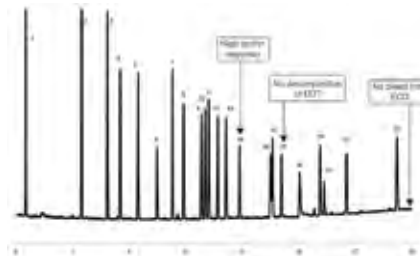


FactorFour GC COLUMNS*

FactorFour (VF) is a comprehensive line of high performance capillary GC columns previously manufactured by Varian, but now part of the Agilent portfolio. These columns are manufactured from the highest quality materials with the most detailed specifications to ensure reproducibility, ultra low bleed and high inertness. Such high performance columns can routinely be used with confidence in all areas of GC and GC/MS analysis.

Analysis of Pesticides

VF-1701 Pesticides

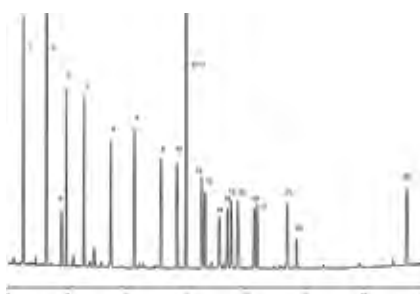


Peak 17



Excellent inertness and low bleed enables improved quantitation of DDT at 3pg level.

VF-5 Pesticides



Peaks

1. 2,4,5,6-tetrachloro-m-xylene
2. α -BHC
3. γ -BHC
4. heptachlor
5. aldrin
6. δ -BHC
7. β -BHC
8. heptachlor epoxide
9. endosulfan I
10. γ -chlordane
11. α -chlordane
12. 4,4'-DDE
13. dieldrin
14. endrin
15. 4,4'-DDD
16. endosulfan II
17. 4,4'-DDE
18. endrin aldehyde
19. endosulfan sulfate
20. methoxychlor
21. endrin ketone
22. decachlorobiphenyl

Product Number	Description	Price
CSCP9070	VF-1701 Pesticides, 30m x 0.25mm, 0.25 μ m	\$614.00
CSCP9071	VF-1701 Pesticides, 30m x 0.32mm, 0.25 μ m	662.00
CSCP9074	VF-5 Pesticides, 30m x 0.25mm, 0.25 μ m	623.00
CSCP9075	VF-5 Pesticides, 30m x 0.32mm, 0.25 μ m	657.00
CSCP8912	VF-1ms, 30m x 0.25mm, 0.25 μ m	593.00
CSCP8916	VF-1ms, 60m x 0.25mm, 0.25 μ m	1,041.00
CSCP8924	VF-1ms, 30m x 0.32mm, 0.25 μ m	625.00
CSCP8926	VF-1ms, 30m x 0.32mm, 1.00 μ m	625.00
CSCP8944	VF-5ms, 30m x 0.25mm, 0.25 μ m	593.00
CSCP8945	VF-5ms, 30m x 0.25mm, 0.50 μ m	593.00
CSCP8946	VF-5ms, 30m x 0.25mm, 1.00 μ m	593.00
CSCP8960	VF-5ms, 60m x 0.25mm, 0.25 μ m	1,041.00
CSCP8949	VF-5ms, 60m x 0.25mm, 1.00 μ m	1041.00
CSCP8955	VF-5ms, 30m x 0.32mm, 0.25 μ m	625.00
CSCP8957	VF-5ms, 30m x 0.32mm, 1.00 μ m	625.00
CSCP8961	VF-5ms, 60m x 0.32mm, 0.25 μ m	1,143.00
CSCP8974	VF-5ms, 30m x 0.53mm, 0.50 μ m	720.00
CSCP8975	VF-5ms, 30m x 0.53mm, 1.00 μ m	720.00
CSCP9109	VF-624ms, 30m x 0.15mm, 0.84 μ m	707.00
CSCP9102	VF-624ms, 30m x 0.25mm, 1.40 μ m	762.00
CSCP9103	VF-624ms, 60m x 0.25mm, 1.40 μ m	991.00
CSCP9104	VF-624ms, 30m x 0.32mm, 1.80 μ m	671.00
CSCP9105	VF-624ms, 60m x 0.32mm, 1.80 μ m	1,118.00
CSCP9205	VF-WAXms, 30m x 0.25mm, 0.25 μ m	522.00
CSCP9223	VF-WAXms, 60m x 0.25mm, 0.50 μ m	931.00
CSCP9210	VF-WAXms, 30m x 0.32mm, 0.50 μ m	560.00
CSCP9216	VF-WAXms, 30m x 0.53mm, 2.00 μ m	639.00
CSCP9228	VF-WAXms, 60m x 0.53mm, 1.00 μ m	654.00

For application assistance, product numbers and pricing on other FactorFour phases, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

AGILENT CAPILLARY GC COLUMNS

CP-PoraBOND and CP-PoraPLOT COLUMNS*

The Best Choice for GC Analysis of Gases and Volatiles

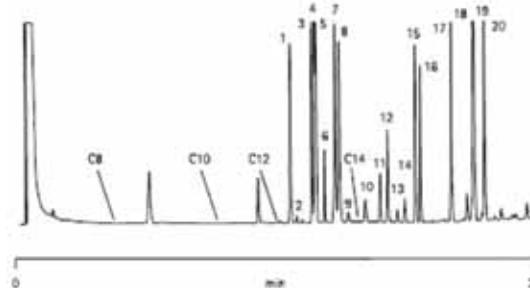
Porous Layer Open Tubular (PLOT) capillary columns are capillary columns where the stationary phase is based on an adsorbent or a porous polymer. This allows users to experience the benefits of high-resolution capillary gas chromatography when analyzing a wide range of gases and volatiles. Agilent PoraPLOT and PoraBOND columns deliver superior mechanical and temperature stability and allow for increasingly fast methods.

Analysis of Oxygenates in a C1 to C5 Hydrocarbon Mix

Column: CP-Lowox, 10m x 0.53mm, 0.25µm (JCP8587)
Sample Size: 1 µL
Sample Conc.: 0.01% per compound
Solvent: Cyclohexane
Carrier Gas: He, 28.8 kPa (0.288 bar, 4.1 psi)
Temp.: 50°C (5 min.) to 240°C, 10°C/min.
Injector: Split, T - 250°C
Detector: FID, T=250°C

Peaks

- | | |
|-------------------------------|--|
| 1. Acetaldehyde | 11. Methanol |
| 2. Diethyl ether | 12. Acetone |
| 3. Ethyl tert-butyl ether | 13. Isovaleraldehyde |
| 4. Methyl tert-butyl ether | 14. Valeraldehyde |
| 5. Diisopropyl ether | 15. 2-Butanone |
| 6. Propionaldehyde (propanol) | 16. Ethanol |
| 7. Tert-amyl methyl ether | 17. 1-Propanol |
| 8. Dipropyl ether | 18. 2-Methyl-1-propanol (isobutanol) |
| 9. Isobutylaldehyde | 19. 2-Methyl-2-propanol (tert-butanol) |
| 10. Butylaldehyde | 20. 1-Butanol |



Available CP-PLOT Columns

CP-PoraBond Q
 CP-PoraBond U
 CP-PoraPLOT Q
 CP-PoraPLOT Q-HT
 CP-PoraPLOT U
 CP-PoraPLOT S
 CP-PoraPLOT Amine
 CP-Al2O3
 CP-SilicaPLOT
 CP-Lowox
 CP-Molsieve 5Å
 CP-CarboBOND
 CP-CarboPLOT

* Formerly a Varian product

Did you know...

that pressure pulses can damage PLOT columns?



Bonded PLOT Application Guide

PLOT Column	Typical Applications
CP-PoraBOND Q CP-PoraPLOT Q	Halogenates, hydrocarbons C1-C9, oxygenated hydrocarbons, solvents, permanent gases, alcohols, glycols, fatty acids, sulfur compounds
CP-PoraBOND Q-HT	Halogenated hydrocarbons, hydrocarbons, solvents
CP-PoraBOND U CP-PoraPLOT U	Alcohols, gases, halogenates, hydrocarbons C1-C9, ketones, solvents, sulfur compounds, halogenated compounds, hydrocarbons C1-C6, ketones, solvents
CP-PoraPLOT S	Hydrocarbons, ketones
CP-PoraPLOT Amines	Amines C1-C6
CP-Al2O3	Hydrocarbons C1-C5 and impurities in hydrocarbon mainstreams, benzene and toluene
CP-Lowox	Trace level oxygenate impurities in gas and liquid hydrocarbon streams, prevention of catalyst contamination by oxygenates, process/on-line applications or portable GC applications (ASTM D 7059)
CP-Molsieve 5Å	Permanent gases such as H ₂ , O ₂ , CO, Ne, HD, N ₂ , NO, Ar, D ₂ , CH ₄ , CO ₂ , Xe, DT, CD ₄ , Rn, T ₂
CP-SilicaPLOT	COS in ethylene, freons/CFCs, hydrocarbons, propylene and sulfur gases
CP-CarboBOND	Hydrocarbons in ethylene and trace gases in ethylene and propylene, He, Xe, CO, Ne, CH ₄ , CO ₂ , O ₂ /Ar, N ₂ , Kr, hydrocarbons C2 and C3 (ASTM D 2505)
CP-CarboPLOT P7	Separation of N ₂ , O ₂ , CO, CO ₂ , He, Xe, Ne, CH ₄ , O ₂ /Ar, Kr and C1-C2 hydrocarbons such as C ₂ H ₆ , C ₂ H ₄ , and C ₂ H ₂

Product Number**	Description	Price
JCP8587	CP-Lowox, 10 m x 0.53 mm, 10 µm	\$2,155.00
JCP7348	CP-PoraBOND Q, 25 m x 0.25 mm, 3.00 µm	1,133.00
JCP7350	CP-PoraBOND Q, 25 m x 0.32 mm, 5.00 µm	827.00
JCP7351	CP-PoraBOND Q, 25 m x 0.32 mm, 5.00 µm	1,247.00
JCP7352	CP-PoraBOND Q, 50 m x 0.32 mm, 5.00 µm	1,848.00
JCP7353	CP-PoraBOND Q, 10 m x 0.53 mm, 10 µm	876.00
JCP7354	CP-PoraBOND Q, 25 m x 0.53 mm, 10 µm	1,456.00
JCP7355	CP-PoraBOND Q, 50 m x 0.53 mm, 10 µm	2,196.00
JCP7381	CP-PoraBOND U, 25 m x 0.32 mm, 7.00 µm	1,247.00
JCP7591	CP-PoraPLOT Amines, 25 m x 0.32 mm, 10 µm	1,247.00
JCP7579	CP-PoraPLOT U, 25 m x 0.25 mm, 8.00 µm	1,133.00
JCP7581	CP-PoraPLOT U, 25 m x 0.32 mm, 10 µm	1,247.00
JCP7584	CP-PoraPLOT U, 25 m x 0.53 mm, 20 µm	1,456.00
JCP7576	CP-Al2O3/KCL, 25 m x 0.25 mm, 4.00 µm	934.00
JCP7577	CP-Al2O3/KCL, 50 m x 0.25 mm, 4.00 µm	1,272.00
JCP7519	CP-Al2O3/KCl, 25 m x 0.32 mm, 5.00 µm	1,025.00
JCP7515	CP-Al2O3/KCl, 50 m x 0.32 mm, 5.00 µm	1,375.00
JCP7516	CP-Al2O3/KCl, 10 m x 0.53 mm, 10 µm	641.00
JCP7517	CP-Al2O3/KCl, 25 m x 0.53 mm, 10 µm	755.00
JCP7518	CP-Al2O3/KCl, 50 m x 0.53 mm, 10 µm	1,240.00
JCP7574	CP-PoraPLOT S, 25 m, 0.53 mm, 20 µm	1,456.00
JCP7371	CP-CarboBOND, 25 m x 0.53 mm, 5.00 µm	1,456.00
JCP7374	CP-CarboBOND, 25 m x 0.53 mm, 10 µm	1,456.00
JCP7372	CP-CarboBOND, 50 m x 0.53 mm, 5.00 µm	2,196.00

** This is only a partial listing — other columns are available. Please inquire.

For application assistance, product numbers and pricing on other CP-PoraBOND and CP-PoraPLOT phases, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

AGILENT CAPILLARY GC COLUMNS

Available

CP-Sil and CP-Wax Columns

Bonded CP-Sil Columns

CP-Sil 2 CB — Non-polar
CP-Sil 5 CB — 5% Phenyl
CP-Sil 8 CB — Halocarbons EPA 624
CP-Sil 19 CB — Medium Polarity
CP-Sil 24 CB — 50% Phenyl-pesticides
CP-Sil 43 CB — Separates Aromatics

“MS”- type CP-Sil Columns

CP-Sil 5 CB Low Bleed/MS
CP-Sil 8 CB Low Bleed/MS
CP-Sil 24 CB Low Bleed/MS
CP-Sil 13 CB Rapid-MS

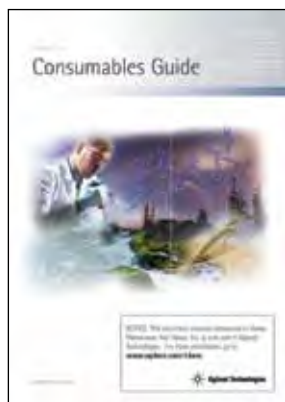
Non-bonded CP-Sil Columns

CP-Sil 1301 — Medium Polarity
CP-Sil 88 — Highest Polarity

CP-Wax Columns

CP-Wax 52 CB — Flavours & Aromas
CP-Wax 57 CB — Solvents, Glycols
CP-Wax 58 FFAP CB — Free Acids

* Formerly a Varian product



For your copy of
Agilent's Consumables Guide,
please request
Literature Code **AG56**

Did you know...

that the lifetime
of your column
is twice as long if
you work 20°C be-
low the maximum
temperature rating



CP-Sil and CP-Wax COLUMNS*

A Full Range of Capillary Columns for Routine Analysis

The CP-Sil range of stationary phases is based on a polysiloxane backbone, whereas the CP-Wax phases use a polyethylene glycol backbone. Functional groups are then added to the polymers to introduce and optimize selectivity. Most of the CP-Sil phases are chemically bonded to withstand direct (liquid) solvent injections, and columns can be rinsed with solvents to remove contamination and extend column life.

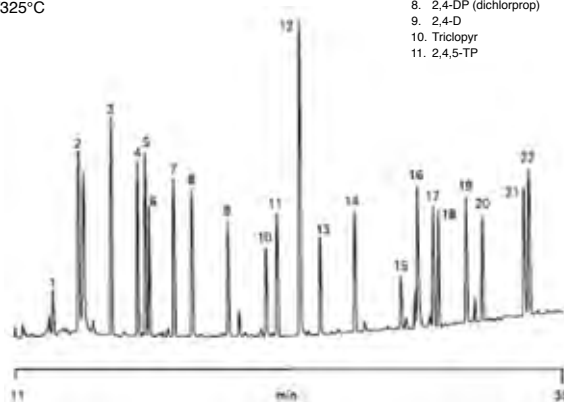
- CP-Sil includes a wide range of polysiloxane phases with different polarities
- CP-Wax offers a broad range of selectivities for method optimization, with three different phases

Methylated Chlorophenoxyacetic Acids

Column: **CP-Sil CB Fused Silica WCOT**, 30m x 0.32mm, 0.25µm (JCP7831)
Carrier Gas: H₂
Temp.: 60°C (2 min.) to 150°C, 15°C/min.,
150°C to 280°C, 3.5 °C/min.
Injector: Splitless 60 s followed by split of 50 mL/min, T-275°C
Inj. Volume: <1 ng per compound
Detector: FID, T325°C

Peaks

- | | |
|-------------------------------|--------------------------------|
| 1. Dibromobenzoic acid | 12. MCPB + naphthylacetic acid |
| 2. 2,4-Dichlorobenzoic acid | 13. 2,4,5-T |
| 3. Clofibrate acid | 14. 2,4-DB |
| 4. 4-Chlorophenoxyacetic acid | 15. Fluoroxypur |
| 5. MCFE | 16. Indoleacetic acid |
| 6. Dicamba | 17. Bentazon |
| 7. MCPA | 18. Fluzifop |
| 8. 2,4-DP (dichlorprop) | 19. Flurenol |
| 9. 2,4-D | 20. Haloxypol |
| 10. Triclopyr | 21. Benazolin |
| 11. 2,4,5-TP | 22. 3-Indolebutyric acid |



CP-Sil Columns

Product Number**	Description	Price
JCP7821	CP-Sil 24 CB, 30m x 0.25mm, 0.25 µm	\$623.00
JCP7824	CP-Sil 24 CB, 30m x 0.25mm, 0.50 µm	623.00
JCP7822	CP-Sil 24 CB, 60m x 0.25mm, 0.25 µm	1,079.00
JCP7831	CP-Sil 24 CB, 30m x 0.32mm, 0.25 µm	681.00
JCP7832	CP-Sil 24 CB, 60m x 0.32mm, 0.25 µm	1,165.00
JCP7870	CP-Sil 24 CB, 15m x 0.53mm, 1.00 µm	442.00
JCP7871	CP-Sil 24 CB, 30m x 0.53mm, 1.00 µm	778.00
JCP7872	CP-Sil 24 CB, 60m x 0.53mm, 1.00 µm	1,247.00

CP-Wax Columns

JCP7703	CP-Wax 52 CB, 10m x 0.25 mm, 0.20 µm	\$372.00
JCP7673	CP-Wax 52 CB, 25m x 0.25 mm, 1.20 µm	672.00
JCP8713	CP-Wax 52 CB, 30m x 0.25 mm, 0.25 µm	603.00
JCP8748	CP-Wax 52 CB, 60m x 0.25 mm, 0.50 µm	1,045.00
JCP7743	CP-Wax 52 CB, 25m x 0.32 mm, 0.20 µm	664.00
JCP7831	CP-Wax 52 CB, 30m x 0.25 mm, 0.25 µm	681.00
JCP7628	CP-Wax 52 CB, 10m x 0.32 mm, 1.00 µm	427.00

** These are only partial listings — other columns are available. Please inquire.

For application assistance, product numbers and pricing on other
CP-Sil and CP-Wax phases, please contact our Technical Support Team
at 1-800-267-8103 or email tech@chromspec.com.

RESTEK RTX®-DHA GC COLUMNS

Rtx®-DHA (Fused Silica)

- Columns meet or exceed all ASTM D6730-01 and CAN/CGSB 3.0 No. 14.3-99 method guidelines
- Excellent responses and peak symmetry for polar oxygenates
- Guaranteed column-to-column reproducibility for retention, efficiency, selectivity, peak skewness, resolution, and low bleed

The Rtx®-DHA polymer was designed to offer the exact polarity necessary to resolve hydrocarbons in the specific order requested by petrochemical companies. In order to meet the demanding resolution and retention criteria of the American Society for Testing and Materials (ASTM) and the Canadian General Standards Board (CGSB), Restek has developed unique quality control tests and specifications for the Rtx®-DHA column. The measured values for retention (k), efficiency (n), and stationary phase selectivity (RI) are controlled so that each column exceeds the requirements of the ASTM and CGSB methods.

Detailed Hydrocarbons Analysis (DHA) Rtx®-DHA-100/Rtx®-5 DHA Tuning Column

Column: Rxi®-DHA-100, 100m x 0.25mm ID, 0.5µm (RK10148)
plus Rtx®-5 DHA tuning column, 2.62m x 0.25mm ID, 1.0µm,
connected via Press-Tight® connector (RK20446)

Sample: Custom detailed hydrocarbons analysis (DHA) mix, neat

Injection: 0.01µL, split (split ratio 150:1), 4mm cup inlet line (RK20709)

Inj. Temp.: 200°C

Carrier Gas: Helium, constant flow

Linear Velocity: 28cm/sec. (2.3mL/min.)

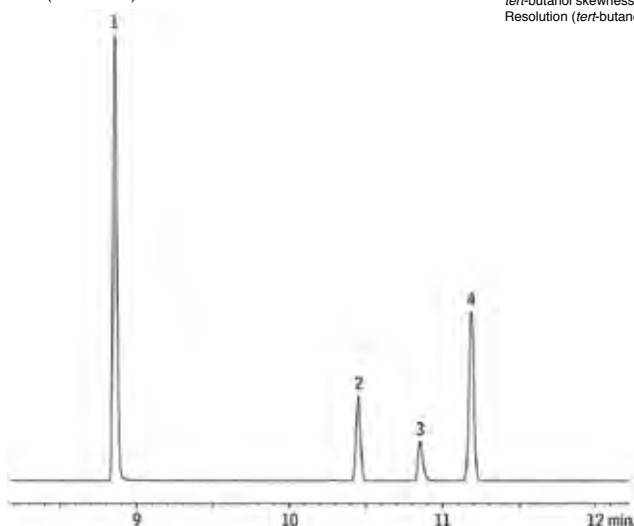
Oven Temp.: 35°C

Det.: FID @ 250°C

Peaks

1. ethanol
2. CS
3. *tert*-butanol
4. 2-methylbutene-2

C5 efficiency: 613,596 total theoretical plates
k' (C5): 0.459
tert-butanol skewness: 1.25
Resolution (*tert*-butanol/2-methylbutene-2): 5.60



RESTEK EZ Twist Top™ SPLIT/SPLITLESS INJECTION PORTS FOR AGILENT GCs



The gas lines are attached to the EZ Twist Top™ Shell Weldment (bottom) instead of the weldment (top). Once the injection port is installed the gas lines are under the GC cover and do not interfere with routine injection port maintenance!

See page 13 for more information.

TECH TIP — Injection Port Maintenance

Injection port maintenance should be performed prior to installing any capillary column, and on a routine basis. For optimum system performance, the injection port liner must be free of sample residue, septum particles, and ferrule fragments. Peak shape degradation, poor reproducibility, sample decomposition, and ghost peaks are all associated with using a dirty liner. Frequent septum replacement prevents fragmentation and leaks. Multiple injections and continuous exposure to hot injection port surfaces will decompose the septum and can create particles that can fall into the injection port liner, where they become a potential source of ghost peaks, loss of inertness, and occluded carrier gas flow. Therefore, changing septa and inlet liners frequently is essential to maintaining optimum system performance!

Product Number

Description

Price

RK10147	Rtx®-DHA-50, 50m x 0.20mm x 0.5 µm	\$757.20
RK10148	Rtx®-DHA-100, 100m x 0.25mm x 0.50 µm	867.80
RK10149	Rtx®-DHA-150, 150m x 0.25mm x 1.0 µm	1,272.40
RK10165	Rtx®-5 DHA Tuning Column, 5m x 0.25mm x 1.0 µm	82.70

Rtx®-DHA columns were previously named Rtx®-1PONA columns. No changes were made to the product, manufacturing process, or column performance.

DHA PONA VI Mix (426 Components)

PONA-VI (PONA 6) is a qualitative mixture of various gasoline and refinery materials prepared to provide nearly every component that may be encountered in feedstock and finished gasolines.

RK30723

DHA PONA VI Mix, 0.1mL, Neat

\$300.30

sales
tech
instrum

@chromspec.com

www.chromspec.com

RESTEK Rxi® GC COLUMNS

High-Performance Rxi® Columns



Rxi® columns deliver more accurate, reliable trace-level results than any other fused silica column on the market. Take variation out of the equation with highly inert, low bleed Rxi® columns.

Phases Available:

- Rxi®-17 (Fused Silica)
- Rxi®-17Sil MS (Fused Silica)
- Rxi®-1HT (Fused Silica)
- Rxi®-1ms (Fused Silica)
- Rxi®-35Sil MS (Fused Silica)
- Rxi®-5HT (Fused Silica)
- Rxi®-5ms (Fused Silica)
- Rxi®-5Sil MS (Fused Silica)
- Rxi®-624Sil MS (Fused Silica)
- Rxi®-XLB (Fused Silica)



For a copy of the latest Rxi Columns Brochure Literature Code **RK25**, please contact our Technical Support Group at 1-800-267-8103.

Not all columns are listed. Contact our Technical Support Team for more information.

Rxi®-5Sil MS (Fused Silica)

- Ultra-low bleed
- Exceptional inertness
- Reproducible performance, column after column

Rxi®-5Sil MS columns are used for GC/MS analysis of polycyclic aromatic compounds, chlorinated hydrocarbons, phthalates, phenols, amines, organochlorine pesticides, organophosphorus pesticides, drugs, solvent impurities, and hydrocarbons. The columns are ideal for GC/MS applications requiring high sensitivity, including use in ion trap systems!

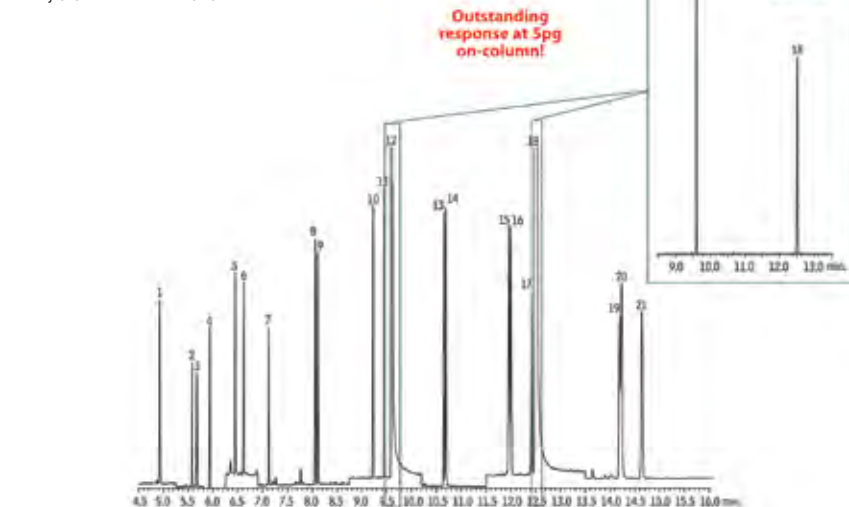
Polycyclic Aromatic Hydrocarbons on Rxi®-5Sil MS

Column: Rxi®-5Sil MS, 30m x 0.25mm ID, 0.25µm (RK13623)
Sample: PAH mix, 1µL of 0.005 µg/mL (IS 2µg/mL)
 SV Calibration Mix #5 / 610 PAH Mix (RK31011)
 1-methylnaphthalene (RK31283)
 2-methylnaphthalene (RK31285)
 2-fluorobiphenyl (RK31091)
Conc.: 5 pg on-column
Injection:
 Inj. Volume: 1.0µL pulsed splitless (hold 0.15 min.)
 Liner: Drilled Uniliner® (hole near top) w/wool (RK210552005)
 Inj. Temp.: 300°C
 Pulse Pressure: 20 psi (137.9kPa)
 Pulse Time: 0.2 min.
 Purge Flow: 60 mL/min.

Oven:
 Oven Temp.: 50°C (hold 0.5 min.) to 290°C at 25°C/min. to 320°C at 5°C/min.
Carrier Gas: He, constant flow
 Flow Rate: 1.4 mL/min.
Detector: MS
 Mode: SIM
 Transfer Line Temp.: 290°C
 Ionization Mode: EI

Peaks	RT (min.)	Peaks	RT (min.)
1. Naphthalene	4.93	12. p-Terphenyl-d14 (IS)	9.61
2. 2-Methylnaphthalene	5.58	13. Benzo[a]anthracene	10.65
3. 1-Methylnaphthalene	5.68	14. Chrysene	10.69
4. 2-Fluorobiphenyl (SS)	5.93	15. Benzo[b]fluoranthene	11.96
5. Acenaphthylene	6.45	16. Benzo[k]fluoranthene	12.00
6. Acenaphthene	6.62	17. Benzo[a]pyrene	12.42
7. Fluorene	7.12	18. Perylene-d12 (IS)	12.51
8. Phenanthrene	8.06	19. Indeno[1,2,3-cd]pyrene	14.19
9. Anthracene	8.11	20. Dibenzo[a,h]anthracene	14.23
10. Fluoranthene	9.23	21. Benzo[ghi]perylene	14.65
11. Pyrene	9.45		

SIM Program			
Group	Time (min.)	Ion(s)	Dwell (ms)
1	4.00	128 m/z	100
2	5.25	142 m/z	100
3	5.80	172 m/z	100
4	6.25	152 m/z	100
5	6.90	166 m/z	100
6	7.60	178 m/z	100
7	8.75	202,244 m/z	100
8	10.2	228 m/z	100
9	11.5	252,264 m/z	100
10	13.5	276,278 m/z	100



Product Number	Description	Price
RK43601	Rxi®-5Sil MS, 10m x 0.10mm x 0.10 µm	\$383.60
RK43602	Rxi®-5Sil MS, 20m x 0.18mm x 0.18 µm	459.40
RK13608	Rxi®-5Sil MS, 30m x 0.25mm x 0.10 µm	535.10
RK13620	Rxi®-5Sil MS, 15m x 0.25mm x 0.25 µm	333.20
RK13623	Rxi®-5Sil MS, 30m x 0.25mm x 0.25 µm	535.10
RK13626	Rxi®-5Sil MS, 60m x 0.25mm x 0.25 µm	882.40
RK13638	Rxi®-5Sil MS, 30m x 0.25mm x 0.50 µm	535.10
RK13653	Rxi®-5Sil MS, 30m x 0.25mm x 1.0 µm	535.10
RK13621	Rxi®-5Sil MS, 15m x 0.32mm x 0.25 µm	353.40
RK13624	Rxi®-5Sil MS, 30m x 0.32mm x 0.25 µm	575.50
RK13639	Rxi®-5Sil MS, 30m x 0.32mm x 0.50 µm	575.50
RK13654	Rxi®-5Sil MS, 30m x 0.32mm x 1.0 µm	575.50

Rxi®-624Sil MS (Fused Silica)

- Low bleed, high thermal stability column—maximum temperatures up to 320 °C
- Inert — Excellent peak shape for a wide range of compounds, including acidic and basic compounds
- Selective — Highly selective for residual solvents, great choice for USP<467>
- Manufactured for column-to-column reproducibility — well-suited for validated methods

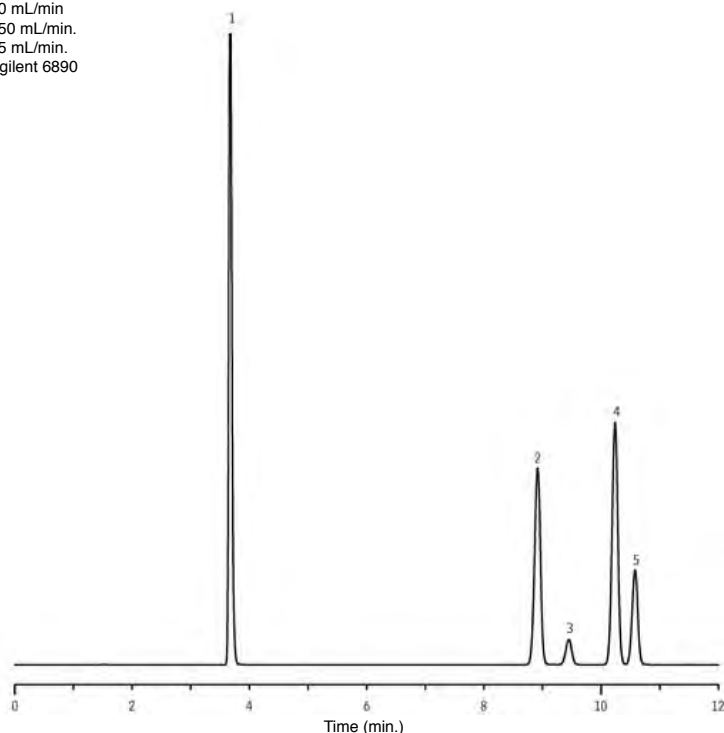
While “1s and 5s” are often used initially in GC/MS method development because of their thermal stability, their nonpolar character results in poor retention for polar compounds and adds additional development time. In contrast, midpolarity Rxi®-624Sil MS columns provide improved retention and selectivity for polar compounds and are also more compatible with polar injection solvents.

Residual Solvents on Rxi®-624Sil MS

Column: Rxi®-624Sil MS, 30m x 0.32mm ID, 1.80µm (RK13870)
Sample: Residual Solvents - Class 1 (RK36279) in 6 mL water, 2 µL in a 20 mL headspace vial (Conc. not consistent with USP <467> methodology)
Injection: 1.0 mL manual headspace injection, split 3:1, 1mm Split liner (RK20972)
Inj. Temp.: 140°C
Carrier Gas: Helium, constant flow
Flow Rate: 2.2 mL/min.
Oven: 40°C (hold 20 min.) to 240°C at 10°C/min. (hold 20 min.)
Detector: FID at 250°C
Hydrogen: 40 mL/min
Air: 450 mL/min.
Makeup: 45 mL/min.
Instrument: Agilent 6890

Peaks

1. 1,1-Dichloroethene
2. 1,1,1-Trichloroethane
3. Carbon Tetrachloride
4. Benzene
5. 1,2-Dichloroethane



Rxi® GUARD/RETENTION GAP COLUMNS

Product Number	Description	Price
RK10029	5m x 0.25mm	\$47.60
RK10039	5m x 0.32mm	53.80
RK10054	5m x 0.53mm	69.40

RESTEK ELECTRONIC LEAK DETECTOR

Why have a small leak turn into a costly repair? Protect your data and analytical column by using a Restek Leak Detector.



See page 15 for more information.

RESTEK Sky™ INLET LINERS



New Sky™ Liners, featuring a state-of-the-art deactivation, give you the inertness you need for accurate, reproducible trace level results.

See page 11 for more information.

Product Number	Description	Price
RK13865	Rxi®-624Sil MS, 20m x 0.18mm x 1.0 µm	\$408.90
RK13868	Rxi®-624Sil MS, 30m x 0.25mm x 1.4 µm	504.80
RK13870	Rxi®-624Sil MS, 30m x 0.32mm x 1.8 µm	545.20
RK13872	Rxi®-624Sil MS, 60m x 0.32mm x 1.8 µm	877.50
RK13871	Rxi®-624Sil MS, 30m x 0.53mm x 3.0 µm	620.90

Other lengths and film thicknesses are available!

Please contact Technical Support at 1-800-267-8103 or tech@chromspec.com.

RESTEK BONDED PLOT GC COLUMNS

PLOT COLUMN PARTICLE TRAPS

The technology used to adhere particles in PLOT columns is excellent; however, there is still a possibility for particles to dislodge when extreme pressure shocks and gas flow changes are anticipated. This sometimes happens when valve backflush or MS detection is used. In those extreme cases, using particle traps is recommended.

- Includes two Press-Tight® connectors and a 2.5m column
- Protect detector and valves; connect between column and detector or valve
- Eliminate detector spikes and scratches in valve rotors

Product Number	Description	Price
RK19753	PLOT Column Particle Trap, 2.5m, 0.32mm	\$101.00
RK19754	PLOT Column Particle Trap, 2.5m, 0.53mm	121.10

*Chromatographic Specialties Inc.
is pleased to offer
SCOTTY™ Transportables!*



- Pure and mixed calibration gases in a wide variety of lightweight, nonreturnable steel and aluminum cylinder sizes
- Cost-effective
- Ideal for use whenever portability or limited gas consumption is needed.

See page 14 for more information.

Restek chemists have developed a special process for the manufacturing of porous polymer PLOT columns. The process incorporates the particles to the walls of the tubing, so there is virtually no particle generation. Because of the particle adhering to the walls of the tubing, there is reproducible performance from column to column, including selectivity and flow. Restek porous polymer PLOT columns are not moisture sensitive, making them ideal for applications in which moisture is of major concern.



Rt®-Q-BOND (Fused Silica PLOT)

- Nonpolar PLOT column incorporating 100% divinyl benzene
- Excellent for analysis of C1 to C3 isomers and alkanes up to C12
- High retention for CO₂ simplifies gas analysis; CO₂ and methane separated from O₂/N₂/CO (Note: O₂/N₂/CO not separated at room temperature)

Product Number	Description	Price
RK19743	Rt®-Q-BOND, 15m x 0.32mm x 10 µm	\$434.20
RK19744	Rt®-Q-BOND, 30m x 0.32mm x 10 µm	585.60
RK19741	Rt®-Q-BOND, 15m x 0.53mm x 20 µm	434.20
RK19742	Rt®-Q-BOND, 30m x 0.53mm x 20 µm	641.10

Rt®-QS-BOND (Fused Silica PLOT)

- Intermediate polarity PLOT column incorporating low 4-vinyl pyridine
- Separates ethane, ethylene and acetylene to baseline

RK19739	Rt®-QS-BOND, 15m x 0.32mm x 10 µm	\$434.20
RK19740	Rt®-QS-BOND, 30m x 0.32mm x 10 µm	585.60
RK19737	Rt®-QS-BOND, 15m x 0.53mm x 20 µm	434.20
RK19738	Rt®-QS-BOND, 30m x 0.53mm x 20 µm	641.10

Rt®-S-BOND (Fused Silica PLOT)

- Midpolarity PLOT column, incorporating high 4-vinyl pyridine
- Use for the analysis of nonpolar and polar compounds

RK19747	Rt®-S-BOND, 15m x 0.32mm x 10 µm	\$434.20
RK19748	Rt®-S-BOND, 30m x 0.43mm x 10 µm	585.60
RK19745	Rt®-S-BOND, 15m x 0.53mm x 20 µm	434.20
RK19746	Rt®-S-BOND, 30m x 0.53mm x 20 µm	641.10

Rt®-U-BOND (Fused Silica PLOT)

- Polar PLOT column, incorporating divinylbenzene ethylene glycol/dimethylacrylate
- Use for the analysis of polar and nonpolar compounds

RK19751	Rt®-U-BOND, 15m 0.32mm x 10 µm	\$434.20
RK19752	Rt®-U-BOND, 30m 0.32mm x 10 µm	585.60
RK19749	Rt®-U-BOND, 15m x 0.53mm x 20 µm	434.20
RK19750	Rt®-U-BOND, 30m x 0.53mm x 20 µm	641.10

Other Bonded PLOT column phases are available.

Please contact our Technical Support Team at 1-800-267-8103 or tech@chromspec.com to determine the column for your application!

RESTEK INJECTION PORT LINERS

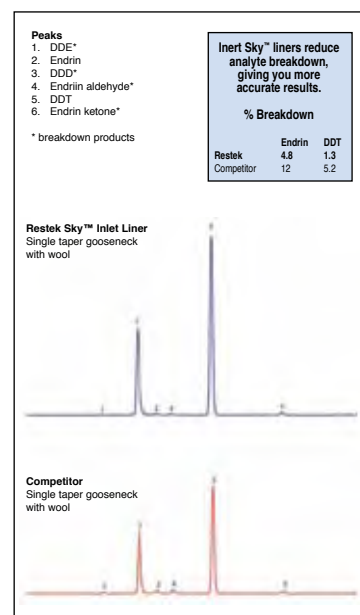
RESTEK SKY™ INLET LINERS

True Blue Performance

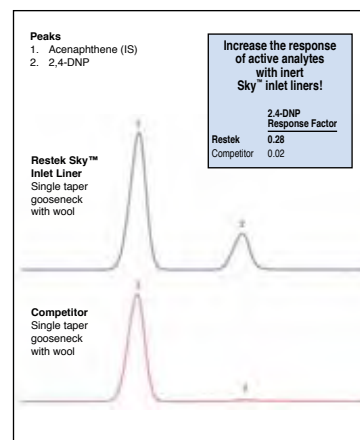
- Use wool with confidence — new quartz wool is deactivated after packing, preventing the loss of sensitive analytes
- Increase accuracy and reproducibility with state-of-the-art deactivation
- Achieve lower detection limits for a wide range of active compounds



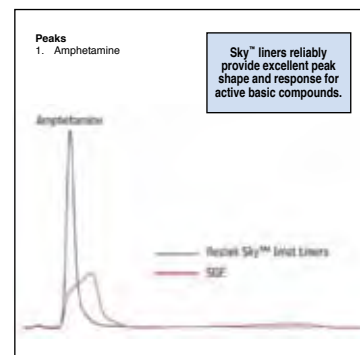
Comparison of Single Taper Gooseneck Liners with Wool for Endrin & DDT



Comparison of Single Taper Gooseneck Liners with Wool for 2,4-DNP Recovery



Comparison of Single Taper Gooseneck Liners with Wool for Amphetamine Peak Shape



Description				
For AGILENT 6890/7890**	Restek Liner Number Cross Reference	Restek Sky™ Liner Product Number	Qty*	Price
SPLITLESS				
2mm Splitless	RK20713	RK233135	5	\$91.60
2mm Splitless w/Wool	—	RK233145	5	119.40
2mm Single Gooseneck	RK20796	RK233155	5	128.70
2mm Single Gooseneck w/Wool	—	RK233165	5	157.50
4mm Straight	RK20773	RK233015	5	68.40
4mm Straight w/Wool	RK22401	RK233005	5	68.40
4mm Single Gooseneck	RK20799	RK233025	5	93.70
4mm Single Gooseneck w/Wool	RK22406	RK233035	5	96.90
4mm Double Gooseneck	RK20785	RK233085	5	111.20
4mm Cyclo Double Gooseneck	RK20896	RK233105	5	319.20
SPLIT				
4mm Precision w/Wool	RK21023	RK233055	5	88.40
4mm Cycloplitter	RK20707	RK233125	5	193.60
SPLIT/SPLITLESS				
Low Pressure Drop Liner w/Wool	RK21033	RK233095	5	152.40
DIRECT INJECTION				
Drilled Uniliner (hole near bottom)	RK20771	RK233065	5	304.80
Drilled Uniliner (hole near bottom) w/Wool	—	RK233075	5	334.70
Drilled Uniliner (hole near top)	RK21055	RK233115	5	277.00

* SKY™ Liners are also available as singles and in packs of 25

** SKY™ Liners are also available in popular configurations for Varian, Perkin-Elmer, Shimadzu and Thermo GCs

AGILENT CROSSLAB GC SUPPLIES



Get a robust, reproducible, and reliable inert flow path, even when using glass wool – with...

NEW Ultra Inert Inlet Liners!

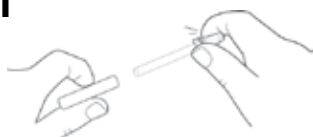
- Exceptional batch-to-batch uniformity
- Low to no bleed or background contamination
- Superior performance even with highly active compound

Touchless Packaging

Ultra inert inlet liners are delivered in exclusive Agilent touchless packaging with a pre-cleaned, conditioned, and non-stick plasma treated O-ring pre-installed. Now you can remove the old liner and easily install the new, clean, preconditioned liner – without risk of contamination from touching.

Instructions for Use

1



Squeeze cap sides tightly to hold liner as you remove plastic tube

2



Align liner with inlet and gently release

3



Place o-ring on liner with forceps. Use cap edge to press liner all the way down

AGILENT CROSSLAB

Agilent CrossLab is a growing portfolio of supplies critical to instrument performance and productivity. They are manufactured to perform seamlessly with a variety of analytical instruments in your lab, regardless of make or model.

When you choose Agilent CrossLab, you know you'll get:

- Over 40 years of chromatography expertise and ongoing innovation
- The same commitment to quality, inherent in Agilent products
- Optimal performance for both routine and challenging applications

CrossLab supports the following instrument manufacturers:

- Bruker (formerly Varian)
- CTC
- Perkin Elmer
- Shimadzu
- Thermo Scientific
- And more coming soon

Autosampler Syringes

- Lot number printed directly on the barrel with a corresponding Certificate of Conformance
- Illuminating backing strip, for effortless viewing of the volume scale
- Individually sealed packaging for contaminant-free use right out of the box

Vials and Closures

- Manufactured in an ISO 9001 certified facility
- Made from First Hydrolytic Type 1 Class A borosilicate glass, which conforms to US FDA, USP, and EU Pharmacopeia standards
- Packaged in material that has been tested and selected for cleanliness

Inlet Septa

- Proprietary plasma treatment prevents sticking and unnecessary inlet cleaning
- Center point guides the needle for easy penetration, less coring and longer life
- Each batch is tested for bleed
- No need to bake septa before using

Inlet Liners

- Perfect mix of liner configurations and chemistries to solve application challenges
- CrossLab Ultra Inert Liners offer reproducibility, robustness, and reliability

Inlet O-rings

- Liners are sealed in the inlet with Fluoroelastomer or graphite O-rings
- Fluoroelastomer O-rings are easier to replace than graphite O-rings, which deform and flake apart more easily

Capillary Column Ferrules

- Graphite ferrules provide an easy-to-use stable seal, boast a high temperature limit, and can be removed easily
- Vespel/graphite ferrules are mechanically robust and maintain a long lifetime

Column Nuts

- CrossLab column nuts will fit seamlessly into your instrument



For more information, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

RESTEK INLET ACCESSORIES

FLIP SEAL DUAL VESPEL® RING INLET SEALS

Restek Innovation! Patented.

Reversible Flip Seal — Same Cost, Twice The Lifetime

New reversible Flip Seal Inlet Seals from Restek last twice as long as other inlet seals. Simply use — flip — then use again. The reversible design doubles the number of analyses you get per seal.

- Same easy sealing as Dual Vespel® Ring Inlet Seals - no extra washer needed
- Lower leak rate than OEM metal seals
- Maximum transfer of analytes to column, due to highly inert gold or Siltek® surface



Gold Coated Flip Seals



Flip Seal Inlet Adaptor
(Required to allow use of the Flip Seal)

Product Number	Description	Price
RK23407	Gold Plated Flip Seals, 0.8mm I.D., Pkg. 2	\$65.40
RK23409	Gold Plated Flip Seals, 0.8mm I.D., Pkg. 10	287.20
RK23411	Gold Plated Flip Seals, 1.2mm I.D., Pkg. 2	65.40
RK23413	Gold Plated Flip Seals, 1.2mm I.D., Pkg. 10	287.20
RK23408	Siltek Treated Flip Seals, 0.8mm I.D., Pkg. 2	65.40
RK23410	Siltek Treated Flip Seals, 0.8mm I.D., Pkg. 10	287.20
RK23412	Siltek Treated Flip Seals, 1.2mm I.D., Pkg. 2	65.40
RK23414	Siltek Treated Flip Seals, 1.2mm I.D., Pkg. 10	287.20
RK23406	Flip Seal Dual Vespel Ring Inlet Kit Includes: Gold-plated 0.8mm ID Inlet Seal Reducing Nut Adaptor 1/16" SS Nut	74.90

EZ Twist Top™ SPLIT/SPLITLESS INJECTION PORTS

- Change inlet liners faster and easier
- Gas lines are attached to shell weldment bottom to help eliminate broken gas lines
- Gas lines don't interfere with routine maintenance
- Weldment Removal Tool allows for quick removal of the hot weldment without fingers ever touching hot surfaces
- Weldment stays secure in the tool for reattachment



RK22177	EZ Twist Top™ Injection Port Kit for Agilent 7890 GCs	\$1,064.90
RK22178	EZ Twist Top™ Siltek Treated Injection Port Kit for Agilent 7890 GCs	1,156.30
RK22721	EZ Twist Top™ Injection Port Kit for Agilent 6850/6890 GCs with Pencil Traps	938.40
RK22722	EZ Twist Top™ Siltek Treated Injection Port Kit for Agilent 6850/6890 GCs with Pencil Traps	1,036.70
RK22735	EZ Twist Top™ Injection Port Kit for Agilent 6850/6890 GCs - for use with large canister type filter	1,059.60
RK22736	EZ Twist Top™ Siltek Treated Injection Port Kit for Agilent 6850/6890 GCs - for use with large canister type filter	1,161.80
RK22725	EZ Twist Top™ Injection Port Kit for Agilent 5890 GCs	872.00
RK22726	EZ Twist Top™ Siltek Treated Injection Port Kit for Agilent 5890 GCs	967.80

Each Kit Contains: Split/splitless weldment, shell weldment, 2 weldment O-rings, Siltek Dual Vespel Ring Inlet Seal, septum nut, reducing nut, stainless steel capillary nut for use with 1/16" ferrules, and weldment removal tool

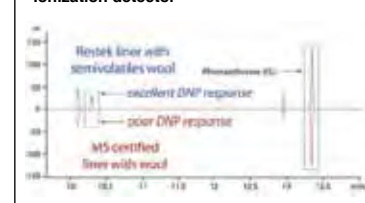
New Wool Ensures More Accurate Semivolatiles Analyses



Increase Accuracy with an Inert Sample Path

Semivolatiles Wool from Restek improves precision and accuracy, while protecting your column from contamination. This new wool is more inert than other's MS Certified Wool and gives you more reliable trace level results.

Response of 10 ng of 2,4-dinitrophenol relative to phenanthrene using a flame ionization detector



Product Number	Description	Price
RK207812311	4mm split with semivolatiles wool	\$39.20
RK207722311	4mm splitless with semivolatiles wool	36.40

Which EZ Twist Top™ should you buy?

The type of split vent trap you have connected to the EPC module/block on your 6890/6850 Agilent GC determines which EZ Twist Top™ Injection Port you need to buy. Simply remove the top and rear panel on the GC and see what type of filter is attached to the split vent gas line. If you have the small (pencil type) split vent filter, you need the EZ Twist Top™ Injection Port for Agilent 6890/6850 GCs (cat.# RK22721 or RK22722). If you have the large canister filter, you'll need the EZ Twist Top™ with Optional Split Vent for Agilent 6890/6850 GCs, for use with large canister type filters (cat.# RK22735 or RK22736).



SCOTTY® TRANSPORTABLES

Pure gas and gas mixtures in SCOTTY® Transportable gas cylinders provide high-purity and accurate calibration and are available in a wide range of cylinder sizes and volumes. The non-refillable, non-returnable design of SCOTTY® gas cylinders results in substantial cost savings by eliminating cylinder rental and two-way shipping.

USEPA TO-14 Multi-Component Gas Mixtures (110L cylinders)

TO-14 Calibration Gases Calibration Mix

39 Components*

Benzene	Methyl Bromide
Carbon Tetrachloride	Methyl Chloride
Chlorobenzene	Methylene Chloride
Chloroform	Styrene
1,2-Dibromoethane	1,1,2,2-Tetrachloroethane
1,2-Dichlorobenzene	Tetrachloroethylene
1,3-Dichlorobenzene	Toluene
1,4-Dichlorobenzene	1,2,4-Trichlorobenzene
Dichlorodifluoromethane	1,1,1-Trichloroethane
1,1-Dichloroethane	1,1,2-Trichloroethane
1,2-Dichloroethane	Trichloroethylene
1,1-Dichloroethylene	Trichlorofluoromethane
cis-1,2-Dichloroethylene	1,1,2-Trichlorotrifluoroethane
1,2-Dichloropropane	1,2,4-Trimethylbenzene
cis-1,3-Dichloropropene	1,3,5-Trimethylbenzene
trans-1,3-Dichloropropene	Vinyl Chloride
1,2-Dichlorotetrafluoroethane	m-Xylene
Ethyl Chloride	o-Xylene
Ethylbenzene	p-Xylene
Hexachloro-1,3-Butadiene	

43 Components**

Includes: 39 components* (listed above)
Acrylonitrile
1,3-Butadiene
3-Chloro-1-Propene
4-Ethyl Toluene

Product Number	Description	Matrix	Price
LAT014114110	Calibration Mix: (39 components*) 100 ppb each	Nitrogen	\$2,506.00
LAT014112110	Calibration Mix: (39 components*) 1 ppm each	Nitrogen	2,217.00
LAT014118110	Calibration Mix: (43 components**) 100 ppb each	Nitrogen	Inquire
LAT014116110	Calibration Mix: (43 components**) 1 ppm each	Nitrogen	2,745.00
LAT014100110	Aromatics Subset Mix (14 components) 100 ppb each Benzene Chlorobenzene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Ethylbenzene Styrene Toluene 1,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene m-Xylene o-Xylene p-Xylene	Nitrogen	1,908.00
LAT014106110	Chlorinated Hydrocarbons Subset Mix (19 Components) 100 ppb each Carbon Tetrachloride Chloroform Chloromethane 1,1-Dichloroethane 1,2-Dichloroethane 1,1-Dichloroethene cis 1,2-Dichloroethylene 1,2-Dichloropropane cis-1,3-Dichloropropene trans-1,3-Dichloropropene Ethyl Chloride Hexachloro-1,3-Butadiene Methylene Chloride 1,1,2,2-Tetrachloroethane Tetrachloroethylene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethylene Vinyl Chloride	Nitrogen	\$1,992.00
LAT014104110	CFC/HCFC Subset Mix (4 Components) 100 ppb each Halocarbon 11 Halocarbon 12 Halocarbon 113 Halocarbon 114	Nitrogen	975.00
LAT014110110	Reactive Subset Mix (3 Components) 100 ppb each 1,3-Butadiene 3-Chloropropene 4-Ethyltoluene	Nitrogen	2,067.00
LAT014108110	GC-MS Tuning Standard @ 2 ppm (1 Component) Bromo Fluorobenzene	Nitrogen	455.00



Many more environmental gas standards are available, including USEPA TO-15/17 Mixtures.

For instructions on how to recycle SCOTTY® transportable cylinders or for more information on other SCOTT® gas products, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

Molecules that Matter and SCOTT are registered trademarks of Air Liquide Group.

RESTEK FLOWMETERS AND LEAK DETECTORS

RESTEK ProFLOW6000 ELECTRONIC FLOWMETER

- Flow range 0.5-500mL/min
- NIST traceable calibration
- EX rating for explosive gas atmospheres
- Accuracy of $\pm 2\%$
- Over range warning indicator
- Ergonomic design and side grips for comfort
- Convenient carrying/storage case included
- Uses 2-AA batteries
- Data output via USB
- Real-time measurements can be made for various types of flow paths, including continually changing gas types
- Optional soft-sided case is ideal for storage in smaller spaces

Flowmeters that can measure flammable gases are becoming mandatory. With its Ex rating, the ProFLOW 6000 is designed specifically with explosive and flammable gases in mind.



RESTEK

FLOWMETER CALIBRATION SERVICE

Digital flowmeters need to be recalibrated frequently according to these regulatory bodies:

- CGMP322.68a: Equipment used shall be routinely calibrated
- CGMP211.160b4: Instruments not meeting established calibration shall not be used
- ISO 9001 v2000 7.6a: Measuring equipment must be calibrated at regular intervals
- CAEAL: As per ISO 9001

Chromatographic Specialties Inc.
offers this calibration service
in Canada, with a
1-2 week turnaround for
most flowmeters.

Contact our Instrumentation Team at
1-800-267-8103 or
email instrum@chromspec.com.

Product Number	Description	Qty	Price
RK22656	Restek ProFLOW 6000		\$725.60
RK22657	Soft-side storage case		30.00

RESTEK ELECTRONIC LEAK DETECTOR

- Optimized sample flow path
- Handy probe storage for cleanliness and convenience
- Longer lasting battery
- Easy to clean probe assembly
- Universal charger set
- Verify hard to reach leaks using the small probe adapter



Soft-side storage case for
Restek flowmeter or leak detector

Limits of Detection

Gas	Minimum Detectable Leak Rate (atm cc/sec.)	Indicating LED Light Colour
Helium	1.0×10^{-5}	Red
Hydrogen*	1.0×10^{-5}	Red
Nitrogen	1.4×10^{-3}	Yellow
Argon	1.0×10^{-4}	Yellow
Carbon Dioxide	1.0×10^{-4}	Yellow

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



Hard-sided carrying case
(included with purchase of Restek
Electronic Leak Detector)



Verify hard-to-reach leaks
using the small probe adapter

RK22839	Restek Leak Detector	\$934.50
RK22657	Soft-Side Storage Case	30.00
RK22658	Small Probe Adapter	44.80

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YMC HPLC COLUMNS

CHROMSPEC™ STANDALONE DEGASSER



- More effective at removing dissolved gas from mobile phases than sonication or helium-sparging
- Degas 4 solvents simultaneously
- The extremely low volume of each channel (480 μ L) offers rapid equilibration and very short start-up times
- Uses the ZHCR® (Zero Hysteresis Constant Run) stepper motor driven vacuum pump, specifically designed and developed for membrane degassing of HPLC mobile phase
 - Vacuum is maintained at a constant 50mm/Hg
 - Eliminates detector baseline noise due to varying vacuum levels in the chamber
- Short vacuum pull-down times, typically 3 minutes

Product Number	Description	Price
DEG0001	Chromspec™ Standalone Degasser	\$2,764.00

Upgrade your 1100 Degasser

The 1100 upgrade kit is a drop in assembly that can be installed in less than 20 minutes, requires only the use of a screwdriver, and provides the following benefits over the original configuration:

- Lower internal volume for faster equilibration times
 - < 5 minutes vs. 30 minutes
- ZHCR® vacuum control

This kit retains the original control board and vacuum sensor, so all communication functions with the HPLC stack and computer software are maintained.

For more information, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

Pro Series columns represent the very best value for customers when selecting YMC columns. YMC also offers bulk packing materials in various chemistries, particles and pore size.

YMC REVERSED PHASE COLUMNS FOR METHOD DEVELOPMENT

YMC Triart C18 Hybrid

- Novel, multi-layered, organic/inorganic hybrid particle with C18 phase
- Chemically stable and physically durable over a wide pH and solvent range



YMC UltraHT

- Designed for high-speed and high-throughput analysis
- Superior column performance at higher flow rate and higher pressure
- Speed-up analysis and cut costs

YMC Pack-Pro and Hydrosphere C18 Ultra HT

- Applicable to both conventional HPLC and specific ultra pressure system
- Simple method transfer from conventional HPLC
- Excellent resolution with back pressure less than that of sub-2 μ m

ID x Length (mm)	Pack Pro C18	Hydrosphere C18	Price	Triart C18 1.9 μ m*	Price
2.0 x 50	YMAS12S020502WT	YMHS12S020502WT	\$722.10	YMTA12SP90502WT	\$814.70
2.0 x 100	YMAS12S021002WT	YMHS12S021002WT	722.10	YMTA12SP91002WT	814.70
3.0 x 100	YMAS12S021003WT	YMHS12S021003WT	722.10	YMTA12SP91003WT	814.70

* 3 μ m, 5 μ m and 10 μ m columns for analytical and semi-prep separations are also available.

YMC Pack Pro

- High purity silica gel
- Low in metal impurities
- Advanced endcapping technology
- Excellent Durability
- Excellent Reproducibility

YMC C18, C8, C4

- Columns for analysis of difficult compounds by HPLC; ideal for LC/MS applications
- Novel Lewis acid/Lewis base endcapping

YMC Hydrosphere C18

- "Hydrophilic" C18 surface for enhanced polar selectivity
- Ideal for pharmaceutical method development

YMC Pack Pro C18 RS

- High selectivity, high carbon ODS column of polymeric type
- Excellent separation of basic compounds
- Choice of a wide range of eluent conditions, easy method development

ID x Length (mm)	Pack Pro C18	Pack Pro C18 RS	Pack Pro C8	Pack Pro C4	Hydrosphere C18
3 μm					
2.0 x 100	YMAS12S031002WT \$542.40	YMRS08S031002WT \$542.40	YMOS12S031002WT \$542.40	YMBS12S031002WT \$542.40	YMHS12S031002WT \$558.00
3.0 X 100	YMAS12S031003WT \$564.70	YMRS08S031003WT \$564.70	YMOS12S031003WT \$564.70	YMBS12S031003WT \$564.70	YMHS12S031003WT \$564.70
3.0 x 150	YMAS12S031503WT \$709.80	YMRS08S031503WT \$709.80	YMOS12S031503WT \$709.80	YMBS12S031503WT \$709.80	YMHS12S031503WT \$709.80
4.6 x 150	YMAS12S031546WT \$737.70	YMRS08S031546WT \$737.70	YMOS12S031546WT \$737.70	YMBS12S031546WT \$737.70	YMHS12S031546WT \$762.20
5 μm					
4.6 x 250	YMAS12S052546WT \$774.50	YMRS08S052546WT \$774.50	YMOS12S052546WT \$774.50	YMBS12S052546WT \$774.50	YMHS12S052546WT \$797.90

YMC REVERSED PHASE COLUMNS FOR METHOD DEVELOPMENT (cont'd)

YMC Pack Pro SIL

- Choice of 60Å, 120Å, 200Å and 300Å pore size packings
- Normal phase column using top quality silica

Original YMC-Pack and J'sphere Columns

YMC Pack ODS-A — Endcapped	YMC Pack ODS-AM — Improved Endcapping
YMC Pack ODS-AQ — 100% Aq Compatible	YMC Pack ODS-AL — Non-endcapped
YMC Pack PolymerC18 — Polymer based C18	J'sphere ODS-H80, M80, L80 — High, medium and low C load
YMC Pack C8 — Fully Endcapped	YMC Pack C4 — Wide polarity range
YMC Pack TMS — Unique Selectivity	YMC Pack Ph — Retains aromatics
YMC Pack CN — Most Polar Reversed-Phase	YMCbasic — Ideal for Analysis of Bases

Normal Phase

YMC Pack CN — Fast equilibration, uniform surface activity	YMC Pack Diol-NP — Selectivity without excessive retention
YMC Pack Polyamine II — Durable, normal or reversed phase	YMC Pack NH2 — Aqueous or nonaqueous normal phase use
YMC Pack PA — Separation of acidic oligosaccharides	YMC Pack PVA-Sil — Consistent surface activity, unaffected by water

CHIRAL

YMC Chiral CD BR — Bromo-cyclodextrin stationary phase	YMC Chiral NEA — R and S phases for reversible selectivity
YMC Chiral PREP CD ST/PM — For preparative isolation of optical isomers	

Ion Exchange

YMC-BioPro IEX Columns — For proteins and peptides
— Newly developed hydrophilic polymer with low nonspecific absorption
— Quaternary amine and Sulfonic acid based phases

Others

YMC-Pack Diol-SEC — Size determination of proteins and sugars	YMC-Pack PROTEIN-RP — Robust RP column for proteins and peptides
YMC-Carotenoid — C30 column for separation of cis and trans isomers	YMC-Pack R&D Series — Analytical and semi-prep columns
	— Packed from same lot for easy scale-up
Wide-Pore Columns — Many YMC columns are available in wide pore format for large biomolecule separations	



Need to go beyond analytical scale?

YMC-Actus High Throughput Extended Life Semi Prep Columns



YMC-Actus series HPLC columns offer outstanding durability under high throughput conditions.

- Outstanding durability by adaptation of DAC column mechanism
- Long column lifetime
- Desirable for milligram scale preparative HPLC in R&D and for laboratory-scale isolation and purification
- Excellent resolution
- High throughput

For more information, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com

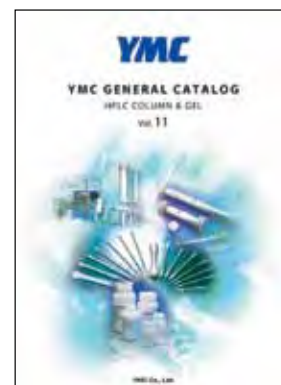
Product Number	Description	Price
YMAA12S031046WT	ODS-A, 100 x 4.6mm, 3 µm	\$601.50
YMAA12S031546WT	ODS-A, 150 x 4.6mm, 3 µm	642.80
YMAA12S052546WT	ODS-A, 250 x 4.6mm, 5 µm	704.20
YMAQ12S031546WT	ODS-AQ, 150 x 4.6mm, 3 µm	791.20
YMAQ12S032546WT	ODS-AQ, 250 x 4.6mm, 3 µm	955.30
YMAQ12S051546WT	ODS-AQ, 150 x 4.6mm, 5 µm	720.90
YMAQ12S052546WT	ODS-AQ, 250 x 4.6mm, 5 µm	830.30
YMJH08S041546WT	J'sphere H80, 150 x 4.6mm, 5 µm	753.30
YMOC12S031503WT	C8, 150 x 3.0mm, 3 µm	657.30
YMOS12S052546WT	C8, 250 x 4.6mm, 5 µm	774.50
YMDN12S051546WT	DIOL-NP, 150 x 4.6mm, 5 µm	720.90
YMPV12S052546WT	PVA-SIL-NP, 250 x 4.6mm, 5 µm	862.70
YMCT99S052546WT	Carotenoid, 250 x 4.6mm, 5 µm	876.10

This is only a partial listing of the most popular YMC columns. For more information, please request a copy of the YMC catalogue.

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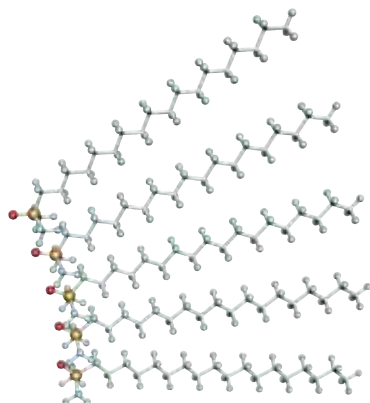
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Call us to ask for Literature Code **YM01** or contact our Technical Support Team for advice on which YMC column is right for you.

MACHEREY-NAGEL NUCLEODUR® HPLC COLUMNS



5 μ m and 10 μ m preparative scale columns are available up to 50mm x 250mm.

Contact our
Technical Support Team at
1-800-267-8103 or
email tech@chromspec.com.

Nucleodur® C18 HTec

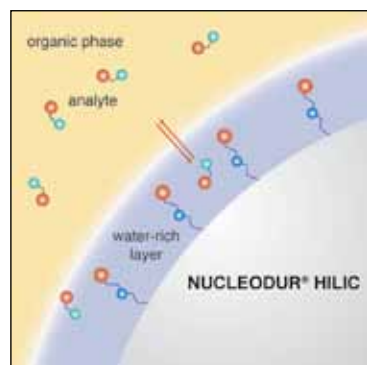
- High purity silica phase for preparative applications
- Special endcapping procedure that deactivates the column and offers excellent stability
- High loadability under both acidic and basic conditions
- Hardware features adjustable end fittings
- Excellent pH stability: pH 1-11
- Designed to scale up from analytical to high end prep
- Better deactivation than C18 gravity

Particle Size	I.D.	Length			
		50mm	125mm	150mm	250mm
1.8 μ m	2mm	MCN76030520 \$605.10	—	MCN76030820 \$692.90	—
	4.6mm	MCN76030546 \$661.50	—	—	—
3 μ m	2mm	MCN76032120 \$605.10	MCN76032420 \$692.90	MCN76032520 \$692.90	MCN76032620 \$801.60
	4.6mm	MCN76032146 \$661.50	MCN76032446 \$767.10	MCN76032546 \$767.10	MCN76032646 \$842.40
5 μ m	2mm	MCN76031120 \$482.80	MCN76031420 \$554.90	MCN76031520 \$554.90	MCN76031620 \$641.70
	4.6mm	MCN76031146 \$529.90	MCN76031446 \$611.40	MCN76031546 \$611.40	MCN76031646 \$676.20

Note: Guard columns are available. Please inquire.

Nucleodur® HILIC

- Ideal for reproducible and stable chromatography of highly polar analytes
- Very short conditioning period
- Combines characteristics of reverse phase, normal phase and ion chromatography
- Betaine character of ammonium-sulfonic acid ligands results in total charge equalization and in an overall neutrally charged but highly polar surface
- More polar compounds will have stronger interaction with the stationary aqueous layer than less polar compounds – resulting in a stronger retention
- Nonpolar compounds exhibit faster elution profiles due to minor hydrophobic interactions



Particle Size	I.D.	Length					
		30mm	50mm	100mm	125mm	150mm	250mm
1.8 μ m	2mm	MCN76052120 \$605.10	MCN76052320 \$605.10	MCN76052620 \$692.90	—	MCN76052820 \$692.90	—
	4.6mm	MCN76052146 \$661.50	MCN76052346 \$661.50	—	—	—	—
3 μ m	2mm	—	MCN76053220 \$605.10	—	MCN76053120 \$692.90	—	MCN76053020 \$801.60
	4.6mm	—	MCN76053246 \$661.50	MCN76053446 \$767.10	MCN76053146 \$767.10	MCN76053346 \$767.10	MCN76053046 \$842.40
5 μ m	2mm	—	MCN76055220 \$482.80	—	MCN76055120 \$554.90	—	MCN76055020 \$641.70
	4.6mm	—	MCN76055246 \$529.90	MCN76055446 \$611.40	MCN76055146 \$611.40	MCN76055346 \$611.40	MCN76053046 \$842.40

AGILENT POROSHELL 120 LC COLUMNS

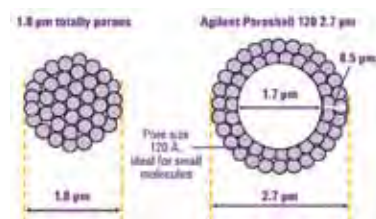
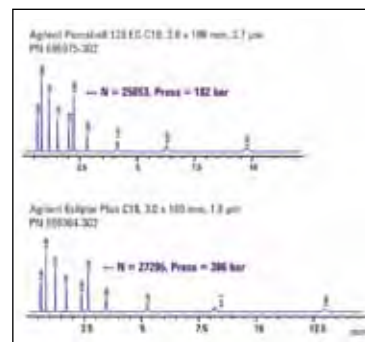
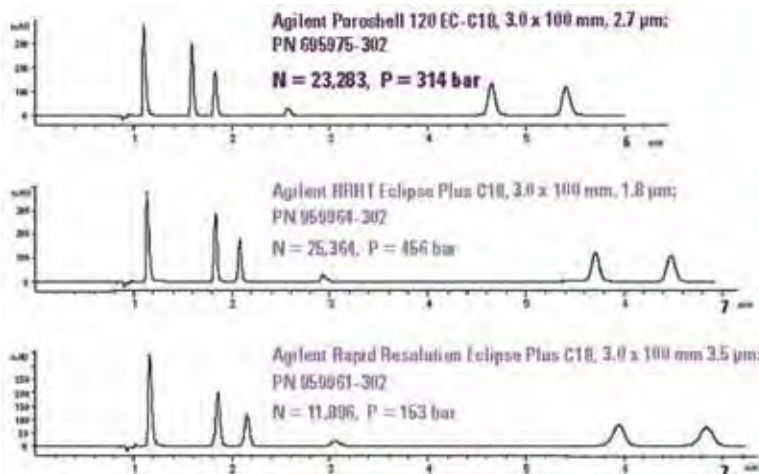
Obtain UHPLC like speed and resolution using traditional HPLC Instrumentation

- Extends the capabilities of standard HPLC systems
- Can be used with UHPLC systems for greater speed
- 2.7 μ m particle with a 1.7 μ m core and a 0.5 μ m porous shell, providing high efficiency that is similar to sub-2- μ m porous particles
- Provides up to 2X the efficiency of 3.5 μ m columns



At conventional LC back pressures, the Poroshell 120 column demonstrates nearly the efficiency of a 1.8 μ m column.

For the highest resolution, a long, 100mm Poroshell 120 column can be used with UHPLC or conventional HPLC, depending on flow rates.



I.D. x Length (mm)	SB-C18	EC-C18	EC-C8
4.6 x 150	CS683975902 \$787.00	CS693975902 \$787.00	CS693975906 \$787.00
4.6 x 100	CS685975902 \$692.00	CS695975902 \$692.00	CS695975906 \$692.00
4.6 x 75	CS687975902 \$618.00	CS697975902 \$618.00	CS697975906 \$629.00
4.6 x 50	CS689975902 \$566.00	CS699975902 \$566.00	CS699975906 \$576.00
3.0 x 150	CS683975302 \$787.00	CS693975302 \$787.00	CS693975306 \$787.00
3.0 x 100	CS685975302 \$692.00	CS695975302 \$692.00	CS695975306 \$692.00
3.0 x 75	CS687975302 \$618.00	CS697975302 \$618.00	CS697975306 \$629.00
3.0 x 50	CS689975302 \$566.00	CS699975302 \$566.00	CS699975306 \$576.00
2.1 x 150	CS683775902 \$787.00	CS693775902 \$787.00	CS693775906 \$787.00
2.1 x 100	CS685775902 \$692.00	CS695775902 \$692.00	CS695775906 \$692.00
2.1 x 75	CS687775902 \$618.00	CS697775902 \$618.00	CS697775906 \$629.00
2.1 x 50	CS689775902 \$566.00	CS699775902 \$566.00	CS699775906 \$576.00

SB = StableBond, non-encapped
EC = Double endcapped

Poroshell 120 columns have a 600 bar / 9000 psi pressure limit.
30mm length columns are available.

For more information, please call our Technical Support Team at
1-800-267-8103 or email tech@chromspec.com.

AGILENT / ZORBAX HPLC COLUMNS



Easy Method Transfer

Zorbax RRHD columns facilitate easy, fast and secure method transfer from HPLC to UHPLC through identical column chemistries.

Achieve the same selectivity on 3.5 and 5 μm Zorbax columns with the same bonded phase for compatibility with any LC.



Agilent LC Handbook

A comprehensive guide to column selection and method development.

Please request Literature Code **AG34**.

ZORBAX RAPID RESOLUTION HIGH DEFINITION (RRHD) COLUMNS

- Takes the popular Zorbax 1.8 μm column line to the next level with a superior packing process, making them ideal for fast or high-resolution separations
- Infinitely greater flexibility that allows you to push your flow rates to the limit without compromising the efficiency or quality of your separations
- Stability up to 1200 bar, for ultimate compatibility with UHPLC instruments
- Superior peak shape
- Enhanced stability at low pH
- More reliable compound identification due to high definition chromatograms
- More C18 bonded phases for the ultimate flexibility in selectivity

Column Specifications

Bonded Phase	Pore Size	Surface Area	pH Range	End-Capped
Eclipse Plus C18	95Å	160m ² /g	2.0-9.0	Yes
Eclipse Plus C8	95Å	160m ² /g	2.0-9.0	Yes
Eclipse XDB-C18	80Å	180m ² /g	2.0-9.0	Yes
Extend-C18	80Å	180m ² /g	2.0-11.5	Yes
SB-C18	80Å	180m ² /g	1.0-8.0	No
SB-C8	80Å	180m ² /g	1.0-8.0	No
SB-Phenyl	80Å	180m ² /g	1.0-8.0	No
SB-CN	80Å	180m ² /g	1.0-8.0	No

I.D. x Length (mm)	Eclipse Plus C18	Eclipse Plus C8	Eclipse XDB-C18	Extend-C18
2.1 x 150	Z959759902 \$831.00	Z959759906 \$831.00	Z981759902 \$831.00	Z759700902 \$831.00
2.1 x 100	Z959758902 \$709.00	Z959758906 \$709.00	Z981758902 \$709.00	Z758700902 \$709.00
3.0 x 150	Z959759302 \$831.00	Z959759306 \$831.00	Z981759302 \$831.00	—
3.0 x 100	Z959758302 \$709.00	Z959758306 \$709.00	Z981758302 \$709.00	Z758700302 \$709.00

I.D. x Length (mm)	SB-C18	SB-C8	SB-Phenyl	SB-CN
2.1 x 150	Z859700902 \$831.00	Z859700906 \$831.00	Z859700912 \$831.00	Z859700905 \$831.00
2.1 x 100	Z858700902 \$709.00	Z858700906 \$709.00	Z858700912 \$709.00	Z858700905 \$709.00
3.0 x 150	Z859700302 \$831.00	Z859700306 \$831.00	—	—
3.0 x 100	Z858700302 \$709.00	Z858700306 \$709.00	Z858700312 \$709.00	Z858700305 \$709.00

SB = StableBond

More columns lengths are available. Please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

PURSUIT COLUMNS*

- Ideal for analyzing lead compounds and biological samples
- Column performance is due to the unique combination of advanced bonding chemistry and ultra-high purity silica
- Built on larger 200Å pore size silica and high ligand density resulting in rapid separations with excellent resolution and symmetrical peaks for polar compounds
- Increased speed with superior resolution is accomplished by optimizing mass transfer with the larger pore size
- pH range of 1.5 to 10

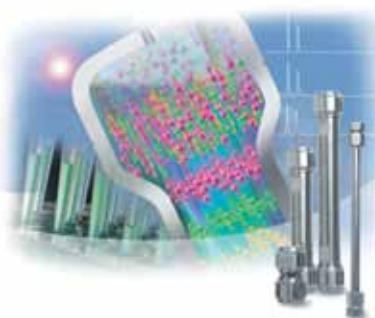
Column Specifications

Bonded Phase	Pore Size	Surface Area	pH Range	End-Capped	Carbon Load	Pore Volume	Ligand Coverage
Pursuit C18	200Å	200 m ² /g	1.5-10	Yes	12.9%	1.1 mL/g	3.5 µmol/m ²
Pursuit C8	200Å	200 m ² /g	1.5-10	Yes	7.4%	1.1 mL/g	3.8 µmol/m ²
Pursuit Diphenyl	200Å	200 m ² /g	1.5-8.0	Yes	7.3%	1.1 mL/g	2.8 µmol/m ²
Pursuit PFP	200Å	200 m ² /g	1.5-10	Yes	6.3%	1.1 mL/g	3.4 µmol/m ²
Pursuit PAH	200Å	200 m ² /g	1.5-10	Yes		1.1 mL/g	
Pursuit XRs C18	100Å	440 m ² /g	1.5-10	Yes	22%	1.1 mL/g	2.9 µmol/m ²
Pursuit XRs C8	100Å	440 m ² /g	1.5-10	Yes	15%	1.1 mL/g	3.7 µmol/m ²
Pursuit XRs Diphenyl	100Å	440 m ² /g	1.5-8.0	Yes	14.6%	1.1 mL/g	2.6 µmol/m ²
Pursuit XRs Si	100Å	440 m ² /g	1.5-10	Yes		1.1 mL/g	
Pursuit XRs ^{Ultra 2.8} C18	100Å	440 m ² /g	1.5-10	Yes	23.2%	1.1 mL/g	3.2 µmol/m ²
Pursuit XRs ^{Ultra 2.8} C8	100Å	440 m ² /g	1.5-10	Yes	15%	1.1 mL/g	3.7 µmol/m ²
Pursuit XRs ^{Ultra 2.8} Diphenyl	100Å	440 m ² /g	1.5-8.0	Yes	14.6%	1.1 mL/g	2.6 µmol/m ²
Pursuit UPS ^{2.4} C18	100Å	350 m ² /g	1.5-10	Yes	21%	0.9 mL/g	2.5 µmol/m ²
Pursuit UPS ^{1.9} C18	100Å	350 m ² /g	1.5-10	Yes	21%	0.9 mL/g	3.0 µmol/m ²

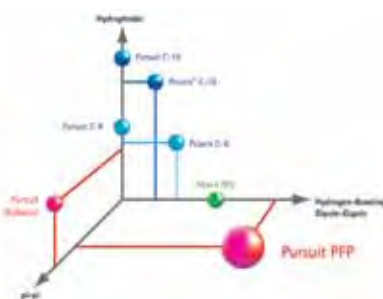
Specifications represent typical values only.

Particle Size	ID x Length (mm)	C18	C8	Diphenyl	PFP	PAH
5 µm	4.6 x 150	CSA3000150X046 \$658.00	CSA3030150X046 \$665.00	CSA3040150X046 \$658.00	CSA3050150X046 \$658.00	CSA7000150X046 \$672.00
	4.6 x 100	CSA3000100X046 \$616.00	CSA3030100X046 \$616.00	CSA3040100X046 \$616.00	CSA3050100X046 \$616.00	—
	2.0 x 150	CSA3000150X020 \$643.00	CSA3030150X020 \$643.00	CSA3040150X020 \$643.00	—	—
	2.0 x 100	CSA3000100X020 \$643.00	CSA3030100X020 \$643.00	CSA3040100X020 \$643.00	CSA3050100X020 \$643.00	—
	2.0 x 100	CSA3000100X020 \$643.00	CSA3030100X020 \$643.00	CSA3040100X020 \$643.00	CSA3050100X020 \$643.00	—
3 µm	4.6 x 150	CSA3001150X046 \$686.00	CSA3031150X046 \$686.00	CSA3041150X046 \$686.00	CSA3051150X046 \$686.00	—
	4.6 x 100	CSA3001100X046 \$643.00	CSA3031100X046 \$643.00	CSA3041100X046 \$643.00	CSA3051100X046 \$643.00	CSA7001100X046 \$672.00
	2.0 x 150	CSA3001150X020 \$658.00	CSA3031150X020 \$658.00	CSA3041150X020 \$658.00	CSA3051150X020 \$658.00	—
	2.0 x 100	CSA3001100X020 \$658.00	CSA3031100X020 \$658.00	CSA3041100X020 \$658.00	CSA3051100X020 \$658.00	CSA7001100X020 \$511.00
	2.0 x 100	CSA3001100X020 \$658.00	CSA3031100X020 \$658.00	CSA3041100X020 \$658.00	CSA3051100X020 \$658.00	CSA7001100X020 \$511.00

For more information, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.



Predominant Retention Mechanism



* Formerly a Varian product

SONNTEK PLIERS — STRAIGHTEN 1/16" TUBING

Looking for an easy way to remove the kinks in metal tubing?

These pliers with centre guide hole are suitable for straightening out bends in 1/16" tubing.



Product Number	Description	Price
TEKTS101	Pliers to Straighten 1/16" Tubing	\$76.20

GRACE DISCOVERY SCIENCES HPLC COLUMNS



Alltech® Alltima™ HP COLUMNS

Premium quality, exceptionally stable columns, without phase bleed

Alltech® Alltima™ HP phases are made from high purity silica to eliminate peak tailing. Proprietary bonding eliminates the problem of column bleed for MS and ELSD detection. Full range of phases with pH stability from 1 to 10. Optimizes retention, resolution, and analysis time.

Differentiated Phases: C18 for classic reversed-phase separations, EPS for extended polar selectivity, C18 High Load for extra reversed-phase retention, C18 Amide with low bleed, and HILIC

Specifications: High purity spherical silica, monomerically bonded, endcapped, 100, 120, 190Å pore size

Formats: Microbore, Expedite

Particle Size	ID x Length (mm)	C18 High Load	C18 Classic	C18-EPS	C18-Amide	HILIC	Silica
3 µm	4.6 x 150 mm	GD3112794 \$715.40	GD3112791 \$708.60	GD3112800 \$717.80	GD3112801 \$717.80	GD5129448 \$717.80	GD5129626 \$722.20
5 µm	4.6 x 150 mm	GD3112797 \$715.40	GD5129556 \$729.60	GD5129574 \$717.80	GD3112804 \$688.20	GD5129450 \$717.80	GD5129635 \$717.80

VisionHT™ Integral Guard System



The smaller diameters and finer porosity frits required in UHPLC create a higher likelihood of column and system blockage. Trace contaminants not normally problematic for traditional LC, may now pose backpressure issues.

VisionHT™ guards protect your column to minimize down time and reduce cost.

Product Number	Description	Price
GD5142548	C18 High Load, 2 x 5mm, Pkg. 3	\$555.90
GD5141952	C18 Basic, 2 x 5mm, Pkg. 3	555.90
GD5141594	C18 Classic, 2 x 5mm, Pkg. 3	673.10
GD5141595	C18 Polar, 2 x 5mm, Pkg. 3	673.10
GD5141954	HILIC, 2 x 5mm, Pkg. 3	555.90
GD5141956	Silica, 2 x 5mm, Pkg. 3	555.90
GD3118351	Integral Ultra-High Pressure Guard Column Holder	245.80
GD3118350	Stand-Alone Guard Holder	234.60

Grace® VisionHT™ ULTRA HIGH-PRESSURE COLUMNS

See Separations with Speed and Clarity

- A powerful combination of high-strength 1.5 µm media with ultra-low volume hardware
- Ultra-fast separations with superior efficiency, sensitivity, and resolution
- Exceptional stability for long column lifetimes
- 16,000psig pressure rating compatible with all ultra high-pressure LC systems



VisionHT™ Stationary Phases

C18 High Load — Fully bonded silica, ultra high purity silica. High capacity for hydrophobic compounds. Good peak symmetry.

C18 Basic — High purity silica and unique endcapping. Improved performance of basic compounds at neutral pH. Better sensitivity and peak shape by mass spec for basic compounds, without the need for acidified mobile phases.

C18 Classic — Moderate silica exposure. Classic reversed-phase selectivity. Reduced bonding is optimized for speed and sensitivity.

C18 Polar — High silica exposure. Unique polar selectivity. Low carbon load gives fastest reversed-phase elution times while retaining polar compounds longer.

HILIC — Polar phase with shorter equilibration times. Shipped in ACN/Water. Peak reversal compared to reversed-phase. Ideal for very polar compounds with high organic mobile phases for improved sensitivity by MS.

Silica — Traditional normal phase for use in 100% organic mobile phases. For isomeric separation of non-aqueous compatible compounds by absorption chromatography.

ID x Length (mm)	C18 High Load	C18 Basic	C18 Classic	C18 Polar	HILIC	Silica
2 x 30 mm	GD5142545 \$727.60	GD5141907 \$727.60	GD5139600 \$727.60	GD5139602 \$727.60	GD5141917 \$727.60	—
2 x 50 mm	GD5142546 \$754.50	GD5141908 \$761.70	GD5139605 \$754.50	GD5139606 \$761.70	GD5141919 \$761.70	GD5141922 \$761.70
2 x 100 mm	GD5142547 \$765.80	GD5141909 \$773.10	GD5139609 \$773.10	GD5139610 \$773.10	GD5141920 \$773.10	GD5141924 \$773.10

GRACE DISCOVERY SCIENCES HPLC COLUMNS

Alltech® Platinum™ COLUMNS

Alternate retention and selectivity for polar and nonpolar analytes available in sub 2 μm particle sizes

This extends polar selectivity well beyond what other reversed-phase columns offer and gives separations other columns cannot.

Alltech® Platinum™ phases have a controlled polar silica surface which provides enhanced polar selectivity (EPS) in addition to reversed-phase retention. C18 and EPS C18 columns are a complimentary duo to separate polar and nonpolar analytes.

Differentiated Phases: C18, EPS C18

Specifications: Spherical silica, monomerically bonded, proprietary endcapping, 100Å pore size

Formats: Microbore, Expedite™, Rocket™, Solvent-Reducer, Analytical, Prep

Alltech® Prevail™ COLUMNS

Reversed-phase columns for use with 100% organic to 100% aqueous mobile phases

Prevail™ phases are designed for wettability with aqueous and organic mobile phases, and are especially useful for broad gradients. Retain highly polar analytes with aqueous mobile phases as well as hydrophobic analytes in organic mobile phases.

Differentiated Phases: Carbohydrate ES, Organic Acid

Specifications: Spherical silica, monomerically bonded, endcapped, 110Å pore size

Formats: Microbore, Expedite™, Rocket™, Solvent-Reducer, Analytical, Prep

Vydac® ProZap™ COLUMNS

High-speed, high-efficiency columns for fast protein analysis

For gradient protein separations, longer columns increase run time but do not increase resolution. Proteins adsorb at the head of the column and then desorb once the critical mobile phase composition is reached. Since the proteins do not interact with the full length of the packed bed, short columns are sufficient for full resolution.

Short 10 and 20mm ProZap™ columns with 1.5 μm particles provide high-speed protein and life science separations. Sharp, efficient peaks maximize method sensitivity.

Differentiated Phases: C18

Specifications: Sub 2 μm spherical silica, proprietary bonding and endcapping, 500Å pore size

Format: Expedite™

Vydac® Everest® COLUMNS

For peptide separations, peptide mapping and proteomics applications

Unique selectivity and sensitivity are the result of new bonding technology that improves C18 surface coverage and deactivates residual silanols. C18 coverage approximates the theoretical limit based on surface area. This increased shielding of the base silica increases column life and reduces the amount of TFA required in the mobile phase.

High-capacity Everest® C18 columns are recommended as the first choice in peptide separations. Everest® offer high capacity to resolve complex samples such as protein digests.

Differentiated Phases: C18

Specifications: Spherical silica, monomerically bonded, endcapped, 300Å pore size

Formats: Capillary, Microbore, Expedite™, Analytical

These are just a few of the column families now available through Chromatographic Specialties Inc.

For more information, product numbers or application assistance, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

Tech Tip

Back Flushing Your Reversible Column

Once you have installed a reversible column, it is best to keep running it in the same direction. As a column is used, particles are trapped on the outside of the upstream frit, and highly retained compounds can accumulate on the head of the column. Reversing the column direction will sweep the particles into your detector. Any highly retained compounds that have been slowly working their way down the column will now be able to work their way back to the old head of the column and trickle off to cause background noise in your detector. So, if you are removing a column with no flow arrow, and plan to use it again later, mark the head of the column.

You may back-flush your reversible column to remove contaminants or clear the frit of particles. Just remember to run the column to waste, not to your detector. You don't need the debris you clean from your column moving into your flow cell.

AGILENT BioHPLC COLUMNS



"It's a struggle to isolate and identify charge variants of our monoclonal antibodies. How can I better separate the protein's isoforms?"

If you have questions like this, request Literature Code **AG47** to get more information on applications, dimensions and part numbers for Bio SEC, Bio MAb and Bio IEX columns.

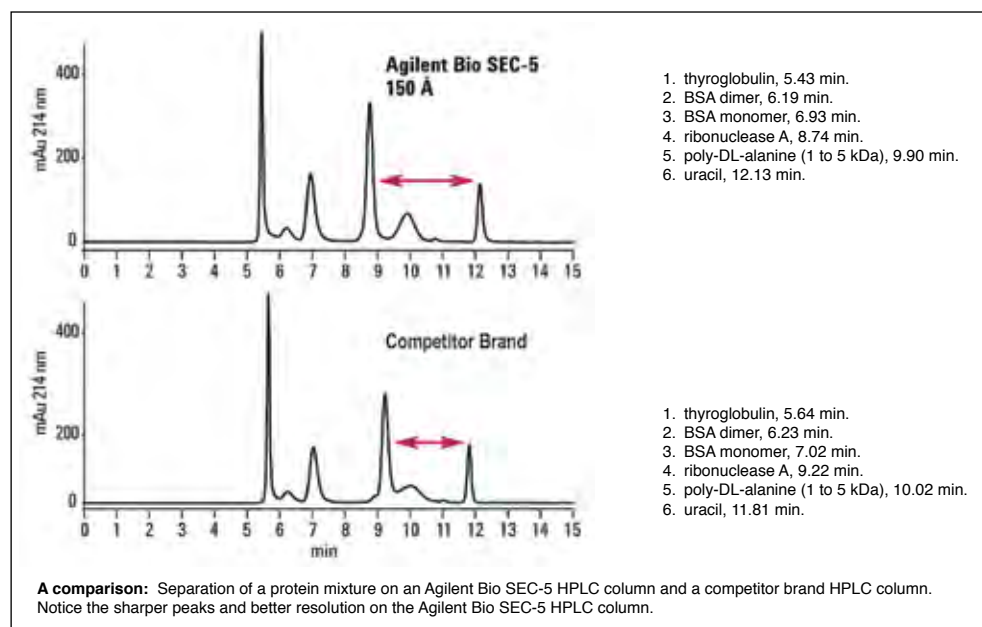
150 mm columns are also available.

For more information please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

Bio SEC-3 & Bio SEC-5 COLUMNS

Agilent Size Exclusion and Ion Exclusion BioHPLC columns enable highly reproducible, high resolution analyses of antibodies, proteins peptides and other biomolecules.

- Spherical, high purity, porous silica with a hydrophilic polymeric coating
- Exceptional loading capacity, stability, and reproducibility for size-based, biomolecule separations
- Sharper peaks, higher resolution, and better protein recovery
- Faster separations than large-particle SEC columns, in most cases
- Compatibility with most aqueous buffers
- Excellent stability in high and low salt conditions
- 3 μm particle size for high efficiency and high resolution separations
- 5 μm particle size for improved peak capacity and resolution



Agilent Bio SEC Columns

Description	SEC-3 (3 μm)	Price	SEC-5 (5 μm)	Price
100Å, 7.8 x 300 mm	CS51902501	\$1,828.00	CS51902516	\$1,391.00
100Å, 4.6 x 300 mm	CS51902503	1,598.00	CS51902518	1,150.00
100Å, Guard 7.8 x 50 mm	CS51902505	598.00	CS51902520	454.00
150Å, 7.8 X 300 mm	CS51902506	1,828.00	CS51902521	1,391.00
150Å, 4.6 X 300 mm	CS51902508	1,598.00	CS51902523	1,150.00
150Å, Guard 7.8 x 50 mm	CS51902510	598.00	CS51902525	454.00
300Å, 7.8 x 300 mm	CS51902511	1,828.00	CS51902526	1,391.00
300Å, 4.6 x 300 mm	CS51902513	1,598.00	CS51902528	1,150.00
300Å, Guard 7.8 x 50 mm	CS51902515	598.00	CS51902530	454.00
500Å, 7.8 x 300 mm			CS51902531	1,460.00
500Å, 4.6 x 300 mm			CS51902533	1,195.00
500Å, Guard 7.8 x 50 mm			CS51902535	477.00
1000Å, 7.8 x 300 mm			CS51902536	1,460.00
1000Å, 4.6 x 300 mm			CS51902538	1,195.00
1000Å, Guard 7.8 x 50 mm			CS51902540	477.00
2000Å, 7.8 x 300 mm			CS51902541	1,460.00
2000Å, 4.6 x 300 mm			CS51902543	1,195.00
2000Å, Guard 7.8 x 50 mm			CS51902545	477.00

Bio MAb COLUMNS

- High-resolution monoclonal antibody (MAb) separations
- Packed with polymeric, non-porous, weak cation exchange particles
- Virtually eliminate nonspecific binding of antibody proteins, increasing efficiency and recoveries
- Unique selectivity for monoclonal antibodies
- Available in 1.7, 3, 5, and 10 μm packings

Agilent Bio MAb Columns

Description	Stainless Steel	Price	PEEK	Price
4.6 x 250 mm, 5 μm	CS51902405	\$1,437.00	CS51902407	\$1,609.00
Guard*	CS51902406	488.00	CS51902408	862.00
4.6 x 250 mm, 10 μm	CS51902413	1,208.00	CS51902415	1,380.00
Guard*	CS51902414	431.00	CS51902416	661.00

* 4 x 10 mm stainless steel, 4 x 50 mm PEEK
 1.7 μm and 3 μm packings available in stainless steel
 2.1 mm ID columns available in PEEK



These particles are coated with a unique hydrophilic layer, improving recovery by dramatically reducing non-specific binding of antibody proteins.

(1.7 μm PS/DVD particles shown here)

Bio IEX COLUMNS

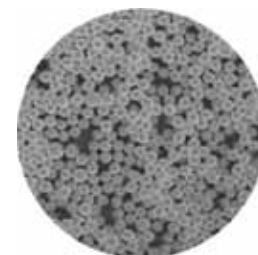
- High resolution, recovery, and efficiency
- Separate of proteins, peptides, oligonucleotides, and other bio-molecules
- Polymeric, non-porous particles
- Coated with a hydrophilic layer that virtually eliminates non-specific interactions.
- Multiple ion exchange groups attached at each bonding site, excellent capacity and selectivity

Columns available:

- **SCX** (Strong cation exchange) – SO_3H
- **WCX** (Weak cation exchange) – COOH
- **SAX** (Strong anion exchange) – $\text{N}(\text{CH}_3)_3$
- **WAX** (Weak anion exchange) – $\text{N}(\text{C}_2\text{H}_5)_2$
- 1.7, 3, 5, and 10 μm packings

Agilent Bio IEX Columns

	Bio SCX	Price	Bio WCX	Price	Bio SAX	Price	Bio WAX	Price
Stainless steel 4.6 x 50 mm, 1.7 μm	CS51902421	\$1,208.00	CS51902441	\$1,208.00	CS51902461	\$1,208.00	CS51902481	\$1,208.00
Stainless steel guard 4 x 10 mm, 1.7 μm	CS51902422	604.00	CS51902442	604.00	CS51902462	604.00	CS51902482	604.00
Stainless steel 4.6 x 50, 3 μm	CS51902423	1,092.00	CS51902443	1,092.00	CS51902463	1,092.00	CS51902483	1,092.00
Stainless steel guard 4 x 10, 3 μm	CS51902424	546.00	CS51902444	546.00	CS51902464	546.00	CS51902484	546.00
Stainless steel 4.6 x 250, 5 μm	CS51902425	1,437.00	CS51902445	1,437.00	CS51902465	1,437.00	CS51902485	1,437.00
Stainless steel guard 4 x 10, 5 μm	CS51902426	488.00	CS51902446	488.00	CS51902466	488.00	CS51902486	488.00
PEEK 2.1 x 250, 5 μm	CS51902431	1,754.00	CS51902451	1,754.00	CS51902471	1,754.00	CS51902491	1,754.00
PEEK guard 2.1 x 50, 5 μm	CS51902432	862.00	CS51902452	862.00	CS51902472	862.00	CS51902492	862.00
PEEK 4.6 x 250, 5 μm	CS51902427	1,609.00	CS51902447	1,609.00	CS51902467	1,609.00	CS51902487	1,609.00
PEEK guard 4.6 x 50, 5 μm	CS51902428	862.00	CS51902448	862.00	CS51902468	862.00	CS51902488	862.00
Stainless steel 4.6 x 250, 10 μm	CS51902433	1,208.00	CS51902453	1,208.00	CS51902473	1,208.00	CS51902493	1,208.00
Stainless steel guard 4 x 10, 10 μm	CS51902434	431.00	CS51902454	431.00	CS51902474	431.00	CS51902494	431.00
PEEK 2.1 x 250, 10 μm	CS51902439	1,523.00	CS51902459	1,523.00	CS51902479	1,523.00	CS51902499	1,523.00
PEEK guard 2.1 x 50, 10 μm	CS51902440	661.00	CS51902460	661.00	CS51902480	661.00	CS51902500	661.00
PEEK 4.6 x 250, 10 μm	CS51902435	1,380.00	CS51902455	1,380.00	CS51902475	1,380.00	CS51902495	1,380.00
PEEK guard 4.6 x 50, 10 μm	CS51902436	661.00	CS51902456	661.00	CS51902476	661.00	CS51902496	661.00



Highly crosslinked and rigid nonporous polystyrene divinylbenzene particles are grafted with a hydrophilic, polymeric layer, eliminating nonspecific binding, increasing efficiency and recoveries.

(5 μm PS/DVD particles shown here)

OPTIMIZE EXP™ — UHPLC COMPONENTS



EXP™ Direct Connect System



Particle Protection for Low Flow HPLC

Opti-Solv Micro and Nano Filters

- Filter out particles, extend column life
- ZDV connections every time
- Floating stem automatically adjusts
- Finger tight - No tools required
- For 400 bar / 6,000 psi micro and capillary HPLC systems

Contact our Technical Support Team for more information.

Optimize UHPLC Check Valves

OPTI-MAX cartridges are available for Shimadzu LC-20ADXR and SSI Ultra CP pumps.

Contact our Technical Support Team to find out if Optimize has developed check valves or piston seals for your UHPLC.

EXP™ fittings, filters and packed-bed products offer unparalleled convenience and ease of use. This advanced system is the first design to provide reusable hand-tight connections and hand-tight cartridge replacement for UHPLC, reducing costly downtime.



- Available in hand-tight & wrench-tight configurations
- Auto-adjusting ZDV connection
- Intended for many repeat uses
- Hand-tight to 8,700 psi or wrench-tight to 20,000 psi (1,400+ bar)
- Ultra-low internal swept volume
- Excellent protection, negligible impact on retention and peak symmetry
- Sleek architecture for easy installation in restricted instrument compartments

REUSABLE UHPLC FITTINGS

Product Number	Description	Price
M152003888	EXP™ Hand-Tight Nut and Titanium Hybrid Ferrule	\$44.50
M152003839	EXP™ 10-32 Hex Head Male Nut, Stainless Steel, Short Length	13.00
M152003833	EXP™ 10-32 Hex Head Male Nut, Stainless Steel, Standard Length	13.00
M152003841	EXP™ 10-32 Hex Head Male Nut, Stainless Steel, Long Length	13.00
M152403831	EXP™ Titanium Hybrid Ferrule	35.00
M152403832	EXP™ Titanium Hybrid Ferrule, Pkg. 10	300.20

UHPLC GUARD HOLDER

M150203956	EXP™ Direct Connect Holder for EXP™ Guard and Trap Cartridges	\$341.50
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GUARD CARTRIDGES, 1.8 µm

	C18	C8	C4	HILIC	Price
1.0 x 5mm	M1504100HA	M1504100HB	M1504100HC	M1504100HD	\$521.70
1.5 x 5mm	M1504102HA	M1504102HB	M1504102HC	M1504102HD	521.70
2.1 x 5mm	M1504104HA	M1504104HB	M1504104HC	M1504104HD	521.70
3.0 x 5mm	M1504106HA	M1504106HB	M1504106HC	M1504106HD	521.70
4.6 x 5mm	M1504108HA	M1504108HB	M1504108HC	M1504108HD	521.70

GUARD CARTRIDGES, 3 µm

	C18	C8	C4	HILIC	Price
1.0 x 5mm	M1504100HE	M1504100HF	M1504100HG	M1504100HH	\$521.70
1.5 x 5mm	M1504102HE	M1504102HF	M1504102HG	M1504102HH	521.70
2.1 x 5mm	M1504104HE	M1504104HF	M1504104HG	M1504104HH	521.70
3.0 x 5mm	M1504106HE	M1504106HF	M1504106HG	M1504106HH	521.70
4.6 x 5mm	M1504108HE	M1504108HF	M1504108HG	M1504108HH	521.70
	Phenyl-Hexyl	SAX	SCX	Custom	Price
1.0 x 5mm	M1504100HI	M1504100HJ	M1504100HK	Inquire	\$521.70
1.5 x 5mm	M1504102HI	M1504102HJ	M1504102HK	Inquire	521.70
2.1 x 5mm	M1504104HI	M1504104HJ	M1504104HK	Inquire	521.70
3.0 x 5mm	M1504106HI	M1504106HJ	M1504106HK	Inquire	521.70
4.6 x 5mm	M1504108HI	M1504108HJ	M1504108HK	Inquire	521.70

EXP™ STEM FILTERS AND PRE-COLUMN FILTERS

- Auto-adjusting stem for ZDV connections with any 10-32 port
- Stem filters only slightly larger than a standard HPLC fitting — Easily fit anywhere else you need extra protection
- Pre-column filters have larger filter area — Trap more particles before clogging

M150404122	EXP™ Stem Filter Kit, 0.2 µm	\$358.10
M150404123	EXP™ Stem Filter Kit, 0.5 µm	358.10
M150404117	EXP™ Stem Filter Cartridge, 0.2 µm, Pkg. 5	358.10
M150404119	EXP™ Stem Filter Cartridge, 0.5 µm, Pkg. 5	358.10
M150403837	EXP™ Filter Holder with EXP™ Titanium Hybrid Ferrule	341.50
M150403093	EXP™ Pre-Column UHPLC Filter Cartridge, 0.5µm, Pkg. 5	307.30
M150403096	EXP™ Pre-Column UHPLC Filter Cartridge, 0.2µm, Pkg. 5	307.30

SCAT AND VICI LIQUID HANDLING SAFETY CAPS

SCAT SAFETY CAPS

Improved Air Valves

- Combined valve and filter
- 1/4-28 thread fits your existing SCAT Safety Caps
- A valve change is recommended every 6 months

New Solvent and Waste Cap Sizes



SCT117010 /
SCT112010



SCT107034
B83 Waste Cap



SCT107410
GL45, 4 Port



SCT107006
GL28 Mini-Cap



SCT112410
GL45, 4 Port Fire Safety

- GL-45 caps with angled ports allow 4 or 5 1/4-28 fittings
- Nalgene B53, B63 and B83 caps for large solvent containers
- Mini-Safety Cap for GL-28 bottles
- **Fire-Safety Caps and Fittings** — Flame retardant plastics are used in these caps for use with the most flammable solvents. They feature bright orange colouring for quick identification.

For more information and product numbers, please contact our Technical Support Team.

VICI SAFETY CAPS

VICI

- Available in multiple sizes including 38-430 (standard 4L) VICI safety caps are based on 1/4-28 fittings throughout, including for charcoal vent filters.
- VICI vent filters are available with Breakthrough Detector Strips.



VJRS13001
38-430



VJRS20005
Charcoal Filter with Indicator

Ports	38-430	Price	GL45	Price	DIN50	Price
2	C44S13001	\$36.80	C44S11001	\$36.80	C44S15001	\$72.80
3	C44S13002	38.80	C44S11002	38.80	C44S15002	74.80
4	C44S13003	40.80	C44S11003	40.80	C44S15003	76.80

Caps are supplied with 1/4-28 fittings for all ports, a 1/16" fitting for 1 port and 1/8" fittings for the remaining ports.

Valves and Filters for VICI Safety Caps

All safety caps require either an air inlet check valve, an exhaust filter or for Helium sparging, an outlet check valve.

Product Number	Description	Price
C44S20003	Inlet valve, with 4 mm filter	\$25.50
C44S20009	Inlet valve, with 15 mm filter	25.50
C44S20006	Inlet valve, without filter	23.50
C44S20004	Air outlet valve, with filter (for He sparging)	25.50
C44S20005	Exhaust Filters with detector	138.10
C44S20002	Exhaust Filters without detector	97.00
C44S40004	Adapter for SCAT® and AIT waste caps	81.10

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SCAT Catalogue
Literature Code SCAT01

*Chromatographic Specialties Inc.
promotes safety in the lab!*

Our product lines are selected by our Technical Department. We all worked in labs of various sorts before we moved to technical support. Every one of us has seen near misses or spills because it was too tempting to take a short cut in the lab. We're delighted to have different lines of products which all make it easier to do lab work right the safe way.

In this supplement, we have only listed a small sample of what we have to offer. If you would like more information on some or all of these products, please give us a call. We'll be happy to discuss the pros and cons of the products, and pleased to send you the full catalogues.

Sincerely,
The Chromatographic Specialties Inc.
Technical Support Team

1-800-267-8103
tech@chromspec.com



VICI Safety Catalogue
Literature Code V45

PICKERING LABORATORIES

HPLC POST-COLUMN DERIVATIZATION

Application Notes

Aflatoxin & Ochratoxin Sample Preparation Columns



Aflatoxins and Ochratoxin A are produced by fungi. Both toxin types are found together in many foods and animal feeds. Analyze one extract for the occurrence of both mycotoxins in a single step.

Please request
Literature Code **PL06**

Multi-Residue Mycotoxin Analysis of Dry Distillers Grains



Distillers grains are the residues of ethanol production. They are used in domestic animal feed. Mycotoxins present in the fresh corn can be concentrated by a factor of three.

This single analysis method covers 4 families of toxins that could be present in distillers grains.

Please request
Literature Code **PL07**

PINNACLE PCX DERIVATIZATION INSTRUMENT SIGMA SERIES

Pickering Laboratories offers the complete package of chemicals, columns, methods and post-column systems. Because each part of the method is designed to work together, Pickering Laboratories can offer the extraordinary promise that the analysis is guaranteed to work for the intended application.

- Optimized HPLC post-column derivatization system
- Analysis of Amino Acids, Carbamates, Mycotoxins, Antibiotics and many other applications



Pinnacle Advantages

- Electronic syringe pump provides true pulse-free flow for superior sensitivity and consistency
- Electronic valves eliminate troublesome check valves and allow automated pump flushing
- Quick-change reactor cartridge for easy application switching and maintenance
- Column oven utilizes circulating air for consistency of heating and quick cooling
- Inert flow path extends system life and reduces maintenance
- Control software allows for precise reagent delivery and conservation
- Only post-column system with column oven temperature programming for improved separation and run times
- Works with any HPLC system

Product Number	Application Description	Price
PL11531011	Pinnacle PCX for Amino Acids (OPA detection), Aminoglycoside, Antibodies, Biogenic Amines, Polyamines, Paraquat/Diquat	\$25,212.00
PL11531021	Pinnacle PCX for Amino Acids (TRIONE® Ninhydrin detection), Ochratoxin A, Formaldehyde, Bromate	25,212.00
PL11531031	Pinnacle PCX for Mycotoxins including Aflatoxins & Fumonisins	25,212.00
PL11531041	Pinnacle PCX for Cholesterol	25,212.00
PL11531051	Pinnacle PCX for Carbamate Pesticides, Glyphosate Herbicide, Streptomycin (OPA detection)	29,092.00
PL11531061	Pinnacle PCX for Paralytic Shellfish Toxins	29,092.00
PL11531071	Pinnacle PCX for Trichothecene Mycotoxins	29,415.00
PL11531081	Pinnacle PCX for Polyether Antibiotics	29,092.00

For more information, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

PICKERING LABORATORIES HPLC POST-COLUMN DERIVATIZATION

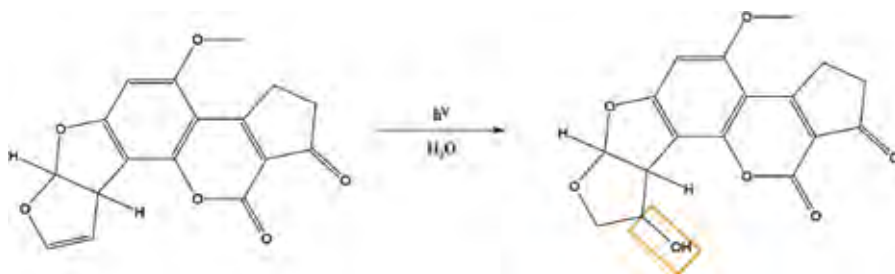
UVE PHOTOCHEMICAL REACTOR

- Detection enhancement for Aflatoxins, Phenylurea Pesticides, Barbiturates and other compounds
- Photochemical derivatization
- Simple, inexpensive and flexible
- Improves sensitivity and selectivity
- Identification of closely related compounds such as polyphenols.

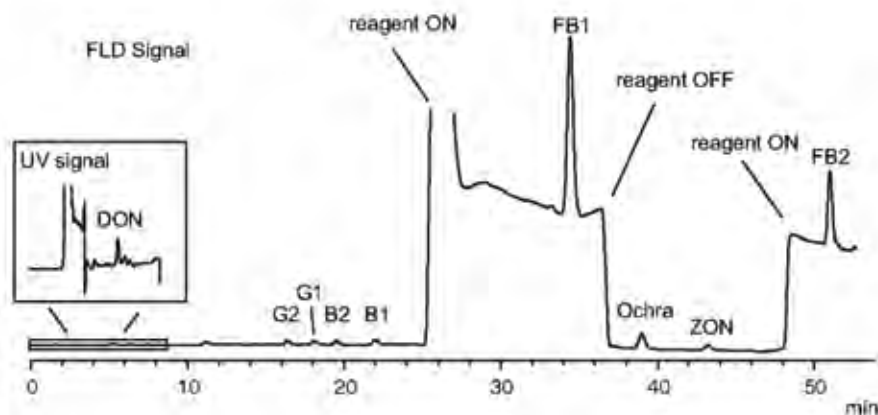
Pinnacle PCX plus UVE Photochemical Reactor

- Pickering Laboratories Multi residue Mycotoxins method for DON, Aflatoxins, Fumonisin, Ochratoxin A and Zearalenone employs photochemical derivatization for Aflatoxins allowing detection at sub-ppb levels
- Comparable to electrochemical derivatization with Cobra cell (DG Joint Research Center of the European Commission in the Institute for Health and Consumer Protection) AOAC accepted methodology

UVE Reactor: Aflatoxin B1 Reaction with Water and UV



Overall Detection Scheme: Pinnacle PCX adds OPA as needed to detect fumonisins (FB1, FB2). Aflatoxins B1 and G1 are converted to stable fluorescent derivatives by UVE reactor. Aflatoxin B2 & G2, Ochratoxin A, and Zearalenone are detected by native fluorescence. Deoxynivalenol can be detected in the same run by UV absorbance.



Application Note

Application of a GPC-LC-MS/MS Method for the Determination of 31 Mycotoxins In Edible Oils



Gel Permeation Chromatography (GPC) is widely used for sample clean up in mycotoxin analysis.

The new GPC column designed by LCTech shows superior performance for simultaneous clean up of Zearalenone, Trichothenes (types A, B and D), Aflatoxins, Ochratoxin A, including Fumonisin, along with other Mycotoxins from edible oil.

Please request
Literature Code **PL08**

Pickering Laboratories
10/11 Catalogue



Please request
Literature Code **PL00**

Product Number

Description

Price

PL10742	UVE Photochemical Reactor	\$2,788.00
PL15520024	Lamp – 254 UV Photochemical	218.90

For more information on Pickering Labs HPLC post column derivatization, amino acid analysis and sample clean-up products, contact our Technical Support Team at 1-800-267-8103.

AGILENT AUTOSAMPLER AND MANUAL SYRINGES



Fitted Plunger Syringes for Liquids

Fitted plunger syringes feature a stainless steel plunger that is meticulously hand-fitted to its matching glass barrel, creating a liquid-tight seal. These syringes are ideal for homogenous samples that are not prone to precipitation or bonding with glass. Note: plungers cannot be interchanged or replaced if damaged.

Also Available:

PTFE-Tipped Syringes for Gases and Liquids

PTFE-tipped syringes have a precision-machined plunger tip that forms a tight seal and enables the tip to wipe the barrel's interior free of sample during operation. This is particularly useful for viscous or heterogeneous samples, because it reduces deposits that can cause the plunger to freeze. Replacement plungers are available for most syringes.

Free Literature!



For a copy of Agilent's Complete Line of Autosampler and Manual Syringes, Specifications and Selection Guide, please request literature code **AG06**.

Many more Agilent manual and autosampler syringes are available!

Call 1-800-267-8103 for more information!

AGILENT COLOUR-CODED MANUAL SYRINGES

Make Volume Identification Easy



- A distinct color is permanently bonded onto every glass barrel for fast, easy identification
- Available in volumes from 0.5 μ L to 50 mL
- Innovative package doubles as a bench top syringe stand
- NIST traceable
- Provide accuracy $\pm 1\%$ for Plunger-in-Barrel syringes and $\pm 2\%$ for Plunger-in-Needle syringes

Manual Syringes with Fitted Plunger

Product Number	Description	Price
CS51901479	Straight, fixed, 5 μ L, 26/50/bevel	\$42.60
CS51901481	Removable with flexible plunger, 10 μ L, 26/50/bevel	67.90
CS51901483	Fixed, 10 μ L, 26/50/bevel	29.90
CS51901488	Fixed with flexible plunger, 10 μ L, 26/50/bevel	42.60
CS51901491	Removable, 10 μ L, 25/50/bevel	53.00
CS51901493	Fixed, 25 μ L, 25/50/bevel	37.40
CS51901495	Removable, 25 μ L, 25/50/bevel	57.60
CS51901500	Fixed, 50 μ L, 25/50/bevel	39.20
CS51901507	Fixed, 100 μ L, 25/50/bevel	44.90
CS51901514	Fixed, 250 μ L, 25/50/bevel	49.90
CS51901521	Fixed, 500 μ L, 25/50/bevel	55.30

AGILENT AUTOMATIC SAMPLER SYRINGES

Expand The Capabilities of Your Automatic Liquid Sampler



Agilent's blue line syringes are specifically designed to support the increased productivity of Agilent's new 7693A automatic liquid sampler. These top-quality syringes...

- Extend plunger lifetime and feature a superior needle finish to reduce inlet septa coring and wear
- Fully compatible with earlier-model Agilent autosamplers
- Decrease carryover between samples
- Accurate within $\pm 1\%$ of nominal volume, and with precision within 1%, measured at 80% of total scale volume
- Available in volumes from 0.5 μ L to 100 μ L, as well as 250 μ L and 500 μ L

Blue Line Autosampler Syringes with Fitted Plunger

CSG451380215	Plunger in needle, fixed, 1 μ L, 23/42/cone tipped	\$155.00
CSG451380213	Straight, fixed, 5 μ L, 23/42/HP	70.20
CSG451380226	Straight, fixed, 5 μ L, 26s/42/HP	70.20
CSG451380206	Tapered, fixed, 5 μ L, 23-26s/42/HP	70.20
CSG451380234	Straight, removable, 5 μ L, 23/42/HP	89.80
CSG451380209	Straight, fixed, 10 μ L, 23/42/HP	46.30
CSG451380216	Straight, fixed, 10 μ L, 26s/42/HP	46.30
CSG451380204	Tapered, fixed, 10 μ L, 23-26s/42/HP	47.20
CSG451380235	Straight, removable, 10 μ L, 23/42/HP	72.50
CSG451380242	Tapered, fixed, 25 μ L, 23-26/42/HP	95.10
CSG451380244	Tapered, fixed, 50 μ L, 23-26/42/HP	111.00

HAMILTON AUTOSAMPLER SYRINGES

HAMILTON SYRINGES FOR SPARK HOLLAND AND VARIAN AUTOSAMPLERS

- Rugged polytetrafluoroethylene (PTFE) plunger tip for GASTIGHT® applications
- Economically designed to give true value at an affordable price
- Strictly machined tolerances for reproducible results from injection-to-injection
- Hamilton glass barrel surface finish for superior syringe life and excellent cost savings

Hamilton offers everything that is required of an instrument syringe: chemical inertness, long life, reduced friction and the well-known Hamilton precision and accuracy.

The Competitor



Note the excess lubricant above the plunger tip.

HAMILTON



HAMILTON does not use a lubricant

HAMILTON
THE MEASURE OF EXCELLENCE™

Hamilton Company manufactures a complete range of chromatography syringes including:

- Syringes for partial loop filling, complete loop filling, and reverse loop filling by the aspiration HPLC technique
- Syringes for a complete range of GC applications, such as capillary and packed column methods; on-column and split/splitless injection techniques; use of Merlin Microseal™ and JADE injectors; and headspace sampling protocols.

Free Literature!



For a complete guide to Maintaining and Using Hamilton GASTIGHT®, MICROLITER™, and Specialty Syringes, please request a copy of literature code **H03**.



For a catalogue of Hamilton Company's complete line of syringes, please contact us to request a copy of Literature code **H01**.

Product Number	Description	Price
H6216101	Syringe, 1702C, 25 µL	\$117.20
H5465801	Syringe, 1710C, 100 µL	89.30
H5465901	Syringe, 1725C, 250 µL	89.30
H5466001	Syringe, 1750C, 500 µL	89.30
H5466101	Syringe, 1001C, 1000 µL	89.30
H5466201	Syringe, 1002C, 2500 µL	89.30

TECH TIP

Replace your syringe if dirt becomes noticeable, if it cannot be cleaned or if the plunger does not slide easily.

Replace the needle if septa wear is abnormal or if the needle is clogged.

Many other Hamilton autosampler syringes are available.
Contact our Technical Support Team at 1-800-267-8103 for more information.

BIO-CHEM FLUIDICS VALVES

BIO-CHEM FLUIDICS

Bio-Chem Valve products are used as critical components by instrument manufacturers serving a host of analytical and industrial applications:

- Chromatography
- Chemical research
- Biotechnology
- Hematology and other in-vitro analysis
- Pharmaceutical analytical research
- Industrial quality testing
- Water / environmental monitoring

BIO-CHEK™ IN-LINE CHECK VALVE



- Non-metallic
- Self-sealing
- Stops back-flow

BFCF5V \$34.80

CoolCube™ CONTROL MODULE



- Hit and Hold circuit
- 1/2 input voltage step down after 100 ms
- Use with all Bio-Chem Fluidics solenoid operated products
- Holds solenoid with less power

BFCOOLCUBE50R \$41.80

SOLENOID OPERATED ISOLATION VALVE

An Isolation Valve is a solenoid operated valve where the fluid path is completely isolated from the valve's solenoid actuation mechanism. The only wetted parts are the valve diaphragm and the valve body – hence the name Isolation Valve.

- 2-way or 3-way configuration
- Choice of PTFE, PEEK™, PPS, Tefzel®, EPDM, Viton® and perfluoroelastomer wetted parts
- For use with aggressive and high-purity fluids
- Designed for over 20 million cycles



Product Number	Description	Price
BF100T2NC1262	Isolation Valve, NC 2 Way 12VDC, PTFE	\$115.20

SOLENOID OPERATED PINCH VALVE

A Pinch Valve is a solenoid operated valve allowing a flow passage through a flexible tube which is "pinched" off to produce a tight seal. Only the easily replaceable tubing comes into contact with the fluid making this style of valve ideal for applications requiring frequent changes of the flow path.

- High cycle life (Valve: 20million; Tubing: 500,000 minimum)
- Low power consumption / minimal heat generation
- Zero dead volume closure
- Tubing options selected for chemical resistance and superior memory characteristics



BF075P2NC1223SM	Pinch Valve, 2-way, NC, 12 VDC, Each	\$76.30
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SOLENOID OPERATED MICRO-PUMP

A Micro-Pump is a solenoid operated device designed to provide a precise, repeatable and discrete dispensed volume of fluid.

- Inert materials
- Self-priming
- Continuous duty - nearly 3,000 hours of continuous use at 2 Hz cycle rate
- Accurate discrete dispense volumes



BF150SP122005EE	Micro Pump, 150SP, 12V, 200µL, 24mL/min.	\$410.00
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For more information on Biochem Fluidics Valves, please contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

HAM-LET AND DIBA FITTINGS AND ACCESSORIES

HAM-LET® FITTINGS

Since 1950, HAM-LET® has become an international leading supplier of high quality fluid transfer components in various materials for high pressure and high purity applications.

Union (tube inch to tube inch)



Product Number	Description	Price
HA92114	Union, Stainless Steel, 1/16"	\$27.30
HA92117	Union, Stainless Steel, 1/8"	22.00
HA92116	Union, Stainless Steel, 1/4"	21.80

Reducing Union (tube inch to tube inch)



HA92226	Reducing Union, Stainless Steel, 1/8"-1/16"	\$26.30
HA92223	Reducing Union, Stainless Steel, 1/4"-1/16"	24.60
HA92224	Reducing Union, Stainless Steel, 1/4"-1/8"	22.70

Union Tee (all tube inch)



HA92308	Union Tee, Stainless Steel, 1/16"	\$65.40
HA92311	Union Tee, Stainless Steel, 1/8"	42.40
HA92310	Union Tee, Stainless Steel, 1/4"	39.40

This is just a sampling of the large selection of HAM-LET® fittings available. Please contact our Technical Support Group at 1-800-267-8103 for help finding the products you require.



Products include:

- Fittings - Brass and Stainless Steel
- High Tech Components
- Process Valves
- Filters
- High Purity Valves
- Check and Relief Valves
- Quick Connectors
- Sample Cylinders

TECH TIP —

HAM-LET® fittings and valves are entirely interchangeable with other commonly used fittings!

DIBA'S OMNIFIT FITTINGS

Couplings

- Excellent chemical resistance
- Polypropylene, PEEK™ or Tefzel®
- Convert different thread sizes

Omnifit threaded couplings are a useful range of 'problem solving' parts that enable you to convert thread sizes quickly and easily.



Product Number	Description	Price
DI002301	Polypropylene two-way coupling	\$19.40
DI002302	Tefzel® two-way coupling	33.00
DI002306	PEEK™, 1/4"-28 Female to 10-32 Female	21.70
DI002352	PEEK™, 1/4"-28 Female to M6 Male	18.40

Click-N-Seal™ Barbed Adaptors

- Thread to barb connection
- Clicks to indicate that the fitting is properly installed
- Cannot be overtightened

DI008NB16CS5R	Polycarbonate, Red, for 1/16" ID tubing, 1/4"-29" Male, Pkg. 10	\$36.20
DI008NB16CS6R	Polycarbonate, Red, for 1/16" ID tubing, M6 Male, Pkg. 10	36.20
DI008NB32CS5R	Polycarbonate, Red, for 1/8" ID tubing, 1/4"-28 Male, Pkg. 10	36.20
DI008NB32CS6R	Polycarbonate, Red, for 1/8" ID tubing, M6 Male, Pkg. 10	36.20
DI008NB40CS5R	Polycarbonate, Red, for 5/32" ID tubing, 1/4"-28 Male, Pkg. 10	36.20
DI008NB40CS6R	Polycarbonate, Red, for 5/32" ID tubing, M6 Male, Pkg. 10	36.20



Since 1973, Omnifit products have been used throughout the scientific research community.



Omnifit Couplings



Click-N-Seal™ Barbed Adaptors

VICI VALVES AND ACTUATORS

360 Micron Fittings for Direct Connection of 360 μ m Tubing



- Work with metal, fused silica, or PEEK
- Up to 20,000 psi with metal FS tubing
- Eliminate use of troublesome liners

The ferrule snaps into the nut so that the fitting is “one-piece”, but the ferrule remains free to rotate as the nut is tightened so that the tube doesn’t twist.

Contact our Technical Support Team for more information.

What universal actuator goes with my valve or selector?

Valco Two Position GC Valves

Fitting Size	Valve Type	Actuator Model
1/32"	W	High speed (EUH)
1/16"	W	High speed (EUH)
1/16"	UW	Medium torque (EUD)
1/8"	UW	Medium torque (EUD)
1/4"	MW	High torque (EUT)

Valco Two Position HPLC Valves

Fitting Size	Valve Type	Actuator Model
1/32"	W	Medium torque (EUD)
1/16"	W	Medium torque (EUD)
1/16"	UW	Medium torque (EUD)
1/8"	UW	Medium torque (EUD)

MODEL C72 NANOBORE AND MICROBORE UHPLC INJECTORS

- Up to 20,000 psi liquid
- 360 μ m, 1/32", or 1/16" Valco fittings
- 100, 150, or 250 micron bore



Many of the latest analytical techniques require systems capable of pressures up to 10,000, 15,000, or even 20,000 psi. The new C72 series injectors from Cheminert feature a proprietary rotor material and stator coating that permits these pressures. C72 injectors are available in a variety of configurations, including a model incorporating our new 360 micron fittings and models with a vertical injection port.

Product Number	Description	Price
VC72MU4696ED	6-port, 20,000 psi, 360 μ m, Microelectric Actuator	\$2,340.00
VC72NU4696ED	6-port, 20,000 psi, 1/32", Microelectric Actuator	2,240.00
VC72U6696ED	6-port, 20,000 psi, 1/16", Microelectric Actuator	2,040.00
C72MX4696EH	6-port, 15,000 psi, 360 μ m, Microelectric Actuator	2,130.00
C72NX4696EH	6-port, 15,000 psi, 1/32", Microelectric Actuator	2,030.00
C72X6696EH	6-port, 15,000 psi, 1/16", Microelectric Actuator	1,830.00

Many other C72 valves are available. Please contact our Technical Support Team for details.

UNIVERSAL ACTUATOR

- CE certified
- Works with any Valco valve or selector
- Autosensing universal power supply, 110/230 VAC to 24 VDC



The universal actuator allows instrument manufacturers to use a single motor and control software to operate virtually any Valco or Cheminert rotary valve. This simplifies the electronic aspect of instrument design and streamlines the development process. Current interface options include RS232/485, USB, and BCD. (Cables not included).

VEUHA*	High Speed Universal Actuator, RS232/485	\$790.00
VEUHB	High Speed Universal Actuator, USB	790.00
VEUHC	High Speed Universal Actuator, BCD	790.00
VEUTA	High Torque Universal Actuator, RS232	830.00
VEUTB	High Torque Universal Actuator, USB	830.00
VEUTC	High Torque Universal Actuator, BDC	830.00

*RS-232 cable (product number VI22697) must be ordered separately. Other Universal Actuator models are available. Please inquire.

Mounting hardware must be ordered separately. Please contact our Technical Support Team to determine the correct hardware needed.

Knauer has been a leader in the European chromatography market for over 45 years. They offer innovative HPLC systems as well as solutions for biochromatography and sample preparation.

KNAUER PLATINblue

Ultra-fast PLATINblue UHPLC from KNAUER

Increase your laboratory's productivity by taking advantage of the benefits of PLATINblue ultra high-performance LC (UHPLC).

With PLATINblue UHPLC, you can now use conventional HPLC columns as well as columns packed with sub-2 μ m particles on the same system, to achieve:

- Faster separations, due to the use of shorter columns with equal or higher separation performance
- Higher resolution and unmatched separation efficiency at equivalent column lengths

Speed and productivity

- Ultimate performance HPLC with an extended pressure range up to 1000 bar (15,000 psi) at flow rates <1.5mL/min.
- Minimal dead volume of 25 μ L with SmartMix gradient mixer
- Fast gradients
- High performance autosampler for fast injection (15 seconds or <60 seconds with needle wash)
- Optimized communication and software operations for short initialization times
- High throughput – process up to 768 samples in 2 x 384-well plates or up to 96 samples in standard 1.8mL vials
- Fast detection – data acquisition rates up to 200Hz provide higher resolution, peak capacity and a more accurate integration

Ultimate detection sensitivity

- Electronically controlled pump drive provides for low pulsation eluent flow and stable baseline
- High intensity over the full UV-Vis range through the combination of a long-life "high brightness" D₂ and a tungsten-halogen lamp
- Excellent linearity of 3.0AU for precise simultaneous determination of main substances and trace components



Knauer PLATINblue



Knauer Bioline

KNAUER Bioline BIOCHROMATOGRAPHY



- The **Bioline Start System** is fast and accurate, particularly suited for the quantification of proteins. The Start System can also be upgraded with an autosampler for high sample throughput.
- **Bioline high resolution glass columns** offer pressure stability up to 100 bar and a thermostatic jacket for temperatures between 0°C and 60°C, making them suitable for a wide range of biochromatography applications.

For more information on the PLATINblue or Bioline systems, please contact our Instrumentation Support Team at 1-800-267-8103 or email instrum@chromspec.com.

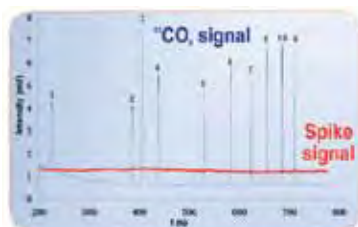
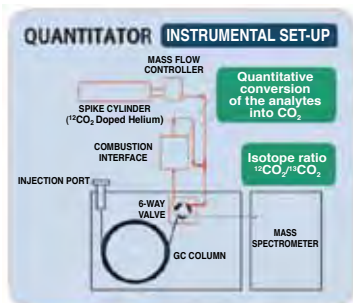
KONIK HPLC + HRGC K2



The power of automatic sample preparation, chromatography and mass spectrometry in a single and unique system with innovative expansion capabilities.

One of the latest developments (patented) introduced by Konik is a Universal Absolute Quantification System, the Konik QUANTITATOR®.

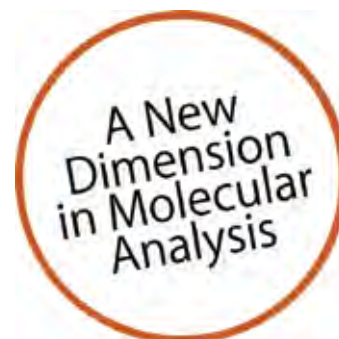
A small combustion furnace, placed at the end of the GC column in the KONIK 5000B GC, converts all the organic molecules to CO₂ (m/z 44). An accurately controlled flow of pure ¹³CO₂ (m/z 45) is leaked into the source providing a reference signal. The KONIK QUANTITATOR® provides an absolute quantification value for any analyte eliminating the need for individual reference standards.



Compound	Expected (µg g ⁻¹)	Found (µg g ⁻¹) n=3	Recovery (%)
1. Toluene	6.1	5.7 ± 0.3	93 ± 5
2. Ethylbenzene	6.1	5.9 ± 0.3	97 ± 5
3. m,p-xylene	12.2	12.3 ± 0.7	101 ± 6
4. o-xylene	6.1	6.2 ± 0.3	101 ± 5
5. Butyl butyrate	5.6	5.9 ± 0.3	105 ± 5
6. Undecane	4.7	5.0 ± 0.3	106 ± 6
7. Butyl hexanoate	5.6	5.6 ± 0.2	100 ± 4
8. Tridecane	5.1	5.3 ± 0.2	104 ± 4
9. Pentadecane	4.9	4.8 ± 0.2	98 ± 4

KONIK HPLC + HRGC K2

Welcome to the innovative world of multidimensional LC/HPLC+HRGC



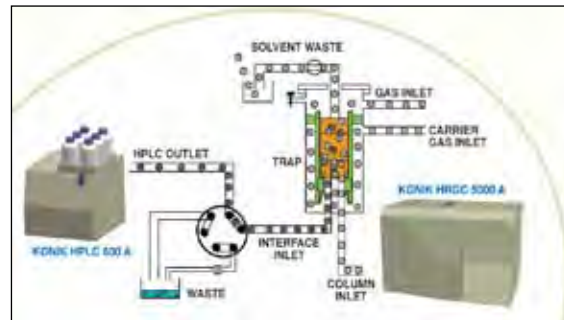
- Combine HRGC and HPLC with no need for sample prep
- Better qualitative results with lower detection limits
- Totally unique system — the only one of its kind!

How K2 works

The innovative Konik-Tech patented TOTAD® (Through Oven Transfer Adsorption Desorption) interface marries in synergy the separation and fractionation potential of LC and HPLC, to the separation, selective detection and quantitation of HRGC.

The basic problem to overcome in coupling an LC/HPLC to a HRGC is the selective elimination of the HPLC solvent from the analytes of interest that can not enter the HRGC column. The TOTAD® interface achieves this while maintaining the HRGC column flow undisturbed.

The flow diagram on the right depicts the TOTAD® interface operating principles. This patented interface allows the trapping of the analytes in the modified PTV injector of the Konik HRGC 5000A at the chosen temperature where the trap is held while a digitally controlled continuous flow of helium maintains the column flow and eliminates the solvent from the trap. The HRGC 5000 A time function on its Control Module automatically sets the logical valve sequence while the KONIK Mass Flow Controllers accurately regulate the set flows. These flows, as well as the temperature of the trap, can be adjusted depending on the solvents being used.



Applications

- Determination of pesticides in edible oils, PCBs in transformer oil, pesticides in water, hydrocarbon fractions in petrochemical samples, organochlorine pesticides in urine samples, organophosphorous and organochlorine pesticides in vegetable, nut and seed samples, minor components (esterols) in olive oils, PAHs in mineral oil
- Online RPLC-GC via TOTAD® method to isolate (+)-Methyl Epijasmonate from lemon (Citrus limon Burm.)
- Use of absorbent materials in on-line coupled reversed-phase liquid chromatography–gas chromatography via the through oven transfer adsorption-desorption interface
- Through oven transfer adsorption–desorption interface for the analysis of methyl jasmonate in aromatic samples by on-line RPLC-GC

For further information, please contact our Instrumentation Department at 1-800-267-8103 or instrum@chromspec.com

TORION PORTABLE GC-TMS SYSTEM

TORION TRIDION-9 GC-TMS

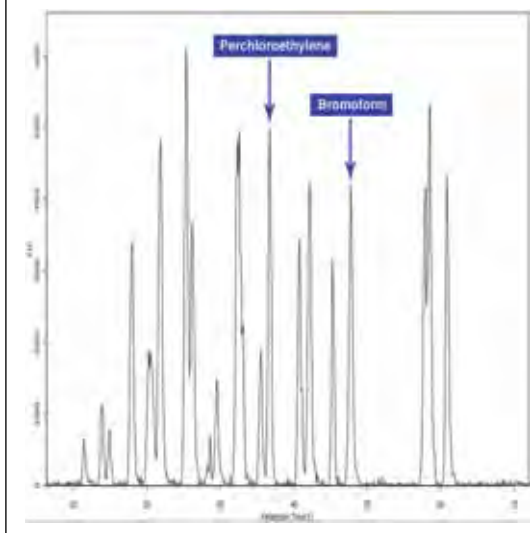
The new **TRIDION-9 GC-TMS** is the world's fastest and most portable GC-TMS for all your field GC applications. A high-speed, EPC-controlled capillary gas chromatograph (GC) is combined with a new amplitude scanning toroidal ion trap mass spectrometer (TMS) in a lightweight instrument that is **portable, fast, reliable and easy to use**. The GC-TMS is also supported by Torion's **CUSTODION®** SPME syringes for sample introduction, new **CALION™** calibration standards, and **CHROMION™** data processing software.



The New TRIDION-9 GC-TMS Features:

- Self contained system, weighing less than 32 pounds with all accessories — complete unit can be transported by one person
- Packaged in a new, specially-designed, hardened enclosure with dimensions of 15.0" (wide) x 15.5" (deep) x 9" (high)
- Ready to use in less than 5 minutes
- On-board helium GC carrier gas supply cartridge (2500 psig, 90cc)
- Low thermal mass capillary gas chromatograph (GC) with high speed temperature programming ($>2^{\circ}\text{C}/\text{sec.}$)
- Miniature toroidal ion trap mass spectrometer (TMS) with a nominal unit mass resolution over a mass range of 50 to 500 Daltons
- Highly sensitive and selective detection of a wide variety of compounds including, explosives, toxic industrial chemicals, environmental pollutants, food constituents and contaminants, and a variety of other hazardous and nonhazardous substances
- Unit is battery (24 V) operated

EPA 624 VOC MIX: TRIDION-9



TRIDION-9 GC-TMS Accessories

CUSTODION® SPME SYRINGES



Target analytes in air, headspace, liquid or dissolved solid samples are rapidly trapped on the active coated surface of the SPME fiber, which is mounted in an easy-to-operate injection molded syringe. The TRIDION-9 GC-TMS provides step-by-step sample injection instructions via the system's 7" LCD colour touchscreen and graphical user interface (GUI).

CHROMION™ PC-BASED OPERATING SOFTWARE



Enables the user to edit the GC-TMS method parameters, calibrate the instrument, and develop target analyte libraries for automated detection and identification of targeted chemical compounds based on their characteristic retention times and mass spectra. Results are reported in an easy-to-understand tabular format that is displayed on the TRIDION-9's LCD touchscreen. CHROMION™ software also provides display and plot views, as well as data processing capabilities.

For more information on Torion's TRIDION-9, please contact our Instrumentation Team at 1-800-267-8103 or email instrum@chromspec.com.

CDS SAMPLE INTRODUCTION SYSTEMS



CDS Model 5250T Trapping Pyrolysis Autosampler and 5250T Upgrade



- Pyrolyze samples in any reactant gas
- Thermally desorb volatiles before pyrolyzing sample
- Unique capabilities
- Upgrade any 5000 series unit
- Universal connectivity

CDS-7300 Purge & Trap Autosampler Water only autosampler



- 72 position autosampler, with removable sample trays for 40 mL VOA Vials, 3 trays of 24
- Internal standard addition (2 μ L)
- Water sample volumes are based on a sample loop (5 mL and 25mL sample loops provided)
- Programmable blank analyses
- Blank water rinse of the entire sample pathway (option for heated rinse to 90°C)
- Programmable replicate/triplicate analyses
- The chemically inert sample pathways are made of PEEK®, silica lined Stainless Steel or glass
- Computer interface
- Covers methods 624, 524 and 8260 (waters)

CDS 5200HP-R HIGH PRESSURE PYROLYSIS MINI-REACTOR SYSTEM

**CDS Analytical has launched the world's first, and only,
mini high-pressure pyrolysis reactor system —
complete with a high temperature catalyst reactor!**

Scientists studying new biomass feedstock, coal, oil, or polymer reactions need to understand how these materials break down in various conditions. The high pressure pyrolyzer allows them to study both high temperature and pressure on a small scale.

Scientists and chemical engineers will notice significant savings in time and money as a result, since they will then have a much better idea of what will happen before they scale up for pilot reactor tests.

Features

- Pyrolysis direct to GC
- Pyrolysis with trapping
- Reactant gas pyrolysis with trapping
- High-pressure pyrolysis with trapping
- Pyrolysis to catalytic reactor with trapping
- High-pressure pyrolysis and reactor with trapping

Benefits

- Provides standard Py-GC or Py-GC/MS analysis
- Allows low temperature work for thermal desorption and programmed heating rate pyrolysis
- Permits pyrolysis in reactive atmosphere like air or oxygen
- Provides for evaluation of process conditions at elevated pressure and reactant gases



CDS 7000 PURGE AND TRAP

As most seasoned chromatographers know, CDS Analytical is the world's premier pyrolysis manufacturer. What you may not know is that CDS also has produced purge and trap instruments for over 25 years - originally under the Peak Master name, and then under an exclusive private label contract with a major US supplier.

- The Best Chromatographic Resolution in the Industry
- Integrated GC and On-Trap Injection Ports
- First Patented Foam Sensor
- Full Length Integrated Wet Trap
- Exchangeable Sample Pneumatic System
- Pre-desorb for Better Peak Shape
- Optional Programmable Electronic Flow Control
- Optional Sample Heater



For more information, please contact our Instrumentation Team at
1-800-267-8103 or email instrum@chromspec.com.

HAMILTON DILUTERS / DISPENSERS

HAMILTON MICROLAB 600 DILUTER / DISPENSER



The MicroLab 600 is a highly precise syringe pump designed to quickly and easily dispense and dilute liquids.

Features and Benefits

- Large Touch Screen
- User-friendly interface
- The positive displacement system provides better than class A volumetric accuracy, independent of a liquid's viscosity, vapour pressure and temperature
- The inert fluid path minimizes sample carry over and improves compatibility with harsh chemicals
- With the new MicroLab 600 there will be no more adjusting pipettes and recalculating dilutions — quickly recall stored dispenses and dilutions using the 'Favourites' screen
- Bubble-free Prime Syringe simplifies priming



Why choose the MICROLAB 600?

- Reduce time preparing samples
- Minimize experimental variation from one user to the next
- Simplify compliance to EPA, FDA (GLP, GMP) and ISO
- N.I.S.T. traceable calibration

Applications

- Forensics Blood Alcohol
- Mining Assay Labs
- Metals Detection
- Environmental Analysis
- Water and Soils Testing
- Oil Analysis
- Alcohol Testing

Basic Controller

Quickly program simple diluting or dispensing applications.

Advanced Controller

Upgrade to create methods that use air gaps, washing, repetitive dispensing and more.

MICROLAB 600 Diluter

- **Dual Syringe Diluter** — Designed for large ratio dilutions in a single step

Product Number	Description	Price
HML615DIL	Dual Syringe Diluter with Basic Controller	\$4,813.00
HML625DIL	Dual Syringe Diluter with Advanced Controller	5,295.00

The “-DIL” model ships complete with the Concorde Hand Probe, Universal Valves, Fill/Dispense Tubing, Accessory Holder, country specific Power Cord, and the choice of two syringes. If no syringes are selected at the time of the order a 2.5 mL and 250 μ L syringe will be included.

MICROLAB 600 Dispensers

- **Single Syringe Dispenser** — Precisely dispense one liquid at a time
- **Dual Syringe Dispenser** — Dispense two liquids at the same time
- **Continuous Dispenser** — Minimize the time between dispenses and one syringe fills while the second syringe dispenses

HML610DIS	Single Syringe Dispenser with Basic Controller	\$4,139.00
HML620DIS	Single Syringe Dispenser with Advanced Controller	4,621.00
HML615DIS	Dual Syringe Dispenser with Basic Controller	5,006.00
HML625DIS	Dual Syringe Dispenser with Advanced Controller	5,487.00
HML615CNT	Dual Syringe Continuous Dispenser with Basic Controller	5,006.00
HML625CNT	Dual Syringe Continuous Dispenser with Advanced Controller	5,487.00

All dispensers ship complete with a Concorde Hand Probe (the Dual Dispenser uses the Dual Push Button Hand Probe), Universal Valve(s), Fill/Dispense Tubing, Accessory Holder, country specific Power Cord, and the choice of syringes. If no syringe(s) are selected at the time of the order the -DIS will ship with 1 mL syringe(s) and the -CNT will ship with 10 mL syringes.

For more information, please contact our Instrumentation Team at 1-800-267-8103 or email instrum@chromspec.com.

J-KEM CUSTOM LABORATORY ROBOTICS



J-KEM LABORATORY ROBOTIC WORKSTATIONS

With four robot styles and multiple software options, J-KEM is uniquely positioned to offer custom robotic solutions for virtually any lab automation need.

**J-KEM's technology
makes lab automation
as simple as...**



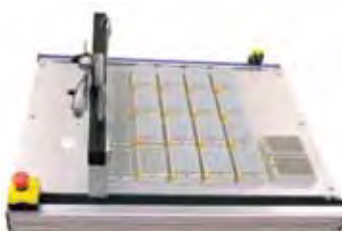
Eclipse Workstation

- Fast • Positional accuracy
- Affordable • Multiple Z-probes



Phoenix Workstation

- Large deck size • Multiple Z-probes
- Generates > 100 lb. of force in the Z-direction



Voyager Workstation

- Fast • Optimized for microvial weighing and cherry picking applications



Endeavour Workstation

- Fast • Positional Accuracy
- Most affordable workstation available

1

Four Robotic Platforms to Choose From

With four different robot platforms, we can help you select the one that most efficiently automates your unique application. Each platform has its own set of advantages including speed, positional accuracy, power, and price that make it the preferred system for different applications.

2

Custom Solutions

J-KEM offers complete hardware and software solutions for almost any lab automation task. Every workstation is customized with the features and software needed to run your specific application.

Workstations for:

- Weighing • Dissolution • Synthesis • Sorting
- Crystallization • Cherry Picking • SPE • SPS • Spectroscopy

3

Do-It-Yourself Robotics

Each of J-KEM's robotic systems is offered with custom programming, professional installation, and user training. For most researchers, this is the service they both need and expect. For research teams who prefer to do it themselves, J-KEM now offers each of its robotic systems as a fully configured and tested workstation, but with no pre-installed software. With complete systems starting under \$10,000, this is a highly affordable way to introduce robotics to your workflow. Software options are available to support your custom development.

For more information, please contact our Instrumentation Team at
1-800-267-8103 or email instrum@chromspec.com.

CUSTOMIZED INSTRUMENTATION SOLUTIONS

What Can Chromatographic Specialties Inc. Instrumentation Do For You?



- Do you have a unique application or installation requirement?
- Do you have a requirement that no one else can provide?
- Our knowledgeable and experienced Instrumentation Specialists can customize your instrument to fit your application needs

TURNKEY SOLUTIONS

Chromatographic Specialties Inc. can develop an analysis method for you that is optimized, validated and ready to use. Our instrumentation team will setup any analysis system with a guarantee that the instrument will work right out of the box.

The system will be installed at your facility by our experts. They will also train you on how to use the instrument and get the results you need. If you experience any problems after the installation, our experts will be available to discuss your questions further.

Systems

- Gas Chromatography
- Liquid Chromatography
- Autosampling
- Gas analysis
- Portable systems
- Automated extraction
- Dilution robots
- Gas generators

Applications

- Environmental
- Mining, oil and gas
- Pharmaceutical
- Food testing
- Chemical
- Industrial
- Nuclear

• ...and much more

If the system you are looking for does not exist, we can custom make it for you.

WE SPECIALIZE IN CUSTOMIZATION

Chromatographic Specialties Inc.'s Instrumentation Department provides uncompromised Service and Technical support for all of the products we distribute.

Our professional in-house instrumentation specialists are available to provide a full range of services, including toll-free telephone support, new product installation, on-site service and training as well as instrument customization.

Our custom capabilities include:

- Custom instruments
- Retrofit almost any GC with new detectors or injectors
- Automation solutions for lab, industrial and field analyses
- Miniaturization of systems
- Custom sample introduction systems
- Custom configurations for almost any application

Professional Gas Generator Installation Services



Whether you have a single GC or a complete laboratory to outfit, CSI can install and service every gas generator, no matter the make. You no longer have to deal with different companies to have your system plumbed. Our experts can also recommend the best system for your application.

Our instrumentation and installation professionals are chromatographers who know the importance of a quality, clean, leak-free installation.

Installation service options:

- Generator and air compressor installation
- Accumulator tanks
- Non-electric back up systems
- Extended warranty and service contracts available



Did you know...

Chromatographic Specialties Inc. is Canada's only Hamilton Diluter/Dispenser Repair and Calibration Center

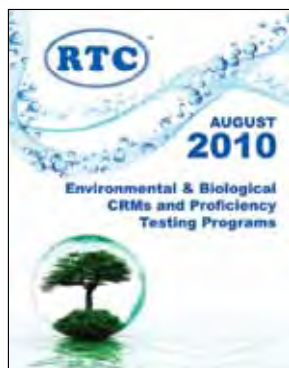
Digital flowmeters need to be recalibrated frequently according to these regulatory bodies:

- CGMP 211.68a: Equipment used shall be routinely calibrated
- CGMP 211.160b4: Instruments not meeting established calibration shall not be used
- ISO 9001 v 2000 7.6a: Measuring equipment must be calibrated at regular intervals
- CAEAL: As per ISO 9001

This calibration service is offered in Canada by **Chromatographic Specialties Inc.** with a 1-2 week turnaround for most flowmeters.

Contact our Instrumentation Team
at 1-800-267-8103 or
email tech@chromspec.com.

RTC ENVIRONMENTAL AND BIOLOGICAL STANDARDS AND PROFICIENCY TESTING



Please Request
Literature Code **RTC01**

What Makes RTC Different?

Quick-Turn Studies

There is no extra charge for off-schedule (Quick-Turn) PT studies. Quick-Turn studies are always the same price as scheduled PTs.

2x The Amount For PTs

RTC provides most ampuled water PTs in duplicates. This allows you to run multiple methods or have more analysts perform the PT. Or it covers your laboratory in case of the accidental mishap. If you do not use the second vial, it becomes a QC sample once the study is closed.

Easily Accessed CoAs Online

PTs are shipped with the documentation to maintain proper chain of custody throughout the testing process.

Analyst Certificates of Proficiency

Laboratories that enter data online are able to generate and print a certificate of proficiency for each PT the analyst has successfully performed. These certificates represent valuable records of training and performance for laboratory audits.

Certificates of Analyst Excellence

Analysts that demonstrate excellence throughout the year in proficiency testing are issued a certificate to recognize outstanding performance. These certificates will only be available for laboratories that have entered data online.

Custom Quote

Laboratories that have extensive PT requirements can contact Chromatographic Specialties to obtain a customized quote to meet regulatory requirements. We will review your company's scope and provide a custom quote, identifying the products you need. We do the work, you save the money.

ENVIRONMENTAL AND BIOLOGICAL CRMS AND PROFICIENCY TESTING PROGRAMS

RT Corp has been manufacturing and distributing Certified Reference Materials (CRMs), Quality Control (QC) Samples, and Proficiency Testing (PT) Samples since 1988.

Since its inception, RT Corp has become world famous for its production of "Real World" CRMs and fortified matrices CRMs. RT Corp was one of the original Proficiency Test providers recognized by the US EPA.



RTC is a CALA Approved PT Supplier

Environmental Reference Materials (QC) Subcategories:

- Constant-Value Quality Control
- Drinking Water
- Lead Reference Materials
- Forensic Standards
- Biological Standards
- Miscellaneous Media
- PCBs in Oil
- Sludge
- Soil
- UST
- Waste Water

Proficiency Testing

- DMRQA
- Pharmaceutical
- Solids/Soils Hazardous Waste PTs
- Underground Storage Tank (UST)
- Water Pollution/Waste Water
- Water Supply/Drinking Water



Product Number	Analysis	Sample Type	Matrix	Price
RTCCRM03050G	Metals in Soil #6	CRM	Soil	\$162.40
RTCCRM10450G	PAH Contaminated Soil/Sediment	CRM	Soil	168.00
RTCCRM107100G	BNAs/Pesticides Sandy Loam 9	CRM	Soil	190.40
RTCCRM13010G	Explosive Residues	CRM	Soil	168.00
RTCCRM207225G	TCLP Metals in Soil #4	CRM	Soil	235.20
RTCQC10602ML	Anions C/V QC Sample	QC	Water	63.10
RTCQC119720ML	Non-Ionic Surfactants in Water	QC	Water	58.40
RTCQC15702ML	Carbamate Pesticides	QC	Water	71.70
RTCQC12752ML	PCB's in Oil	QC	Oil	75.60
RTCQC14252ML	Organic Disinfection By-Products	QC	Water	70.10
RTCQC13732ML	Dioxin in Water	QC	Water	146.90
RTCFPE951	Pesticides in Food - 4 Sample Set	PT	Fruit Juice	435.80
RTCPE10832ML	Oil & Grease	PT	Water	67.20
RTCPEO0051	Organochlorine Pesticides Ampule 1	PT	Water	77.30
RTCPE13172ML	Pyrethroids in Ground Water	PT	Water	133.30

RTC can supply hundreds of QT, PT and Calibration products. This is a small sample of their product line. Please contact our Technical Support Team for specific requirements.

RTC PHARMACEUTICAL STANDARDS AND PROFICIENCY TESTING

RT PHARMA SECONDARY PHARMACEUTICAL REFERENCE STANDARDS (PRS™)

RTC is the only company worldwide that produces traceable Secondary Pharmaceutical Reference Standards. The RT Pharma Secondary PRS™ product line provides pharmaceutical laboratories and manufacturers with an economical and convenient alternative to the use of Pharmacopeial primary standards. Their PRS™ are produced and certified in accordance with ISO Guide 34 and ISO 17025. Each PRS™ has a Certificate of Analysis that complies with the requirements of ISO Guide 31 and is traceable to multiple Pharmacopeial primary standards. RTC also produces custom PRS™.



Please request
Literature Code **RTC03**



Please request
Literature Code **RTC02**

Product Number	Description	Traceable to USP	Qty	Price
RTCPHR1028	1,4-Benzoquinone (TOC Qualified)	1056504	1 g	\$67.20
RTCPHR1072	2-Propanol	1570428	3 x 1.2 mL	67.20
RTCPHR1048	4-Hydroxybenzoic Acid	1609013	1 g	67.20
RTCPHR1031	α-Tocopherol	1667600	500 mg	67.20
RTCPHR1030	α-Tocopheryl Acetate	1667701	500 mg	67.20
RTCPHR1029	α-Tocopheryl Acid Succinate	1667803	500 mg	67.20
RTCPHR1005	Acetaminophen (Paracetamol)	1003009	1 g	67.20
RTCPHR1086	Acetanilide Melting Point Standard	1004001	1 g	67.20
RTCPHR1053	Albuterol Sulphate	1012633	1 g	67.20
RTCPHR1008	Ascorbic Acid	1043003	2 g	72.80
RTCPHR1003	Aspirin (Acetylsalicylic acid)	1044006	1 g	67.20
RTCPHR1073	Avobenzene	1045337	1 g	67.20
RTCPHR1088	Azithromycin	1046056	1 g	72.80
RTCPHR1019	Benzyl Alcohol	1061901	1 g	67.20
RTCPHR1050	Benzoic Acid	1055002	1 g	67.20
RTCPHR1022	Butylparaben (Butyl parahydroxybenzoate)	1084000	1 g	67.20
RTCPHR1009	Caffeine	1085003	1 g	67.20
RTCPHR1095	Caffeine Melting Point Standard	1086006	1 g	67.20
RTCPHR1067	Carbamazepine	1093001	1 g	67.20
RTCPHR1016	Chlorpheniramine Maleate	1123102	500 mg	67.20
RTCPHR1075	Cimetidine	1134062	1 g	67.20

Certificates of Analysis and MSDS' are available.

This is a small sample of the products that are available.
Please contact us for a complete list.

RT PHARMA PROFICIENCY TESTING

RT Pharma Proficiency Testing Helps:

- Pharmaceutical laboratories comply with ISO 17025
- Provide internal quality checks
- Test the competency of contract laboratories
- Test competency of laboratory staff
- Compare intra- and inter-laboratory measures



Product Number	Analysis	Price
RTCPEP001	Analgesics (IR) Kit	\$151.20
RTCPEP002	Antibacterials (IR) Kit	151.20
RTCPEP003	Antibiotics (IR) Kit	151.20
RTCPEP004	Sugars (IR) Kit	151.20
RTCPEP005	Vitamins (IR) Kit	151.20
RTCPEP006	Residue on Ignition	106.40
RTCPEP007	Water Determination	106.40
RTCPEP008	Total Organic Carbon (TOC)	162.40
RTCPEP009	Conductivity	151.20
RTCPEP010	pH Determination Kit	151.20
RTCPEP011	Loss on Drying Kit	106.40
RTCPEP012	Melting Range Kit	106.40
RTCPEP013	Micro Standard Plate Count Kit	184.80



Please request
Literature Code **RTC09**

ACCUSTANDARD — CHEMICAL STANDARDS



**Over 6,000 Standards
from Abamectin to Ziram**

This guide includes the following for each individual pesticide:

- Chemical name
- Structure
- CAS number
- Molecular formula
- Molecular weight
- Physical state

Included for most:

- Solvent solubility
- Specific gravity
- Melting or boiling point
- Flash point
- Common Synonyms

A CAS number index is included for easy reference.

700 pesticides are available as single component solutions and neat. Also included are standards for over 50 EPA and international methods.

For your copy of the
AccuStandard Pesticide Standards
Reference Guide, please request
Literature Code **A05**



For your copy of the
AccuStandard Catalogue, please
request Literature Code **A01**



AccuStandard



In addition to the widest selection of organic, inorganic and petrochemical Chemical Reference Standards available as catalogue products, AccuStandard also offers custom formulations to meet unique requirements or specific laboratory needs.

AccuStandard is proud to announce that they have added even more products to their ever-expanding product line...

PBDEs Congeners - An additional 20 congeners, bringing the total available to 205 - just 4 short of the possible 209.

PBDE Metabolites and Derivatives - Additional methoxy and hydroxy PBDEs, as well as several more fluorinated PBDEs, which are ideal for use as internal standards.

22 New Industrial Flame Retardants - Identified as emerging "new" brominated flame retardants referenced in a study commissioned by the Norwegian Pollution Control Authority.

New EPA Method 524.3 Drinking Water Standards

New EPA Chicago Regional Laboratory (CRL)

Environmental Methods

• CRL-MS014 Series • CRL-MS015 Series • CRL-MS016 Series

Consumer Product Safety Commission (CPSC) Phthalate Method

30 New Pesticides Including:

- Dimethenamide-P
- Quinoxifen
- Fluroxypyr
- Oxabetrinil
- Emamectin-benzoate
- Novaluron
- Indanofan
- Quinoclamine

New Low Cost Inorganic ICP Calibration Standards to mimic high priced solutions from instrument manufacturers (Alternate Source Line).

Proposed Standards To Meet The New ASTM Environmental Methods

- D7599-09 Ethanolamines
- D7065-09 Bisphenol A (BPA)
- D7485-09 Nonylphenols, Nonylphenol Ethoxylates and Octylphenol
- D7065-06 Nonylphenols and Octylphenol and BPA
- D7600-09 Carbamates
- D7697-09 Organophosphonates
- D7598-09 Thiodiglycol (TDG)

Most in-stock products can be shipped the same day the order is placed and the Chromatographic Specialties Technical Support Team is available to answer any questions.



SAVE MONEY... AccuStandard's On-Going Stability Program

With the "On-Going Stability Program" many standards can be reevaluated near their expiration date and extended for a longer period of time. If you have unopened ampoules of standards, you can request an extension. If an extension is granted, you will receive a new Certificate of Analysis and new labels if required.

Please contact our
Technical Support Team
for more information.



RESTEK AND GRACE — CHEMICAL STANDARDS

NEW

ANALYTICAL REFERENCE MATERIALS

- 524 Calibration Mix #7A
- ASTM D3606 Standards
- Benzoguanamine Internal Standard
- DHA PIANO Mixes
- EP 2.4.22 Composition of Fatty Acids by GC Mix 2
- Glycerin Standard Mix
- L/C B/N Lab Control Sample Mix A
- Limit of Diethylene & Ethylene Glycol Internal Standard Mix
- Melamine Analysis Kits
- Ammelide Stock Standard
- Cyanuric Acid Stock Standard
- Propylene Glycol Standard Mix
- QuEChERS Internal Standards and QC Mixes
- Rxi®-5Sil MS/XLB Column Test Mix
- Sorbitol Standard Mix



For your copy of
Restek's New
2011/2012 Catalogue,
please request
Literature Code **RK01**



RESTEK

GRACE
Enriching Lives, Everywhere.®

CERTIFIED REFERENCE STANDARDS

Stay Current With Grace Davison Discovery Sciences'
Certified Reference Drug Standard Offering



- New and exclusive standards available
- Supplied with a Certificate of Analysis

As a supplier of drug and metabolite standards for over 30 years, Grace is continually updating their drug standard offering to keep up with the demand of new analyses performed by toxicological and forensics laboratories.

Their Quik-Check™ Solutions are packaged in ready-to-use ampoules at stated concentration. Quik-Check™ Solutions are DEA exempt and do not require a DEA license for purchase.

All chromatographic reference standards are supplied with a Certificate of Analysis certifying the identification and purity of the compound.

Contact our Technical Support Team for help finding the right product for your application.
Call 1-800-267-8103 or email tech@chromspec.com.



For your copy of the
2010 Grace-Discovery
Certified Reference
Standards Catalogue
Request Literature Code **GV02**

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@chromspec.com

www.chromspec.com

LUKNOVA AND VORTEX SAMPLE PREPARATION

Need other products for
dissolution testing?

PTFE and FEP tubing for
Automated Dissolution Equipment

See page 140 of our
Main (2008/2009) Catalogue
for Polymeric tubing

1/4-28 Finger Tight Fittings



See Page 141 of our
Main (2008/2009) Catalogue
for fingertight fittings,
or request Literature Code **DI01**
for the Omni-Fit fittings brochure.

Cuvettes and other supplies
for Agilent 8453 and Cary
(former Varian) Spectrophotometers



Request Literature Code **AG01**,
see pages 1224-1253

**Deuterium Lamps for
Spectrophotometers**



See pages 149, 156 and 157 of our
Main (2008/2009) Catalogue

LUKNOVA PROPRIETARY DESIGN FLASH COLUMNS

Luknova flash columns are packed with high purity silica gel by using our unique uniform packing technology. High purity silica gel with narrow particle size distribution and special packing technology guarantee the packed column to exhibit excellent purification and separation performance. The columns are compatible with purification systems, including ISCO, Analogix, and Biotage.

- Ultrapure and neutral silica gel
- Silica gel with narrow particle size distribution
- Unique uniform column packing
- Innovative column design, never lose a sample
- Stringent quality control



Luknova flash columns consist of
five pieces:



1. Perforated Cap
2. Sealing Insert
3. Inlet Filter
4. Outlet Filter
5. Column Body

VORTEX DISSOLUTION PRODUCTS

Vortex Pharma Group manufactures OEM quality dissolution consumables and accessories for the pharmaceutical market.

This product line includes:

Baskets & Basket Shafts
Cannulae
2 to 70 μ m Cannula Filters
Teflon and Peristaltic Pump Tubing
Clear & Amber Dissolution Vessels
Sinkers & Stainless Steel Wire
Stainless Steel & Teflon Paddles



Product Number	Description	Qty	Price
Vessels			
VORV900	1L Glass Vessel	Each	\$111.80
VORV910	1L Amber Glass Vessel	Each	157.10
Paddles			
VORP100	15" Stainless Steel Paddle	Each	\$113.20
VORP110	19" Stainless Steel Paddle	Each	133.10
VORP200	15" Teflon Paddle	Each	119.80
VORP210	19" Teflon Paddle	Each	139.80

Size	Distek Type	Price	Hanson Type	Price	Vankel/Varian Type	Price
Filters (Pkg. 1000)						
10 μ m	VORF110DK	\$167.60	VORF010HN	\$360.20	VORF110	\$360.20
20 μ m			VORF020HN	479.10	VORF120	360.20
35 μ m			VORF035HN	360.20	VORF135	360.20
45 μ m	VORF145DK	167.60				
70 μ m					VORF170	360.20

For more information, product numbers or application assistance, please contact our
Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

UCT CLEAN SCREEN Xcel® SPE

Less Steps In Your Extractions With UCT's Clean Screen Xcel®!

With demand for efficiency and cost savings in everything we do, UCT has developed a break-thru technology. The Clean Screen Xcel® solid phase extraction columns are the brand new line of sample prep phases designed to reduce the number of steps in the extraction, and therefore the amount of time and solvent necessary to complete the sample cleanup.

The **Xcel® I column** will extract a wide array of basic drugs including benzodiazepines and opiates.

The **Xcel® II column** is designed solely for the extraction of the THC metabolite.



Benefits of Clean Screen Xcel®

- Conditioning of the SPE column is eliminated
- Increased sample throughput
- Reduced sample size
- Increased sensitivity and recovery



Clean Screen Xcel® columns and plates are used by forensic and clinical chemists including:

- Post mortem investigations
- Criminal investigations
- Urine drug testing
- Racing laboratories
- Athletic drug testing
- Therapeutic drug monitoring
- Medical drug screening



Other Clean Screen SPE phases!

Since 1986, Clean Screen has led the industry with dependable and reproducible Solid Phase Extraction products and applications. Clean Screen phases are true copolymeric sorbents that contain hydrophobic and ion exchange functional groups uniquely polymerized to a silica substrate. The design and quality of Clean Screen provides superior sample clean up, recovery and reproducibility.

- **Clean Screen DAU**
Multiple drugs of abuse
- **Clean Screen THC**
THC and metabolites
- **Clean Screen GHB**
Gamma Hydroxy Butyrate
- **Clean Screen BNZ**
Benzodiazepines
- **Clean Screen ETG**
Ethyl Glucuronide
- **Reduced Solvent Volume**
Multiple Drugs of Abuse

Free Literature!



For a copy of the UCT Clean Screen Xcel® brochure, please contact our Technical Support Team at 1-800-267-8103 and request Literature Code **UCT25**

Product Number	Description	Qty	Price
UCTCSXCE103	Clean Screen Xcel® I, 130 mg / 3 mL	50	\$134.60
UCTCSXCE106	Clean Screen Xcel® I, 130 mg / 6 mL	50	136.60
UCTZSXCE010	Clean Screen Xcel® I, 130 mg / 10 mL	50	138.60
UCTCSXCE111	Clean Screen Xcel® I, 130 mg / 1 mL	100	132.70
UCTZSXCE2010	Clean Screen Xcel® II, 130 mg / 10 mL	50	146.50
UCTCSXCE211	Clean Screen Xcel® II, 130 mg / 1 mL	100	140.60
UCTCSXCE2103	Clean Screen Xcel® II, 130 mg / 3 mL	50	142.60
UCTCSXCE2106	Clean Screen Xcel® II, 130 mg / 6 mL	50	144.50
UCTWSH48XCE11	Clean Screen Xcel® 48 Deep Well Plate	1	146.50
UCTWSH96XCE11	Clean Screen Xcel® 96 Deep Well Plate	1	232.70

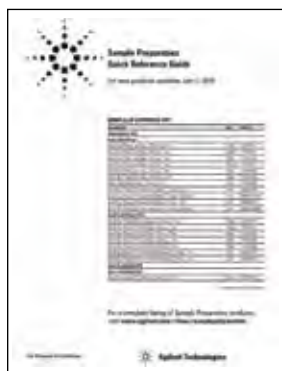
Custom SPE columns are also available! Please contact our Technical Support Team at 1-800-267-8103 or tech@chromspec.com to discuss your application requirements!

AGILENT BOND ELUT SPE PRODUCTS



Free Literature!

Agilent Sample Preparation Quick Reference Guide



The Agilent Sample Preparation Quick Reference Guide helps you find the SPE you need quickly! Please request Literature Code **AG62**.

Agilent Products for Solid Phase Extraction



To learn more about Bond Elut SPE, please request the Agilent Products for Solid Phase Extraction Brochure, Literature Code **AG04**.

For over 30 years, Bond Elut has been a trusted name in solid phase extraction. Years of use by demanding chemists at top companies worldwide have documented its many applications and proven its performance.

The Bond Elut Difference

- Proven track record of reliability
- Large selection of formats and sorbents to provide extraction solutions for a wide range of analytes and matrices
- Flexible design to meet both manual and automation requirements



BOND ELUT PLEXA

- Non polar retention mechanism
- Improved extract cleanliness minimizes sample matrix interferences
- Simple methods are amenable to a very broad range of analytes
- Fast flow, reproducible performance and ease of use

Plexa provides performance enhancements due to a unique polymeric architecture with a non-retentive, hydroxylated, amide-free surface and a non-polar PS/DVB core for retaining small molecules. Binding of proteins and lipids on the polymer surface is minimized, resulting in cleaner samples and reduced ion suppression. Plexa is ideal for high throughput assays requiring validated performance with minimal method development.

Product Number	Description	Qty	Price
CS12109303	Bond Elut Plexa Cartridges, 30 mg, 3 mL	50	\$104.00
CS12109603	Bond Elut Plexa Cartridges, 60 mg, 3 mL	50	118.00
CS12109610	Bond Elut Plexa Cartridges, 200 mg, 3 mL	50	352.00
CS12109206	Bond Elut Plexa Cartridges, 200 mg, 6 mL	30	181.00
CS12259506	Mega Bond Elut Plexa, 500 mg, 6 mL	30	248.00

BOND ELUT PLEXA PCX

- Faster flow rates improve productivity
- Extraction cleanliness and reduced ion suppression improves precision
- Simplified, single method for ease-of-use

Bond Elut Plexa PCX is a further milestone in the development of simple and robust SPE methods. Plexa PCX uses a polymeric cation exchange resin that combines the outstanding properties of Bond Elut Plexa – superior flow characteristics and improved analytical performance – with strong cation exchange functionalities. This mixed-mode SPE sorbent removed neutral and acidic interferences from the matrix, concentrates basic analytes and therefore improves sensitivity in the determination of basic compounds.

CS12108301	Bond Elut Plexa PCX Cartridges, 30 mg, 1 mL	100	\$232.00
CS12108303	Bond Elut Plexa PCX Cartridges, 30 mg, 3 mL	50	115.00
CS12108603	Bond Elut Plexa PCX Cartridges, 60 mg, 3 mL	50	130.00
CS12108206	Bond Elut Plexa PCX Cartridges, 200 mg, 6 mL	30	200.00
CS12258506	Bond Elut Plexa PCX Cartridges, 500 mg, 6 mL	30	273.00

More sizes are available. Please contact our Technical Support Team for more information.

AGILENT BOND ELUT SPE PRODUCTS

BOND ELUT C18

- Extremely retentive for non-polar compounds
- Effective for desalting aqueous mixtures
- The most hydrophobic, bonded silica sorbent

Bond Elut C18 is the most hydrophobic, bonded silica sorbent available in the Bond Elut range. It is the most popular SPE sorbent because of its extreme retentive nature for non-polar compounds. C18 is generally regarded as having the broadest spectrum of retention among bonded silica sorbents, since it retains most organic analytes from aqueous matrices.

Product Number	Description	Qty	Price
CS12102099	Bond Elut C18, 100 mg, 3 mL	50	\$103.00
CS12102025	Bond Elut C18, 200 mg, 3 mL	50	128.00
CS12102052	Bond Elut C18, 500 mg, 6 mL	30	92.70
CS12162028B	Bond Elut Jr, 500mg	100	300.00

BOND ELUT SI

- Highly polar phase retains polar molecules from non-polar matrices
- High purity silica
- Separate compounds with very similar structures

Bond Elut SI is particularly effective at separating compounds with very similar structures. Applying the analytes in a non-polar solvent, then increasing the solvent polarity by increasing the concentration of a polar modifier, such as THF or ethyl acetate, delivers effective separations.

CS12102010	Bond Elut SI, 100 mg, 1 mL	100	154.00
CS12102037	Bond Elut SI, 500 mg, 3 mL	50	133.00
CS12256008	Bond Elut SI, 1 g, 6 mL	30	110.00
CS12166008B	Bond Elut Jr, 1g	100	296.00

BOND ELUT NH2

- Normal phase or anion exchange sorbent
- Weaker anion exchange than SAX
- Amenable to separating structural isomers

Bond Elut NH2 is a weaker anion exchanger than sorbents such as SAX (a quaternary amine sorbent that is always charged) and is therefore a better choice for retention of very strong anions, such as sulfonic acids, which may retain irreversibly on a SAX sorbent. Similar to Diol and SI sorbents, Bond Elut NH2 is excellent for the separation of structural isomers.

CS12102014	Bond Elut NH2, 100 mg, 1 mL	100	\$233.00
CS12102041	Bond Elut NH2, 500 mg, 3 mL	50	204.00
CS12256012	Bond Elut NH2, 1 g, 6 mL	30	172.00
CS12162041B	Bond Elut Jr, 500mg	50	261.00

More sizes are available – Please contact our Technical Support Team for more information.

Captiva™ FILTER CARTRIDGES

Advanced Filtration Products for Sample Preparation

*All the benefits of Captiva™
in a standard SPE cartridge*

- Standard SPE tube format
- Suitable for larger plasma samples
- Simple handling for individual samples

The 0.2 μ m and 0.45 μ m depth filter cartridges are ideal for protein precipitation applications.

Product Number	Description	Price
CSA5300002	Captiva™ Filter Cartridges, 0.20 μ m Polyvinylidene fluoride and Polypropylene, 3 mL, Pkg. 100	\$242.00
CSA5307045	Captiva™ Filter Cartridges, 0.45 μ m Polyvinylidene fluoride and Polypropylene, 3 mL, Pkg. 100	239.00

EnvirElut SORBENTS

Pesticide, Herbicide and PAH Extraction with EnvirElut!

EnvirElut sorbents are specially designed for the extraction of a wide range of compounds from aqueous matrices.

- Extreme purity offers cleanliness in extract
- High capacity allows for the processing of large sample volumes
- Broad compound specificity

CS12272006	Bond Elut EnvirElut Cartridge, 500 mg, 3 mL, Pkg. 50	\$148.00
CS12272005	Bond Elut EnvirElut Cartridge, 1 g, 6 mL, Pkg. 30	146.00

MACHEREY-NAGEL AND RESTEK SPE PRODUCTS



Free Literature!



Contact our Technical Support Team to request a copy of the Macherey-Nagel CHROMABOND® HR SPE Phase Guide, Literature Code **MN04**

CHROMABOND® HR-X SPE FROM MACHEREY-NAGEL

- Hydrophobic polystyrene-divinylbenzene copolymer
- pH stability: 1 – 14
- High-purity material with excellent reproducibility
- Spherical particles: 85 μm ; pore size: 55 – 60 \AA
- Very high surface area: 1000 m^2/g
- Capacity: 390 mg/g (caffeine in water)
- Excellent recovery rates especially for the enrichment of pharmaceuticals/active ingredients



Recommended applications:

Pharmaceuticals/active ingredients from tablets, creams and water/waste water; drugs and pharmaceuticals from urine, blood, serum and plasma; trace analysis of pesticides, herbicides, phenols, PAHs and PCBs from water.



Product Number	Description	Qty	Price
MCN730934	CHROMABOND® HR-X, 1mL / 30g	30	\$69.30
MCN730935	CHROMABOND® HR-X, 1mL / 100mg	30	86.60
MCN730936	CHROMABOND® HR-X, 3mL / 60mg	30	96.10
MCN730931	CHROMABOND® HR-X, 3mL / 200mg	30	101.60
MCN730931250	CHROMABOND® HR-X, 3mL / 200mg	250	660.90
MCN730937	CHROMABOND® HR-X, 3mL / 500mg	30	145.80
MCN730938	CHROMABOND® HR-X, 6mL / 200mg	30	139.20
MCN730938250	CHROMABOND® HR-X, 6mL / 200mg	250	904.20
MCN730939	CHROMABOND® HR-X, 6mL / 500mg	30	206.70
MCN730939250	CHROMABOND® HR-X, 6mL / 500mg	250	1,377.80
MCN730940	CHROMABOND® HR-X, 15mL / 500mg	20	171.20
MCN730941	CHROMABOND® HR-X, 15mL / 1g	20	282.00

RESTEK Q-sep™ QuEChERS dSPE TUBES FOR EXTRACT CLEAN-UP

QuEChERS methods are fast, easy, and cost-effective, and Restek Q-sep™ products make QuEChERS procedures even simpler. All sorbents and sample tubes are included — no specialized equipment or glassware is required. Prepare samples more efficiently with a complete line of QuEChERS supplies from Restek.



- Ready-to-use tubes, no glassware required
- Preweighed, ultra-pure sorbents
- Support AOAC (2007.01) and European (EN 15662) QuEChERS methods
- Packaged in mylar subpacks for enhanced protection and storage stability
- Individually labeled tubes for easy sorbent identification



RK26215	150mg MgSO_4 , 25mg PSA, 2mL	100	\$169.30
RK26216	150mg MgSO_4 , 25mg PSA, 25mg C18, 2mL	100	169.30
RK26217	150mg MgSO_4 , 25mg PSA, 2.5mg GCB, 2mL	100	169.30
RK26218	150mg MgSO_4 , 25mg PSA, 7.5mg GCB, 2mL	100	169.30
RK26124	150mg MgSO_4 , 50mg PSA, 2mL	100	169.30
RK26125	150mg MgSO_4 , 50mg PSA, 50mg C18, 2mL	100	169.30
RK26123	150mg MgSO_4 , 50mg PSA, 50mg GCB, 2mL	100	169.30
RK26220	1200mg MgSO_4 , 400mg PSA, 15mL	50	143.20
RK26221	1200mg MgSO_4 , 400mg PSA, 400mg C18, 15mL	50	143.20

Free Literature!



Contact our Technical Support Team to request a copy of the RESTEK QuEChERS Products Guide, Literature Code **RK53**.

CHROMSPEC™ ...The Name for Affordable Quality

In our on-going search for new and innovative products, we sometimes come across affordably priced products of exceptional quality. We market these products under the brand name CHROMSPEC™.

- Chromatographic Specialties Inc. maintains a large inventory of CHROMSPEC™ products for quick delivery
- Competitively priced
- Superior quality, guaranteed product performance
- Free access to our technical expertise

CHROMSPEC™ SILICA GEL

A very high purity acid washed silica gel with a nominal pore diameter of 60Å and a pH range of 6.5 to 7.5. The particle size range of this product, 60 to 200 µm, makes it suitable for the removal of polar organic compounds using the following methods.

- CCME's "The Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in Soil"
- The Atlantic RBCA Method for PHCs
- Oil and Grease Analysis — Speciation of Animal/Vegetable/Mineral fractions (HEM & HEM-SGT)

The product can also be used for many other procedures to separate organic molecules by polarity.



Free 50g samples are available for evaluation.

Contact our Technical Support Team at
1-800-267-8103 or email tech@chromspec.com.

CHROMSPEC™ Products

- Autosampler Vials
- Chromatographic Tubing
- Fused Silica Cutting Stones
- GC Ferrules
- GC Septa
- GC Gas Traps
- GC Glass Connectors
- GC Injection Port Liners
- HPLC Lamps
- Inspection Gloves
- Membrane Filters
- GC Packed Columns
- Syringe Filters



Product Number	Description	Qty	Price
C741000	CHROMSPEC™ Bulk Silica	1 kg	\$70.00
C741010	CHROMSPEC™ Bulk Silica	5 kg	275.00
C741020	CHROMSPEC™ Bulk Silica	25 kg	990.00

We are continuously adding innovative products to our CHROMSPEC™ line.
For more information, contact our Technical Support Team at
1-800-267-8103 or email tech@chromspec.com.

MUNKTELL FILTER PAPER



- High quality
- Ready to ship
- Competitively priced

Compare our prices!

The world's first manufacturer of filter paper

The Swedish chemist J.J. Berzelius (1779–1848) is regarded as the inventor of the first real filter paper. He was the first to use pure wet-laid all-rag paper for the retention of precipitates in chemical analysis.

At Berzelius' suggestion, the development and manufacture of such paper was begun around 1815 at J. H. Munktell's paper mill at Grycksbo. Similar production was later begun in England and Germany, but the "Swedish Filter Paper" retained its leading position, and its characteristics, particularly its purity, set the standard for analytical filter paper.

The paper which was hand-made at the time of Berzelius, is still made at the same paper mill today, but now with the aid of modern paper-making technology. Munktell filter paper with Berzelius's picture – your assurance of original quality!



Replica Filter Paper Boxes

Munktell filter paper was originally delivered in hand-made birchbark packages.



QUALITATIVE CELLULOSE FILTER PAPER

Munktell No. 1 — Medium to slow filtering, medium tight pores
Particle Retention: 10 μm Hertzberg Rate: 150 s/100mL
Available from 32mm to 500mm diameter

Ash Content: <0.06%

Munktell No. 2 — Slow filtering, narrow pores
Particle Retention: 8 μm Hertzberg Rate: 240 s/100mL
Available from 32mm to 385mm diameter

Ash Content: <0.06%

Grade 1288 — Fast filtering, wide pores, hardened
Particle Retention: 12-15 μm Hertzberg Rate: 70 s/100mL
Available from 42.5mm to 400mm diameter

Ash Content: <0.1%

Grade 1289 — Medium to fast filtering, medium wide pores, hardened
Particle Retention: 8-12 μm Hertzberg rate: 160 s/100mL
Available from 55mm to 240mm diameter

Ash Content: <0.1%

QUANTITATIVE CELLULOSE FILTER PAPER

Grade 388 — "Black Dot" Fast filtering
Particle Retention: 12-15 μm Hertzberg rate: 70 s/100mL
Available from 55mm to 240mm diameter

Ash Content: <0.01%

Grade 389 — "White Dot" Medium to fast filtering, medium wide pores
Particle Retention: 8-12 μm Hertzberg rate: 150 s/100mL
Available from 12.7mm to 240mm diameter

Ash Content: <0.01%

Grade 390 — "Green Dot" Slow filtering, narrow pores
Particle Retention: 3-5 μm Hertzberg rate: 1200 s/100mL
Available from 55mm to 240mm diameter

Ash Content: <0.01%

Grade 391 — "Blue Dot" Very slow filtering, fine pores
Particle Retention: 2-3 μm Hertzberg rate: 2500 s/100mL
Available from 55mm to 240mm diameter

Ash Content: <0.01%

Product Number	Grade	Diameter	Qty	Price
MK125220	Munktell No. 1	47mm	100	\$6.00
MK125204	Munktell No. 1	110mm	100	8.50
MK125207	Munktell No. 1	185mm	100	16.20
MK120211	1288	47mm	100	6.50
MK120208	1288	240mm	100	23.30
MK120306	1289	150mm	100	11.60
MK119104	388 Black Dot	110	100	21.60
MK119105	388 Black Dot	125	100	28.30
MK119205	389 White Dot	110	100	24.20
MK119206	389 White Dot	125	100	30.10
MK119207	389 White Dot	150	100	41.10
MK119302	390 Green Dot	70	100	15.40
MK119304	390 Green Dot	110	100	21.60
MK119404	391 Blue Dot	110	100	21.60

Prices cannot be combined with other discounts.

This listing contains some common sizes and grades of cellulose filters.

For more options, contact our Technical Support Team at
1-800-267-8103 or email tech@chromspec.com.

BINDER-FREE GLASS MICROFIBRE FILTERS

MGA — Highly efficient for general laboratory filtration, clarification of buffer and reagent solutions. Corresponds to many international standards for air and water pollution monitoring.

Particle Retention: 1.6 μm

MGB — For filtration of suspended solids in water, waste water analysis, pre-filters for membrane filters. Suitable for filtration of large volumes.

Particle Retention: 1.0 μm

MGC — Standard filter for the clarification and monitoring of waste water and water, scintillation counting on the filter, cell harvesting and hydrocarbon analysis where cellulose fibres are a nuisance.

Particle Retention: 1.2 μm

MGD — Universal membrane pre-filter material

Particle Retention: 2.7 μm

MGF — Higher efficiency in particle retention for smaller particles than other glass fibre grades. Ideal for clarification of protein solutions or filtration of liquids prior to HPLC.

Particle Retention: 0.7 μm

MG 550-HA — For standard methods of determining total suspended solids in water. Also recommended for cell harvesting, air pollution control and liquid scintillation counting. Appropriate for TCLP testing.

Particle Retention: 1.5 μm

Product Number	Grade	Diameter	Qty	Price
MK413003	MGA	47	100	\$26.70
MK414003	MGB	47	50	44.40
MK415003	MGC	47	100	43.60
MK419005	MGD	47	50	28.10
MK417005	MGF	47	100	67.40
MK417010	MGF	110	100	196.70
MK417510	MG 550-HA	47	100	36.00

Prices cannot be combined with other discounts.

Glass fibre filters are available in 10mm to 257mm diameter (depending on grade).

Find your Munktell Grade Here

Munktell	Whatman	Ahlstrom	Schleicher & Schuell	MFS/Advantec	Macherey-Nagel
No. 1	1	601	593	2	616 md
No. 2	2	642	597 / 2095	232	616
1288	4	631	604 / 1573	1	1670
1289	n/a	n/a	1574	n/a	1672
388	41 / 54 / 541	54 / 55	589/1 / 1505	5A	640 w
389	40 / 43	n/a	589/2 / 589/4 / 1506	7	640 m
390	44	74	589/5	5B	640 d
391	42 / 50 / 542	95	589/6 / 1507	6 / 4A	640 de
MGA	GFA	111	GF50	GA-55	GFA
MGB	GFB	121	GF51	GB-140	GF2
MGC	GFC	131	GF52	GC-50	GF3
MGD	GFD	141	GF53	GD-120	GF4
MGF	GFF	151	GF55	GF-75	GF5
MG 550-HA	934 AH	n/a	n/a	n/a	n/a





For the full Munktell Catalogue, request literature code **MK01**


What is "Black Dot" Paper?


To simplify your selection of quantitative ashless filter paper, Munktell uses a system of colour markings on their filter paper boxes:


The dot colour represents the grade of paper:


 **388** - Fast filtering for coarse and voluminous precipitates.

 **389** - Medium to fast filtering, typical grades for quantitative tasks, coarser precipitates.

 **392** - Medium to slow filtering, but relatively fast for fine precipitates.

 **391** - Very slow filtering, for fine-grained precipitates.

 **390** - Slow filtering, fine precipitates such as lead dioxide.

 **393** - Particular slow filtration For extremely difficult filtration conditions and particularly fine precipitates.



THOMSON FILTER VIALS

Advantages of SINGLE StEP Vials

- Fast sample filtration in one easy step
- Easily pressed by hand
- Eliminate burst filter membranes
- Reduce instrument maintenance
- Eliminate cross contamination from reusing syringes

Save time!

Filtering takes seconds not minutes

Filter 20 Samples With Syringe Filters	Filter 20 Samples With SINGLE StEP Filter Vials
1) Open syringe filter 2) Open package 3) Fill syringe 4) Attach filter to syringe 5) Filter sample into vial 6) Cap vial 7) Dispose of waste	1) Add 0.45mL sample to vial 2) Press down plunger
(Approximately 2 minutes per sample)	(Approximately 15 seconds per sample)
	
Elapsed Time: 40 minutes	Elapsed Time: 5 minutes Time Saved: 35 minutes

Colour Coded Caps Make SINGLE StEP Vials Easy to Find in the Lab

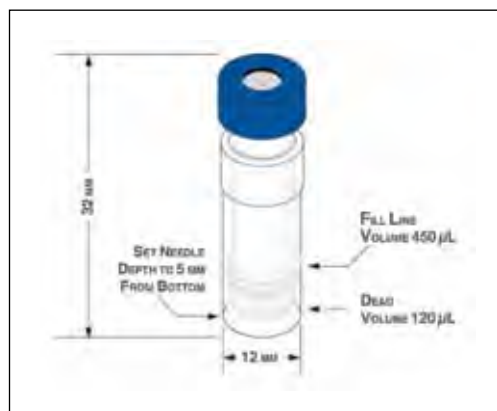


THOMSON SINGLE StEP FILTER VIALS

Thomson SINGLE StEP Filter Vials (patent no. 7,790,117) are designed to speed up sample prep and analysis. Simply transfer your sample into the vial, press down on the plunger filter and your sample is ready.

- Standard 12x32mm vial format
 - Compatible with most standard Autosamplers including Agilent® and Waters®
 - Ideal for UHPLC systems
- SINGLE StEP process that minimizes any loss of sample
 - Multiple transfers are not needed
- Economical – An all-in-one replacement for the syringe, filter, vial, cap and septum
- Pre-slit caps ensure a no-hassle, clean aliquot withdrawal
 - Eliminates needle damage and septum coring problems

Make SINGLE StEP Filter Vials part of your laboratory!



Vial Features

- 0.2 or 0.45µm filter
- Pre-slit cap
- 450µL loading capacity
- LC/MS grade polypropylene body

THOMSON Solutions At Work
INSTRUMENT COMPANY

Product Number	Description	Qty	Price
TI35530500	0.20µm PTFE Filter, Green Cap	500	\$1,119.00
TI35540500	0.45µm PTFE Filter, Blue Cap	500	1,119.00
TI35538500	0.20µm Nylon Filter, Black Cap	500	1,119.00
TI35539500	0.45µm Nylon Filter, Pink Cap	500	1,119.00
TI35531500	0.20µm PVDF Filter, Red Cap	500	1,119.00
TI35541500	0.45µm PVDF Filter, Yellow Cap	500	1,119.00
TI35535500	0.20µm PES Filter, Gray Cap	500	1,119.00
TI35545500	0.45µm PES Filter, Orange Cap	500	1,119.00

All SINGLE StEP Filter Vials are also available in packages of 200. Please inquire.

For more information or to request a sample, contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

CHROMSPEC™ AUTOSAMPLER VIALS

CHROMSPEC™ LOW ACTIVITY GLASS VIALS

When You Need The Very Best For Your Samples

For years the ultimate standards for quality vials have been ASTM Type 1 Class A and USP Type I borosilicate glass. But, as sample volumes have decreased, so has the internal volume of autosampler vials. These smaller vials and inserts have very high surface area to volume ratios – increasing the amount of contact between the sample, the glass and its impurities. Even ASTM 1A and USP I glass vials now contain enough impurities to noticeably change sample pH and bind sensitive analytes.

Until now, the only solutions have been surface treatments like silanization, which add cost and handling time. Chromatographic Specialties Inc. offers a new solution:

The New Low Activity Glass (LAG) vials and inserts use a newly developed glass

- Meet and exceed ASTM 1A and USP I glass specifications
- Reduce or eliminate pH changes and analyte binding without silanization
- For the ultimate in inert glass vials, LAG can be silanized
- All LAG Vials come in kits with mass-spec grade septa

Product Number	Description	Qty	Price
C226151LA	Crimp Top Vial with Aluminum Seals and MS PTFE/Silicone Septa	100	\$31.80
C226147LA	Snap Cap Top Vial Kit Pack with Blue Snap Cap and MS PTFE/Silicone Septa	100	34.70
C226149LA	Snap Cap Top Vial Kit Pack with Blue Snap Cap and Pre-slit MS PTFE/Silicone Septa	100	36.60
C226115LA	Screw Top Clear Vial Kit Pack with Blue QuikCap and MS PTFE/Silicone septa	100	33.20
C226125LA	Screw Top Clear Vial Kit Pack with Blue QuikCap and MS Pre-slit PTFE/Silicone Septa	100	40.40

Try LAG vials in your lab! Request a sample and compare.

Contact us for more information at 1-800-267-8103 or email tech@chromspec.com.

CHROMSPEC™ HIGH RECOVERY VIALS

- High capacity, high recovery autosampler vials
- Maximum useable volume in a 12 x 32mm vial
- 1,200 μ L usable capacity, 4 μ L residual volume
- One piece, no fumbling for inserts
- Also available in LAG, please inquire

C226100	Snap/Crimp Top, Vial Only	100	\$93.20
C226101	Snap Cap Top Vial Kit Pack with Blue Snap Cap and PTFE Septa	100	104.80
C226102	Snap Cap Top Vial Kit Pack with Blue Snap Cap and PTFE/Silicone Septa	100	113.10
C226103	Snap Cap Top Vial Kit Pack with Blue Snap Cap and Pre-slit PTFE/Silicone Septa	100	122.00
C226110	Screw Top Clear Vial Kit Pack with Blue Cap and Bonded PTFE/Silicone Septa	100	114.60
C226111	Screw Top Clear Vial Kit Pack with Blue Cap and Bonded PTFE/Silicone Septa	100	110.10
C226112	Screw Top Clear Vial Kit Pack with Blue Cap and Bonded Pre-slit PTFE/Silicone Septa	100	127.90
C226113	Screw Top Clear Vial Kit Pack with Blue Cap and Bonded Pre-slit PTFE/Silicone Septa	100	115.40

Should you try LAG vials?

Are your analytes organic bases (multiple amino groups)?

Are your analytes metal chelators?

Do you have unexplained changes in sample recovery?

Have you had to use polypropylene vials to prevent sample loss?

Do you have problems with analyte recovery from microsampling vials or inserts?

Do you need to silanize your glassware?

If you've said yes to one or more of these questions, LAG vials may be the solution for you.

Microsampling and Limited Volume Options from Chromatographic Specialties Inc.

Inserts For Vials

- Flexible
- Easily convert your standard vials to microsampling by dropping in an insert
- Economical for occasional use — drop in an insert when you need it



Fused Insert Vials

- Standard autosampler vial with insert fused in place
- One piece for easier handling
- Saves time and money for frequent users



High Recovery Vials

- One piece molding provides 1.2 mL useable capacity
- Full sized vial at the top, high recovery profile at the bottom
- Ideal when you need to get the most out of your vials



CHROMSPEC™ MASS SPEC VIALS

*Premium mass spec
certified vials and septa
without the
premium price tag!*

Advantages

- Certified particle clean
— less downtime for critical equipment
- Virtually no residual short chain silicone in septa
— cleaner mass spectra, easier peak identification
- CHROMSPEC™ Brand
— competitive pricing

Can I use Mass Spec Certified vials for other instruments or detectors?

Yes, MSQ vials and septa are suitable for any instrument able to use a standard vial. Mass Spectrometers are the most common instruments to see silicones and other trace contaminants, but any sensitive, universal detector will show increased noise.

If you suspect your detector is seeing too much of your vials, call our technical support team for a sample.

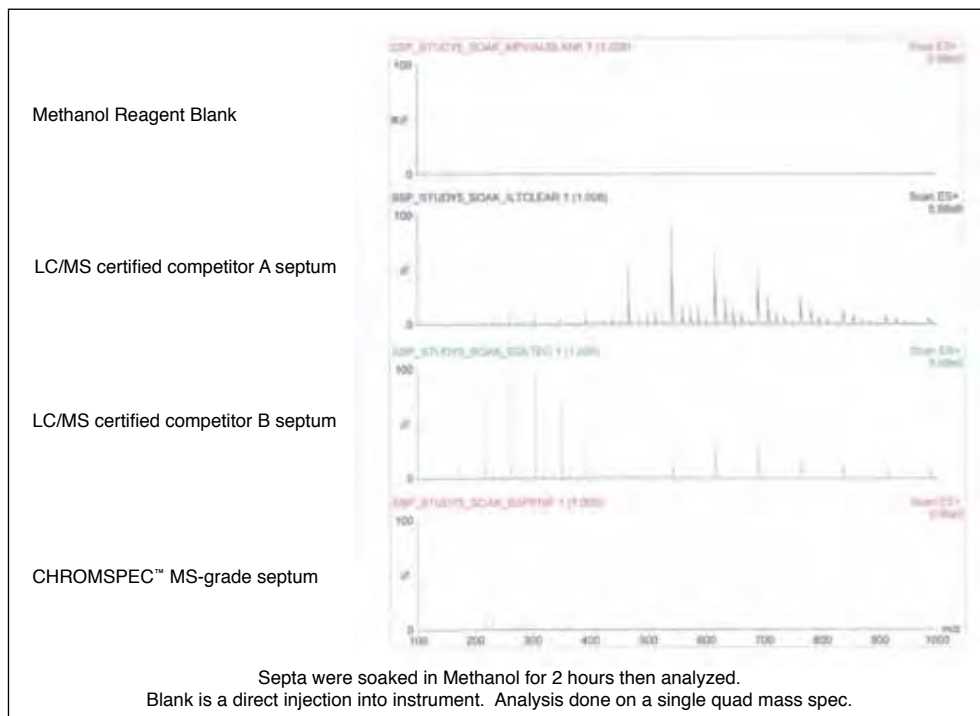
Need other sizes of vials?

We have listed the most common types. If you don't see the product you need, contact us at 1-800-267-8103 or email tech@chromspec.com.



CHROMSPEC™ CERTIFIED VIALS FOR MASS SPEC

In Mass Spec, the cleanliness and purity of your septa and vials make a difference. The mass spectra below compare methanolic extracts from different vial septa.



Product Number	Description	Qty	Price
C226115M	2 mL Screw top 12x32 Vial, MS PTFE/Silicone Septa	1000	\$281.50
C226125M	2 mL Screw top 12x32 Vial, Pre-slit MS PTFE/Silicone Septa	1000	346.50
C226127M	2 mL Screw top 12x32 Vial, MS PTFE/Silicone Septa, Clear with marking panel	1000	301.50
C226129M	2 mL Screw top 12x32 Vial, Pre-slit MS PTFE/Silicone Septa, Clear with marking panel	1000	381.20
C226131M	2 mL Screw top 12x32 Vial, MS PTFE/Silicone Septa, Amber	1000	292.80
C226133M	2 mL Screw top 12x32 Vial, Pre-slit MS PTFE/Silicone Septa, Amber	1000	363.80
C226135M	2 mL Screw top 12x32 Vial, MS PTFE/Silicone Septa, Amber with marking panel	1000	324.80
C226137M	2 mL Screw top 12x32 Vial, Pre-slit MS PTFE/Silicone Septa, Amber with marking panel	1000	381.20
C226151M	2 mL Snap/Crimp top Vial with 11mm Aluminum crimp seal & Septa, Clear with marking panel MS PTFE/Silicone	1000	268.50
C226153M	2 mL Snap/Crimp top Vial with 11mm Aluminum crimp seal & Septa, Amber with marking panel MS PTFE/Silicone	1000	277.20
C226139	Plastic Polypropylene 12x32mm Vial with Cap & Septa 9mm, Cap screw top 300 µL MS PTFE/Silicone	100	30.60
C226141	Plastic Polypropylene 12x32mm Vial with Cap & Septa 9mm, Cap screw top 300 µL MS Pre-slit PTFE/Silicone	100	39.30
C226143	Plastic Polypropylene 12x32mm Vial with Cap & Septa 9mm, Cap screw top 700 µL MS PTFE/Silicone	100	30.60
C226145	Plastic Polypropylene 12x32mm Vial with Cap & Septa 9mm, Cap screw top 700 µL MS pre-slit PTFE/Silicone	100	39.30
C226111	Maximum Recovery Vial, MS PTFE/Silicone Septa	100	110.10
C226113	Maximum Recovery Vial, MS PTFE/Silicone pre-slit Septa	100	115.40
C226117	Fused 300µL Insert, MS PTFE/ Silicone Septa	100	117.80
C226119	Fused 300µL Insert, MS pre-slit PTFE/Silicone Septa	100	121.80
C226121	Amber, Fused 300µL Insert, MS PTFE/Silicone Septa	100	125.70
C226123	Amber, Fused 300µL Insert, MS pre-slit PTFE/Silicone Septa	100	131.60

CHROMSPEC™ GAS SAMPLING PRODUCTS

CHROMSPEC™ ALTEF GAS SAMPLING BAGS

ALTEF is a proprietary fluoropolymer film that meets or exceeds many of the desired characteristics of Tedlar® at a significantly lower cost!

- Readily available
- Choice of nine fitting options
- Lower VOC background than Tedlar®
- Suitable for sampling and analysis of most VOCs within 2 days, and many sulfur compounds for up to 24 hours
- Contains no additives, fillers or pigments



Unique Properties of ALTEF compared to Tedlar

Film	Tensile Thickness	Max. Operating Strength	Specific Temp.	Oxygen Gravity	Water Vapour Permeability	Carbon Dioxide Permeability	Permeability
ALTEF	.003"	6100 psi	150°C (302°F)	1.78	58 cc/m² x d	12-15 g/m² x d	172 cc/m² x d
Tedlar	.002"	8000 psi	204°C (400°F)	1.70	50 cc/m² x d	9-57 g/m² x d	172 cc/m² x d

The availability of Tedlar® bags is limited worldwide — ALTEF is an ideal replacement.

ALTEF Gas Sampling Bags - Screw Cap Combo Valve with Septum

Product Number	Size (inches)	Capacity (L)	Qty	Price
TDPAL0707S10	7 x 7	1.0	10	\$92.00
TDPAL0909S10	9 x 9	2.0	10	106.40
TDPAL0912S10	9 x 12	3.0	10	132.50
TDPAL1212S10	12 x 12	5.0	10	148.60
TDPAL1219S10	12 x 19	10.0	10	187.90
TDPAL1824S10	18 x 24	25.0	10	325.00

* Packages of 1, capacities up to 100L and other fitting options are also available. Please inquire.

Samples are available. To try ALTEF bags in your lab, contact our Technical Support Team at 1-800-267-8103 or email tech@chromspec.com.

CHROMSPEC™ MULTI-LAYER FOIL BAGS

Multi-Layer Foil bags provide light and moisture protection for low molecular weight compounds such as hydrogen that are unstable when collected into standard Tedlar® bags. For use with a low flow air sample pump with exhaust port.

- For methane, CO, CO₂, and other gases
- The only gas bag material that can sample and store hydrogen sulfide
- Water and vapor-proof
- Sample stability up to 5 days



Multi-Layer Foil Bag with Screw Cap Combo Valve with Septum

Product Number	Size (inches)	Capacity (L)	Qty	Price
TDPA0707S10	7 x 7	1	10	\$121.90
TDPA0909S10	9 x 9	2	10	124.00
TDPA1010S10	10 x 10	3	10	148.40
TDPA1212S10	12 x 12	5	10	163.40
TDPA1219S10	12 x 19	10	10	201.30
TDPA1221S10	12 x 21	12	10	221.80

* Packages of 1 and other fitting options are also available. Please inquire.

Note: Multi-Layer Foil Bags are not suitable for collecting low ppm to high ppb VOCs due to the composition of the bag material.

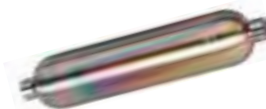
RESTEK VACUUM BAG SAMPLER



The Model 1062 Vacuum Bag Sampler provides fast sampling with zero cross-contamination. A vacuum created in the box draws air into the sampling bag without drawing it through the vacuum pump first, as is the case with standard air sampling pumps, thereby preventing contamination of the sample. This bag sampler can fill a 10L bag in two minutes with an automatic shut-off switch, which stops the sample bag from overfilling.

Product Number	Description	Price
RK22118	Vacuum Bag Sampler	\$2,021.00

RESTEK ULTRA-HIGH PRESSURE SAMPLE CYLINDERS, Sulfinit® TREATED



- Sulfinit® coating provides stable storage of sulfur and mercury at ppb levels in petroleum samples
- 1/4" female NPT threads on both ends
- 316L stainless steel; DOT rating to 5,000 psi

Product Number	Description	Price
RK22111	Sample Cylinder, 5000psi, 150cc	\$707.40
RK22112	Sample Cylinder, 5000psi, 300cc	850.10
RK22113	Sample Cylinder, 5000psi, 500cc	930.80