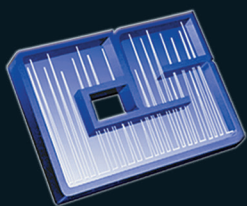




for your Chromatography lab



**CHROMATOGRAPHIC
SPECIALTIES INC.**

COST SAVING SOLUTIONS

Customers often tell us that their lab's budget is tight and getting tighter, yet they're still expected to provide quality and timely laboratory results. A difficult challenge for sure.

Chromatographic Specialties Inc. is pleased to present our **2021 cost savings brochure**. Inside we showcase numerous consumables and instrumentation products and services **designed to help you and your lab save time, money and effort.**

Cost saving is often limited to finding the lowest prices, however, savings can also be achieved by:

Don't Spend More For Expensive Brand Name Products

- Our products, sourced from world-class suppliers of analytical columns and supplies, perform as well or better than those offered by instrument manufacturers, often at significant savings.
- Choose CHROMSPEC™ brand products for high quality at a fraction of the price; CHROMSPEC™ is your source for affordable quality



Stock Up and Save

- Buy larger package sizes for a lower cost per unit.
- Ask us to quote on your annual needs; discounts may be available. We can stock products for you and send them as needed. Invoicing occurs only after each shipment.



Watch For Promotions

- Visit our website for current promotions: www.chromspec.com/Promotions
- Sign up for our eChronicle newsletter for updates on new promotions and specials: www.chromspec.com/e-Chronicle-Newsletter
- Take advantage of our ongoing Clearance Sale: www.chromspec.com/Clearance



Analytical Method Improvements

- Take advantage of products that can pump out results in less time, while consuming less gas or solvent and minimizing the need for retesting due to out-of-spec results
- Automate parts of the analytical process to save on labour costs (often resulting in improved consistency and results)



Cost Saving Products and Services

- Use guard columns, frits and filters to extend the life of expensive analytical columns and supplies
- Use long-life detector lamps
- Take advantage of recertification programs to extend the life of standards
- Use gas generators rather than cylinders
- Repair equipment instead of replacing it
- Maintain equipment so it's in tip-top shape to prevent unexpected downtime
- And much more



This brochure will guide you through a variety of products and ideas to help achieve cost savings for you and your lab.

Technical Support

Need expert advice? Our friendly and knowledgeable Technical Support and Instrumentation Teams consist of experienced chromatographers who understand the challenges facing separation scientists. They are available to assist you with everything from method reviews, to application support and troubleshooting. This is a free service for our customers; we will not charge for helping you resolve a chromatography problem.



Instrumentation Support

Are your instruments in need of repair or service?

Are your flowmeters due for recalibration?

Do you need preventive maintenance to avoid instrument downtime?

Our Instrumentation Team is available to answer your questions and perform calibrations and repairs to your instrumentation. They can also customize instruments, and perform difficult modifications and installations to fit your specific applications or needs. See pages 32 and 33 for more information.

We're a Proud Canadian Company!

- Competitive prices on all products; priced in Canadian Dollars
- Products are shipped from our warehouse in Brockville, Ontario; you'll have no customs or border shipment issues.
- Bilingual Support: our Technical, Instrumentation, Sales and Customer Service teams will be happy to assist you in either French or English.



Fast Delivery

We offer several options to ensure that you get the products you need as quickly as possible.

• Same Day Shipments

We maintain a large inventory of products to ensure automatic same day shipment of most orders placed before 2:45pm Eastern Time.

• Reserved Inventory - Release on Demand (ROD)

We can set up a special reserved inventory for you on items for which you have a high volume need or critical requirements in order to avoid potential delays.

• Computerized Delivery

We will work with you to create a Blanket Order to cover future purchases of high usage items. Just specify your preferred delivery dates and quantities; we will ensure that your products are in stock and shipped on those dates. Invoicing occurs after each shipment. Shipment dates and quantities can be altered as necessary.



Call Us

Our receptionist, order desk, customer service and technical support departments, in fact our entire company, is staffed by real people. Are you tired of trying to negotiate your way through frustrating automated voice systems? Call us! We'll be happy to help you.



We're just a phone call away.
Contact us today and start the savings!



Pricing is subject to change, contact us for a quote when needed.

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Throughout the brochure, look for these symbols, they'll provide information to illustrate how we can help you save time, money and effort...



QUALITY

Compare
and Save

Great ideas to help you and your lab reduce costs by providing tried and true alternatives to more costly OEM brands.



**Volume
Discounts**

More
Savings

Save More

Higher volume purchases may qualify for greater savings.



Tips and Tricks to help you get better results.



Free samples are available for certain products. Contact us and try these products in your lab.



Save time so you can focus on other tasks or process more samples.



Contact our Technical and Instrumentation Teams for more information or for assistance.



Think Green! Help the environment by using less solvent or generating less waste. Save money and be environmentally proactive.



Take advantage of our limited-time special offers.

INLET SEALS FOR AGILENT GCs

The inlet seal at the base of the Agilent 5890/6890/7890 GC injection port contacts the sample and **must be changed frequently to prevent adsorption of active compounds**. In addition, septum fragments and sample residue accumulate on the disk surface, requiring disk replacement.

The Dual Vespel Ring Inlet Seal greatly improves injection port performance – it stays sealed, even after repeated temperature cycles, without retightening the reducing nut! This seal features two soft Vespel rings, one embedded in its top surface and the other embedded in its bottom surface. These rings eliminate the need for a washer and ensure very little torque is needed to make a leak-tight seal.

The Flip Seal Dual Vespel Ring Inlet Seal is reversible and can be used twice! Other inlet seals have a protrusion on one side that seals the ferrule onto the capillary column, which restricts installation and allows only one side of the seal to be used. In contrast, the Flip Seal inlet seal does not have a protrusion, but instead uses a capillary inlet adaptor fitting to seal the capillary column. This adaptor is included in the kit and uses standard 1/16" ferrules for compression-style fittings (ferrules not included).

Restek Replacement Inlet Seals for Agilent GCs

- Gold plating provides enhanced inertness versus stainless steel
- All seals include washers



RESTEK
Pure Chromatography

Description	Equivalent to Agilent Number	Pkg. 2	Pkg. 10	Pkg. 50
Restek Inlet Seal, 0.8mm ID, Single Column, Gold-Plated, for Agilent GCs	5188-5367 (Pkg. 1) 5190-2209 (Pkg. 10)	RK21317 \$81.50	RK21318 \$332.40	RK23415 \$1,534.00



Restek Dual Vespel Ring Inlet Seals – Washerless, Leak-Tight Seals for Agilent GCs

- Does not require a separate washer
- Requires less torque to seal
- Does not require retightening of reducing nut after several oven cycles

Restek Dual Vespel Ring Inlet Seal, 0.8mm, Single Column, Gold-Plated, for Agilent GCs	—	RK21240 \$91.00	RK21241 \$386.90	RK23418 \$1,482.00
Restek Dual Vespel Ring Inlet Seal, 1.2mm, Dual Column, Gold-Plated, for Agilent GCs	—	RK21246 \$91.00	RK21247 \$386.90	—



Restek Flip Seal Dual Vespel Ring Inlet Seals – Reversible Seal Inlet Seal, for Agilent GCs

- Reversible, two-sided design allows significantly more analyses than other seals, at the same price – simply use, flip, then use again!
- Vespel ring embedded in top and bottom surface eliminates need for a washer.
- Highly inert gold seals reduce breakdown and adsorption of active compounds, maximizing component transfer to GC column

Restek Flip Seal Dual Vespel Ring Inlet Seal, Single Column, Gold-Plated, for Agilent GCs	—	RK23411 \$95.40	RK23413 \$403.00	—
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Note: The Flip Seal inlet seal requires a special reducing nut adaptor fitting, which is included in the kit.

Flip Seal Dual Vespel Ring Inlet Seal Kit - Includes: Gold-plated inlet seal, reducing nut adaptor, 1/16" SS nut (RK23406)

Please note that inlet seals are also available in stainless steel or Siltek-deactivated, and in single column and dual column formats.



GC inlet seals should be examined at least once a month for corrosion, abrasions or a build-up of non-volatile contaminants and replaced if necessary. More frequent changes may be needed for instruments with heavy usage or for labs that are analyzing dirty samples. Regular maintenance helps minimize active sites in the inlet and prevents sample adsorption.

Please contact our Technical Support Group at **1-800-267-8103** or **tech@chromspec.com** to discuss the inlet seal that is best for your application.

REPLACEMENT PARTS FOR AGILENT GC AND GC/MS SYSTEMS

Chromatographic Specialties offers an extensive line of replaceable instrument parts to keep your Agilent GC and GC-MS running at peak performance. These parts are designed to meet or even exceed the manufacturers' already-strict specifications and performance requirements.



Restek EI and CI Filaments

Product Number	Description	Qty	Equivalent to Agilent Number	Price
RK23099	Filament, High Temperature EI for GC/MS	1	G7005-60061	\$168.20

Electron Multiplier Replacement Horn

CP4200010200	Electron Multiplier Replacement Horn	1	05971-80103	\$1,144.00
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Restek Split/Splitless Injection Port (Direct Replacement or Siltek® Treated) for Agilent 6890/7890/6850 GCs

RK22674	Replacement Weldment with EPC	1	G1544-60575	\$459.00
RK22672	Replacement Weldment with EPC, Siltek® Treated	1	G1544-60575	565.00
RK22673	Replacement Shell Weldment	1	G1544-80570	423.00
RK22671	Replacement Shell Weldment, Siltek Treated	1	G1544-80570	505.00
RK22686	Split/Splitless Weldment, for use with large canister type filter	1	G1544-60585	608.00
RK22670	Split/Splitless Weldment, for use with large canister type filter, Siltek® Treated	1	G1544-60585	746.00

Restek Replacement Chemical Traps for Agilent GCs

RK22820	Replacement Split Vent Trap for Agilent 6890/6850 GCs	1	G1544-80550	\$190.90
RK21610	Replacement Chemical Trap for Agilent 5890 GCs	1	05890-61260	176.50
RK22800	Split Vent Line (32-inch) for Agilent GCs Includes: All installation hardware	2	19251-80525	86.90
RK22064	O-Rings for Agilent Trap Fittings	25	5180-4181	34.80
RK23031	Optional Split Vent Trap Assembly for Agilent 6890/6850 GCs	Kit	G1544-60610	422.00
RK23032	Replacement Traps (2) and O-Rings (4)	Kit	G1544-80530	142.60

Restek Air Diverter for 5890/6890/7890 GCs

RK22076	Air Diverter	1	G1530-80650 19247-60510	\$282.50
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Restek FID Collector for Agilent 6890/6850

RK21139	FID Collector	1	G1531-20690	\$141.80
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Restek FID Maintenance Kits for Agilent GCs

- Include the most common consumable GC supplies and tools
- All parts meet or exceed performance of instrument manufacturer's parts
- Parts list makes reordering easy

RK22179	FID Kit for Agilent 6850/6890/7890 GCs	Kit	—	\$1,122.00
RK22180	FID Kit for Agilent 5890 GCs	Kit	—	1,122.00



REPLACEMENT PARTS FOR AGILENT GC AND GC/MS SYSTEMS

Get the same GC separation in less time—use a GC Accelerator Kit and the EZGC method translator to accurately convert methods to a scaled-down column format.

Restek GC Accelerator Oven Insert Kit for Agilent 5890, 6890, 7890, and 8890 Instruments

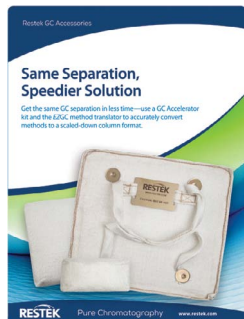
- Scaled-down methods let you speed up analysis time and increase sample throughput without capital investment
- GC Accelerator kit installs easily without damaging the GC column or interfering with the MS interface

Designed with GC-MS users in mind, the GC Accelerator kit provides a simple way to speed up sample analysis. By reducing oven volume, these inserts allow faster ramp rates, which reduce oven cycle times and allow for increased sample throughput. When faster ramp rates are used, existing methods can be accurately scaled down to smaller, high-efficiency, narrow-bore columns using Restek's EZGC Method Translator. **With a scaled-down column, a properly translated method, and a GC Accelerator kit, you can obtain the same chromatographic separation – often with greater sensitivity – in a fraction of the time without making a capital investment.**

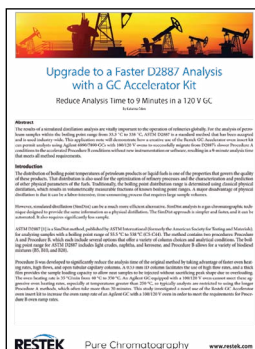


EZGC Method Translator			
Carrier Gas	Original	Translation	
	Helium	Helium	
Column			
Length	30.00	15.00	m
Inner Diameter	0.25	0.25	mm
Film Thickness	0.25	0.25	µm
Phase Ratio	250	250	
Control Parameters			
Column Flow	1.40	1.40	mL/min
Average Velocity	42.74	60.65	cm/sec
Holdup Time	1.17	0.45	min
Inlet Pressure	15.42	3.77	psi
Outlet Pressure (at)	0.00	0.00	psi
Oven Program			
Program			
Ramp			
Number of Ramps (1-4)	1	1	
1	6.5	330	1
24	330	0.35	
Control Method			
Constant Flow			
Results			
Run Time	36.12	12.78	min
Speed		2.83	x

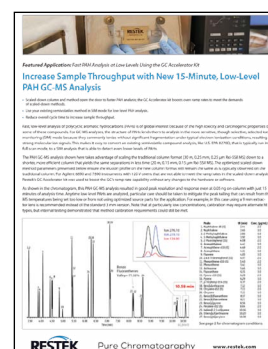
GC Accelerator Oven Insert Kit Product Brochure Literature Code RK208



Upgrade to a Faster D2887 Analysis! Literature Code RK210

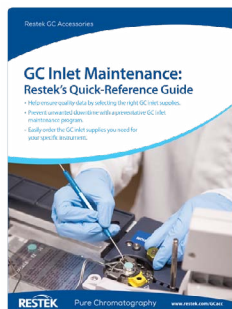


Faster PAH GC-MS Analysis! Literature Code RK211



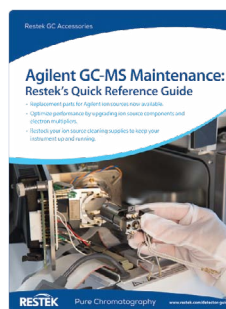
Product Number	Description	Price
RK23849	GC Accelerator Oven Insert Kit for Agilent 5890, 6890, 7890, and 8890 instruments	\$975.00

Free Literature!



GC Inlet Maintenance:
Restek's Quick-Reference Guide
 With Restek's comprehensive line of high-quality GC inlet supplies, performing proper GC inlet maintenance to help maximize your lab's uptime and ensure accurate, reproducible data is as easy as replacing a liner or septum.

Literature Code RK207



Agilent GC-MS Maintenance: Restek's Quick Reference Guide

Let us help you maintain—and even enhance—the performance of your instrument with Restek's line of routine GC-MS maintenance and replacement parts for Agilent mass spectrometers.

Literature Code RK203



We recommend that you condition your system after performing GC inlet maintenance to help guarantee the best results possible from the very first injection.

CONSUMABLES FOR AGILENT GCs

Chromatographic Specialties stocks all of the GC consumables analysts rely on every day in their labs, including ferrules, septa, o-rings, gold seals, connectors and more! You can count on us for timely delivery and friendly, expert Tech Support!



You can depend on our affordable, high quality equivalents to Agilent products!

Reducing Ferrules

- Graphite Ferrules have an upper temperature limit of 450°C. They are made from high purity graphite.
- The short ferrule design is characteristic of Agilent 5890/6890/7890 GCs.

Product Number	Description	Qty	Equivalent to Agilent Number	Price	Price (5+)
C75510	CHROMSPEC™ Ferrule, Reducing 1/16" - 0.4mm, Short, Graphite	10	500-2114	\$32.20	\$27.10
C75502	CHROMSPEC™ Ferrule, Reducing 1/16" - 0.5mm, Short, Graphite	10	5080-8853	32.20	27.10
C75514	CHROMSPEC™ Ferrule, Reducing 1/16" - 0.8mm, Short, Graphite	10	500-2118	32.20	27.10



Inlet Septa

- Bleed and temperature optimized (BTO) septa are ideal for demanding GC and GC-MS applications.
- The partially predrilled Center Guide designed for easy penetration also helps reduce needle damage.
- Use Thermolite Plus septa at inlet temperatures up to 350°C.
- CHROMSPEC™ ELB Septa have a maximum temperature of 360°C.
- BTO® Septa and Advanced Green 3 (AG3)™ Septa can be used at 400°C.

RK23864	Restek Thermolite Plus Septa, 11mm*	50	5183-4759	\$105.90	—
RK23865	Restek Thermolite Plus Septa, 11mm*	100	5183-4759-100	183.00	—
C37017	BTO® Septa, 11mm*	50	5183-4757	102.30	—
C37633	Septa, AG3™, 11mm*	50	5183-4759	87.50	—
C6649611	CHROMSPEC™ ELB Septa, 11mm	25	5183-4761	50.00**	—
C37500	BTO® Septa, 5mm*	50	5181-1260	91.20	—



TRY IT NOW!

FREE FERRULE AND SEPTA SAMPLES are available!

* With CenterGuide / ** Additional cost savings when purchasing quantities of 4+: \$42.50

Merlin Microseal Septa

No More Septum Bleed or Ghost Peaks!

- The Microseal requires a 23 gauge (0.63 mm, 0.025 inches) syringe needle diameter and blunt, cone shaped needle to function properly (see below).

MIC305	Microseal Septum Kit, Low Pressure Includes: 1 Nut & 1 Low Pressure Septum	Kit	5181-8816	\$323.50	—
MIC310	Microseal Septum, Low Pressure, Replacement	1	5181-8815	165.60	—
MIC405	Microseal Septum Kit, High Pressure Includes: 1 Nut & 1 High Pressure Septum	Kit	5182-3442	326.80	—
MIC410	Microseal Septum, High Pressure, Replacement	1	5182-3444	233.40	—
MIC2101	Microseal Septum, SPME, Replacement	1	392609902	233.40	—
H80343	Syringe, 701N, 10µL, 23S GA AS, 2.55"	1	—	64.40	—



The Merlin Microseal has two distinct sealing mechanisms allowing it to last up to 10 times longer than traditional rubber septa, saving you time and money!

CONSUMABLES FOR AGILENT GCs

Restek Split/Splitless Inlet Supplies

- Viton® O-Rings for Agilent GCs fit split (6.3 mm OD) or splitless (6.5 mm OD) liners.
- The inlet seal at the base of the Agilent 5890/6890/7890 GC injection port contacts the sample and must be changed frequently to prevent adsorption of active compounds. In addition, septum fragments and sample residue accumulate on the disk surface, requiring disk replacement. To reduce breakdown and adsorption of active compounds, use gold-plated instead of stainless steel seals.
- For sensitive, trace analyses of pesticides and herbicides, Siltek® deactivated inlet seals provide outstanding results.

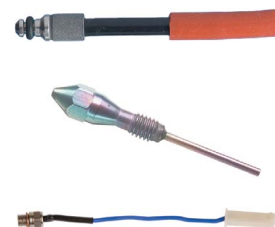
Product Number	Description	Qty	Equivalent to Agilent Number	Price
RK21884	Nut, SS, for Short HP Ferrules	2	5181-8830	\$45.90
RK21878	Nut, Brass, for Short HP Ferrules	2	5181-8830	52.40
RK22242	O-Ring, Viton, for Agilent GCs	50	5188-5365	69.40
RK22336	O-Ring, Viton, for Agilent Flip Top Assembly	10	5188-5366	26.40
RK21315	Seal, Inlet, 0.8mm, Stainless Steel	2	18740-20880	75.30
RK21316	Seal, Inlet, 0.8mm, Stainless Steel	10	—	320.30
RK21317	Seal, Inlet, 0.8mm, Gold Plated	2	5188-5367	81.50
RK21318	Seal, Inlet, 0.8mm, Gold Plated	10	5190-2209	332.40
RK21319	Seal, Inlet, 0.8mm, Siltek-Treated	2	5190-6144	100.20
RK21320	Seal, Inlet, 0.8mm, Siltek-Treated	10	5190-6145	441.00



Restek Flame Ionization Detector (FID) Supplies

- There are two FID jet configurations for Agilent GCs. The longer "adaptable" jet fits both 5890 and 6890 GCs, and can be used with capillary or packed columns. The shorter "dedicated" jet is for the FID in the 6890/7890 GC that is designed only for use with capillary columns.

RK21000	FID Flow Measuring Adaptor	1	19301-60660	\$92.10
RK21001	FID Ignitor, for Agilent 5890/6850/6890/7890 GCs	1	19231-60680	76.90
RK21621	Capillary Dedicated FID Replacement Jet, 43mm	1	G1531-80560	75.00
RK21682	Capillary Dedicated FID Replacement Jet, 43mm	3	G1531-80560	212.40
RK20670	FID Jet, Capillary Adaptable, Standard, for Agilent 5890/6890, 61.5mm	1	19244-80560	89.60
RK20671	FID Jet, Capillary Adaptable, Standard, for Agilent 5890/6890, 61.5mm	3	19244-80560	252.40



FID and NPD Adapters

- Graphite ferrules are soft, easy to seal, stable to 450°C, and contain no binders that might off-gas.
- Polyimide ferrules are durable, leak-tight, and stable to 350°C.

RK22077	Adaptor, Capillary, FID/NPD, for Agilent 5890/6890/6850 GCs	1	19244-80610	\$90.50
C76040	CHROMSPEC™ Ferrule, Straight, 1/4" - 1/4", Polyimide	10	5080-8874	53.60*
C75506	CHROMSPEC™ Ferrule, Reducing, 1/16" - 1.0mm, Short, Graphite	10	5080-8873	32.20*
C75502	CHROMSPEC™ Ferrule, Reducing, 1/16" - 0.5mm, Short, Graphite	10	5080-8853	32.20*
B4021	Nut, 1/4", Brass	1	5180-4105	3.40**

* Additional cost savings when purchasing quantities of 5+:

C76040 = \$48.60 / C75506 = \$27.10 / C75502 = \$27.10

** Additional cost savings when purchasing quantities of 10+: B4021 = \$2.00



Restek FID Maintenance Kits

- Include the most common consumable GC supplies and tools
- All parts meet or exceed the performance specifications of the instrument manufacturer's parts

RK22179	FID Kit for 6850/6890/7890 GCs	\$1,122.00
RK22180	FID Kit for 5890 GCs	1,122.00

We carry many more consumables and replacement parts for Agilent, Varian/Bruker, Perkin Elmer, ATAS, Thermo Scientific, Shimadzu, and more!



GC SEPTA

Our septa offering allows you to select the one with properties best suited for your specific chromatographic needs.



CRS BTO® Bleed and Temperature Optimized Septa

- Ideal for the most demanding GC and GC/MS applications

Product Number	Description	Qty	Equivalent to OEM Number	Price
C37017	BTO® Septa, 11mm*	50	Agilent 5183-4757	\$102.30
C37018	BTO® Septa, 11mm*	100	Agilent 5183-4757-100	192.80
C37524	BTO® Septa, 10mm	50	Varian/Bruker 8010-0221	90.80
C37036	BTO® Septa, 9mm*	50	Agilent 8010-0217	100.10

* With CenterGuide



CHROMSPEC™ ELB Extremely Low Bleed Septa

- Economical die-cut

C6649611	CHROMSPEC™ ELB Septa, 11mm	25	Agilent 5183-4759	\$50.00*
C6649695	CHROMSPEC™ Septa, ELB, 9.5mm	25	Varian/Bruker 8010-0204	50.00*
C6649616	CHROMSPEC™ ELB Septa, 16mm	100	—	202.20

* Additional cost savings when purchasing quantities of 4+: \$42.50



CHROMSPEC™ Emerald Green-HT Septa

- Glass jar packaging for high purity

C6613211	CHROMSPEC™ Emerald Green-HT, 11mm	25	Agilent 5183-4759	\$26.70*
C6613295	CHROMSPEC™ Emerald Green-HT, 9.5mm	25	Varian/Bruker 8010-0204	21.90*
C6613216	CHROMSPEC™ Emerald Green-HT, 16mm	25	—	32.60*

* Additional cost savings when purchasing quantities of 4+: C6613211 = \$22.70 / C6613295 = \$18.70 / C6613216 = \$27.80

Restek Thermolite® Plus Septa

- Plasma coated for enhanced non-stick properties

RK23864	Restek Thermolite® Plus Septa, 11mm*	50	Agilent 5183-4759	\$105.90
RK23865	Restek Thermolite® Plus Septa, 11mm*	100	Agilent 5183-4759-100	183.00
RK23877	Restek Thermolite® Plus Septa, 9.5mm	50	Varian/Bruker 8010-0203	103.20
RK23863	Restek Thermolite® Plus Septa, 9mm*	100	Varian/Bruker 8010-0202	181.00

* With CenterGuide



Restek Thermolite® Septa

- Excellent puncturability

RK27142	Restek Thermolite® Septa, 11mm	50	Agilent 5183-4759	\$104.00
RK27143	Restek Thermolite® Septa, 11mm	100	Agilent 5183-4759-100	185.70
RK27154	Restek Thermolite® Septa, Shimadzu Plug	50	Shimadzu 220-90547-00	113.80
RK27155	Restek Thermolite® Septa, Shimadzu Plug	100	—	199.50

Septum Puller

- Use hooked end for removing septa and O-rings; pointed end works well for removing stuck on ferrules or debris

RK20117	Septum Puller	1		\$31.30
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Other septa brands, configurations, sizes, and package sizes are available. Contact our Technical Support Team for help finding the most suitable septa for your needs.

Which GC Septa should I use?

All our septa have low bleed, long injection life and excellent puncturability. Use the table below to choose your septa based on the temperature limits and other properties which are most important to you.

	CRS BTO®	CHROMSPEC™ ELB	CHROMSPEC™ Emerald Green-HT	Restek Thermolite® Plus	Restek Thermolite®
Temperature Limit	400°C	360°C	325°C	350°C	340°C
Preconditioned Ready-to-use		✓		✓	✓
CenterGuide™ Easy penetration and reduced needle damage	✓			✓	
Molded Assures accurate fit	✓			✓	✓
Non-Stick	✓			✓	
Packaging	Glass Jar for High Purity	Glass Jar for High Purity	Glass Jar for High Purity	Convenient Ultra Clean Blister Packs	Convenient Ultra Clean Blister Packs
Colour	Red	Blue	Green	Green	Green
Price	\$\$	\$	\$	\$\$	\$\$

**Handling Septa**

All septa, regardless of their composition, puncturability, or resistance to thermal degradation, will be a source of problems if they are mishandled. Always use clean forceps or wear clean powderless or cotton gloves when handling septa. Do not handle them with bare fingers or with powdered latex gloves—contaminants such as finger oils, perfumes, make-up, fingernail polish, skin creams, hand soaps, and talcum can be absorbed into the septum and will bleed out during your analyses.

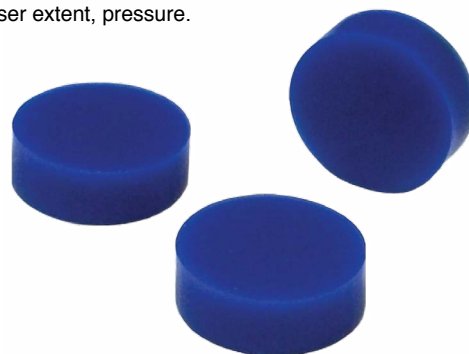
**Septa Lifetime**

GC septa can last 100 injections or more before problems start to occur.

Factors that affect the septa lifetime are needle size, inlet temperature and to a lesser extent, pressure.

**TRY IT
NOW!**

FREE SAMPLES are available!



GC FERRULES

Chromatographic Specialties offers a wide variety of high purity ferrules, for every GC application and connection, featuring products from our two most popular brands: CHROMSPEC™ and Restek.

Standard “Universal” Ferrules



Short “Agilent Style” Ferrules



Thermo Scientific GC Ferrules



Ferrule Material	Temp Limit	Use	Advantages
Graphite (100%)	450°C	General purpose for FID, TCD or NPD	Easy to use and remove, compressible, not reusable
Graphite/polyimide (40%/60% or 15%/85%)*	350°C	For GC-MS, ECD and other sensitive detectors	Robust, long lasting, maintains seal, reusable

* The 40% graphite/60% polyimide blend offers the best combination of sealing and ease of workability. The 15% graphite/85% polyimide blend offers equivalent composition to Agilent graphite/Vespel®, with exceptionally low oxygen diffusion rates, these are recommended for GC-MS and GC-MS-MS users.



CHROMSPEC™ ferrules are economically priced compared to Agilent ferrules.



Product Number	Description	Qty	Equivalent to Agilent Number	Price per Pkg.	
				1-4	5+
CHROMSPEC™ 100% Graphite, Short Ferrules for Agilent GCs					
C75510	1/16" – 0.4mm, Short, Graphite	10	500-2114	\$32.20	\$27.10
C75502	1/16" – 0.5mm, Short, Graphite	10	5080-8853	32.20	27.10
C75514	1/16" – 0.8mm, Short, Graphite	10	500-2118	32.20	27.10
CHROMSPEC™ 15% Graphite/85% Polyimide, Short Ferrules for Agilent GCs					
C75522	1/16" – 0.4mm, Short Graphite/Polyimide**	10	5181-3323	\$53.90	\$48.70
C75524	1/16" – 0.5mm, Short Graphite/Polyimide**	10	5062-3514	53.90	48.70
C75526	1/16" – 0.8mm, Short Graphite/Polyimide**	10	5062-3512	53.90	48.70
CHROMSPEC™ 15% Graphite/85% Polyimide, Standard Ferrules					
C75529	1/16" – 0.4mm, Graphite/Polyimide**	10	5062-3508	\$58.90	\$53.70
C75242	1/16" – 0.5mm, Graphite/Polyimide**	10	5062-3506	58.90	53.70
C75244	1/16" – 0.8mm, Graphite/Polyimide**	10	5062-3538	58.90	53.70
CHROMSPEC™ 40% Graphite/60% Polyimide, Standard Ferrules					
C75003	1/16" – 0.3mm, Graphite/Polyimide	10	—	\$58.90	\$53.70
C75004	1/16" – 0.4mm, Graphite/Polyimide	10	0100-1381	58.90	53.70
C75002	1/16" – 0.425mm, Graphite/Polyimide	10	—	58.90	53.70
C75005	1/16" – 0.5mm, Graphite/Polyimide	10	—	58.90	53.70
C75008	1/16" – 0.8mm, Graphite/Polyimide	10	—	58.90	53.70
CHROMSPEC™ 100% Graphite Ferrules for Packed Columns and Fittings					
C75202	1/8" Straight Ferrule, Graphite	10	0100-1325	\$36.00	\$30.80
C75204	1/4" Straight Ferrule, Graphite	10	0100-1324	39.30	34.10
C75272	1/4" – 1/8" Reducing, Graphite	10	—	39.30	34.10
C75250	1/8" – 1/16" Reducing, Graphite	10	—	36.00	30.80
** 15% Graphite/85% Polyimide ferrules offer equivalent composition to Agilent graphite/Vespel®					

** 15% Graphite/85% Polyimide ferrules offer equivalent composition to Agilent graphite/Vespel®

Product Number	Description	Qty	Equivalent to Agilent Number	Price
Restek 100% Graphite, Short Ferrules for Agilent GCs				
RK20250	1/16" – 0.4mm, Short, Graphite	10	500-2114	\$80.20
RK20251	1/16" – 0.4mm, Short, Graphite	50	500-2114	Save More 231.10
RK21007	1/16" – 0.5mm, Short, Graphite	10	5080-8853	80.20
RK21008	1/16" – 0.5mm, Short, Graphite	50	5080-8853	Save More 228.00
RK20252	1/16" – 0.8mm, Short, Graphite	10	500-2118	80.20
RK20253	1/16" – 0.8mm, Short, Graphite	50	500-2118	Save More 231.10
Restek 100% Graphite, Standard Ferrules				
RK20200	1/16" – 0.4mm, Standard, Graphite	10	8010-0301	\$79.20
RK20227	1/16" – 0.4mm, Standard, Graphite	50	8010-0301	Save More 251.70
RK20201	1/16" – 0.5mm, Standard, Graphite	10	8010-0302	79.20
RK20228	1/16" – 0.5mm, Standard, Graphite	50	8010-0302	Save More 251.70
RK20202	1/16" – 0.8mm, Standard, Graphite	10	8010-0304	79.20
RK20224	1/16" – 0.8mm, Standard, Graphite	50	8010-0304	Save More 253.40
Restek 40% Graphite/60% Polyimide, Short Ferrules for Agilent GCs				
RK20238	1/16" – 0.4mm, Short, Graphite/Polyimide	10	8010-0267	\$104.80
RK20239	1/16" – 0.4mm, Short, Graphite/Polyimide	50	8010-0267	Save More 362.70
RK20248	1/16" – 0.5mm, Short, Graphite/Polyimide	10	8010-0268	104.80
RK20249	1/16" – 0.5mm, Short, Graphite/Polyimide	50	8010-0268	Save More 362.70
RK20263	1/16" – 0.8mm, Short, Graphite/Polyimide	10	8010-0269	104.80
RK20264	1/16" – 0.8mm, Short, Graphite/Polyimide	50	8010-0269	Save More 362.70
Restek 40% Graphite/60% Polyimide, Standard Ferrules				
RK20211	1/16" – 0.4mm, Graphite/Polyimide	10	0100-1381	\$92.20
RK20229	1/16" – 0.4mm, Graphite/Polyimide	50	0100-1381	Save More 281.70
RK20212	1/16" – 0.5mm, Graphite/Polyimide	10	—	92.20
RK20231	1/16" – 0.5mm, Graphite/Polyimide	50	—	Save More 281.70
RK20213	1/16" – 0.8mm, Graphite/Polyimide	10	—	92.20
RK20230	1/16" – 0.8mm, Graphite/Polyimide	50	—	Save More 281.70
Restek Graphite/Polyimide Straight Ferrules for Columns and Fittings				
RK20219	1/8" Straight Ferrule, Graphite/Polyimide	10	0100-1379	\$98.20
RK20221	1/4" Straight Ferrule, Graphite Polyimide	10	5080-8774	100.20
RK27077	1/8" Straight Ferrule, Graphite/Polyimide**	10	0100-1332	135.10
RK27078	1/4" Straight Ferrule, Graphite/Polyimide**	10	0100-1331	135.10
Restek 100% Graphite Ferrules for Thermo Scientific GCs				
RK20280	1/16" – 0.4mm, Graphite (for Thermo GCs)	2	Thermo 29053488	\$55.10
RK20281	1/16" – 0.4mm, Graphite (for Thermo GCs)	10	Thermo 29053488	177.60

** 15% Graphite/85% Polyimide ferrules offer equivalent composition to Agilent graphite/Vespel®

Ferrule Removal Kit

Useful for removing ferrules that are stuck in fittings. Each kit includes two sizes of tapered stabbers for retrieving capillary size ferrules.



VFRK1	Ferrule Removal Kit	1	\$35.10
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Ferrule Replacement

Look for the following signs that may indicate ferrule damage:

- Sample degradation or sample loss
- Background noise from oxygen diffusing into the system
- Increase in detector noise

Ferrule Size Selection

The ferrule should always have a slightly larger ID than the column OD, so that it can compress and seal around the column without damaging it.

Ferrule ID	Fits Column ID
0.4mm	0.05, 0.10, 0.15, 0.18, 0.25, 0.28mm
0.5mm	0.32mm
0.8mm	0.45, 0.53mm

Ferrules are available in many more sizes and materials, such as 100% Polyimide (Vespel), PTFE, Stainless Steel, Aluminum, PEEK, PFA, FEP and CTFE.

We can also provide ferrules in custom materials, sizes and configurations.

INLET LINERS FOR ROUTINE ANALYSES












Restek's Intermediate Polarity (IP) deactivated liners are economically priced compared to expensive Agilent liners for routine, day-to-day GC analyses!

Most GC analyses require an IP liner with a phenylmethyl deactivated surface. They can be used for a wide variety of polar and non-polar compounds, including hydrocarbons, common solvents and less sensitive analytes generally detected using FID or TCD.

For more challenging analyses consider using a more inert liner. See Restek Topaz liners on page 13.



Description	ID* OD x Length	Equivalent to Agilent Number	Product Number	Pkg. 5	5 x Pkg. 5
DI Liners for Agilent GCs (for 0.25 / 0.32 / 0.53mm ID Columns)  Double Taper Drilled Uniliner (hole near bottom) ¹	4.0mm 6.3mm x 78.5mm	G1544-80700 (Each)	RK20989	\$472.00	\$399.50
Splitless Liners for Agilent GCs  2mm Splitless ²	2.0mm 6.5mm x 78.5mm	5183-4703 (Pkg. 5) 5183-4704 (Pkg. 25)	RK20713	138.90	114.90
 Single Taper Splitless w/Deactivated Wool ³	4.0mm 6.5mm x 78.5mm	5183-4693 (Pkg. 5) 5183-4694 (Pkg. 25)	RK22406	153.60	127.50
 Double Taper Splitless ⁴	4.0mm 6.5mm x 78.5mm	5183-4705 (Pkg. 5) 5183-4706 (Pkg. 25)	RK20785	188.90	163.90
 4mm Splitless w/Deactivated Wool ⁵	4.0mm 6.5mm x 78.5mm	5183-4691 (Pkg. 5) 5183-4692 (Pkg. 25)	RK22401	107.00	88.90
 Cyclo Double Taper (4mm) ⁶	4.0mm 6.5mm x 78.5mm	N/A	RK20896	531.00	441.00
Split Liners for Agilent GCs  4mm Splitless w/Deactivated Wool ⁷	4.0mm 6.3mm x 78.5mm	5183-4691 (Pkg. 5) 5183-4692 (Pkg. 25)	RK20782	116.30	113.80
 Cyclo ⁸	4.0mm 6.3mm x 78.5mm	N/A	RK20707	323.60	268.70
Siltek® Metal Split/Splitless Liners for Agilent GCs  Split/Splitless w/Deactivated Wool ⁹	5.2mm 6.3mm 78.5mm	N/A	RK21700	100.20	83.20

¹ Trace, active samples, high recovery & linearity. Hole in Drilled Uniliner liner makes direct injection possible with EPC-equipped Agilent 6890 & 7890 GCs;

² Trace samples <2µL; ³ Trace samples >2µL; ⁴ Trace, active samples >2µL; ⁵ Trace samples >2µL; ⁶ Trace, active, dirty samples >2µL;

⁷ Universal, use with Agilent 7673 Autosampler; ⁸ Dirty samples, many injections before cleaning required; ⁹ More robust than glass, high temp SIM DIST

* Nominal ID at syringe needle expulsion point










We offer Topaz and IP inlet liners for Agilent, Bruker/Varian, Perkin Elmer, Shimadzu and more!
Visit www.chromspec.com/topaz and www.chromspec.com/liners for complete lists.

INLET LINERS FOR TRACE ANALYSES

Restek Topaz inlet liners give industry leading inertness and performance.

Topaz GC inlet liners are made under strict manufacturing controls, followed by a battery of industry-specific QC tests, to prove that every lot produced maintains superior reliability and outstanding inertness across a broad range of compound classes. By ensuring the utmost reproducibility in these liners, it helps eliminate frustration and uncertainty in your work. Using deactivated Topaz GC inlet liners prevents unwanted chemical interactions and minimizes breakdown, which improves your data quality and dependability and reduces instrument downtime!

More
Savings

Description	ID OD x Length	Equivalent to Agilent Number	Product Number	Pkg. 5	5 x Pkg. 5
Direct Injection Liners for Agilent GCs (for 0.25/0.32/0.53mm ID Columns)					
 Drilled Uniliner (hole near bottom)	4.0mm 6.3mm x 78.5mm	5190-7020	RK23306	\$420.00	\$365.00
 Drilled Uniliner (hole near bottom) w/Wool	4.0mm 6.3mm x 78.5mm	5190-7014	RK23307	450.00	395.00
Splitless Liners for Agilent GCs					
 4mm Single Taper w/Wool	4.0mm 6.5mm x 78.5mm	5190-3163 (Pkg. 5) 5190-3167 (Pkg. 25)	RK23303*	156.50	126.70
 4mm Single Taper	4.0mm 6.5mm x 78.5mm	5190-3162 (Pkg. 5) 5190-3166 (Pkg. 25)	RK23302	150.90	122.20
 4mm Cyclo Double Taper	4.0mm 6.5mm x 78.5mm	N/A	RK23310	508.00	411.00
Split Liners for Agilent GCs					
 4mm Precision Liner w/Wool	4.0mm 6.3mm x 78.5mm	210-4004-5 (Pkg. 5)	RK23305*	141.10	114.30
Split/Splitless Liners for Agilent GCs					
 4mm Straight w/Wool	4.0mm 6.3mm x 78.5mm	5190-3164 (Pkg. 5) 5190-3168 (Pkg. 25)	RK23300	109.00	88.30
 Low Pressure Drop Liner w/Wool	4.0mm 6.3mm x 78.5mm	5190-3165 (Pkg. 5) 5190-3169 (Pkg. 25)	RK23467	240.70	195.00
 Low Pressure Drop Precision Liner w/Wool	4.0mm 6.3mm x 78.5mm	5190-3165	RK23309	242.00	196.10



* Split and Splitless liners vs. Split / Splitless

For chromatographers who frequently switch between split and splitless injections, RK23309 is a very effective liner as it performs very well for both injection types. However, if you are using RK23309 (or an equivalent liner) solely for split or splitless injections the following liners offer equal performance at a significantly lower cost:

RK23305 for split injections
RK23303 for splitless injections

GC COLUMN CONNECTORS

Glass connectors are useful for connecting fused silica GC columns to guard columns and transfer lines; and to repair broken columns.



Restek Press-Tight® Undeactivated Connectors ⇒ For Routine Analyses

- Ideal for working with hydrocarbons and permanent gas (oxygen, nitrogen, methane, and carbon monoxide) analyses

Product Number	Description	Fits Column (MM OD)	Qty	Equivalent to Agilent Number	Price
RK20400	Universal, Straight	0.33 to 0.74	5	—	\$89.10
RK20401	Universal, Straight	0.33 to 0.74	25	—	Save More337.60
RK20402	Universal, Straight	0.33 to 0.74	100	—	Save More.....1,021.00
RK20405	Universal, "Y"	0.33 to 0.74	1	—	129.80
RK20406	Universal, "Y"	0.33 to 0.74	3	—	Save More340.70

Deactivated Connectors ⇒ For Sensitive Analyses

- Recommended for sensitive analyses of solvents like alcohols, aldehydes and ketones

CHROMSPEC™ Glass Deactivated Connectors					
CS833010	Universal, Straight	0.30 to 0.74	10	5190-6979 (Pkg. 10)	\$105.00*
* Additional cost savings when purchasing quantities of 3+: \$84.00					
Restek Press-Tight® Deactivated Connectors					
RK20429	Universal, Straight	0.33 to 0.74	5	5190-6979 (Pkg. 10)	\$94.20
RK20430	Universal, Straight	0.33 to 0.74	25	5190-6979 (Pkg. 10)	Save More385.80
RK20405261	Universal, "Y"	0.33 to 0.74	1	5190-6980	131.30
RK20406261	Universal, "Y"	0.33 to 0.74	3	5190-6980	Save More345.40

CHROMSPEC™ MS-Connect Deactivated Connectors ⇒ For GC-MS

- Ideal for GC-MS analyses of a wide variety of pharmaceutical, forensic/toxicological and environmental compounds
- Proprietary deactivation for superior inertness
- Re-engineered inside tapers and overall lengths resulting in improved sealing properties

CS846610	Straight	0.30 to 0.50	10	—	\$249.70
CS8460	3-way	0.30 to 0.50	1	—	368.00

Restek Press-Tight® Siltek® Deactivated Connectors ⇒ For Organochlorine Pesticide & Low Level Drug Analyses

- Unlike traditional deactivations, Siltek® deactivation is not susceptible to cleavage or the formation of active silanols. Therefore, they greatly reduce bleed and breakdown or adsorption of active components, compared to conventional surface coatings

RK20480	Universal, Straight	0.33 to 0.74	5	—	\$113.20
RK20449	Universal, Straight	0.33 to 0.74	25	—	Save More478.00
RK20485	Universal, "Y"	0.33 to 0.74	1	—	146.20
RK20486	Universal, "Y"	0.33 to 0.74	3	—	Save More338.90
RK20487	Universal, Angled "Y"	0.33 to 0.74	1	—	158.80
RK20469	Universal, Angled "Y"	0.33 to 0.74	3	—	Save More424.00

Restek Defined PressFit Connectors

RK22160	Deactivated PressFit Connector	0.40 to 0.40mm	25	—	\$367.70
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CHROMSPEC™ Defined Connectors

CS83025*	CHROMSPEC™ Connector	0.25mm to 0.25mm	5	—	\$57.40*
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* Additional cost savings when purchasing quantities of 2+: \$51.70

Note: Other sizes of defined connectors are available, please inquire.

Universal vs. Defined GC Column Connectors

“Universal” Connectors are able to secure any GC column with an OD between the limits indicated in the “Fits Column” column. Use with 0.1 to 0.53mm ID columns (0.33 to 0.74mm OD).

We also offer an assortment of “Defined” Connectors which have ID-specific ends for better sealability. Please inquire.



Should I Use Deactivated or Undeactivated GC Connectors?

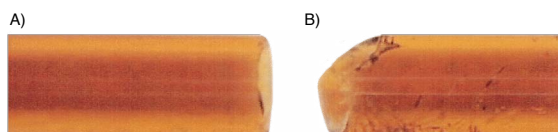
Many chromatographers prefer undeactivated GC connectors for general, routine GC analyses and have obtained very good results. For more sensitive analyses (such as solvents, pesticides, herbicides, forensic & toxicological samples, and trace GC-MS work), a deactivated connector will maintain a more inert flow path and help prevent sample adsorption or loss.



How Do I Attach Glass GC Connectors to Fused Silica Tubing?

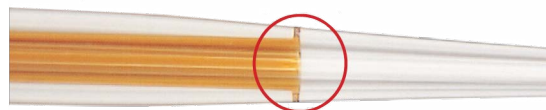
To obtain a proper connection it is essential to begin with a perfect 90 degree cut (Figure 1). First clean the tubing with methanol and use a ceramic scoring wafer (RK20116) for the cut. Examine the end with a pocket magnifier. Assuming a good cut, push the column into the connector until the polyimide sticks to the glass surface, producing a brown ring (Figure 2). Apply a very small amount of polyimide resin (RK20445) near the opening of the glass connector and allow to air dry for 30 minutes. The polyimide resin adds mechanical strength to the connection. For a solid and tight connection, the connector should be heated, under carrier gas, to 200°C in the GC oven for 30 minutes.

Figure 1



A) The cut on the left will produce a good seal
B) The cut on the right will produce a poor seal

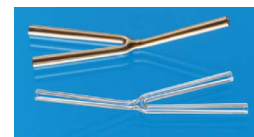
Figure 2



Why Use an Angled “Y”?

Angled “Y” Connector inlet and outlet ends conform to the column curvature to alleviate column-end connection strain.

Contact us for more information.



Restek Ceramic Scoring Wafer

Product Number	Description	Qty	Equivalent to Agilent Number	Price
RK20116	Ceramic Scoring Wafers	5	5181-8836	\$64.10



Restek Polyimide Resin

Securely connects a Press-Tight® connector to a fused silica column.

RK20445	Polyimide Resin	5g	500-1200	\$47.00
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Wait! There's More...

We carry many more glass connectors, including “Y”, “T”, “X”, 3-way splitters, and defined PressFit connectors.

Please contact us for more information.



GC COLUMNS FOR TRACE ANALYSIS



Analyze more samples per day and purchase fewer Rxi columns compared to the competition.



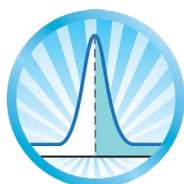
Less Troubleshooting = more time to run samples!

Rugged polymers are cross-bonded and anchored to an extremely inert deactivation surface, resulting in a column that can take whatever abuse you throw at it. This rugged, inert design increases column lifetime and helps to reduce column maintenance, column replacement, instrument recalibration, and the potential need for method revalidation compared to other columns.

Get the Right Results, Fast!

High column efficiency and inertness allow for faster analyses with lower detection limits, especially for trace-level GC-MS analyses.

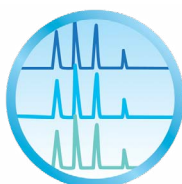
Leverage the outstanding inertness, low bleed, and high reproducibility of Rxi® 3-in-1 technology:



Outstanding Inertness



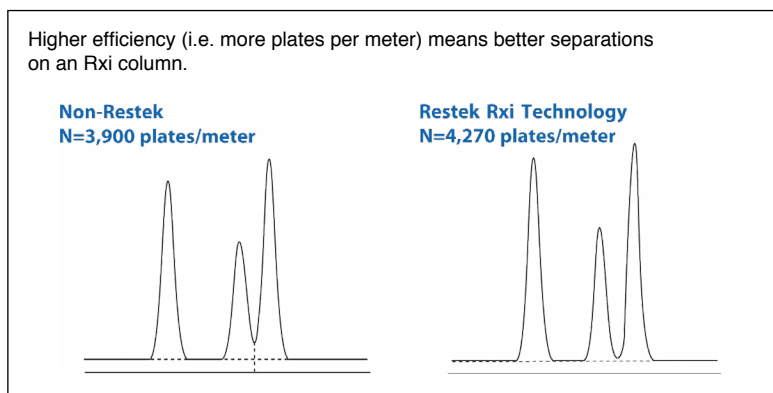
Low Bleed



High Reproducibility



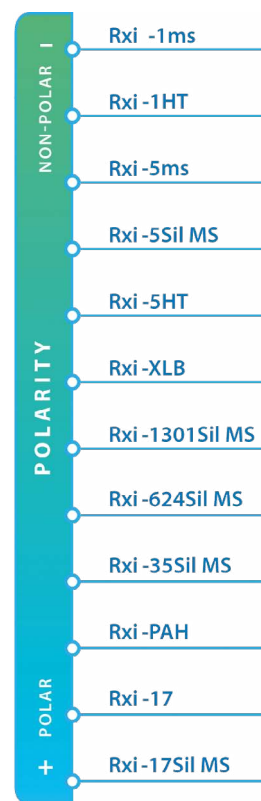
Rxi columns don't just give you the right results; they give you the right results fast. Thermal stability with low column bleed lets you run your instrument at higher oven temperatures, reducing analysis times and increasing sample throughput. And, the efficiency of an Rxi column generates sharp, narrow peaks, so target analytes are still separated at high temperatures!



Contact our Technical Support Team to discuss your application today!

The Best Column For Your Next Method is an Rxi Column

Choosing the right stationary phase can make all the difference to the success of your analysis. Restek has developed a wide selection of stationary phases that span the polarity range, so you can easily select a perfectly matched Rxi column that helps you run faster and produce unbeatable results.



Rxi low-bleed MS columns exceed the requirements of the most sensitive mass spectrometers.

Use Rxi "Sil" Columns for Mass Spec

By combining arylene chemistry with Rxi technology, Restek has developed a subgroup of phases containing silarylene copolymers that offer even more exceptional thermal stability. Higher thermal stability results in lower bleed, making Rxi "Sil" columns perfect for MS or highly sensitive applications.

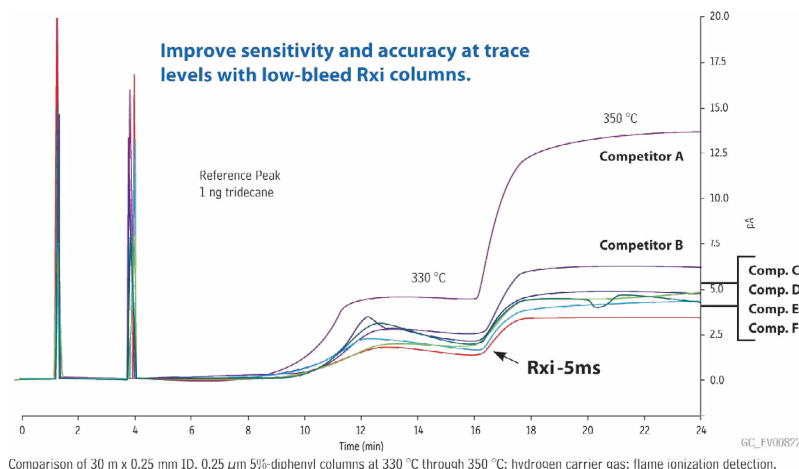
Put Rxi GC Columns to Work in Your Lab Today!

You owe it to yourself, your data, and your customers to put the best GC column into your instrument. Rxi columns are the right choice for improving the speed and accuracy of your results.

GC COLUMNS FOR TRACE ANALYSIS

Rxi GC columns have the lowest bleed among major brands of columns

Rxi columns are more stable than other manufacturers' columns, so they generate less bleed and reduce background to further improve signal-to-noise ratios, enhance sensitivity, and lower detection limits. These qualities make low-bleed Rxi columns the perfect choice for trace-level, GC-MS analyses.



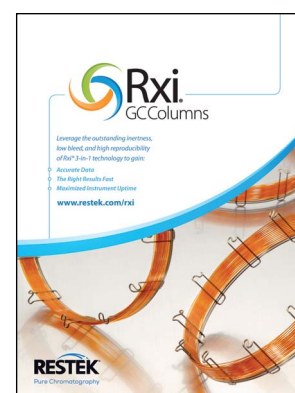
Column bleed is the degradation and elution of the stationary phase at elevated temperatures. Lower bleed columns inherently last longer.



Use **Rxi Guard/Retention Gap Columns** to protect your analytical column and help focus analytes.

For Glass Connectors and cutting tips, see page 15.

Rxi GC Columns Brochure



For more information about Rxi columns, please contact our Technical Support Team at tech@chromspec.com and request a free copy of Literature Code **RK171**.

Restek Rxi GC Columns

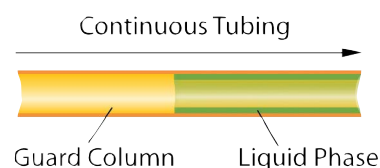
Product Number	Description	Equivalent to Agilent Number	Price
RK13323	Rxi-1ms, 30m x 0.25mm x 0.25 μ m	122-0132UI	\$676.00
RK13356	Rxi-1ms, 60m x 0.25mm x 1.0 μ m	—	1,161.00
RK13357	Rxi-1ms, 60m x 0.32mm x 1.0 μ m	—	1,471.00
RK13952	Rxi-1HT, 30m x 0.25mm x 0.25 μ m	—	903.00
RK13423	Rxi-5ms, 30m x 0.25mm x 0.25 μ m	19091S-433I	670.00
RK13623	Rxi-5Sil MS, 30m x 0.25mm x 0.25 μ m	122-5532UI	687.00
RK13923	Rxi-5HT, 30m x 0.25mm x 0.25 μ m	—	903.00
RK13723	Rxi-XLB, 30m x 0.25mm x 0.25 μ m	122-1232	707.00
RK16094	Rxi-1301Sil MS, 30m x 0.25mm x 0.25 μ m	CP9053	801.00
RK13868	Rxi-624Sil MS, 30m x 0.25mm x 1.40 μ m	122-1334UI	683.00
RK13870	Rxi-624Sil MS, 30m x 0.32mm x 1.80 μ m	123-1334	752.00
RK13871	Rxi-624Sil MS, 30m x 0.53mm x 3.00 μ m	125-1334	1,060.00
RK13823	Rxi-35Sil MS, 30m x 0.25mm x 0.25 μ m	122-3832UI	889.00
RK49318	Rxi-PAH, 30m x 0.25mm x 0.10 μ m	—	882.00
RK13523	Rxi-17, 30m x 0.25mm x 0.25 μ m	122-1732	627.00
RK14123	Rxi-17Sil MS, 30m x 0.25mm x 0.25 μ m	122-4732	707.00
RK10059	Rxi Guard / Retention Gap, 10m x 0.25mm	—	147.40
RK10064	Rxi Guard / Retention Gap, 10m x 0.32mm	—	166.40
RK10073	Rxi Guard / Retention Gap, 10m x 0.53mm	—	219.30

Many more Rxi GC Columns and Guards are available.
Visit www.chromspec.com/rxi

Integra-Guard columns incorporate a guard column and analytical column in one to eliminate the problems associated with this connection altogether. Integra-Guard columns are available for Rxi-5Sil MS columns as well as a variety of Rtx columns. Protecting your analytical column has never been easier.



**Integra-Guard
Built-In Guard Column**



GC COLUMNS FOR ROUTINE ANALYSIS

Restek Rtx GC Columns → A Dependable Solution For General Use

Product Number	Description	Equivalent to Agilent Number	Price
RK10109	Rtx-1, 30m x 0.32mm x 0.10 μ m	123-1031	\$673.00
RK10177	Rtx-1, 15m x 0.53mm x 5.0 μ m	125-1015	426.00
RK10223	Rtx-5, 30m x 0.25mm x 0.25 μ m	122-5032	607.00
RK10226	Rtx-5, 60m x 0.25mm x 0.25 μ m	122-5062	1,148.00
RK10968	Rtx-624, 30m x 0.25mm x 1.4 μ m	122-1334	709.00
RK10638	Stabilwax, 30m x 0.25mm x 0.50 μ m	122-7333	786.00
RK10823	Stabilwax-DB, 30m x 0.25mm x 0.25 μ m	112-2132	908.00
RK10857	Stabilwax-DB, 60m x 0.32mm x 1.0 μ m	—	1,683.00
RK12498	FAMEWAX, 30m x 0.32mm x 0.25 μ m	—	854.00
RK18077	Rtx-Volatile Amine, 30m x 0.32 x 5 μ m	—	802.00
RK18078	Rtx-Volatile Amine, 60m x 0.32mm x 5 μ m	—	1,665.00
RK10148	Rtx-DHA-100, 100m x 0.25mm x 0.50 μ m	—	1,535.00
RK10043	IP Deactivated Guard Column, 5m x 0.25mm	160-2255-5	71.80
RK10044	IP Deactivated Guard Column, 5m x 0.32mm	160-2325-5	78.30
RK10045	IP Deactivated Guard Column, 5m x 0.53mm	160-2535-5	97.50



Many more Rxi GC Columns and Guards are available.
Visit www.chromspec.com/rxi

We carry a wide variety of Restek Rxi, Rtx, MXT, capillary, packed and micropacked columns.

We also offer other GC columns such as CHROMSPEC packed columns, ValcoBond and ValcoPLOT (VICI), Macherey Nagel and Quadrex.

Please contact our Technical Support Team to find the column you need, fast!



Checking for leaks and verifying flows before starting helps you avoid costly problems later. Protect your instrument and column!

Restek ProFLOW 6000 and Leak Detector Combo

- Restek's Leak Detector is an essential tool for troubleshooting and routine maintenance of your gas chromatograph.
- The ProFLOW 6000 flowmeter simplifies gas flow measurement in the lab. Real-time measurements can be made for various types of flow paths, including continually changing gas types.



RK22654 Combo Pack, ProFLOW 6000 & Leak Detector VI \$2,347.00

Restek Dynamic Duo - Leak Detector and ProFLOW 6000 Flowmeter Combo Pack



Avoid using liquid leak detectors on a GC.
Liquids can be drawn into the system causing contamination or damage to the column or other components.

METAL CAPILLARY GC COLUMNS

For GC applications where column breakage is a concern, trust MXT columns to deliver the robustness of steel with the inertness of fused silica

- High temperature petroleum and petrochemical applications
- Field instruments and process GCs where excessive jarring is common

MXT columns undergo a process whereby a thin, flexible deactivation layer is bonded directly to the stainless steel surface, offering comparable efficiency and inertness to fused silica tubing, with increased durability.

Product Number	Description	Price
RK70105	MXT-1, 15m x 0.25mm x 0.10 μ m	\$540.00
RK70120	MXT-1, 15m x 0.25mm x 0.25 μ m	552.00
RK70106	MXT-1, 15m x 0.28mm x 0.10 μ m	562.00
RK71815	MXT-1, 20m x 0.18mm x 0.40 μ m	799.00
RK70107	MXT-1, 30m x 0.53mm x 0.15 μ m	558.00
RK70109	MXT-1, 30m x 0.28mm x 0.10 μ m	866.00
RK70124	MXT-1, 30m x 0.28mm x 0.25 μ m	913.00
RK70112	MXT-1HT SimDist, 5m x 0.53mm x 0.10 μ m	532.00
RK70115	MXT-1HT SimDist, 5m x 0.53mm x 0.20 μ m	532.00
RK70118	MXT-1HT SimDist, 10m x 0.53mm x 0.21 μ m	637.00
RK70101	MXT-1 SimDist, 6m x 0.53mm x 0.15 μ m	546.00
RK70223	MXT-5, 30m x 0.25mm x 0.25 μ m	850.00
RK70252	MXT-5, 15m x 0.53mm x 0.25 μ m	549.00
RK70225	MXT-5, 30m x 0.53mm x 0.25 μ m	948.00
RK70199	MXT-2887, 10m x 0.53mm x 2.65 μ m	398.70
RK70652	MXT-Wax, 15m x 0.53mm x 1.0 μ m	549.00
RK70655	MXT-Wax, 30m x 0.53mm x 1.0 μ m	948.00
RK70658	MXT-Wax, 60m x 0.53mm x 1.0 μ m	1,452.00

Many more phases and column dimensions are available. The standard coil diameter for most MXT columns is 4.5", but they can be custom coiled to meet your exact specifications (2.5 - 7" diameters). Please contact our Technical Support Team to discuss your requirements or for instructions on cutting and proper installation of MXT columns!

MXT guard columns are also available. Please inquire.

Restek MXT Connectors

Connect transfer lines or guard columns directly to your MXT columns without affecting your chromatography.

MXT Low-Dead-Volume Connector Kits

RK20397	For 0.28mm ID MXT Columns	\$106.30
RK20536	For 0.32mm ID MXT Columns	109.30
RK20394	For 0.53mm ID MXT Columns	106.30

MXT Low-Dead-Volume "Y" Connector Kits

RK20396	For 0.28mm ID MXT Columns	\$186.80
RK20537	For 0.32mm ID MXT Columns	197.40
RK20395	For 0.53mm ID MXT Columns	186.80

Restek MXT Needle Files for Cutting MXT Columns

Multi-purpose files especially useful for cutting Siltek-treated stainless steel GC columns.

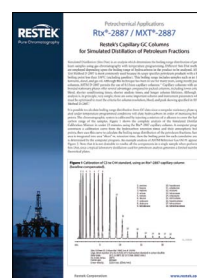


RK21601	MXT Needle Files, Pkg. 2	\$38.00
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MXT-2887 columns are your best choice for simulated distillation.

For more information, please request Literature Code **RK188**.



GC Columns in Space!



MXT columns were chosen to be carried on the Rosetta spacecraft's Philae lander, which made history by achieving the first soft landing on a comet. When column ruggedness and durability is essential, trust MXT.

REPLACEMENT TRAPS FOR EXISTING GC AND GC-MS SYSTEMS

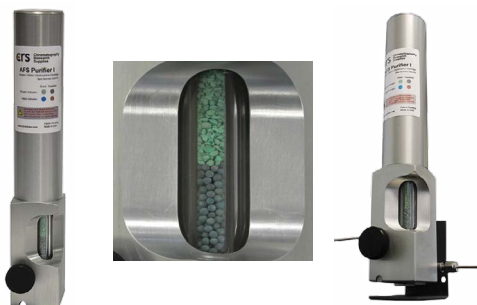
All GC manufacturers recommend the use of gas traps to:

- ⇒ Eliminate contaminants (oxygen, hydrocarbons and moisture)
- ⇒ Increase column lifetime and reduce detector interference
- ⇒ Decrease baseline noise, increase sensitivity and improve analytical accuracy

Economically Priced Replacement Traps for your Existing Agilent Gas Purification System

Advanced Filter System (AFS) Gas Traps

⇒ Applications: GC and GC-MS, ECD, ICP



- Removes oxygen, hydrocarbons and moisture
- High capacity and efficiency in a single cartridge
- Can supply 4 GCs for at least one year when used with 99.995% pure gas
- Easy cartridge replacement – twist on/off
- Double seal construction for safety, especially for use with hydrogen
- Check valves protect gas lines from ambient air during cartridge replacement, maximizing column and system lifetime

Compare
and Save!

Product Number	Description	Equivalent to Agilent Number	Qty	Price
C36301	AFS I Complete Kit, 1/8" Fittings	G3440-60004	1	\$929.00
C36323	AFS I Replacement Cartridge Kit (Reconditioned)	G3440-69003	1	393.00
C36321	AFS I Replacement Cartridge	G3440-60003	1	591.00
C36329	AFS I Complete Kit, 1/4" Fittings	N/A	1	943.00



Gas traps are more effective if they are mounted in a vertical position with the carrier gas running upwards through the trap. This eliminates channelling of the carrier gas and maximizes the trapping capacity.

Choose our Most Economical Purification Option for New Systems

CHROMSPEC™ GC Gas Traps

- Economically priced in-line traps
- Consider using the large, 750cc traps for additional cost savings and less frequent trap changes!

CHROMSPEC™ ...The Name for Affordable Quality



C36035	Indicating Moisture Trap, 400cc, 1/8"	MT400-2	1	\$184.60
C36086	Non-Indicating Moisture Trap, 750cc, 1/8"	BMT-2	1	364.30
C36060	Oxygen Trap, 100cc, 1/8"	OT1-2	1	162.10
C36082	Oxygen Trap, 750cc, 1/8"	BOT-2	1	380.00
C36065	Oxygen Trap, 100cc, 1/4"	OT1-4	1	162.10
C36100	Hydrocarbon Trap, 200cc, 1/8"	HT200-2	1	138.10
C36090	Hydrocarbon Trap, 750cc, 1/8"	BHT-2	1	340.40
C36105	Hydrocarbon Trap, 200cc, 1/4"	HT200-4	1	165.60
C36120	Hydrocarbon/Moisture Trap, 200cc, 1/8"	HMT200-2	1	201.00
C36125	Hydrocarbon/Moisture Trap, 200cc, 1/4"	HMT200-4	1	201.00
C36190	Excelasorb Multi-purpose Trap, 750cc, Mass Spec Grade, 1/8" SS Fittings	RMSH-2	1	394.00

Traps are available with 1/8" or 1/4" tube fittings.

GAS TRAPS FOR NEW GC AND GC-MS SYSTEMS

Set up a New, Flexible Gas Purification System

Restek Super Clean Gas Traps

Suitable for the purification of GC gases with low contamination to a better than 6.0 grade (99.9999%) purity.

- Several trap designs for single or multiple contaminant removal
- “Quick connect” fittings for easy, leak-tight changes
- High purity at max flow of 2L/min.
- Trap life is approx 1 year with one GC system



Product Number	Description	Equivalent to Agilent Number	Qty	Price
RK21983	Helium-Specific Carrier Gas Cleaning Kit (for GC-MS)	CP17988	1	\$910.00
RK22019	Carrier Gas Cleaning Kit	—	1	711.00
RK21982	Replacement Helium-Specific Gas Trap	CP17973	1	390.00
RK22020	Replacement Triple Trap	—	1	263.40
RK22022	Replacement Fuel Gas Trap (removes moisture and hydrocarbons)	—	1	291.00
RK22028	Ultra-High Capacity Moisture Trap	CP17971	1	227.90
RK22029	Ultra-High Capacity Oxygen Trap	CP17970	1	227.90
RK22030	Ultra-High Capacity Hydrocarbon Trap	CP17972	1	227.90
RK22025	Single position trap base plate	CP7988	1	416.00
RK22026	2-position trap base plate	CP738407	1	767.00
RK22027	3-position trap base plate	—	1	1,090.00

The traps are connected to a base plate, installed into the gas line. Standard base plate inlet/outlet fittings accept 1/8" tubing.

Restek Electronic Maintenance Indicator for Gas Filters

- Progressively displays real-time gas filter status
- Warns you when maintenance for a gas filter is due and prevents unplanned downtime
- Audiovisual warning system ensures maintenance is done on time



RK22645	Maintenance Indicator for Gas Filters	—	1	\$95.00
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Replacement Purifiers for Agilent GC-MS and LC-MS Systems

VICI Metronics Gas Specific Purifiers

- Reduce gas impurities from high PPM to low PPB levels
- Decrease baseline noise and increase GC-MS sensitivity
- Remove oxygen, hydrocarbons and moisture

Purification is optimized with a multiple bed format. Each bed functions at a lower contaminant concentration, resulting in a series of contaminant concentration gradients across the length of the gas purifier.



VMSP1001	Helium Purifier, 1/8"	5182-3467, RMSH-2	1	\$335.90
VMSP2001	Hydrogen Purifier, 1/8"	5182-3425, RMSHY-2	1	335.90
VMSP3002	Nitrogen Purifier, 1/4"	G1946-80047, RMSN-4	1	335.90

YMC — Triart HPLC and UHPLC COLUMNS



Rugged, inert columns last longer so you can run more samples.

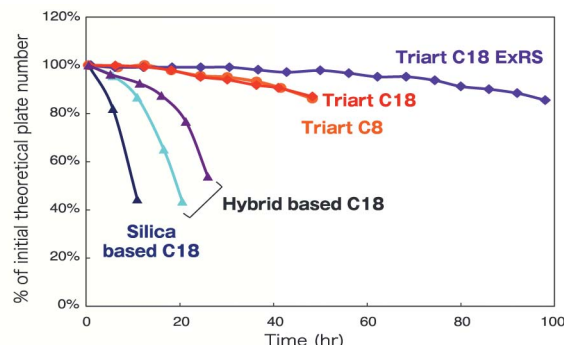
Triart Columns – 9 Reasons to Use Triart Columns in Your Lab Simplified HPLC method development

- Extreme chemical stability allows you to choose from a range of separation conditions to optimize selectivity without changing columns
- pH resistant from 1-12 (C8, C18 columns)
- Can be used with 0-100% organic or aqueous solvents
- Stable to 70°C
- High physical strength and a broad range of particle sizes allow columns to be used on a wide range of instruments
- Microreactor production avoids particle delamination of organic and inorganic layers
- 1000 MPa (bar) / 14,500 psi limit for UHPLC
- 1.9 μm , 3 μm , 5 μm analytical columns and up to 50 μm preparative columns
- YMC has increased the maximum temperature limit on Triart C4, C8 and C18 to 90°C from pH 1 - 7



Stability of Triart columns at high pH.

Conditions: Phosphate buffer (pH 11.5), 40°C.

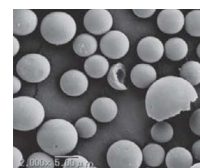


Avoid Delamination

Triart C18



Other Hybrid Particle



Mode	Reversed Phase							HILIC
Product name	C18 BIO	C4 BIO	C18	C18 ExRS	C8	Phenyl	PFP	Diol-HILIC
Base material	Multi-layered organic/inorganic hybrid							
Stationary phase	-C ₁₈ H ₃₇	-C ₄ H ₉	-C ₁₈ H ₃₇	-C ₁₈ H ₃₇ Trifunctional for Steric selectivity	-C ₈ H ₁₇			
Bonding type	Polymeric							
Particle size	1.9 μm , 3 μm , 5 μm (plus preparative sizes)							
Pore size	300 Å		120 Å					
End-capping	Yes						No	No
Carbon loading	Proprietary	20%	20%	25%	17%	17%	15%	12%
pH range	1 - 12					1 - 10	1 - 8	2 - 10
Temperature limit (recommendation)	90°C to pH 1 - 7, 50°C to pH 12					50°C		
100% aqueous mobile phase compatibility	Yes	Yes	Yes	No	No	Yes	Yes	-

Make fewer compromises and simplify your HPLC method development.

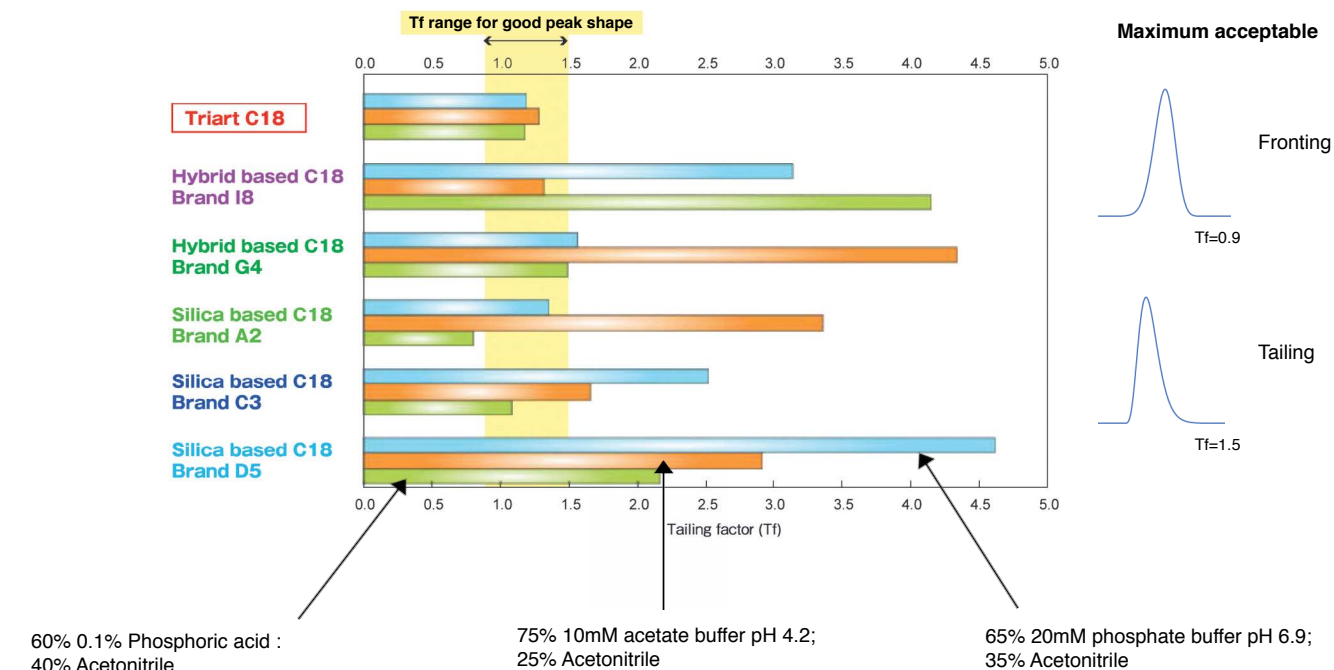
Contact our Technical Support Team for more information.

YMC — Triart HPLC and UHPLC COLUMNS

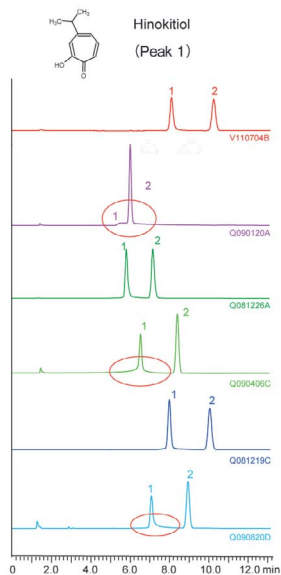
Excellent separations for even your most miserable analyses

Use pH where it's needed most: for selectivity, not to fix peak shape

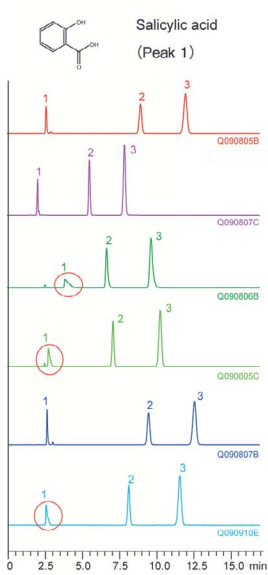
Difficult analytes don't need complicated mobile phases to obtain symmetrical peaks. Triart is so inert that simple mobile phases provide excellent peak shapes even for acids, bases and metal chelators.



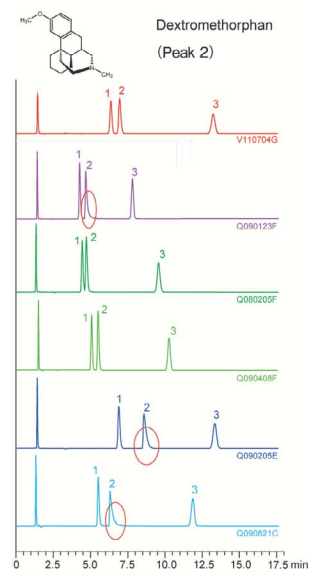
Coordination compounds



Acidic compounds



Basic compounds



Triart is tested to work well for difficult analytes and conditions...Imagine what it can do with easy analytes!

To see Triart put to the test under more conditions, request Literature Code **YM10**, or visit www.chromspec.com/ymc-triart.

HPLC Columns...

Look what we have to offer!

Chromatographic Specialties has access to a broad range of HPLC column brands and manufacturers.



Our Technical Support Team is available to help you find the optimal HPLC column for fast, effective and reliable method development.

Contact them at **1-800-267-8103** or **tech@chromspec.com**.

-
- YMC** – Meteoric, Triart, YMC-Pack *Pro*, YMC-Ultra HT *Pro*, YMC-Pack™, Chiral ART, YMC-Actus™, YMC-Ultra HT™  
- Restek** – Force, Raptor, Ultra, Roc, Viva, Pinnacle DB, PFAS Delay  
- MACHEREY-NAGEL** – Nucleodur®, Nucleoshell®, Nucleosil®  
- HAMILTON** – PRP®, HxSil
- HiChrom** – Genesis®, Apex™, Apollo™, Alltima™, HP, Partisil®, PartiSphere, Prevail™, Vydac
- KNAUER** – Eurospher I & II, Eurocel, Eurokat, Eurosil Bioselect, AppliChrom®
- REGIS** – IAM, RAM Direct Injection
- REGIS CHIRAL** – Alpha Burke 2, DACH-DNB, Leucine, Phenylglycine, Pirkle 1-J, β-Gem 1, ULMO, Wheelk-O®, RegisCell™, RegisPack™, ChiroSil®, Reflect™
- THERMO** – Accucore™, Hypersil®, Hypersil Gold™, Hypercarb™, BioBasic™, POROS™ 
- MICRO-TECH** – Capillary LC Columns
- OROCHEM** – Orosil - simple replacement for Inertsil-based applications
- PERKIN-ELMER** – Brownlee™, Aquapore™, Polypore
- PICKERING LABORATORIES** – Application matched columns for turn-key Post Column Derivatization
- PRINCETON** – PrincetonSPHER, PharmaBOND  
- SHODEX** – Asahipak™, RSpak 
- ZIRCHROM** – ZirChrom®, Sachtopore™ - Zirconia and Alumina columns for high temperature and extreme pH applications 
-

PLUS – Envirodur, Lichrosorb®, Lichrospher®, Superspher®, Spherisorb®, Nova-Pak®, SiELC, Primesep™, Obelisc™, Matrix, Polygosil, Silicycle, COSMOSIL, COSMOCORE, COSMOGEL, CAPCELL PAK®, ProntoSIL, Sepax, Chromegabond®, Emerald, Monitor, Polygoprep



Restek has a complete line of columns to satisfy your simplest to most specialized analyses.

Raptor[®] LC Columns

Selectivity Accelerated

- Higher efficiency for drastically faster analysis times
- Better selectivity for substantially improved resolution
- Increased sample throughput with existing HPLC and UHPLC instrumentation
- Long-lasting ruggedness for dependable reproducibility

C18

- General reversed-phase chromatography columns
- Compatible with pH 2–8 mobile phases
- Increased retention of hydrophobic compounds

Target Analytes

Hydrocarbons, hydrophobic compounds

HILIC-Si

- Increased retention of small polar compounds
- Minimise use of ion-pairing reagents
- Improve retention and sensitivity for hydrophilic compounds by LC-MS

Target Analytes

Extremely polar organics

ARC-18

- Well-balanced retention profile
- Sterically protected to resist pH 1–3 mobile phases
- Ideal for use with sensitive detectors like mass spec
- Analyze large, multiclass lists by LC-MS/MS

Target Analytes

Hydrocarbons, hydrophobic compounds
Protonated bases

Biphenyl

- Increase retention for dipolar, unsaturated, or conjugated solutes
- Enhance selectivity when used with methanolic mobile phase
- Increase sensitivity and selectivity in LC-MS analyses
- Increase retention of hydrophilic aromatics

Target Analytes

Aromatics
Lewis acids
Dipolar, unsaturated, or conjugated compounds
Fused-ring compounds with electron withdrawing groups

FluoroPhenyl

- Capable of both reversed-phase and HILIC separations
- Increase sensitivity and selectivity in LC-MS analyses and for charged bases & hydrophilic compounds

Target Analytes

Nitrogen-containing analytes
Quaternary ammonium compounds
Positively charged moieties, Protonated amines
Lewis bases

Polar-X

- HILIC and ion-exchange retention in a single ligand
- Resolution and separation of a wide variety of polar compounds
- LC-MS friendly analysis of polar compounds

Target Analytes

Any polar compounds – Neutral, acidic, basic, or permanently damaged

Visit www.chromspec.com/pdf/e/rk212.pdf for more information.

Specially Selected Frits

Precision control over particle size allows the largest possible frit size, which prevents clogging, increases column lifetimes, and helps maintain optimal pressures.

Rugged Label

Clearly identifies both flow direction and column; resists solvents and tearing to last as long as your column does.

Proprietary Column-Packing Technique

Provides greater pressure stability and achieves higher linear velocities without sacrificing efficiency or lifetime; columns hold up under the rigors of UHPLC injection cycles.

Raptor SPP Particles

A Range of Robust Particles

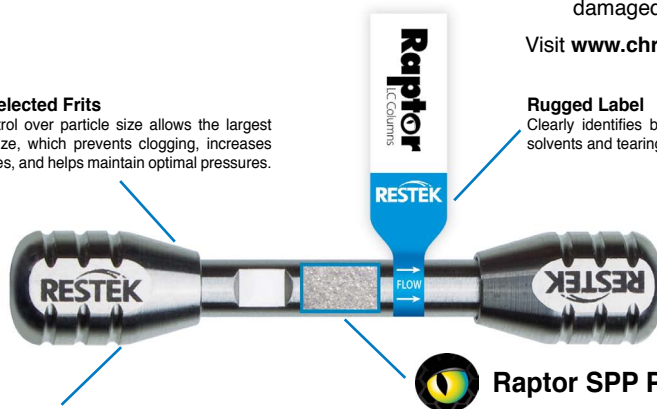
Accelerate traditional HPLC with 2.7 and 5 μ m particles; boost UHPLC with 1.8 μ m.

Narrow Silica Distribution

Ensures high efficiency and consistent flows.

Updated Bonding and QC

Guarantee retention time stability, run-to-run and column to column.



Roc HPLC Columns

Exceptional value for routine analyses and large-volume workflows

- 5 phases cover 98% of USP methods

Contact our Technical Support Team to see if Roc columns can provide cost savings for your lab.

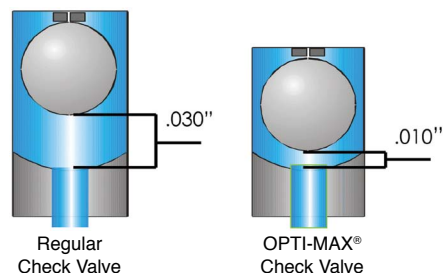


HPLC CONSUMABLES – OPTI-MAX® CHECK VALVES



An economical option for faster and easier maintenance on HPLC and UHPLC instruments.

- **Less down-time:** Change check valves without removing tubing with Free-Turn® Housings
- **Faster valve response:** OPTI-MAX® cartridge design operates with 1/3 the ball travel of standard check valves.
- Ceramic balls are also denser than ruby, helping them seat even faster.
- Ceramic balls avoid sticky varnish formation in acetonitrile¹
- **Better sealing:** OPTI-MAX® cartridges have 1/4 the industry standard leak rate (3 bubbles / sec vs. 12 bubbles / sec)
- Available for:
 - HPLC (6,000psi / 400 bar)
 - UHPLC (18,000 psi / 1,250 bar or >20,000psi / 1,400 bar)



Reduced ball travel: OPTI-MAX® (right) has 1/3 of typical check valve travel, for more precise valve operation and faster seating.

Product Number	Description	Qty	Equivalent to Original Manufacturer Number	Price
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For Agilent 1100 and 1200 HPLCs

M275601330	OPTI-MAX® Outlet Housing & Cartridge, HPLC for Agilent 1050, 1100 and 1200 (400 bar)	1	G1311-60012 G1312-60012 G1312-60067	\$320.90
M105602004	OPTI-MAX®, Replacement Cartridges, 1/8" Ball, HPLC	2	—	337.50
M273804713	OPTI-MAX®, Replacement Cartridge for Active Inlet Valve, 600 bar	1	5062-8562 G1312-60020	290.30
M277601330	OPTI-MAX® Outlet Check Valve Conversion Kit, UHPLC for Agilent 1200 (600 bar), 1220, 1260	1	G1312-60067	375.60



For Waters Alliance HPLCs

OPTI-MAX® cartridges have the same external dimensions as Waters Performance PLUS® cartridges and can be used in the same holders.

M104602004	OPTI-MAX®, Replacement Cartridges, 1/16", HPLC	2	700000254	\$383.50
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For Shimadzu LC-30 UHPLCs

M347605135	OPTI-MAX® Inlet Housing, with Stainless Steel / Ceramic Cartridge, 1/16" Single Ball and Seat	1	228-52964-95	\$474.00
M348605139	OPTI-MAX® Outlet Housing, with Stainless Steel / Ceramic Cartridge 1/16" Double Ball and Seat	1	228-53334-96	430.00
M348605140	OPTI-MAX® Conversion Kit (2 inlets, 2 outlets)	Kit	—	1,510.00



Also available in more sizes and with ruby/sapphire balls and seats.

UHPLC Check Valves (Contact our Technical Team for holders compatible with your instrument)

M107602004	OPTI-MAX® Ceramic Single Ball and Seat Cartridge, Rated to 18,000 psi / 1,250 Bar Pressure	2	—	\$477.00
M108602004	OPTI-MAX® Ceramic Double Ball and Seat Cartridge, Rated to 20,000+ psi / 1,400+ Bar Pressure	2	—	514.00

¹ (Dolan, J. Check Valves and Acetonitrile. LCGC North America. v. 26, n. 6 pp 532-538)

HPLC CONSUMABLES – OPTI-SEAL® PLUNGER SEALS



OPTI-SEAL® UHMW-PE plunger seals reduce HPLC maintenance for Reversed Phase methods.

- UHMW-PE seals **last longer** than PTFE seals in water and polar organic solvents
- **Reduced filter maintenance:** UHMW-PE is designed to shed strands that sit on frits rather than plug them
- **Less chance of leaching:** made from natural UHMW-PE, eliminating dyes or pigments that can contaminate your results

Visit www.chromspec.com/opti-seal-solvent for the Solvent Compatibility Guide.

Product Number	Description	Qty	Equivalent to Original Manufacturer Number	Price
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For Agilent 1100 and 1200 HPLCs

M273601570	Plunger Seal, UHMW-PE, OPTI-SEAL®	1	0905-1420	\$83.80
M273601571	Plunger Seal, UHMW-PE, OPTI-SEAL®	10	0905-1420	788.00

For Waters Alliance HPLCs

M393602596	Plunger Seal, UHMW-PE, OPTI-SEAL®	1	WAT270938	\$77.90
M393602603	Plunger Seal, UHMW-PE, OPTI-SEAL®	2	WAT270938	146.20
M393602597	Plunger Seal, UHMW-PE, OPTI-SEAL®	10	WAT270938	676.00

Note: The Waters Alliance system is designed for reversed phase methods. If you need greater seal life for normal phase with an Alliance system, contact us for information on ITB™ seals.



M393602596

Pistons and Seals

For Agilent 1100 and 1200 HPLCs

M273601572	Plunger Seal, ITB™ PTFE	1	5063-6589	\$62.30
M273601573	Plunger Seal, ITB™ PTFE	10	5063-6589	608.00
RK22482	Plunger Seal, PTFE w/ Graphite	2	5063-6589	119.30
RK22483	Plunger Seal, PTFE w/ Graphite	10	5063-6589	517.00
M273400658	Plunger, Sapphire	1	5063-6586	204.80
M273602364	Wash Seal, UHMW-PE, OPTI-SEAL®	1	0905-1175	65.60
M273602851	Gasket, Wash Seal	6	5062-2484	41.40

For Waters Alliance HPLCs

M393602858	Tube Seals, Seal Wash	4	WAT270940	\$233.50
M393602860	Plunger Seal, Seal Wash	2	WAT271018	129.20
M393402180	Sapphire Plunger	1	WAT270959	280.80



M393402180

Purge and Mixing Valves

For Agilent 1100 and 1200 HPLCs

C56018AG	Frits, PTFE, Purge Valve	5	01018-22707	\$40.00
M273102853	2-in-1 Seal Cap (Replaces two part Agilent cap with a single part)	1	5067-4728	35.90
UAG131167701T	Valve, Multi-Channel Gradient	1	G1311-67701	2,070.00



Single piece design is easier to use than the Agilent part.
No assembly required and no gold disc that can pop out of the PE ring.



M273102853
on Agilent Purge
Valve Base

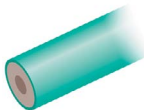
UNIVERSAL HPLC AND UHPLC FITTINGS

HPLC Tubing and Fittings

For systems running at <6,000 psi. Also ideal for UHPLC systems after the column!

1/16" PEEK® Tubing — Dual Layer Colour Coded, Straight

- Undyed core & dyed shell = permanent, easy to see size information
- No leaching concerns
- Same pressure rating, same great price as our dyed, undyed and striped tubing



Product Number	ID mm (in)	Colour Code	Pressure Limit (psi)	Qty	Price
C446007D	0.13 (0.005)	Red	6700	Per ft	\$5.20
C446008D	0.18 (0.007)	Yellow	6400	Per ft	4.40
C446009D	0.25 (0.010)	Blue	6100	Per ft	3.70

More diameters and lengths are available.

One-Piece PEEK® Fingertight Fittings

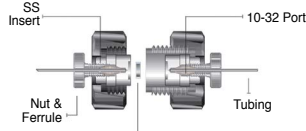
- Easy to use, no separate ferrule to fumble with
- Seal to 5,000 psi
- Contact us for colour coded part numbers



Product Number	Description	Qty	Price
C44550205	Fingertight Fitting, Natural	5	\$32.20

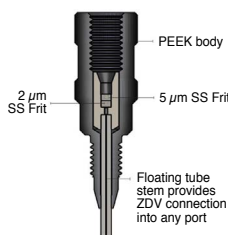
Optimize Opti-Solv® In-Line Filters

- User-friendly filters excel for quick changes
- Unique swivel design allows frits to be changed without removing the connecting tubing
- Plumb it once and leave it
- Hand-tight or wrench-tight versions



OPTI-SOLV® Mini Filters

- A perfect choice for pre-column filtration when volume must be kept to a minimum
- Patented floating tube-stem design provides a very low-volume, zero-dead-volume connection every time
- Depth-filtration design extends filter life by stacking two frits of different porosity to trap particles at two frit surfaces instead of one



M100400391	OPTI-SOLV® In-Line Filter, Gorilla-grip	1	\$450.00
M100400390	OPTI-SOLV® In-Line Filter, Wrench-tight	1	450.00
M100400103	OPTI-SOLV® In-Line Filter, Replacement Frits, 2µm	10	212.70
M100400097	OPTI-SOLV® Mini-Filter, 2µm, SS frit	5	402.00

Mobile Phase Filters

- Your first line of defense against particles or dust entering through your mobile phase bottles



C4446772	Filter, Last Drop Economy, 2µm, 22mm OD, SS	1	\$27.80
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UHPLC Tubing and Fittings

Recommended for systems operating at >6,000 psi (400 bar). Also suitable for demanding HPLC applications.

1/16" 316 Stainless Steel Capillary Tubing

- Bulk Tubing
 - High quality, low cost per foot
 - Cuts depend on user skill
- Pre-cut Tubing
 - All cuts smooth, square, free of metal fragments
 - Convenient sizes, more economical than custom cut tubing



Length	0.005" ID (17,250psi*)	0.010" ID (15,750psi*)	0.020" ID (12,750psi*)	Price (Pkg. 2)
5 cm	VT5C5D	VT5C10D	VT5C20D	\$12.50
10 cm	VT10C5D	VT10C10D	VT10C20D	14.70
20 cm	VT20C5D	VT20C10D	VT20C20D	16.10
30 cm	VT30C5D	VT30C10D	VT30C20D	20.50
				Each
10ft	VTSS105S10F	VTSS110S10F	VTSS120S10F	54.60

* Calculated ASME maximum working pressure for 316 grade tubing

Optimize EXP® Reusable Fittings

- Handtight seal to 8,700 psi, wrench-tight to 18,000 psi
- No permanent swage for easy repeat connections



EXP®2 adds:

- Titanium nut with integral PEEK ferrule
- One-piece fitting (no loose ferrules)



Product Number	Description	Qty	Price
M152003888	EXP® Hand-Tight Nut and Titanium Hybrid Ferrule	1	\$77.10
M152003833	EXP® 10-32 Hex Head Male Nut, Stainless Steel, Standard Length	1	24.50
M152403831	EXP® Titanium Hybrid Ferrule	1	57.80
M152403832	EXP® Titanium Hybrid Ferrule	10	527.00
M152405253	EXP®2 TI-LOK™ All-In-One Hand-Tight Fitting with Integral Ferrule	1	97.80

Request **Literature Code O31** for more information on the EXP® and EXP®2 family of UHPLC fittings.



Friction at the piston/seal interface inevitably leads to particle shedding. Placing a filter between the pump and injector / autosampler removes these particles, preventing problems with downstream components and costly downtime.



Most are lower cost than OEM / brand name parts, with no compromise in quality.

Product Number	Description	Qty	Equivalent to Original Manufacturer Number	Price
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Filters for Waters Alliance HPLCs

M390403524	Filter Insert Assembly, 2 μ m	1	WAT088084	\$30.60
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M390403524

Autosampler Parts

For Agilent 1100 and 1200 HPLCs

M273103212	Rotor Seal Assembly, Polyimide	1	0100-1853	\$153.90
RK26424	Stator Face Assembly	1	0100-1851	406.00
C56028AG	Needle	1	G1313-87201	89.70
M273103329	Needle Seat Assembly with Convenient 1 Piece Ferrule	1	G1329-87101	210.60
M273103146	Needle Seat Assembly with 2 Piece Ferrule	1	G1329-87101	224.90



M273103329



Needle Seat Assembly for Agilent 1100 / 1200
With a 1-piece ferrule it is easily installed with less hassle than 2-piece ferrules, without compromising sealing pressure.

For Waters Alliance HPLCs

H80024	Syringe, 250 μ L, 1725 for WISP	1	WAT073109	172.10
H80020	Syringe, 25 μ L, 1702 for WISP	1	—	180.50



Larger pack sizes and customized Preventive Maintenance (PM) Kits are available.

PerfectPeak® HPLC In-Line Mixers

Up to 60% better baseline noise reduction and detection limits versus comparable volume mixers

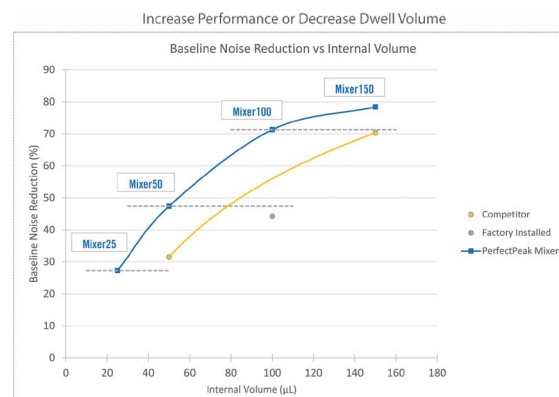
3D printed mixers create unique mixing pathways.

- Improved mixing performance over comparable competitor or factory installed mixers
- Compatible with a wide range of flow rates
- Easy installation in any HPLC system with compact bodies and standard 10-32 connections
- Competitive pricing compared to other after market mixers

Product Number	Description	Qty	Price
C18MIXER25	HPLC / UHPLC Static Mixer, 25 μ L	1	\$946.00
C18MIXER50	HPLC / UHPLC Static Mixer, 50 μ L	1	946.00
C18MIXER100	HPLC / UHPLC Static Mixer, 100 μ L	1	946.00
C18MIXER150	HPLC / UHPLC Static Mixer, 150 μ L	1	946.00

mott

Perfect PEAK



CHROMSPEC™ REPLACEMENT DEUTERIUM LAMPS



Enjoy significant savings over comparable products from Agilent, Waters and other manufacturers with no compromise in quality.



All CHROMSPEC™ replacement lamps are fully guaranteed and manufactured to the same standards as original equipment manufacturer (OEM) lamps, but at a greatly reduced cost.

- Fully guaranteed with a 1,000 or 2,000 hour pro-rated warranty
- Each lamp is carefully designed to match the OEM product specifications

Bright Ideas for Lamps...

Handle with care

Lamp electrodes must remain within tenths of a millimeter of their correct position. Do not drop or jostle bulbs.

Shelf-life is not warranty life

2,000 hour lamps may be held for up to 12 months before installation, (1,000 hour lamps for 6 months), without affecting the life span pro-rated warranty.

Clean lamps are happy lamps

Wear cotton or thin rubber gloves to protect your lamp from fingerprints. Wipe all lamp bulbs down with IPA before installing.

Track your operating time

CHROMSPEC™ lamps do not have built in timers. For maintenance and warranty purposes, either track time in software by re-setting the lamp timer when replacing the bulb, or use an instrument log book to track lamp replacements and total use.

Lamp Replacement

The 1,000 or 2,000 hour warranty is our minimum expectation of lamp service life. Actual lamp life is typically 25% or more above warranty time.

For more information, or for tips on how to install your lamp, visit www.chromspec.com/lamps



Product Number	Model	Equivalent to Original Manufacturer Number	Type	Price	
				1-2	3+
For Agilent					
C55D401AGLL	1100 VWD (G1314A)	G1314-60100	D2	\$644.00	\$581.00
C55D501AGLL	1100, 1200 DAD & MWD (G1315 A&B, G1365 A&B)	2140-0813 / 5182-1530	D2	835.00	752.00
C55D701AGLL	1100, 1200, 1260 DAD & MWD (G1315 C&D, G1365 C&D, G7115A, G7165A)	2140-0820	D2	857.00	772.00
C55D801AGLL	1260, 1290 DAD (G4212 A&B)	5190-0917	D2	613.00	553.00
C55D501AG	8453 Spectrophotometer	2140-0590	D2	553.00	498.00
For Waters					
C55D401WALL	966 2996 DAD	WAT057760 / WAT052586	D2	\$665.00	599.00
C55D501WALL	Alliance 2487, 2488	WAS081142	D2	665.00	599.00
C55D801WALL	Waters Acquity	201000281	D2	939.00	846.00
Call us for lamps for 2998 DAD, 2489 TUV					
For Shimadzu					
C55D101SHLL	SPD10A, 10AS, 10AV, 10AVP, M10AVP, 20A, 20AV	228-34016-02	D2	\$525.00	\$473.00
C55D301SHLL	LC2010	228-37401-00	D2	535.00	482.00
For Varian					
C55D301VALL	Vista 5000, 5500, UV50/100/200, 9050, Prostar 310	0391615691	D2	\$651.00	\$586.00
C55D401VA	Prostar 330 DAD	0393570502	D2	577.00	520.00
C55D501VALL	Prostar 325, 335	110715400	D2	629.00	567.00

All lamps ending in "LL" are Double life lamps with 2,000 hour warranties.

Also available: Select Tungsten and Xenon lamps.

We also offer lamps for the following instruments: Beckman, Biorad, Bruker, Dionex, Gilson, Hitachi, Jasco, Jenway, Knauer, Kontron, Perkin Elmer, TSP, and many more.

LIQUID & GAS VALVES TO MEET ALL YOUR CHROMATOGRAPHY NEEDS



OPTIMIZE YOUR INSTRUMENTATION FOR HIGH SPEED, HIGH THROUGHPUT MICRO AND NANO FLOW UHPLC

- For injection and stream selection
- Pressure ratings from 100 psi to 20,000 psi liquid
- Inert, biocompatible construction
- Bore sizes from 0.10 mm (0.004") to 0.75 mm (0.30")
- 4, 6, 8, 10 port, and internal sample two-position models
- Multiposition stream selection versions with up to 28 positions
- Internal injection volumes as low as 4 nL
- Compatible with any VICI actuation option
- Integrated valve/motor combination for OEM use available

TWO POSITION & MULTI-POSITION VALVES FOR GAS CHROMATOGRAPHY

- For injection, stream selection, and trapping
- Bores from 0.25 mm (0.01") to 4 mm (0.156")
- Zero dead volume fittings for 1/32", 1/16", 1/8" or 1/4" tubing
- Alloys and polymer composites to meet virtually any system requirement
- Manual, pneumatic, or electric actuation



INSTRUMENTATION SOLUTIONS

Whatever your instrumentation needs are...
We can make it work!

- Customization
- Turnkey Systems
- Automation
- Chromatography Data Systems for Acquisition & Control
- Process Integration
- Installation
- Maintenance and Repairs
- Training

Our professional in-house Instrumentation Specialists provide affordable expert advice, service and support on any GC, HPLC and Sample Preparation system.

Contact us for a free consultation!



Chromatography

GCs

High End, Portable and Low Cost Options



HPLCs

Analytical, Preparative, GPC, Biochromatography



Universal Autosamplers for GC and LC



Sample Preparation

Automated SPE

for Environmental, Clinical, Forensic, Dioxin Applications



GC Sample Introduction, Purge and Trap, Thermal Desorption and Pyrolysis



Sample Concentrators



And More....

Customization

We specialize in designing custom analytical systems and providing solutions that are not commercially available in order to meet your specific application requirements. We will sign a non-disclosure agreement, so you can rest assured that your information will be kept confidential and the solution will be tailored to your needs.

Our custom capabilities include:

- Modification of existing GCs and LCs
- Addition of a new injector, detector, or autosampler
- System automation
- Custom electronics and software
- ...and much more, call us!

Turnkey Systems

We can develop a system that is optimized and ready to use for your application. Our experts will install the instrument at your facility and train you on how to use it to get the results you need. You will be able to start analyzing samples right away, without worrying about complicated method development.

Process Chromatography Integration

For fully automated analyses, we can integrate your chromatography system to work seamlessly within your industrial process. If you need to monitor your analysis closely, we can connect it to your Distributed Control System (DCS).

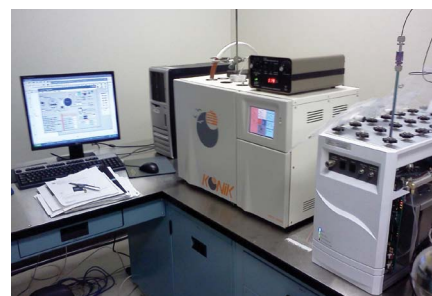
Gas Generators with Backup and Alarm Systems

We can design and install a gas generator system with a remotely located backup cylinder. A warning system will tell you that the backup has been engaged, and can be set up to send phone, text or email notifications.

Contact us for a



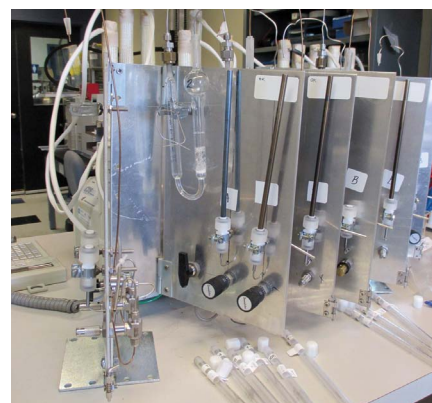
FREE Consultation



Multi column/multi detector GC for low level atmospheric gases



Custom sampling device for sealed container



Custom VOC sample splitting system



SRI GC with pulse discharge detector for low PPB work

Axcend[®]

CDS
Analytical, Inc.

DataApex

HAMILTON
THE MEASURE OF EXCELLENCE™

Horizon
technology a part of

Biotage

hta

KNAUER

LC
Tech

Microsaic
Systems

Parker **BALSTON**

TRANSCENDENT
Enterprises Inc.

VICI

VUV ANALYTICS

YOUNG IN
Chromass

We offer you the best available solutions from a wide range of world renowned manufacturers.

We can customize any product to meet your specific needs.

HPLC / UHPLC SYSTEMS

German engineering and quality at an affordable price...backed by a 2-year warranty.

Knauer has been the leader in the European analytical instrumentation market since 1962. We're excited to offer their products to Canadian scientists.

Knauer's instruments are renowned for top-end specifications. Each module, including the pump, detector and autosampler has equal or higher specifications than those of the North American market leaders.

Warranty: Industry-best 2-year parts and labour with 24hr express service available for critical operations (please inquire).



Knauer Azura® HPLC / UHPLC Systems

These modular HPLC / UHPLC systems allow you to configure the instrument to your application. Should your requirements change, it can easily be upgraded to provide flexibility and capability at a later date.

Multiple modules to choose from:

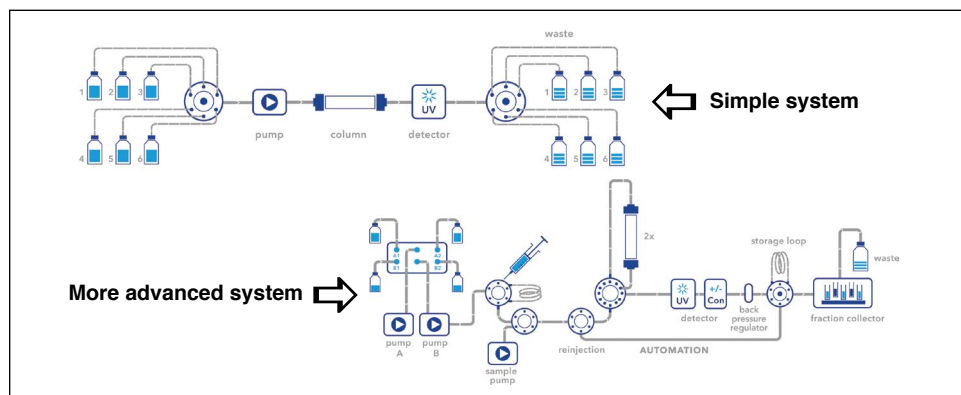
- Pumps (isocratic, low- or high-pressure gradient)
- Autosampler (cooling option available, 2mL vials or well plates)
- Detectors - wide range of options including UV-VIS (single and multiwavelength), photodiode array, fluorescence, refractive index, electrochemical, conductivity, and more



Knauer Azura® FPLC Systems

The flexible protein purification platform.

You choose the method (size exclusion, affinity, ion exchange or hydrophobic interaction) and the purification strategy (capture, intermediate or polishing), this system does the rest.



Knauer Azura® Preparative HPLC and Simulated Moving Bed (SMB) Systems

Maximum ruggedness and reliability.

From semi-prep to pilot scale, from batch to continuous chromatography, Knauer offers a wide range of preparative HPLC solutions.

These systems can be configured with different injectors, including autosamplers, manual valves or feed pumps.

They can also be configured with different collection options, including fraction collectors and collection valves.



Axcend® PORTABLE HPLC SYSTEMS

The Axcend Focus LC® is a revolutionary, shoebox-sized HPLC. Don't let its small size fool you; with a pressure range of up to 10,000 psi, nano-flow capillary columns, and single or dual UV-detectors for on-column detection, Axcend's sleek and miniaturized system delivers results on par with today's leading HPLC platforms.



The Axcend Focus LC® features:

Lightweight and portable: At under 18 pounds, this instrument is literally hand-portable and can be used anywhere. Small solvent and waste vials are enclosed inside the unit, so you don't have to worry about transporting separate solvent or waste bottles.

A unique cartridge system: Easy-to-use cartridges that contain UV-detectors and capillary columns supporting flow rates as low as 800 nL/minute. A cartridge (and consequently the column) slides easily into the Axcend Focus LC® and is then hand-tightened into place.

Dramatic Reduction in Solvent Use and Costs: By using small-diameter capillary columns with on-column UV Absorption detection at extremely low flow rates, you will see a dramatic reduction in solvent use of up to 90% or more. This translates into huge savings in solvent costs.

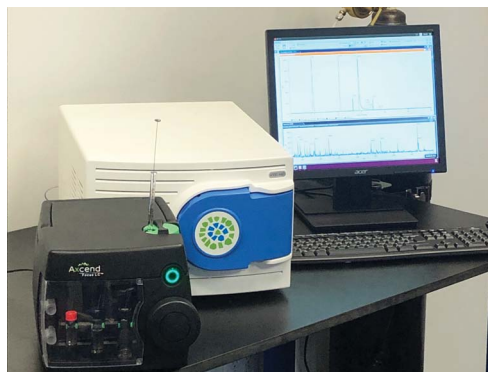
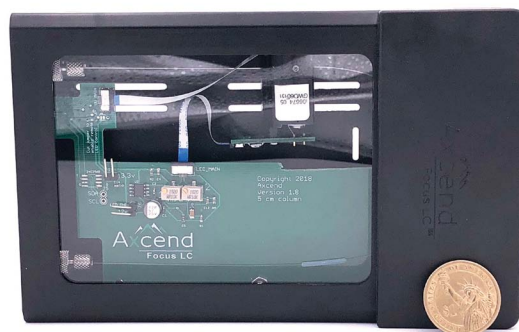
Lower Purchase Cost: The Axcend Focus LC features an extremely affordable price point vs. traditional HPLCs, delivering even more value to you.

A Truly Green HPLC: Such a huge reduction in solvent usage and waste production means that the Axcend Focus LC® is environmentally unmatched — a truly “green” HPLC that is “friendly” to the planet, you and your team.

The system can also be coupled with a small single quad MS to keep the footprint as small as possible while delivering the data that your laboratory requires. Contact us for information on MS systems that pair nicely with the Axcend HPLC.



Axcend® Focus LC Cartridge



For additional information, view the Axcend Focus LC® Brochure at www.chromspec.com/pdf/e/ax01.pdf or contact our Instrumentation Team at instrum@chromspec.com or call 1-800-267-8103.

POINT-OF-NEED MASS SPECTROMETRY FOR HPLC ANALYSIS

Real-time, point-of-need mass spectrometry (MS) enables faster decision-making during your analytical workflow. Providing immediate insights from complex sample and reaction information, Microsaic's MS will enable you to achieve your desired product quality, optimise processes, and ensure faster product and process compliance.

Microsaic are pioneers in miniaturized mass spectrometry, their patented chip-based technology enables analytical detection and characterization for most HPLC analyses.

Easy-to-use and maintain, with no prior knowledge of MS required, their technology gives users and process operators access to continuous MS detection data at any step in their workflow.

The 4500 MiD® combines the mass spec itself, plus the necessary vacuum system, electronics and computer...all inside one compact box:

- Single quadrupole with a mass range of 50 - 1400 m/z
- Integrated software designed for rapid set up and data analysis
- Fully integrated system, with no external vacuum pumps, and no external PC
- Small footprint enables deployment anywhere within laboratory or processing facilities
- Seamless integration with nearly all HPLC systems and 3rd party software platforms
- Easy-to-use with simple 'plug and play' consumables provide an ease of use for maintenance with no alignment
- Low maintenance costs with completely tool-less front-end
- **Lower operating cost** than conventional systems due to reduced power requirements, low solvent consumption and lower N₂ usage



Miniaturized mass spectrometry enabled by patented chip-based technology



With a mass range to 1400 m/z, the 4500 MiD® can be used for a broad range of pharmaceutical and biopharmaceutical applications, including both analytical and preparative HPLC analyses.

When combined with the Microsaic MiDas™ compact interface sampling module (designed for both flow and direct injection monitoring at the point of reaction or processing), it can be easily deployed in a variety of online, at-line and off-line applications. MiDas™ provides:

- Direct injection analysis via an optional motorised 2-position 6-port valve
- Make-up pump and active splitter dilutes the sample from the reaction flow for analysis in the detector
- Automated sample sequences include flushing to eliminate carry-over



AUTOMATED DILUTIONS AND DISPENSING



**Experience 80% savings in solvent usage
AND a significant decrease in variability
compared to manual dilutions.**



Hamilton Microlab 600

The Microlab 600 is a highly precise syringe pump with a graphical user interface designed to quickly and easily dilute and dispense liquids.

This positive displacement system provides better than 99% accuracy, independent of a liquid's viscosity, vapor pressure, and temperature. The inert fluid path minimizes sample carryover and is compatible with harsh chemicals.

- Positive displacement system provides unsurpassed accuracy and precision
- Inert fluid path allows dilution and dispensing of volatile, viscous, corrosive and other harsh liquids
- Bubble Free Prime Syringe simplifies priming
- Large touch screen and innovative user interface provides for simplified programming

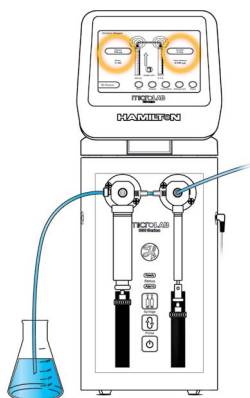


Contact our Instrumentation Team at instrum@chromspec.com for more information.

How does the diluter work?

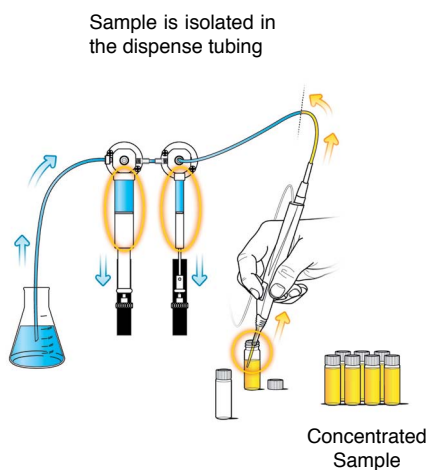
Step 1

Program the desired Diluent and Sample volumes.



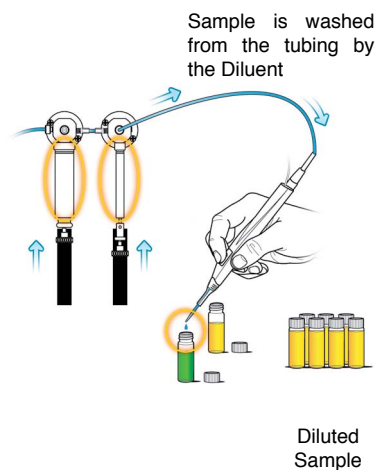
Step 2

Trigger the hand probe to fill the left syringe with Diluent and aspirate Sample into the hand probe with the right syringe.



Step 3

Trigger the hand probe to dispense the Sample and then Diluent into a vial.



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



**Chromatographic Specialties Inc. is the only
Canadian Supplier authorized to complete
Calibration and Repairs on Hamilton products.**

GC AND GC/MS SYSTEMS



GC and GC/MS with specifications that meet or exceed the industry leaders, at considerable savings!

With over 30 years of manufacturing experience, YOUNG IN Chromass Co., Ltd. (YL Instruments, manufactured in South Korea) has evolved their line of GC and GC/MS instrumentation by dedicating research and development to chromatographic technologies.

Chromatographic Specialties is pleased to offer YL's superior line of GC and GC/MS instrumentation to the Canadian scientific community.

YL's goal is to provide scientists with feature-rich, reliable analytical instrumentation at reasonable prices. Their accumulated experience in gas chromatography combined with Chromatographic Specialties' devotion for customer satisfaction creates a one-stop solution for your chromatographic instrumentation needs.



YOUNG IN
Chromass

**YL6500 GC and
YL 6900 MS**

YL6500 Gas Chromatograph provides reliable and accurate data by using precise temperature and flow control. Each module either meets or exceeds the specifications of systems offered by the market leaders, but at a lower price.

The 5th generation YL6500 GC system features:

- Up to 3 inlets and 3 detectors (plus an MS) can be installed on a single GC
- Inlet options include: capillary (split/splitless), packed or on-column
- Detector options : FID, TCD, μ TCD, ECD, NPD, FPD, PDD, PFPD and MS
- Improved gas pressure and flow rate precision, combined with precise temperature control, for more consistent and reliable results
- Large touch screen display shows all settings at a glance



The ChroZen GC/MS and Triple Quadrupole (TQ) GC/MS

The ChroZen TQ GC/MS is the right solution to achieve greater insight into samples with extremely selective and sensitive data for quantitative and qualitative information. Its structural characteristics such as 180° curved collision cell and lens-free optics eliminate the interferences of co-eluting compounds and neutrons, minimizing maintenance and simplifying method setup to maximize ease of use.



ChroZen GC

Features

- Enhanced Intuitive 10.1" touchpad / LCD display with at-a-glance status of all components and parameters, including real time chromatogram display
- New UPC (Ultimate Pneumatic Control) to optimize flow control provides exceptional accuracy and precision (RT Repeatability SD < 0.0008 min)
- Increased sensitivity through improved EMI shielding and advanced electronics design
- SmartFlow Kit for backflush, 2D GC or heart-cut applications

The new ChroZen GC system features an extended range of available detectors, including: FID, TCD, μ TCD, NPD, PDD, μ ECD, FPD, PFPD, PID, VUV, MS and TQ MS.

ChroZen TQ GC/MS

Features

- 180 deg curved collision cell
- Active focusing ion guide
- Axial ion source
- EDR (Extended Dynamic Range) detection system
- Lens-free optics
- High Capacity Turbo pump



Contact our Instrumentation Team for details.

They can help you determine the optimal configuration for any application.



You'll be pleasantly surprised at the price of our systems!



Clarity Advanced Chromatography Software

- Full featured Chromatography acquisition software at a fraction of the cost of comparable systems
- Clarity has control and acquisition options for more than 800 different manufacturer's instruments
- Allows up to four independently controlled GC/LC instruments from one computer
- Clarity is 21CFR Part 11 compliant for GLP/GMP environments



Please contact our Instrumentation Team at instrum@chromspec.com or 1-800-267-8103 for more information.

AUTOSAMPLERS FOR GC AND HPLC SYSTEMS

Are you spending more time fixing your old autosampler than running samples?



Buying a NEW HTA autosampler can cost less than repairing your old unit!

For more than 25 years, HTA has been a leading European manufacturer of GC and LC Autosamplers. Their systems are sold worldwide, both under the HTA brand and as the original manufacturer for major GC and LC brands.

HTA offers a wide range of autosamplers that provide:

- The lowest cost of ownership in the industry
- Touch screen control for exceptional ease of use
- Versatility – systems are compatible with almost any brand of GC, HPLC or ICP/AA
- Software that includes an optional CFR 21 Part 11 compliant module



HT2800 All-in-One

GC Autosamplers

- A wide variety of GC autosamplers to choose from!
- HT3000 series liquid autosamplers for 15, 121 or 209 vial positions
- HT2000 series Heated Static Headspace autosamplers with 15 or 42 vial positions
- HT2800 series All-in-One for liquid, headspace and SPME
- Installation kits for most GC makes and models
- Can be configured for dual injectors on most GC platforms
- Mounting design allows for injector maintenance without removing autosampler
- Custom options available

HPLC Liquid Chromatography Autosamplers

- HPLC, UHPLC, NanoLC, Preparative LC, LC-MS, and IC
- These systems can be added to any type of analyzer with a quick, trouble-free installation
- Whatever your sample throughput, we have a solution for you: from 10 to 176+ sample vessel capacity
- Cooling and biocompatible options are available to handle most complex samples

Please contact our Instrumentation Team for more information on these units, including cooling/heating options, customization needs and even ones for ICP or AA Spectroscopy.



HT4000L for HPLC

PURGE & TRAP / THERMAL DESORPTION



Economical Air and Water Volatiles Analysis

⇒ With modular towers, it is like having 3 systems in 1!



- CDS 7350 Purge & Trap Autosampler ⇒ **Water only**
- CDS 7450 Purge & Trap Autosampler ⇒ **Water / Soil / Dynamic Headspace**
- CDS 7500 Thermal Desorption Autosampler ⇒ **Sorbent Tubes for Air Sampling**

With this modular platform, you can easily upgrade from the 7350 water-only autosampler to the 7450 or 7500 with a simple swap of towers. Changing from one mode to another can be accomplished in a matter of minutes!

- 72 positions with removable sample trays for 40mL VOA vials or TD tubes
- Switch between water, soil and dynamic headspace modes in seconds
- Switching to thermal desorption takes only minutes
- Connects to existing CDS 7000E systems as well as other concentrators and/or desorbers on the market
- Performing multiple methods on one GC or GC/MS significantly reduces costs and saves bench space
- Competitively priced



CDS 7350 (Water only)



CDS 7450 (Water & Soil)



CDS 7500 (TD Tubes)

CDS 7000E Purge and Trap Concentrator

Proven, reliable performance at a competitive price!

The CDS-7000 has been acknowledged as a workhorse in the industry for decades as the most cost-effective Purge and Trap concentrator. The newer 7000E has expanded on the capabilities of the 7000.

- Sample path made of SilcoNert 2000 coated stainless steel, which is the most chemically inert material commercially available
- The up to 350°C valve oven allows the widest range of analytes from VOCs to semi volatiles
- A Hydroguard-coated wet trap conforms to EPA methods and eliminates over 96% of moisture
- Patented foam sensor prevents contamination and crossover
- Quick access panel makes maintenance simple
- Front panel shows the instrument's status at a glance
- Powerful Windows-based user interface makes it compatible with leading GC systems



GAS GENERATORS

VICI DBS is a leading innovator and manufacturer of high purity gas systems for analytical laboratories. Generators are specifically designed to meet the stringent gas requirements for all the leading GC and LC/MS instrument manufacturers.

VICI DBS gas generators use a patented proprietary technology that offers unique performance benefits including:

- Guaranteed ultra purity gas
- Silent operation
- Minimal moving parts
- Minimal operator oversight
- Software control for remote monitoring and troubleshooting
- **All at a price that should translate into significant savings for your lab (typically 30% savings over similar featured competitive brands)**



VICI DBS offers generators for any gas requirements you might need, including ones for nitrogen, hydrogen, FID station or zero air. If a system doesn't suit your need, a custom alternative can be built, including ones that produce more than one gas in the same system.

For additional information, a full brochure is available at: www.chromspec.com/pdf/e/vd01.pdf



Gas Generator Installation Services

Chromatographic Specialties is the only Canadian supplier that offers complete installation, maintenance and qualification services.



All gas generator installations should be done with hardware and tubing that is as clean as possible to avoid contamination and noise issues; just one dirty fitting can cause serious problems for instrumentation connected to that line.

Let an instrumentation professional who understands the specific needs of your analytical instrumentation complete your set-up.

- Each installation is customized to the specific needs of the customer
- No installation is too big or too small
- Complete backup systems are available, automated or manual
- Alarm / notification in case of backup being activated, locally with audible signal or by e-mail / text or both



Benefits and Considerations of Converting to Hydrogen Carrier Gas



As the cost of helium continues to soar and its availability becomes more and more uncertain, many GC labs are considering switching to hydrogen carrier gas. Hydrogen can be reliably produced on demand using hydrogen generators, which are safer and more cost-effective than free-standing, high-pressure gas cylinders. In addition, using hydrogen allows efficient separations to be obtained twice as fast compared to helium, which offers clear benefits to sample throughput and overall lab productivity.

Contact our Technical Support or Instrumentation Team to further discuss whether a switch to H₂ gas could benefit your lab.

For more information, visit: www.chromspec.com/pdf/e/rk209.pdf

How many times have you **run out of gas** during a sample run?
How often do you have to **change gas tanks**?
How much **lab and storage space** have you dedicated to gas tank inventory?
Are **fuel surcharge and delivery fees** costing your lab too much money?



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Minimize safety hazards
Maximize convenience
Avoid unpredictable downtime



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Customized Add-ons Available from Chromatographic Specialties Inc.:

- Professional installation:
 - Generators and gas lines
 - Air compressors
 - Accumulator tanks
 - Non-electric backup systems
- Gas system design
- Remote alarm warning
- Preventive maintenance service plans
- ...and much more! See pages 32-33 for information about our customization capabilities.



Visit www.chromspec.com/gasgenerators for more information.



AUTOMATED QuEChERS

Novel QuEChERS for Difficult-to-Analyze Samples

QuEChERS III for Fatty Matrices

Analyzing fatty matrices like oils or butter can be difficult and challenging. Typically, many sample preparation steps are required, often including a freezing-out step.

LCTech has developed a new QuEChERS cartridge to address these difficulties, the main benefits are a straightforward and easy-to-use protocol with just one simple loading step. Because of the high matrix-retention capacities of the cartridge in combination with a non-dispersive approach, a minimized ion suppression with high recoveries and low standard deviations was observed. This new methodology was applied to fatty matrices like butter and avocado and gave excellent results.



Butter Analysis – Material and Methods

Animal Matrix (Butter)

- Weigh 5 g sample in a 50 mL centrifuge tube
- Add 10 mL of acetonitrile
- Add 5 mL of water
- Shake vigorously for 1 min., shake occasionally
- Allow to stand for 10 min.
- Add buffer mix
- Shake vigorously for 1 min.
- Centrifuge 5 min. at 500 rpm, 4°C



- ✓ No conditioning
- ✓ No eluting
- ✓ No further dilution of results
- ✓ No extra filters needed



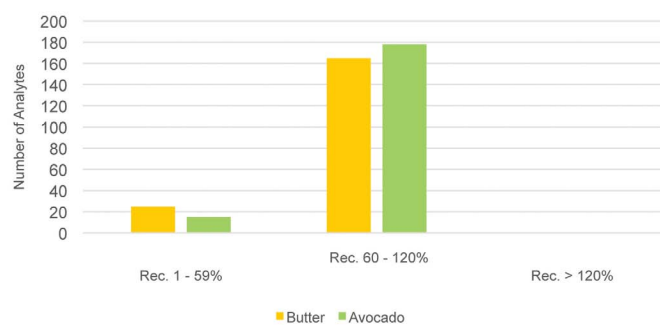
No freezing out!

Just load 2 mL raw extract!



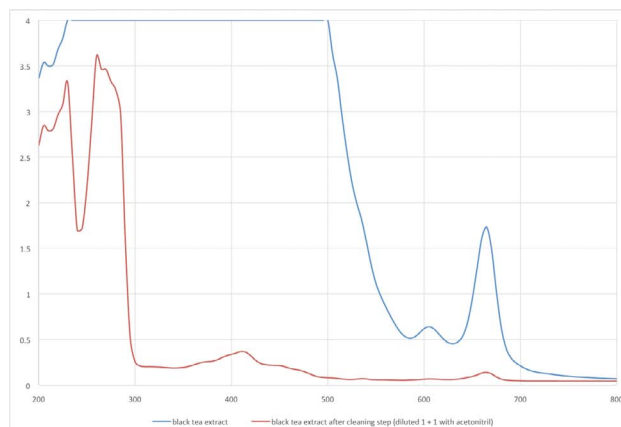
Matrix reduction
Avocado: 95%
Butter: 99%

- Left:** Extract after addition of Mix I
Middle: Extract after dispersive SPE cleanup
Right: Extract after non-dispersive automated clean-up via FREESTYLE and Pesticide III QuEChERS column



QuEChERS II for Tea, Herbs and Cannabis

There is a similar product to QuEChERS I that has been developed specifically for Tea, Herbs and Cannabis – QuEChERS II, with similar results as was realized in QuEChERS I.



Butter Image © Can Stock Photo / Magone

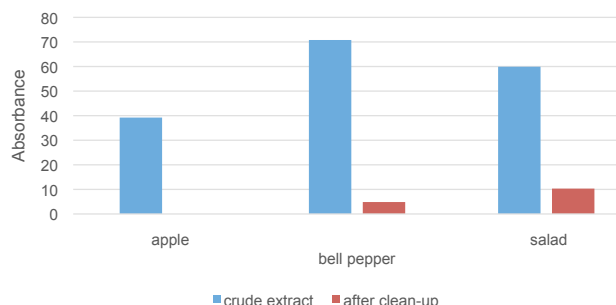
Novel QuEChERS for Difficult-to-Analyze Samples

QuEChERS I for Fruits and Vegetables

Using a similar procedure as shown on the facing page for fatty matrices, a specially designed QuEChERS cartridge has been developed for dry / chlorophyll containing matrices.

Typically, QuEChERS techniques consist of two main steps, the extraction and the clean-up step. Both of them are typically manually performed and use a dispersive approach, where two different buffer/salt and clean-up mixes are added to matrix solutions, respectively, with subsequent vortexing and centrifugation steps.

QuEChERS I is an alternative approach where the clean-up step uses a non-dispersive sorbent. Using this approach, chromatography in general is better and unwanted matrix compounds or particles are retained on the top of the cartridge, thus leading to cleaner extracts with reduced matrix suppression in the LC-MS/MS measurement.



Fruit and vegetable matrices were tested with the specifically adapted cartridge. In general, over all three matrices 90% of the analytes could be detected within the accepted recovery range. Additionally, it can be seen that no analyte did not work at all, so in general the recovery data obtained were mainly dependent on the individual matrix compositions.

CrossTOX® is a low cost QuEChERS SPE Column for the Analysis of 16 Mycotoxins in one run!

- Many labs analyze mycotoxins using a dilute-and-shoot method that is labour intensive and slow.
- CrossTOX® improves these analyses by using a QuEChERS-based procedure that provides a cleaner extract than the syringe filter used in the dilute-and-shoot method (the syringe filter is no longer needed when using CrossTOX®)
- Because the extract is cleaner, CrossTOX® allows a higher number of sample injections to be made before the LC-MS/MS needs to be cleaned or maintained. That means your LC-MS/MS is running more and being serviced and cleaned less.
- CrossTOX® saves significant cost per sample as much less internal standard is required.



All of these methods can be automated on LCTech's FREESTYLE Automated Sample Preparation system.



Due to the high level of automation and the non-dispersive approach, the extracts were cleaner compared to a standard QuEChERS approach and showed good reproducibility. As the system can work fully unattended over night or the weekend it is a great support for any routine pesticide lab.

Contact our Instrumentation Team for more information.



AUTOMATED SAMPLE PREPARATION



Use automation to help you save time and money for your high throughput water analysis.

SPE-DEX® 5000 Automated Extraction ⇨ For High Throughput Labs

The SPE-DEX® 5000 Automated Extraction System is a programmable, multipurpose SPE system, capable of processing aqueous samples directly from their original containers.

- Uses less solvent
- Collects organic and waste water separately for proper and economical disposal
- Less chance of emulsions, providing more predictable and increased productivity
- Better reproducibility between technicians
- Requires less attention for good results
- Use the bottle of your choice

Increase your productivity:

- Use up to four modules connected to one PC allowing up to 12 samples to be run at once
- A 4L water sample will take around 15 to 20 minutes to be processed depending on the amount of suspended particles
- All valves and pumps are internal to the system, requiring less bench space



a part of



TurboVap® II and TurboVap® LV by Biotage

The next generation of solvent extractors featuring the patented sheared vortex technology.

TurboVap® II



TurboVap® LV



Flexible rack: A novel and innovative feature of the new TurboVap® II and LV is the Multi Rack system that can be fully adjusted for a variety of tube and vial sizes, from 1.5 mL to 60 mL for the TurboVap® LV and from 50 mL to 200 mL for the TurboVap® II.

Acid resistant version: For demanding applications involving the use of aggressive acids and bases, upgraded versions of both the TurboVap® II and TurboVap® LV are available, featuring PTFE coated needles and manifolds.

Removable adjustable nozzles: Easily replaceable individual nozzles allow for quick, easy and inexpensive maintenance.

Independent gas flow control: Each row can individually be turned on or off depending on the number of samples, allowing for reduced gas consumption if the unit is not full.

Illuminated water tank with indicator: The 3 sided glass reservoir allows for monitoring the evaporation process without having to interrupt it.

Reduced footprint: The footprint has been reduced by 30% while maintaining the same number of samples as the previous versions of the unit.

Flow gradient: Flow gradients can be programmed to gradually increase as evaporation occurs, decreasing the amount of time it takes to reach the desired end-point, without splashing.

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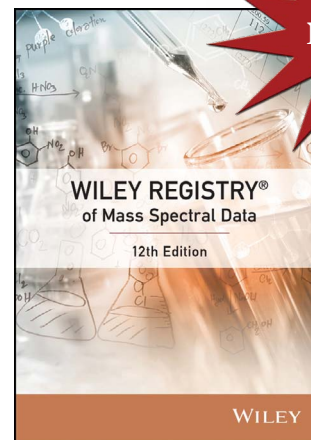
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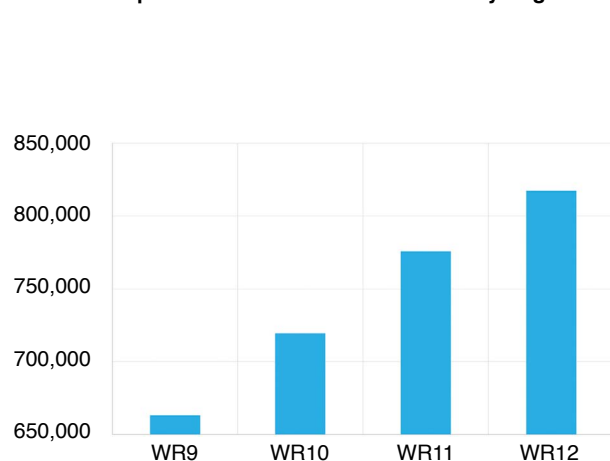
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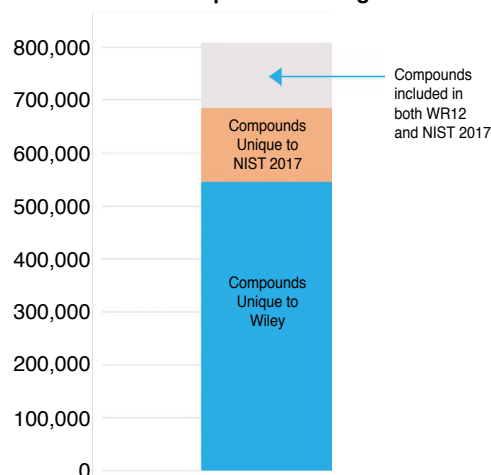
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Compound Coverage



The combination of Wiley + NIST gives more hits with minimal overlap.

Product Number	Description	Price
WL9781119171027	Wiley Registry of Mass Spectral Data, 12 th Edition	\$13,031
WL9781119511182	Wiley Registry of Mass Spectral Data, 12 th Edition (Upgrade)*	9,109
WL9781119376743	NIST / EPA / NIH Mass Spectral Library 2017 - GC-MS, LC-MS	5,671
WL9781119376750	NIST / EPA / NIH Mass Spectral Library 2017 - GC-MS, LC-MS (Upgrade)*	3,877
WL9781119412236	Wiley Registry 11 th Edition / NIST 2017 - GC-MS, LC-MS	14,865
WL9781119450931	Wiley Registry 11 th Edition / NIST 2017 - GC-MS, LC-MS (Upgrade)*	12,540

* Upgrade is only available to purchasers of the previous editions of the library.

Contact our Technical Department for further details on how upgrading to Wiley's most current MS spectral libraries can give your lab a performance boost.



SOLID PHASE EXTRACTION (SPE)



Using SPE instead of LLE can save you time and money by:

- Increasing productivity and sample throughput
- Removing interferences and helping to protect the analytical column from contaminants
- Using less solvent and glassware
- Creating less disposable waste in the lab, which helps the environment!
- Saving solvent and energy:
 - Less solvent use = less evaporation needed to concentrate samples = lower energy use



Extraction depends on diffusion, and that means we need small droplets of sample and solvent in close contact. In LLE, you use equal volumes of sample and solvent, and shake hard to disperse. The drawbacks are that it forms emulsions and uses large volumes of solvent compared to solubility and partitioning requirements.

SPE forces the sample through an extraction phase immobilised on small particles. The sample is extracted from the stationary phase with “just enough” solvent for dissolution. No emulsions. Little or no blowdown.

Considerations for switching to SPE:

- Are your analytes non-polar, polar or ionic? We have solutions for all three, including mixes of different classes!
- Do your analytes need to be in a buffered matrix for stability? It's very easy to pH optimize with UCT SPE.



Symptoms of a Sample in Need of Further Clean-up:

- Poor reproducibility
- Column failure (high back pressure, changing retention times)
- Incorrect quantitation on QC samples

Fixing Insufficiently Clean Samples:

- Try a different sorbent which uses the same retention mechanism (i.e. try end capped silica C18 instead of non-end capped C18)
- Change to a different retention mechanism sorbent
- Change the wash solvent
- Change the ionic strength (when using ion exchange sorbents)
- Change the pH of the load and wash
- Change the % organic of the load and wash
- Contact our Technical Support Team to discuss your application and current method



SOLID PHASE EXTRACTION (SPE)

UCT's commitment to ensuring customer satisfaction is accomplished by delivering on these promises: top-quality, dependable SPE products, and unmatched technical support.

Since 1986, UCT has been a respected leader in supplying SPE products to the drug testing, pharmaceutical, clinical, environmental and agricultural industries. Their wide range of highly reproducible SPE columns gives chromatographers a consistent extraction technique, and their expertise in silane manufacturing allows greater control of the chemical process involved in producing high quality bonded phases.

UCT Clean-Up®

⇒ **General Applications: Polar, Non-polar, Ionic**

Clean-Up® Hydrophobic

- Composed of a silica backbone bonded with hydrocarbon chains.
- Used to extract compounds which exhibit non-polar or neutral characteristics.
- C18 phase is the most widely used for non-polar interactions.

Clean-Up® Hydrophilic

- Composed of a silica backbone bonded with carbon chains containing polar functional groups.
- Compounds typically extracted include analytes which have polar groups, including amines, hydroxyls and carbonyls.
- Elution is performed by strong polar solvents.

Clean-Up® Anion Exchange

- Anion exchange sorbents contain positively charged functional groups that interact and retain negatively charged anions, such as acids.
- Strong anion exchange sorbents contain quaternary ammonium groups that have a permanent positive charge in aqueous solutions; whereas weak anion exchange sorbents use amine groups which are charged when the pH is below about 9.
- To elute the analyte from either the strong or weak sorbent, the stationary phase is washed with a solvent that neutralizes the charge of either the analyte, the stationary phase, or both.

Clean-Up® Co-polymeric

- Combine hydrophobic and ion exchange phases on every particle
- Retain either charged, neutral or both analytes at once



We can help you choose from over 50 different chemistries in over 40 sizes or column formats to get the product that's right for you.

UCT Clean Screen®

⇒ **Forensic and Clinical Applications**

High volumes and fast turn-arounds for complex matrices and demanding accuracy levels.

Clean Screen® DAU ⇒ Efficient clean-up from complex samples

Combined reversed phase and cation exchange mechanism optimized for drug of abuse screening. Contact us for standardized applications to capture and analyse acid, basic, and neutral drugs in one clean-up with excellent recovery and reproducibility.

Clean Screen® Xcel ⇒ Fast clean-up for simple samples

SPE optimized for basic drugs (Xcel I) and THC metabolites (Xcel II). Fewer extraction steps with lower sample size requirements and cleaner extracts.

Contact us for more information.



Free Catalogue!

Get the UCT Solid Phase Extraction Products catalogue.

Request Literature Code **UCT27**

Quick Easy Cheap Effective Rugged and Safe Extraction of Pesticides and Pollutants from Solid Samples, useful for:

- ⇒ **Pesticides from plant produce (the original method)**
- ⇒ **Pesticides and veterinary drugs from meats, eggs, honey and other foods**
- ⇒ **Persistent organic pollutants from animal tissue or vegetation samples**
- ⇒ **Persistent organic pollutants from soil samples**

QuEChERS is a simple universal technique to extract organic pollutants from biological samples for LC/MS or GC/MS analysis. This technique uses simple, low toxicity solvents and basic lab equipment – water and acetonitrile, a mixer and a centrifuge – to extract solid matrices in roughly 1 hour.

QuEChERS has proven to be a very useful technique and applications are expanding to cover more biological matrices every year.

Why Use UCT QuEChERS Products?

- Pre-packed products save valuable laboratory time for increased throughput
- Single use salt and dispersive SPE (dSPE) packages avoid contamination
- Best selection of QuEChERS products
- Excellent lot-to-lot reproducibility
- Custom made products are available



High performance products at competitive prices!

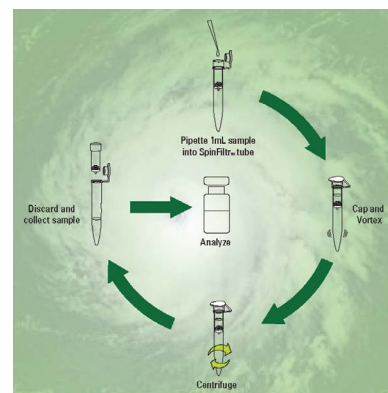


UCT SpinFiltr™

- ⇒ **Makes dSPE following extraction even easier**
- ⇒ **0.22µm filter ensures complete separation of sorbent from sample after centrifugation**

SpinFiltr™ steps are the same as any dSPE:

1. Add sample to sorbent in upper chamber
2. Vortex/Shake
3. Spin: extract flows through membrane; sorbent, drying salt and unwanted matrix stay in the top chamber; no “pellet” of sorbent to resuspend & contaminate sample



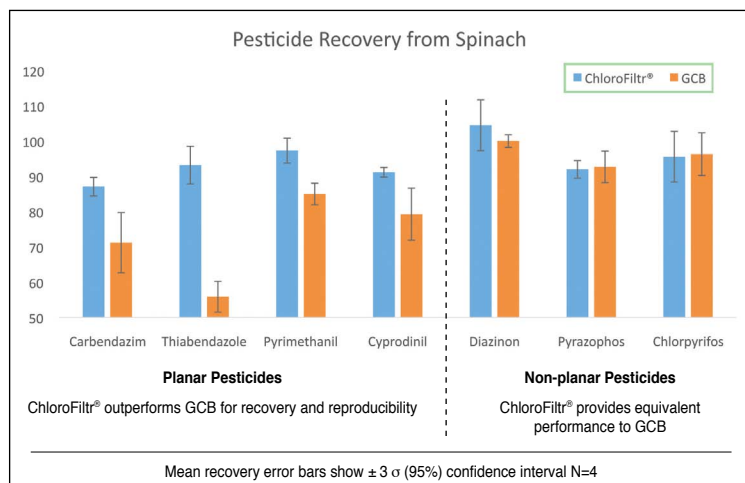
UCT QuEChERS ChloroFiltr®

- ⇒ **Selectively removes chlorophyll from extracts while leaving planar pesticides behind in an acetonitrile extract**

- Greater than 80% recoveries of planar pesticides, unlike carbon black clean-ups
- ChloroFiltr® has been tested against hundreds of pesticides and herbicides and has been shown to reduce chlorophyll concentration by greater than 82%

Visit www.chromspec.com/quechers for more information.

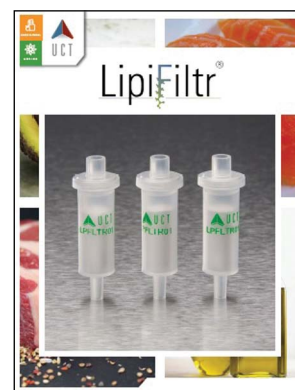
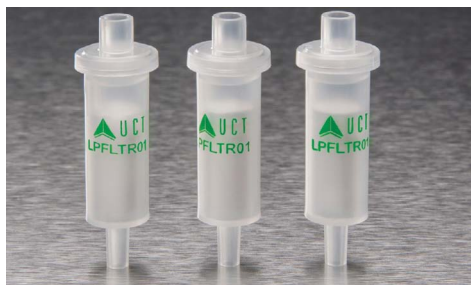
Contact our Technical Support Team for a recommendation on the right QuEChERS kit and extraction protocol for your specific matrix.



Lipifiltr® Push-Thru Cartridge for Quick and Easy Lipid Removal

- ⇒ UCT Lipifiltr® traps unwanted lipids and fats using a streamlined push-thru cartridge format, leaving you with a purified extract that is suitable for LC-MS/MS analysis.
- ⇒ A simple, one step procedure following a QuEChERS extraction can easily be incorporated into your current sample preparation workflow. No need for additional finishing steps!
- ⇒ Ideal for nuts, oils, fish, poultry and livestock samples, Lipifiltr® will not compromise the recoveries of your analytes of interest and will provide clean sample profiles.

The easy to use Lipifiltr® push-thru purification cartridge was designed to remove lipids from acetonitrile extracts. Samples are extracted using a standard QuEChERS procedure and an aliquot of the supernatant is simply pushed thru the Lipifiltr® purification cartridge using a disposable syringe. The purified extract is collected in an autosampler vial and analyzed by UHPLC-MS/MS. The ability to obtain significantly cleaner extracts, ease of use and time and cost savings make the new Lipifiltr® push-thru cartridges an attractive cleanup option for laboratories conducting pesticide residue analysis in complex fatty samples.



Free Literature!

To learn more about Lipifiltr®, please contact our Technical Support Group at 1-800-267-8103 and / or request Literature code **UCT48**.

Product Number	Description	Qty	Price
UCTLPFLTR01	Lipifiltr® Push-Thru Cartridge	50	\$267.90
UCTECQUEU7MP	QuEChERS European Extraction Salts, Mylar pack	50	181.20

More QuEChERS solutions for Fatty Matrices, Fruits / Vegetables, Tea / Herbs / Cannabis can be found on pages 44-45.

Manifold Systems

Chromatographic Specialties Inc. offers a huge assortment of manifolds for sample extraction. Glass Block Vacuum Manifolds, Positive Pressure Manifolds, Universal Manifolds and Environmental Disk Manifolds plus a wide variety of manifold accessories are available from our suppliers, UCT, Restek and Macherey-Nagel. You'll find everything you need to set up your sample extraction analyses!



Glass Block Vacuum Manifold Systems

Product Number	Description	Price
UCTVMF016GL	Glass Block Vacuum Manifold System, 16 position	\$1,497.00
UCTVMF024GL	Glass Block Vacuum Manifold System, 24 position	1,497.00
RK28298VM	Glass Block Vacuum Manifold System, 12 position	1,855.00
RK28299VM	Glass Block Vacuum Manifold System, 24 position	2,688.00

SOLID PHASE EXTRACTION (SPE)



Finally, a cost saving alternative to Waters Oasis® HLB!

Until June 30th, 2021
Save an additional 10%
on all HLB products
for your lab!

Macherey-Nagel CHROMABOND® HLB

⇒ Hydrophilic analytes from polar matrices

Hydrophilic-lipophilic balanced N-vinylpyrrolidone-divinylbenzene resin for SPE.

Capturing hydrophilic analytes from polar matrices is a challenge. They often cannot be retained by C18 / C8-modified silica or hydrophobic polymer adsorbents. **CHROMABOND® HLB**'s lipophilic backbone / hydrophilic side chains work together to retain polar organic molecules.

- The direct alternative to Waters Oasis® HLB!
- High loadability and outstanding performance
- Water wettable – even if bed runs dry, SPE can be continued
- Spherical particles for greater reproducibility
- pH stability: 1–14

TRY IT NOW!

FREE SAMPLES are available!

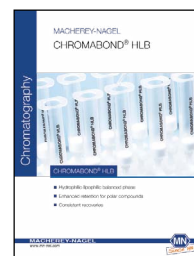
Please contact our Technical Support Group at tech@chromspec.com to discuss your application requirements and identify the part number(s) that best suit your needs.

Product Number	Description	Qty	Equivalent to Waters Oasis® Number	Price
MCN730926	CHROMABOND® HLB, 60 µm, 6 mL, 200 mg	30	—	\$146.40
MCN730927	CHROMABOND® HLB, 60 µm, 6 mL, 500 mg	30	186000115	238.00
MCN730923P30	CHROMABOND® HLB, 30 µm, 3 mL, 60 mg	30	WAT094226	102.40
MCN730923	CHROMABOND® HLB, 60 µm, 3 mL, 60 mg	30	—	102.40
MCN730921P30	CHROMABOND® HLB, 30 µm, 1 mL, 30 mg	30	WAT094225	76.50

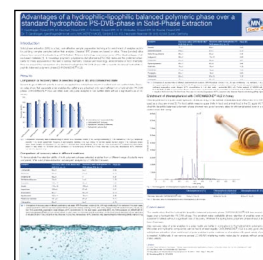
Other CHROMABOND® HLB sizes and formats are available, please inquire.



No conditioning step is needed when using CHROMABOND® HLB due to its excellent wettability.



For more information regarding CHROMABOND HLB technical specifications, please request Literature Code **MN23**.



For more information regarding the advantages of CHROMABOND HLB, please request Literature Code **MN24**.

SPE Disks can outperform SPE Tubes in certain situations

While SPE tubes are more commonly used, easily automated and can offer a cost savings in term of reduced solvent use, tubes can only handle a limited sample size and usually take a long time to process large samples. It is also difficult to process particle-laden samples using conventional SPE tubes. SPE tubes typically use sorbent with particle sizes of 30 or 60-microns; this limits the flow rates to 1 – 10 mL / min., and typically reduces the sample size to 200 mL.

SPE disks are designed to handle large sample volumes and completely extract all analytes, even ones with high particulates, quickly and efficiently. SPE disks can handle rapid sample flow rates (> 100 mL per minute) and large sample size (up to 8 liters). SPE tubes will frequently encounter sample breakthrough, this is not encountered using SPE disks.



Do you have a challenging SPE application?

Please feel free to contact our Technical Support Group at tech@chromspec.com to determine the best sample clean-up for your application – disk or tube.

CHROMSPEC™ MEMBRANE FILTERS



Paying too much for your filters? Compare and save!



CHROMSPEC™ membrane filters are microporous films with specific pore size specifications. These membranes retain particles and microorganisms that are larger than the pore size, acting as a physical barrier while retaining the particles on the surface of the membrane.

CHROMSPEC™ membrane filters are available in a range of membranes, diameters and porosities that make them suitable for a wide range of analytical and life science applications.

Applications

- HPLC mobile phase filtration
- Isolation of discrete microorganisms (bacteria, fungi, molds and yeasts)
- Monitoring of drinking water
- Bacterial monitoring in pharmaceutical, food and beverage, cosmetics, electronics industries

Ask about our Vacuum Filtration Glassware.

Image: Product Number N419380 Wheaton 47 mm Assembly, Vacuum Filter, 1 L Flask with Fritted Glass Support



Product NumberDescription		Price per Pkg. 100	
		1-4	5+
Nylon			
CSMFN13022	CHROMSPEC Membrane Filter, Nylon, 13mm, 0.22μm	\$28.40	\$24.20
CSMFN47022	CHROMSPEC Membrane Filter, Nylon, 47mm, 0.22μm	81.20	69.10
CSMFN90045	CHROMSPEC Membrane Filter, Nylon, 90mm, 0.45μm	259.30	220.50
PTFE			
CSMFT13022	CHROMSPEC Membrane Filter, PTFE, 13mm, 0.22μm	\$32.50	\$27.70
CSMFT25045	CHROMSPEC Membrane Filter, PTFE, 25mm, 0.45μm	48.70	41.40
CSMFT47022	CHROMSPEC Membrane Filter, PTFE, 47mm, 0.22μm	89.30	76.00
Mixed Cellulose Esters			
CSMFMC13022	CHROMSPEC Membrane Filter, MCE, 13mm, 0.22μm	\$28.40	\$24.20
CSMFMC25045	CHROMSPEC Membrane Filter, MCE, 25mm, 0.45μm	36.60	31.20
CSMFMC47022	CHROMSPEC Membrane Filter, MCE, 47mm, 0.22μm	81.20	69.10
PVDF and PES			
CSMFPE25022	CHROMSPEC Membrane Filter, PES, 25mm, 0.22μm	\$48.70	\$41.40
CSMFPH25045	CHROMSPEC Membrane Filter, Hydrophilic PVDF, 25mm, 0.45μm	73.00	62.10
CSMFPH47045	CHROMSPEC Membrane Filter, Hydrophilic PVDF, 47mm, 0.45μm	243.40	206.90

Other membranes and sizes are available (PP, Regenerated Cellulose, Cellulose Acetate). Please contact us for more information.

CHROMSPEC™ ...The Name for Affordable Quality



**FREE SAMPLES
are available!**

CHROMSPEC™ SYRINGE FILTERS

Your best option for quality syringe filters at low prices! Compare & save!

CHROMSPEC™ UV Syringe Filters

- Solvent resistant housing
- Made with North American membranes
- All CS-UV syringe filters are autoclavable
- GMF pre-filter option
- Pore sizes of 0.45µm and 0.22µm for HPLC and UHPLC applications; some membranes are available in 1, 3 and 5µm pore sizes, please inquire
- 4mm, 13mm, 25mm and 30mm diameters
- Economical glass microfibre pre-filter options

NON STERILE

- Great performance for high throughput labs
- Ideal for HPLC-UV and GC-FID applications

Choosing the right CHROMSPEC™ UV Syringe Filter

CS-UV syringe filters are available in many membrane types; the most popular are listed below. Contact us to review your application and availability of other membrane types.

Nylon

- Hydrophilic, good solvent resistance and medium protein binding
- Filtration of all aqueous samples and most organic solvents
- Not recommended for acids

PTFE

- Highest solvent resistance and high protein binding
- Filtration of non-aqueous or solvent based samples
- Recommended for strong acids and bases

PVDF

- Highly resistant to most solvents and low protein binding
- General filtration of biological samples
- Filtration of all aqueous and most solvent based samples
- Filtration of proteins and tissue cultures

Mixed Cellulose Esters (MCE)

- Hydrophilic and very low protein binding
- Ideal for aqueous based samples, tissue culture and sensitive biological samples
- Low chemical resistance

PES

- Hydrophilic and low protein binding
- Ideal for aqueous based samples
- General filtration of biological samples

Polypropylene

- Hydrophobic
- High solvent resistance
- Low protein binding
- General filtration of biological samples
- Filtration of all aqueous and most solvent based samples

Regenerated Cellulose

- Hydrophilic
- Resistant to most solvents and aqueous solutions (pH range 3-12)

Pre-Filters

- Recommended for removing particles in suspension
- Helps prevent clogging of the syringe filter membrane

Visit www.chromspec.com/UV for more information.

Size Selection	
Syringe Filter Size	Sample Volume
4mm	2mL
13mm	6mL
25mm	70mL
30mm	90mL

TRY IT NOW!

FREE SAMPLES are available!

CHROMSPEC™ ...The Name for Affordable Quality

CHROMSPEC™ SYRINGE FILTERS

More Savings

CHROMSPEC™ UV Syringe Filters, Non-sterile				Price per Pkg. 100		
Size (mm)	Membrane Type	Pore (µm)	Product Number	1-4	5-9	10+
13	Nylon	0.22	CSUV13N201	\$59.50	\$54.50	\$49.50
13	Nylon	0.45	CSUV13N451	59.50	54.50	49.50
13	PTFE	0.22	CSUV13T201	82.00	77.00	72.00
13	PTFE	0.45	CSUV13T451	82.00	77.00	72.00
13	PVDF	0.22	CSUV13P201	80.00	75.00	70.00
13	PVDF	0.45	CSUV13P451	80.00	75.00	70.00
25	Nylon	0.22	CSUV25N201	72.50	67.50	62.50
25	Nylon	0.45	CSUV25N451	72.50	67.50	62.50
25	PTFE	0.22	CSUV25T201	88.50	83.50	78.50
25	PTFE	0.45	CSUV25T451	88.50	83.50	78.50
25	PVDF	0.22	CSUV25P201	96.00	91.00	86.00
25	PVDF	0.45	CSUV25P451	96.00	91.00	86.00

Additional sizes and membranes, and syringe filters with pre-filters are available (see previous page). Please inquire for part numbers and prices.



Volume Discounts

Higher Volume purchases may qualify for even greater savings! Call us for details.



Pre-filters are recommended for removing particles in suspension and to help prevent clogging of the syringe filter membrane.

We also offer multi-layer pre-filters for heavier suspensions.

CHROMSPEC™ DISPOSABLE SYRINGES

- Cost effective disposable syringes designed for today's chromatography labs
- Housing and plunger made of chemically inert polypropylene and polyethylene
- Various sizes available (1, 3, 5, 10, and 20mL)
- Luer Lok and Luer Slip configurations available
- No rubber seals or silicone lubricants that may cause sample contamination
- Sterile syringes are also available, please inquire



More Savings

CHROMSPEC™ Disposable Syringes			Price per Pkg. 100	
Volume (mL)	Type	Product Number	1-4	5+
1	Luer Slip, Concentric	CSSYLS01	\$29.00	\$26.10
3	Luer Slip, Concentric	CSSYLS03	17.80	16.10
3	Luer Lok, Concentric	CSSYLL03	30.50	27.50
5	Luer Slip, Eccentric	CSSYLS05	23.30	21.00
5	Luer Lok, Concentric	CSSYLL05	37.60	33.90
10	Luer Slip, Eccentric	CSSYLS10	29.00	26.10
10	Luer Lok, Concentric	CSSYLL10	45.50	41.10
20	Luer Slip, Eccentric	CSSYLS20	40.60	36.60
20	Luer Lok, Concentric	CSSYLL20	56.80	51.10

OTHER FILTRATION PRODUCTS



Finally, a cost saving alternative to Whatman GD/X Syringe Filters!

Ahlstrom-Munksjö offers a range of advanced syringe filters that include multi-layered custom prefilters for difficult matrices.

Ahlstrom-Munksjö ReliaMAX™ High Capacity Syringe Filters

ReliaMAX™ syringe filters contain prefilters specifically developed to increase the efficiency of laboratory microfiltration by reducing the number of steps needed to process samples and solutions with either a high particle load or a high viscosity. ReliaMAX™ includes high quality nylon and PTFE membranes available in 0.2µm and 0.45µm pore sizes for increased flexibility in sample filtration depending on final application.

Internal testing shows that ReliaMAX™'s filter design performs better than syringe filters containing a membrane with a single layer prefilter and comparably with competitive syringe filters containing multi-layer prefilters when filtering standardized solutions.



Benefits of Multi-Layer Prefilters

- **High particle holding capacity** – larger amount of particles can be captured prior to clogging the membrane
- **Fast initial flow** – the structure of ReliaMAX™ offers excellent flow with viscous samples
- **Low resistance to pressure** – fast and efficient filtration even with low pushing pressure
- Available in 0.2 µm and 0.45 µm pore sizes in both nylon and PTFE

Applications

- Clarification of solutions
- Removal of particles
- Sample preparation

Specifications

- Hold-up Volume < 400 µL
- Housing – Polypropylene
- Inlet / Outlet – Female Luer Lock / Male Luer Slip

Product Number	Size (mm)	Membrane Type	Pore (µm)	Equivalent Whatman Product Number	Pkg. 100
HL7X7531	25	Nylon	0.20	68702502	\$175.50
HL7X7532	25	Nylon	0.45	68702504	175.50
HL7X7539	25	PTFE	0.20	68742502	175.50
HL7X7512	25	PTFE	0.45	68742504	175.50

GVS SEPARA® Syringeless Filter Vials

The GVS Group is one of the world's leading manufacturers of filtration solutions with over 40 years of experience.

These filtration vials will save you time and money; we have priced this line to be extremely competitive with other brands.



Features & Benefits

- Vial and filtration all-in-one package
- Easy to press, fast and simple to use; after filtration, the sample is ready for use
- Almost double the capacity of comparable products

Specifications

- Vial Dimensions: 12mm x 33mm
- Materials: Body – polypropylene; Septa - PTFE and silicone; Membranes – PTFE, Nylon, PVDF, PES, RC



Product Number	Description	Membrane Type	Pore (µm)	Colour	Pkg. 100
GVMV32ANPNY004UC	SEPARA® Syringeless Filter Vial	Nylon	0.45	Blue	\$185.00
GVMV32ANPPT002TC	SEPARA® Syringeless Filter Vial	PTFE	0.20	Pink	185.00
GVMV32ANPPV002FC	SEPARA® Syringeless Filter Vial	PVDF	0.20	Yellow	185.00

Talk to our Technical Support to find the right membrane for your analysis.



Filter paper with high purity and consistency at great prices!

Ahlstrom-Munksjö Qualitative, Quantitative and Glass Fibre Filtration Products

This well-established and popular European brand is now available in Canada from Chromatographic Specialties Inc.

Ideal for a wide range of laboratory applications:

- Sample clarification, soil analysis, food and beverage testing
- Pre-weighed, qualitative and quantitative products
- A complete range of low ash products for general lab use



Did you know?
Munktell, part of the Ahlstrom-Munksjö group, has been making scientific filter paper in Sweden since 1815.

**Compare
and Save!**

The following is a selection of our most popular filter paper offerings. Check out our prices compared to what you are currently paying.

Product Number	Ahlstrom-Munksjö Grade	Equivalent Whatman Grade	Equivalent Whatman Product Number	Diameter (cm)	Price per Pkg. 100	
					1-9	10+
Qualitative						
HL60100550	601	1	1001-055	5.5	\$10.20	\$8.80
HL60100900	601	1	1001-090	9.0	13.00	11.10
HL63101500	631	4	1004-150	15.0	19.60	16.80
Quantitative						
HL05400900	54	41	1441-090	9.0	\$37.30	\$31.70
HL05401500	54	41	1441-150	15.0	64.10	54.60
HL05501500	55	541	1541-150	15.0	67.50	57.40
Glass Fibre						
HL16100900	161	934-AH	9907-090	9.0	\$79.40	\$67.50
HL13100240	131	GF/C	1822-024	2.4	54.40	46.30
HL15101500	151	GF/F	1825-150	15.0	433.00	367.70

Ahlstrom-Munksjö produces a full range of filtration papers and products, including other grades and diameters (2.5 to 50cm). Please inquire.



FREE SAMPLES are available!



Contact us for a quote on your annual filter paper needs. Further discounts may be available for larger quantities.

We have cross-references for many filter brands. In most cases, we can provide Ahlstrom-Munksjö grade filter paper that is equivalent to your current product at better prices. Contact our Technical Team for assistance.



Ahlstrom-Munksjö Filtration Products Catalogue



Literature Code AH01
(PDF Only)

Visit www.chromspec.com/ah01

AUTOSAMPLER VIALS



CHROMSPEC™ vials offer the same high quality you expect from other manufacturers, but at a lower price.

- Compatible with robotic arm autosamplers
- Screw thread, crimp top and snap seal
- Clear and amber glass

We use low bleed (LB) septa with all our screw caps and snap caps. This new generation of LB septa features:

- High purity silicone: Allowing you to work with highly sensitive analyses where low background levels are a necessity
- Easier piercing: The silicone used is softer and reseals better; and the PTFE is thinner, helping your needle puncture the septa more easily
- Made in North America
- Ultra Low Bleed versions are available. Please inquire.



Volume Discounts

Contact us for a quote on your annual vial needs.

Discounts may be available for larger quantities.

TRY IT NOW!

FREE SAMPLES are available!

More Savings

CHROMSPEC™ 2mL Wide Opening Crimp Top Glass Vials

Description	Equivalent to	Product Number	Price per Pkg. 100	
			1-9	10+
Clear Vial	Agilent 5181-3375 Waters WAT094222	C223682L	\$16.50	\$13.20
Clear Vial with White Marking Spot	Agilent 5182-0543	C7711800W	18.10	14.50
Amber Vial	Waters WAT094223	C7711800A	18.50	14.80
Amber Vial with White Graduated Marking Spot	Agilent 5181-3376	C7711800AW	19.80	16.00



CHROMSPEC™ 2mL 9-425 Wide Opening Screw Thread Vials

Clear Vial	Agilent 5182-0714 Waters 186000273	C779100	\$16.30	\$13.10
Clear Vial with White Graduated Marking Spot	Agilent 5182-0715	C779100W	21.10	16.90
Amber Vial	Agilent 5188-6535 Waters 186000848	C779100A	18.40	14.70
Amber Vial with White Graduated Marking Spot	Agilent 5182-0716	C779100AW	20.40	16.40



CHROMSPEC™ 11mm Crimp Top Seal with Septa

Description	Equivalent to	Product Number	Price per Pkg. 1000	
			1-9	10+
Silver Aluminum Seal with PTFE/Orange Rubber Septum	Agilent 5183-4500	C221150	\$117.80	\$94.30
Silver Aluminum Seal with PTFE/Natural Red Rubber Septum	Agilent 5181-1217 (pkg. 100)	C221145	100.00	90.00
Silver Aluminum Seal with PTFE/Synthetic Red Rubber Septum	Agilent 5183-4498	C221140	76.50	68.40



1.5mL, 1.8mL and 2mL vials: Is there a difference?

No, unless the vial is described as "high recovery" or "micro-sampling".

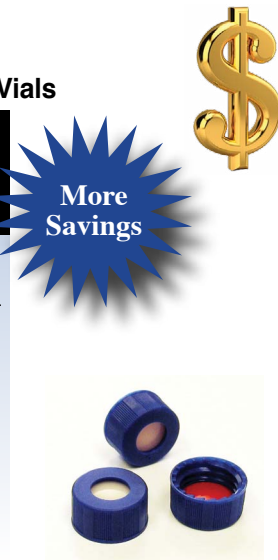
These vials are all made to industry standard dimensions (12mm OD, 32mm tall).

CHROMSPEC™ helps you put a cap on your lab costs.

CHROMSPEC™ Pre-assembled Caps and Septa for 2mL 9-425 Wide Opening Screw Thread Vials

Description	Equivalent to	Product Number	Price per Pkg. 100	
			1-9	10+
Screw Cap, Blue with Red PTFE/ White LB Silicone Septum	Agilent 5182-0717 Waters WAT094174	C779200B	\$14.70	\$11.70
Screw Cap, Blue with Bonded Red PTFE/ White LB Silicone Septum	Agilent 5185-5823 Waters 186000274	C779200BB	17.60	14.10
Screw Cap, Blue with Pre-slit Red PTFE/ White LB Silicone Septum	Agilent 5183-2076	C779200XB	17.90	14.40
Screw Cap, Green with Red PTFE/ White LB Silicone/Red PTFE Septum	Agilent 5182-0724 Waters 186002130	C779203G	21.40	17.20
Screw Cap, Blue with Pre-slit Bonded Red PTFE/White LB Silicone Septum	Agilent 5185-5824 Waters 186000305	C779200XBB	20.90	16.80

More colours available. LB = Low Bleed



CHROMSPEC™ 2mL Snap Seal Glass Vials

Clear Vial	Agilent 5182-0544 Waters WAT094219	C7711100	\$16.20	\$13.00
Clear Vial with White Graduated Marking Spot	Agilent 5182-0546	C7711100W	19.80	16.00
Amber Vial	Waters WAT094220	C7711100A	18.30	14.70
Amber Vial with White Marking Spot	Agilent 5182-0545	C7711100AW	22.60	18.10



CHROMSPEC™ Pre-assembled Caps and Septa for 2mL Snap Seal Vials

Snap Cap, Blue with Red PTFE/ White LB Silicone Septum	Agilent 5182-0541 Waters 186000303	C7711200B	\$16.10	\$12.90
Snap Cap, Blue with Pre-slit Red PTFE/ White LB Silicone Septum	Waters 186000304	C7711200XB	20.40	16.40



CHROMSPEC™ 2mL 8-425 Standard Opening Screw Thread Vials

Clear Vial	Agilent 5183-4428 Waters WAT063300	C223700C	\$15.30	\$12.30
Amber Vial	Agilent 5183-4429	C221200A	18.20	14.60



Pre-assembled Caps and Septa for 2mL 8-425 Standard Opening Screw Thread Vials

Screw Cap, Black with PTFE/Silicone Septum	—	C223733CAS	\$24.70	\$20.40
Screw Cap, Black with Red PTFE/White Silicone Septum	—	C22371250CAS	20.70	18.40



Why choose a 9-425 combo vial and cap over an 8-425?

The 40% larger opening of the 9-425 reduces autosampler needle damage.



Contact us for a quote on your annual vial needs. Discounts may be available for larger quantities.

AUTOSAMPLER VIALS

Microinserts for Wide Mouth 2mL Autosampler Vials

Description	Equivalent to	Product Number	Price per Pkg. 100	
			1-9	10+
Insert, 50 μ L, 4x25mm, Glass, with Plastic Spring	—	C734005BS425	\$69.30	—
Insert, 200 μ L, 6x29mm, Pull Point, 51 Glass, with Plastic Spring	Agilent 5181-1270 Waters WAT094170	C221094	80.80	\$71.30
Insert, 200 μ L, 6x29mm, Mandrel Precision Point, 33 Glass, with Plastic Spring	—	C221020	86.50	76.40
Insert, 250 μ L, 6x31mm, Conical, 51 Expansion Glass	Agilent 5183-2085 Waters WAT072704	C221016	41.90	36.90
Insert, 350 μ L, 6x31mm, Flat Bottom, 51 Glass	—	C221190L	16.80	13.50



How to protect your needle when using an insert:

Choose an insert with a spring!

It will absorb the shock which will prevent broken needles and vials.

Contact us for a quote on your annual vial needs.
Discounts may be available for larger quantities.



Volume Discounts

QSertVial™ Autosampler Vials

The QSertVial™ consists of a precision 300 μ L conical glass insert permanently fused into a 12x32mm autosampler vial.

- This integral unit saves time and reduces the risk of contamination that is associated with the manual assembly of vial and insert
- Enables consistent sample recovery from vial to vial because the insert is always at the same precise depth within the vial



Great Prices

12x32mm Limited Volume Glass QSertVial™ with Fused 300 μ L Insert

Description	Equivalent to	Product Number	Qty	Price
Clear QSertVial™, Crimp Top (vial only), Wide ID	Agilent 9301-1388	CQ2030	100	\$115.00
Amber QSertVial™, Crimp Top (vial only), Wide ID	Agilent 5188-6572	CQ2032	100	120.00
Clear QSertVial™, Snap Top (vial only), Wide ID	Agilent 5188-6593	CQ2028	100	115.00
Clear QSertVial™, Screw Top, with Cap and PTFE/Silicone Septa	Agilent 5188-6591 (vial only) Waters 186001126C	CQ2024	100	179.40
Amber QSertVial™, Screw Top, with Cap and PTFE/Silicone Septa	Agilent 5188-6592 (vial only) Waters 186001130C	CQ2036	100	191.20
Clear QSertVial™, Screw Top, with Cap and PTFE/Silicone Pre-slit Septa	Waters 186001128C	CQ2042	100	197.70
Amber QSertVial™, Screw Top, with Cap and PTFE/Silicone Pre-slit Septa	Waters 186001131C	CQ2044	100	207.40
Clear QSertVial™, Screw Top, with Cap and PTFE/Silicone/PTFE Septa	—	CQ2026	100	193.70
Amber QSertVial™, Screw Top, with Cap and PTFE/Silicone/PTFE Septa	—	CQ2038	100	207.40

Headspace Vials

- Crimp, screw and magnetic cap options
- Available with Ultra Low Bleed (ULB) Septa for premium quality at a low price
- Available in clear and amber glass



20mm Crimp Top Headspace Vials

Description	Equivalent to	Price per Pkg. 100		Price per Pkg. 1000
		1-9	10+	
10mL, 23x46mm, Flat Bottom, Bevelled Top, Clear Glass	Agilent 5182-0838	C733100202346 \$40.20	\$37.50	—
10mL, 23x46mm, Round Bottom, Bevelled Top, Clear Glass	Agilent 5183-4475	—	—	C73310020A2346M \$469.00
20mL, 23x75mm, Flat Bottom, Bevelled Top, Clear Glass	Agilent 5182-0837	—	—	C733200202375M 361.10
20mL, 23x75mm, Round Bottom, Bevelled Top, Clear Glass	Agilent 5183-4474	C73320020A2375 47.40	44.10	—

Contact us for a quote on your annual vial needs.

Discounts may be available for larger quantities.



Pre-assembled 20mm Metal Seals and Septa for Headspace Vials

Description	Equivalent to	Product Number	Price per Pkg. 100	
			1-9	10+
Open Top Seal, Aluminum with 0.125" White PTFE/White ULB Silicone Septum	Agilent 5183-4477	C2221223CAS	\$39.40	\$34.50
Magnetic Crimp Cap, Silver with 0.125" Tan PTFE/White ULB Silicone Septum	—	C6620206	44.50	35.60



18mm Screw Thread Caps for Headspace Vials

Magnetic Screw Cap, Silver with 2mm Red PTFE/White ULB Silicone Septum	Agilent 5188-2759	C6618201	\$76.40	\$61.20
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Visit www.chromspec.com/as-vials for more information on our Autosampler Vials.

18mm PolyMag® Magnetic Screw Caps

⇒ For magnetic sample transport systems

- Easy-to-use polypropylene screw thread format
- No crimping required – smooth thread fit compared to metal caps
- Secure grip to autosampler magnet
- Septa manufactured from low extractable silicone
- Not designed for oven temperatures exceeding 130°C



Description	Product Number	Price per Pkg. 100	
		1-9	10+
White Silicone / Blue PTFE Microcenter SPME Septum	C221831	\$67.90	\$57.20
0.125" White Silicone / Natural PTFE Septum	C221832	83.70	70.40
0.125" Red Butyl / Natural PTFE Septum	C221833	112.50	94.70
0.070" Trans Blue Silicone / White PTFE Septum	C221834	71.70	60.30
0.060" White Silicone / Blue PTFE Septum	C221835	66.60	56.10
0.075" White Silicone / Red PTFE Septum	C221836	69.10	58.20

ANALYTICAL REFERENCE MATERIALS



One purchase order, one shipment, one invoice — saves you time, money and hassles!

Chromatographic Specialties Inc. is your one-stop shop for standards. We have multiple suppliers of analytical reference materials and proficiency testing standards, so we can supply you with the standards you need.

- Buy both your 1st and 2nd source standards at the same time
 - In many instances we are able to offer second source options. Choose between the same standard from a different lot from the same supplier, or the same standard from a different supplier.



We offer a wide range of standards with **ISO 9001, ISO 17043 and ISO/IEC 17025 certifications.**

Compound Classes of Standards Offered — The following chart gives an overview of the types of reference materials we have available. Contact us if you don't see what you're looking for; there's a good chance we can source it for you.

More cost saving ideas...



AccuStandard's Recertification Program

Do you have unopened ampoules of expired or soon-to-expire AccuStandard reference material? AccuStandard will test their retained material and if possible extend the expiration date. You will receive a new Certificate of Analysis and labels if applicable.

Custom Formulations

Custom standard formulations can be costly and difficult to manufacture; but there are ways to save money or maximize return when considering non-stocked formulations.

- Minimize costly custom mixes by combining stock products or using a combination of stock products and smaller component custom mixtures.
- Purchase larger volumes of custom standards — often, more than your required amount of material is made during the manufacturing process; the cost of subsequent ampoules of material taken from that same lot are often attractively priced.

Let our Technical Team Save You Time and Effort

Searching through lists of standards to find one that matches your needs can be daunting and frustrating. Let our Technical Support Team be your guide. We will interface with our suppliers to find the closest, cost savings solutions for you.

Optimize Target Concentrations

Did you know that ordering standards at 100 µg/mL will often save you money? That particular concentration requires neither extra dilutions, nor extra raw material for manufacturing.

Visit www.chromspec.com/Custom-Standard-Request to request a custom formulation.



ANALYTICAL REFERENCE MATERIALS

Category	Compound	Analytical		Mass Labelled	Proficiency Testing
		Primary	Secondary		
Persistant Organic Pollutants (POPs)	PCBs	•	•	•	•
	Pesticides & Biocides	•	•	•	•
	PBDEs & Flame Retardants	•	•	o	
	PAHs	•	•	•	•
Environmental	Environmental Reference Materials	•	•		
	EPA 500 Series Drinking Water	•	•	o	•
	EPA 600 Series Waste Water	•	•	o	•
	EPA TCLP	•	•		
	EPA 1600 Series Waste Discharge	•	•	o	•
	EPA 8000 Series Solid Waste	•	•	o	•
Volatiles	VOCs	•	•	•	•
Petrochemicals	Petrochemicals	•	•		
	ASTM	•	•		o
	PIANO	•	•		
	LUFT / LUST (UST)	•	•		•
	Biodiesel	•	•		•
Food and Flavours	FAMEs	•	•	o	
	Fragrances / Allergens	•	•	•	
	Food Safety	•	•		
	Phthalates	•	•	o	o
Cannabis	Cannabinoids (TK exempt)	•	•		
	Pesticides	•	•	•	•
	Terpenes	•	•	o	
	Metals	•	•		
	Residual Solvents	•	•	•	o
	Mycotoxins	•	o		
Pharmaceuticals / Clinical / Forensics	Drugs of Abuse	•	•	o	
	Medical Marijuana	•	•		
	Pharmaceutical	•	•	•	o
Inorganics	Single & Mixed Element	•	•		
	Environmental Reference Materials	•	•		
	Instrument Calibration	•	•		
	pH Buffer Standards	•	•		
	Conductivity Standards	•	•		
Standardized Body Fluids	Artificial Perspiration	•			
	Artificial Saliva	•			
	Artificial Urine	•			
	Artificial Cerumen & Sebum	•			
	Simulated Lung Fluid	•			
Specific Applications	Explosives	•	•	o	o
	Refrigerants	•	•	o	
	Plastic Additives	•	•	o	
	Gas Standards	•	•	•	
	Substitute Ocean Water	•	•		
	Molecular Weight for SEC	•	•		
	Bio Standards including: Lipids, biochemicals, biomarkers, DNA, RNA, protein, molecular weight and more	•	•		

Legend: • Extensive Product Offerings o Limited Product Availability

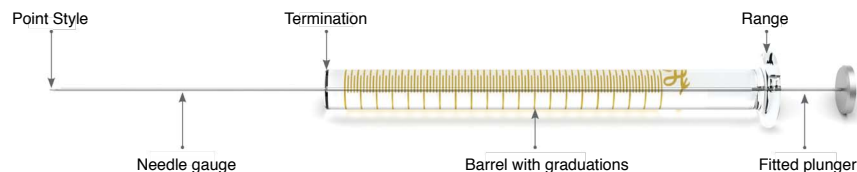
HAMILTON SYRINGES



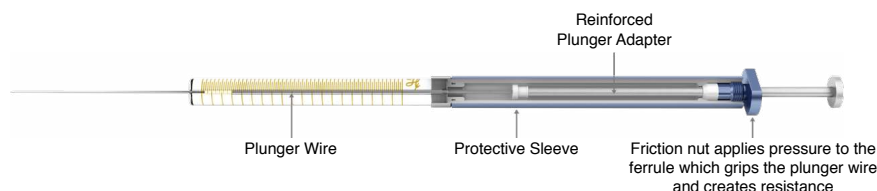
Chromatographic Specialties offers a complete, economical and durable line of syringes for GC injections.

HAMILTON
THE MEASURE OF EXCELLENCE™

700 Series Microliter™ Syringes ⇨ for liquid organic samples not prone to precipitation, crystallization or bonding with glass



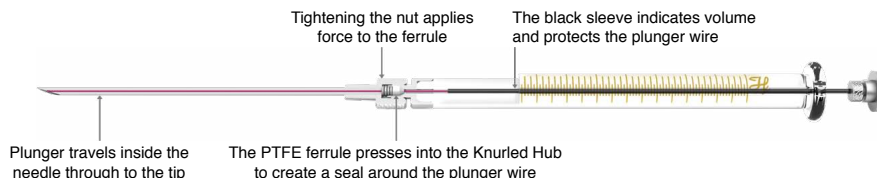
800 Series Reinforced Plunger Syringe ⇨ for uses that are prone to bending and breaking small plungers



1000 and 1700 Series Gastight® Syringes ⇨ for aqueous and low volatile organic samples

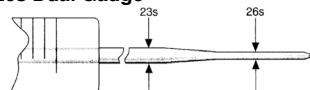


7000 Series Modified Microliter Syringes ⇨ for aqueous volumes < 5 µL



Needle Gauges

23s-26s Dual Gauge



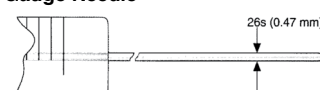
- Durability of a 23s gauge needle with septum piercing capabilities of a 26s gauge needle
- Performs split/splitless and on-column injections like a 26s gauge needle

23s Gauge Needle



- Standard needle for Merlin Microseal™ and packed column injections
- Used for split/splitless injections, when needle life is more important than septum life

26s Gauge Needle



- Standard needle gauge for capillary split/splitless injections
- Fine enough for capillary on-column injections onto 0.53mm ID columns

Needle Point Styles

Point Style 2



- 10-12° sharp, beveled, curved non-coring for manual injections

Point Style 5



- Conical with side port for penetration without coring for manual injections

Point Style AS



- Conical, non-coring designed to withstand multiple injections on autosamplers

Hamilton syringes are renowned for quality, performance, reliability and long life durability.

⇒ For Manual GC Injections



Description	Each			Pkg. 6		
	Product Number	Equivalent to Agilent Number	Price	Product Number	Equivalent to Agilent Number	Price
700 Series Microliter™						
5µL, 75N, Pt2, 2", 26s gauge	H87900	5190-1479	\$53.80	—	—	—
10µL, 701N, Pt2, 2", 26s gauge	H80300	5190-1483	37.40	H80366	5190-1487	\$178.80
10µL, 701N, Pt5, 2", 26s gauge	H80339	—	58.60	—	—	—
10µL, 701RN, Pt2, 2", 26s gauge	H80330	—	61.50	H80336	—	324.00
7000 Series Microliter™						
1µL, 7101KH, Pt3, 2.75", 22 gauge	H86200	—	\$97.10			
1µL, 7001KH, Pt3, 2.75", 25 gauge	H80100	—	97.10			
5µL, 7105KH, Pt2, 2.75", 24 gauge	H88011	5190-1475	130.10			
1000 and 1700 Series Gastight®						
10µL, 1701RN, GT, Pt3, 2", 22s gauge	H80065	5190-1492	\$67.20			
25µL, 1702N, GT, Pt2, 2", 22s gauge	H80200	—	61.60			
25µL, 1702LT, GT, Needle sold separately	H80201	—	58.00			
25µL, 1702RN, GT, Pt2, 2", 22s gauge	H80230	—	69.60			
50µL, 1705LT, GT, Needle sold separately	H80901	—	66.30			
100µL, 1710N, GT, Pt3, 2", 22 gauge	H81085	—	66.70			
100µL, 1710N, GT, Pt2, 2", 22s gauge	H81000	—	61.30			
250µL, 1725LTN, GT, Pt2, 2", 22s gauge	H81100	5190-1514	69.60			
250µL, 1725RN, GT, Needle sold separately	H765701	—	70.00			
500µL, 1750LTN, GT, Pt2, 2", 22 gauge	H81217	5190-1521	70.90			
500µL, 1750RN, GT, Pt2, 2", 22 gauge	H81230	—	78.40			
1mL, 1001RN, GT, Pt2, 2" 22 gauge	H81330	5190-1529	95.10			
1mL, 1001LTN, GT, Pt2, 2", 22 gauge	H81317	5190-1528	60.30			
800 Series Microliter™						
10µL, 801RN, Pt2, 2", 26s gauge	H84853	—	137.20			

HAMILTON
THE MEASURE OF EXCELLENCE™

N = cemented (fixed) needle; RN = removable needle; GT = Gastight® syringe; KH = Knurled Hub; LT = Luer Tip



Why pay expensive brand name pricing when you can get comparable results at a lower price?

⇒ For Agilent 7673, 7683, 7693A and 6850 Autosamplers



Description	Each			Pkg. 6		
	Product Number	Equivalent to Agilent Number	Price	Product Number	Equivalent to Agilent Number	Price
5µL, N, Pt AS, 23s-26s gauge	H87993	5181-1273	\$61.30	H87994	5181-8810	\$330.70
5µL, N, Pt AS, 26s gauge	H87988	9301-0891	61.10	H87989	5183-4728	342.40
5µL, N, Pt AS, 23s gauge	H87987	9301-0892	61.10	H87990	5182-0875	327.20
10µL, N, Pt AS, 23s gauge	H80387	9301-0713	40.20	H80390	9301-0725	219.90
10µL, N, Pt AS, 26s gauge	H80388	9301-0714	37.90	H80389	5183-4729	219.90
10µL, N, Pt AS, 23s-26s gauge	H80393	5181-1267	40.20	H80391	5181-3360	219.90
10µL, GT, N, Pt AS, 23s gauge	H80080	5181-8809	60.00	H80094	5183-4730	324.00
10µL, GT, N, Pt AS, 23s-26s gauge	H80079	5181-3354	54.60	H80096	5181-3361	316.40

N = cemented (fixed) needle; GT = Gastight® syringe with PTFE tipped plunger.

Chromatographic Specialties Inc. has syringes that are designed to fit virtually every GC and HPLC autosampler on the market, including: Agilent, LEAP Technologies / CTC, Perkin-Elmer, Shimadzu, and many more!

CHROMSPEC™ GAS SAMPLING BAGS

CHROMSPEC™ gas sampling bags offer a convenient, reliable, economical way of collecting airborne samples.

- Chemically inert
- Leak tested
- Mechanically strong
- Reusable
- Non-contaminating
- Minimal sample loss



Tedlar®

- Our most popular material – offering the best combination of inertness, low gas permeation levels, high tensile strength, puncture resistance and cost
- Perfect for sampling of carbon monoxide, sulfur dioxide, hydrogen sulfide, radon and mercaptans
- Temperature range for sampling is -98 to 225°F

Aluminized

- Multi-layer foil barrier bags protect light-sensitive compounds
- Perfect for low molecular weight compounds such as hydrogen and inert gas
- Provide sample stability of up to 5 days with minimal adsorption for most compounds



Aluminized multi-layer foil is the only bag material that is adequate for collecting and storing Hydrogen Sulfides (H₂S) for long periods (>5 days)

FEP

- High chemical inertness with extreme temperature stability, resistant to most severe corrosives
- Works well in temperatures ranging from -400 to 400°F; making it the ideal material for stack sampling and other extreme conditions

ALTEF

- Extremely low VOC and sulfur background levels
- Provide up to 2 days stability on VOCs and up to 24 hours on many sulfur compounds

			
Polypropylene Screw Cap Combo Valve with Replaceable Septum	Polypropylene Locking Combo Valve with Septum	Stainless Steel TCLP Fitting with Replaceable Septum	Stainless Steel Combo Valve with Replaceable Septum
			
Polypropylene Jaco® Fitting for Tubing or Septum	Nickel Plated HR® Barbed Roberts On/Off Valve	Swagelok® type Stainless Steel Fitting for Tubing or Septum	PFA Fitting for Tubing or Septum



All CHROMSPEC™ gas sampling bags are available in a variety of sizes, with any combination of material and valve. Optional metal grommets allow for easy manipulation and storage.

Product Number	Size* (inches)	Capacity (Litres)	Material	Fittings	Price per Pkg.	
					1-9	10+
TDP0707S	7x7	1	Tedlar	Screw Cap Combo Valve with Septum	\$20.20	\$16.20
TDP0707ST	7x7	1	Tedlar	Screw Cap Combo Valve with Septum & PTFE Coated Washer	25.00	19.10
TDP0707JS	7x7	1	Tedlar	Jaco Fitting with PTFE-Faced Septum	25.20	20.20
TDP1212S	12x12	5	Tedlar	Screw Cap Combo Valve with Septum	33.10	26.50
TDPA0707SG	7x7	1	Aluminized	Screw Cap Combo Valve with Septum, 1 Grommet	19.00	15.20
TDPA1824S	18x24	25	Aluminized	Screw Cap Combo Valve with Septum	44.60	35.70

* Many more sizes and configurations are available. **Please contact our Technical Support Team for assistance in selecting the right material and the best valve and fitting for your application.**

CHROMSPEC™ Chromatography Grade Tubing

Top quality tubing, cleaned to chromatography standards.

- Cleaned before shipping to provide internal surfaces that are free of oil, grease and other foreign materials
- Ready to use on sensitive GC and MS systems without fear of contamination



Custom Tubing and Fitting Services:

Custom Cleaning – Do you have tubing or fittings that need to be cleaned for chromatography or oxygen service? Contact us to request a quote.

Custom Design and Installation of laboratory gas fitting systems - by chromatographers, for chromatographers. Contact our Instrumentation Team at 1-800-267-8103 or instrum@chromspec.com to find out how to make your next lab upgrade easier.



Chromatography Grade Clean and Oxygen Service Clean are not the same.

Both have the same goal: remove all oil, grease and debris from the inside of tubing and fittings. Once cleaned, oxygen service tubing or fittings can be lubricated or sealed with non-flammable oils or greases. Chromatography grade tubing and connections must remain free of lubricants so they don't affect analytical results.

Oxygen cleaning is an ASTM standard (G93). While there is no industry standard for Chromatography grade cleaning, CHROMSPEC™ Chromatography Grade Tubing meet the same ASTM G93 standards.

Product Number	Size	Description	Price
Stainless Steel (Premium Quality, Chromatography Grade)			
C49300	1/16"	OD x 0.010" ID 316SS (Any length up to 300 ft.)	\$5.40 per ft.
C49305	1/16"	OD x 0.030" ID 316SS (Any length up to 300 ft.)	5.00 per ft.
C49306	1/16"	OD x 0.040" ID 316SS (Any length up to 300 ft.)	5.70 per ft.
C49310	1/8"	OD - 0.020" Wall 304SS (Up to 10 ft., straight lengths)	7.30 per ft.
C49315	1/8"	OD - 0.020" Wall 304SS (50 ft. continuous coils)	376.20 per 50 ft.
C49320	3/16"	OD - 0.020" Wall 304SS (Up to 10 ft., straight lengths)	8.30 per ft.
C49325	1/4"	OD - 0.030" Wall 304SS (Up to 10 ft., straight lengths)	9.40 per ft.
Copper (Refrigeration Grade Cleaned)			
C49345	1/8"	OD Wall thickness 0.030"	\$71.70 per 50 ft.
C49350	3/16"	OD Wall thickness 0.030"	83.00 per 50 ft.
C49355	1/4"	OD Wall thickness 0.030"	89.50 per 50 ft.
Fluoropolymer			
C49405	1/8"	OD x 0.085" ID FEP Tubing (Max. Temp. 204°C)	\$155.00 per 100 ft.
C49415	1/4"	OD x 3/16" ID FEP Tubing	173.70 per 25 ft.
C49420	1/4"	OD x 1/8" ID PTFE Tubing	143.30 per 25 ft.

More tubing materials and dimensions are available.
Bulk pricing is available, contact us to discuss your needs.

Do you need something more inert than stainless steel?

Ask us about Siltek / SilcoNert 2000 surface treatments for stainless steel. More inert than glass, and as tough as steel.

Have tubing to cut?

We've got you covered. Check out our line of cutting tools, contact our Technical Support Team to discuss which option is best for you.

Product Number	Description	Qty	Price
RK22356	Hi-Duty Tubing Cutter – cuts 1/8" to 1 1/8" SS tubing	1	\$115.70
RK22357	Replacement Cutting Wheel for Hi-Duty Tubing Cutter	2	49.20
RK20192	1/16" Tubing Cutter (cuts hard or soft copper, aluminum, brass, stainless steel, Monel® alloy, or titanium.)	1	176.20
RK20185	Replacement Cutting Wheels for 1/16" Tubing Cutter	3	57.40

PRODUCTS FOR INORGANIC ANALYSIS



Competitively priced products with exceptional quality from a supplier you know and trust.

Supplies for ICP-OES, ICP-MS, and AAS

Our products perform as well or better than those offered by instrument manufacturers. We offer many options that cost less, last longer and / or save you time and money because they are easier to use or more robust.

- Nebulizers
- Torches
- Bonnets
- Cones
- Peristaltic Pump Tubing
- Autosampler Probes
- Graphite Furnace Tubes

Reference Standards

- Full range of ICP / AA / IC and HPLC inorganic standards
- Manufactured under ISO 17034 and ISO / IEC 17025 quality systems
- Traceable to NIST and other internationally recognized third party standards
- One-stop shop: purchase your 1st and 2nd source standards at the same time

Syringe Filters

- **CHROMSPEC™ UV PES Syringe Filters** - Quality Syringe Filters at Lower Prices!
 - Naturally hydrophilic, Ideal for aqueous inorganic samples
- **Whatman – GD/XP™ Syringe Filters**
 - Incorporates a two-layer polypropylene pre-filter stack rather than a multi-layer glass fiber stack to minimize levels of ion extractables
 - Extremely low protein binding filter
 - High loading volume for filtration of challenging samples

Solid Phase Extraction (SPE)

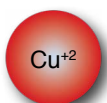
- Sample pre-treatment and clean-up for ICP-OES, ICP-MS and AAS
- Eliminate matrix interferences and achieve high concentrations of ions

Visit www.chromspec.com/inorganics for more information.

Instruments

We have a variety of inorganic instrumentation, including spectroscopy autosamplers and sample digestion systems.

Contact our Instrumentation Team at instrum@chromspec.com or 1-800-267-8103 to discuss your requirements.





Our Technical and Instrumentation Teams will be happy to work with you to get the most value from your budget. They will be able to guide you towards the products that will give you the best results, at the best price.

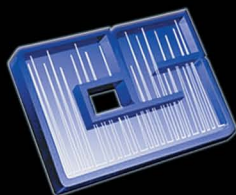
Chromatographic Specialties offers a complete product line:

- GC Columns, Accessories and Replacement Parts
- HPLC Columns, Accessories and Replacement Parts
- Analytical Instrumentation
- Chemical Reference Standards
- Solid Phase Extraction and Filtration Products
- Glassware and Sample Handling Solutions
- Valves and Fittings

We source these products from trusted chromatography market leaders, including:

And Many More...

We offer you the best available solutions from a wide range of world renowned manufacturers. We can easily source alternative products for better pricing, availability, and quality based on your specific needs.



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