

CATALOG  
17

QUADREX



GAS  
CHROMATOGRAPHY  
PRODUCTS

# CONTACT & ORDER INFORMATION

**TELEPHONE** *Our Order Desk will take your telephone orders Monday - Friday, 9:00 am - 5:00 pm EST.*

**Toll-free: 1-800-275-7033**

**(203) 393-3112**

**FAX** *We can accept your faxed orders or technical inquiries 24 hours a day.*

**(203) 393-0391**

## MAIL

**Quadrex Corporation**  
P.O. Box 3881, Woodbridge, CT 06525 USA

## EMAIL

**ORDER PLACEMENT, STOCK INFORMATION, OR CATALOG REQUESTS:** [sales@quadrexcorp.com](mailto:sales@quadrexcorp.com)  
**TECHNICAL SUPPORT:** [tech@quadrexcorp.com](mailto:tech@quadrexcorp.com)

**INTERNET** *For the latest product information on columns, portable GCs and GC related accessories.*

<http://www.quadrexcorp.com>

## EUROPEAN OFFICE:

**Quadrex Scientific, Box 79, Weybridge, Surrey, KT13 9RA , ENGLAND**  
Tel: 011-44(9323) 47648  
Fax: 011-44(9323) 36028  
Email: [sales.europe@quadrexcorp.com](mailto:sales.europe@quadrexcorp.com)

## INTERNATIONAL CUSTOMERS:

**CONTACT US FOR A DISTRIBUTOR NEAR YOUR LOCATION.**

## PAYMENT TERMS

**Net - 30 Days. Minimum order is \$25.00.**

To expedite order processing, please provide a purchase order number and a complete shipping and billing address. Please use both the catalog number and item description to avoid errors.

## CREDIT CARDS:



**VISA, MASTERCARD, AMERICAN EXPRESS**

**SHIPPING** *Orders are shipped via UPS or Federal Express, with appropriate shipping & handling costs prepaid and added as a separate item on the invoice. Other carriers can be designated by request; if you have an account with a particular shipping company, we would be happy to use their services; all charges will be billed to the consignee.*

**PRICES, SPECIFICATIONS AND WARRANTY** *All prices listed herein supersede any previously published prices and are subject to change without notice. All Quadrex goods of its own manufacture are warranted to be free from defects due to defective materials or faulty workmanship for a period of ninety (90) days after receipt. The obligations of the Quadrex Corporation for any such defects shall be limited to the replacement or the repair, at its election, of goods when returned in their original condition. Such replacement or repair shall be the exclusive remedy for defects in the goods, and Quadrex shall not be liable for damages which occur as a consequence of use or failure of such defective goods. Failure to give notice of claim within thirty (30) days from date of delivery will constitute a waiver by the buyer of any and all claims. No license or immunity from suit under any patent owned by a third party is granted by the sale of any Quadrex product.*

**RETURNS** *Do not return items without prior authorization. Call Customer Service to obtain a Return Authorization Number. Provide us with the catalog number of the product and indicate the nature of the problem, your name and number, account number, your purchase order number and/or our Invoice number. Our customer service personnel will gladly issue an R.A. Number to you. This number should be clearly marked on the outside of your shipment back to us.*



# C O N T E N T S

THE  
QUADREX STORY 2-3

FEATURED  
PRODUCTS 4-5

STATIONARY PHASE  
INFORMATION 6-7

MANUFACTURER  
EQUIVALENT COLUMNS 8

CAPILLARY  
COLUMNS 9-31

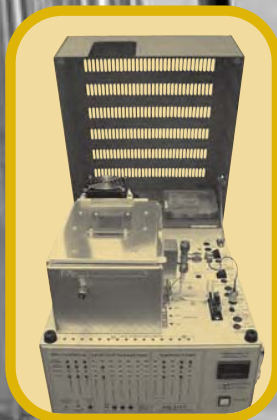
CHROMATOGRAMS  
ON THE WEB 32

PORTABLE GCS  
AND DATA SYSTEMS 33-51

GAS GENERATOR  
SYSTEMS 52-57

GC  
CONSUMABLES 58-66

PRODUCT LIST  
& INDEX 67-80



# THE QUADREX STORY

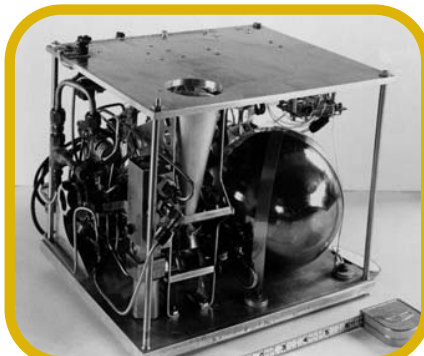
For nearly 30 years, QUADREX CORPORATION has invested a wealth of scientific expertise into making its GC capillary columns the finest, most progressive in the gas chromatography industry.

The vision of Quadrex has its roots deep in the early days of gas chromatography. Quadrex Corporation was founded in 1976 by Professor Seymour R. ("Sandy") Lipsky, then the head of the Department of Physical Sciences at Yale University in New Haven, Connecticut.

One of the early pioneers of high resolution gas chromatography, Dr. Lipsky had been researching the field of lipids in the late 1950's when he decided to try a new and intriguing technique called Gas Chromatography, which had been recently developed by Dr. Archer J. P. Martin and Dr. A. T. James. Dr. Lipsky's curiosity with this new technique led to the first successful analyses of fatty acids by gas chromatography (Figure 1)<sup>1</sup>, demonstrating the capability of gas chromatography in the analyses of biochemical substances. However, his attention was drawn away from the research of lipids to focus on furthering the developing field of gas chromatography, which continued throughout his 30-plus year career, yielding several patents and over 100 technical papers.

2

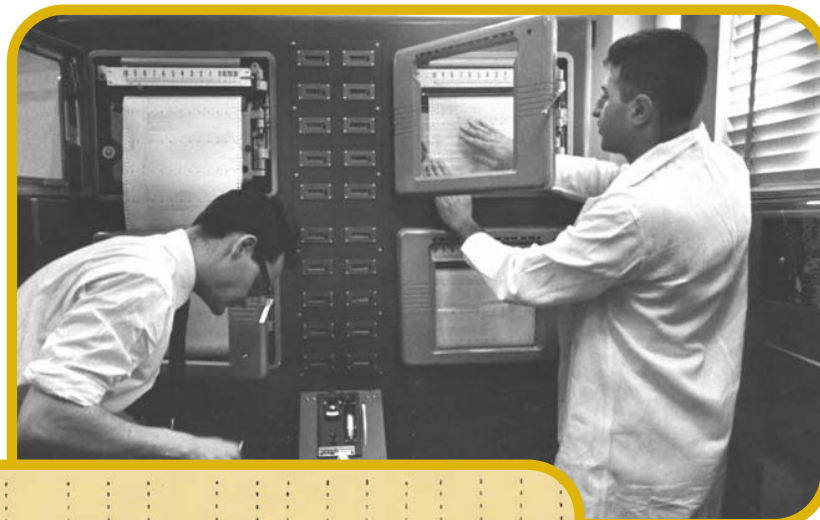
In 1960, together with Dr. James Lovelock, Dr. Lipsky invented one of the primary detectors used in environmental GC today: the electron capture detector (ECD)<sup>2</sup>. With his Yale colleague, Dr. Csaba Horvath, the technique of High Performance Liquid Chromatography (HPLC) was developed. Dr. Lipsky also pioneered the use of a GC in combination with a mass spectrometer – now commonly known as GC-MS.



Lunar Gas Chromatograph

Dr. Lipsky's other early work included consulting projects with the Jet Propulsion Laboratory (JPL) and NASA on their early lunar (Surveyor) missions, which sought to discover the composition of the lunar surface. In 1960, Dr. Lipsky received a substantial grant from NASA to develop a "highly specialized,

ultra-sensitive, miniature gas chromatograph" for this purpose. The resulting instrument measured only 8" x 8" x 8" and weighed only 11 pounds. He



ABOVE: Dr. S. R. Lipsky (right) and his colleague, Maurice Godet, prepare an early Gas Chromatograph.

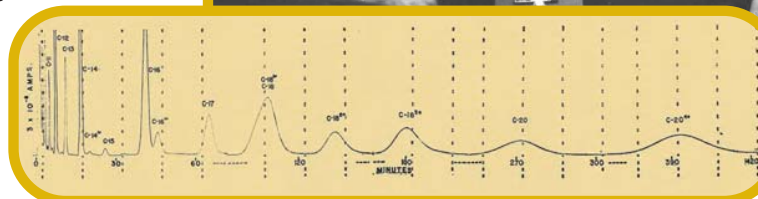


Figure 1 - One of the first chromatograms of FAMES ever produced, from Dr. Lipsky's lab in 1959. What took seven hours in the late '50s now takes less than 14 minutes!

also proposed the use of the little-known technique of GC-MS

for the analysis of Martian soils and was appointed Lead Experimenter for NASA's Mariner program.

Dr. Lipsky continued to work with NASA through the 1970s, and received lunar material brought back by the Apollo astronauts for GC-MS analysis.

The expiration of the Perkin Elmer (Golay) patent on capillary columns in 1975 opened the GC market to a new generation of column manufacturers. Along with others at the time, Dr. Lipsky recognized the need for commercially available reproducible columns – and QUADREX CORPORATION was born.

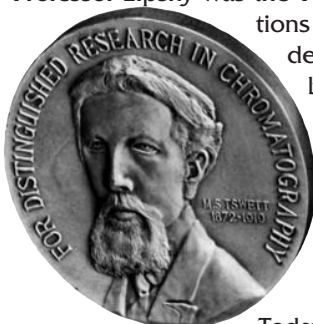
In 1979, the landmark paper by Ray Dandeneau of Hewlett-Packard announced the development of fused silica columns to the world. Taking the lead in this field of opportunity, Dr. Lipsky sought out suppliers of the new flexible fused silica tubing material and found a source for fused silica tubing (coated with an outer layer of polyacrylate) in Massachusetts. As a result, Quadrex became the first column manufacturer to actually produce commercially available fused silica columns (known as the 'Black Knights'



BLACK KNIGHT

because of their glossy black outer coating), introducing them at the 1980 ExpoChem. In 1982, Quadrex switched to the now-recognized industry standard polyimide-coated fused silica tubing for its column material.

Professor Lipsky was the 1982 recipient of the Tswett Medal for his contributions to the field of Gas Chromatography. His other developments in the 1980's include advancing bonded stationary phase technology, surface deactivations, and the development and the introduction of aluminum-clad fused silica columns for high temperature applications. Sadly, in 1986 Dr. Lipsky passed away after a seven-year battle with leukemia.



Today, under second generation management, Quadrex remains in the forefront of gas chromatography with many technical advancements. The Quadrex Corporation product line continues to focus on GC capillary columns – including specially developed columns for environmental and petrochemical applications – and has expanded to include a wide range of fused silica capillary columns.

In 1991, Quadrex initiated the development of a fully automated column coating system which resulted in a device we call the 'Workstation'. Our Workstations allow for faster column production speeds not normally attained with standard coating technologies. We found that our Workstation technology enabled us to expand the range of film thicknesses we can coat onto fused silica tubing. This led to our introduction of the line of PHAT Phase™ thick film capillary columns in 1995. These PHAT Phase™ columns offer unprecedented films of up to 18 microns on 0.53mm I.D. columns for low molecular weight analyses. Utilizing this same coating technology on narrow-bore (0.10 and 0.18mm I.D.) columns, we now offer a line of PHAST GC™ columns, with standard and thick films, which maintain a balance between analysis speeds and sample capacity levels.

QUADREX headquarters in Bethany, CT

Quadrex, in a joint effort with the Zoex Corporation (Lincoln, NE), also developed the first-ever device to simplify capillary column installation. At the 1992 Pittsburgh Conference, the Capillary Column Quick-Connect™ was introduced. The Quadrex Quick-Connect™ fitting eased the column installation burden, also saving time and materials.



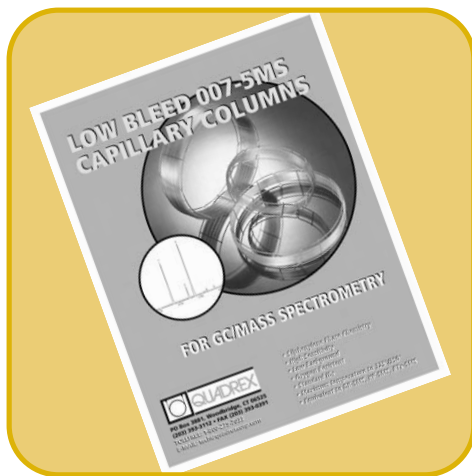
In the years since that successful venture, Quadrex has established strategic partnerships with other manufacturers for the supply of related products, such as Ultra-ALLOY™ Stainless Steel Columns from Frontier Labs (Japan), full-featured portable GCs from SRI Instruments (U.S.), a full line of gas generator systems from Peak Scientific (U.K.), and an in-depth line of GC consumables. With these relationships, and a world-wide distribution system, **QUADREX** offers the discerning chromatographer complete GC systems, from consumables to GC instrumentation.

1. S.R. Lipsky, R.A. Landowne, and J.E. Lovelock, *Analytical Chemistry*, **Vol. 31**, No. 5, pg. 853 (May 1959)
2. J.E. Lovelock and S.R. Lipsky, *J. Am. Chem. Soc.* **81**, 431-433 (1960)





# FEATURED PRODUCTS



## 007-5MS Low-Bleed Capillary Columns

Our 007-5MS silphenylene polysiloxane stationary phase is another in the class of low bleed capillary columns. The 007-5MS is ideal for GC-MS applications, and similar to the following phase types: DB-5MS, RTx-5MS, HP-5MS, Ultra-2, BPX-5, MDN-5S, and CPSil-8CB/MS.

## PHAT Phase™ Capillary Columns

Our exclusive line of **PHAT** Phase™ thick film capillary columns yield increased retention and higher elution temperatures of low molecular weight analytes. **PHAT** Phase™ columns are available in 0.10mm I.D.'s with films up to 3.5µm up to 0.53mm I.D. columns with 18.0µm films.



4



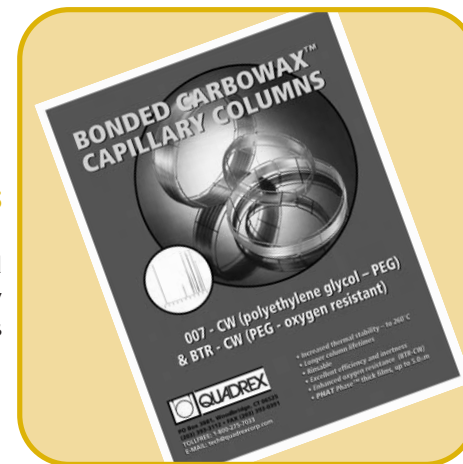
## PHAST GC™ Capillary Columns

Capillary columns with 0.10mm and 0.18mm I.D.'s offer high speed analyses where total elution times can be cut by up to 50% and more. Higher carrier gas velocities and high column efficiencies maintain excellent resolving power. Coupled with **PHAT** Phase™ thick films, these **PHAST GC™** columns offer higher sample capacities than normally-coated narrow bore columns.

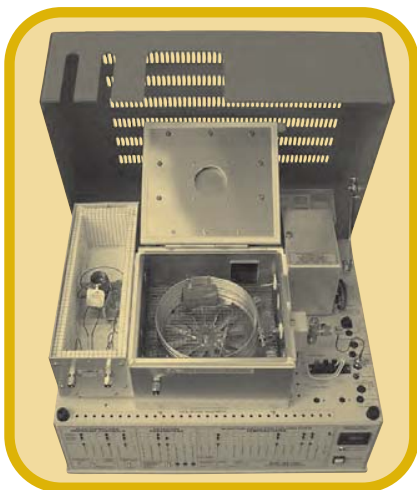
## BTR-CW (Bonded Carbowax™) Capillary Columns

Quadrex's BTR-CW columns are an oxygen-resistant version of our popular 007-CW, bonded polyethylene glycol (Carbowax™) phase. These moderately polar columns withstand oxygen degradation from an anti-oxidant moiety which has been incorporated into the stationary phase structure. BTR-CW columns are well suited for the analysis of solvents, flavors, perfumes and essential oils.

Carbowax™ is a trademark of the Union Carbide Corp.



## PORTABLE GAS CHROMATOGRAPHS FROM SRI INSTRUMENTS



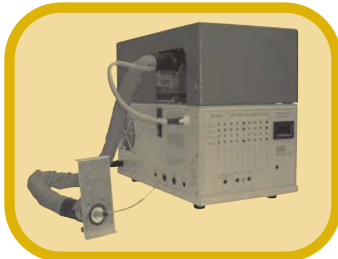
Quadrex offers the latest full-featured portable GCs from SRI Instruments. Choose from many detector and injector options to custom configure a GC, or select a popular pre-configured GC systems to perform almost any ASTM, EPA or custom GC method with the precision and accuracy demanded of full sized instruments. Simplified operation, easy troubleshooting, two year factory warranty, and low initial cost make the SRI portable GCs an ideal choice for your laboratory.

### Model 8610C GC - Power in a Portable Package

A full-featured, lab-quality portable gas chromatograph suited for either lab or field use. The 8610C can mount up to 4 detectors, 5 injectors, and a host of accessories yet is still small enough to ship UPS/FedEx or even carry as baggage!

### Model 310 GC - Tiny Footprint, Big Impact

The compact Model 310 GC provides chromatographers with the same power and performance as the 8610C but in a smaller package. Consider it when you want the smallest laboratory GC available and plan to inject using a syringe.



### Model 110 Stand-Alone Detectors

Upgrade or enhance your existing GC – no matter what brand – with a Model 110 stand-alone detector. The chassis can mount up to 4 detectors and connects to the host GC via a heated transfer line.

### Popular Pre-Configured Gas Chromatographs

SRI has pre-configured a number of GCs for many popular applications. In some cases, the pre-configured GCs are less expensive than the identical hardware assembled “a la carte.” All GCs include the easy-to-use PeakSimple data system.

### Model 202 and 203 PeakSimple Data Systems

Included with every SRI Gas Chromatograph with factory-installed detectors, or buy to enhance an existing GC system with stand-alone Model 203 (1-channel) or Model 202 (4-channel) Data Systems. PeakSimple’s software combines ease of use and powerful features; its intuitive graphical functions and features are so user-friendly, most operators can produce results fast, and without specific training. PeakSimple’s features are seldom found in other system software packages costing much more.



## PEAK SCIENTIFIC GAS GENERATOR SYSTEMS

Peak’s Hydrogen, Nitrogen and Zero-Air Generators produce the extreme high purity gases any critical GC or LC system requires – with greater stability and repeatability, eliminating cylinder-to-cylinder variations, and allowing you to run instruments 24/7 with confidence. All systems have an integral air compressor (where applicable), and are available in 110V and 220V systems. Includes full 1-year warranty!

# STATIONARY PHASE INFORMATION

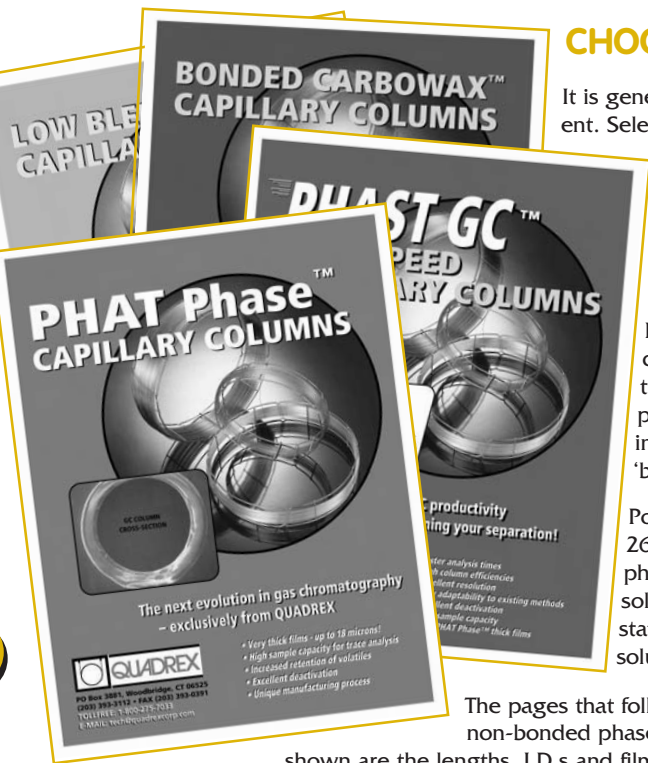
## CHOOSING A STATIONARY PHASE FOR YOUR APPLICATION

It is generally accepted that the terms 'selectivity' and 'polarity' denote stationary phase parameters which are quite different. Selectivity involves the interaction of solute molecules with the stationary phase. These interactions include dispersion, dipole and acid/base or hydrogen bond donors or acceptors.

Polarity describes those phases that contain substituted groups possessing permanent dipoles such as cyano, hydroxyl and carbonyl. Consequently, a stationary phase such as a dimethylpolysiloxane is non-polar but selective because dispersion interactions occur between the solute molecules and the stationary phase. Using these criteria, a phase containing cyanopropyl substituent groups is classified as selective, due to dipole interactions, and polar.

Non-polar phases such as our '007-1' (dimethylpolysiloxane) or '007-5' (5% phenyl methylpolysiloxane) offer two distinct advantages: they are quite stable and have a wide useful temperature range (-50° to 350°C); and, (all conditions being equal) columns coated with these phases exhibit higher efficiencies than columns coated with more polar phases. In addition, methyl substituted polysiloxanes are less susceptible to oxidation and hydrolysis than phases incorporating more polar functional groups. As a rule, non-polar stationary phases separate solutes according to their 'boiling points' and are useful for approximately 70% of all real-world applications.

Polar stationary phases display lower column efficiencies and have lower maximum operating temperatures (200° - 260°C). Additionally, they are more susceptible to oxidation and hydrolysis than non-polar stationary phases. Polar phases separate solutes through more complex solute/stationary phase interactions which may not correspond to solute 'boiling points'. Fatty acid methyl esters are an example of the type of components best separated with a polar stationary phase. Factors such as alkyl chain length and degree and position of unsaturation require multiple modes of solute/stationary phase interactions available only in a polar stationary phase.



6

The pages that follow describe each **QUADREX** stationary phase in detail and in increasing order of polarity. Listed are the traditional non-bonded phase equivalents and other manufacturers' bonded phase equivalents which correspond to each one of our phases. Also shown are the lengths, I.D.s and film thicknesses in which our columns are manufactured. Each phase type is characterized via a chromatogram of the comprehensive Grob test mix as well as by the Kovats retention index of the McReynolds probes. A comparison of the retention indices for a particular functional grouping on various phases provides a quick reference guide for characterizing and optimizing a particular separation.

### Reference Alkylate Standard

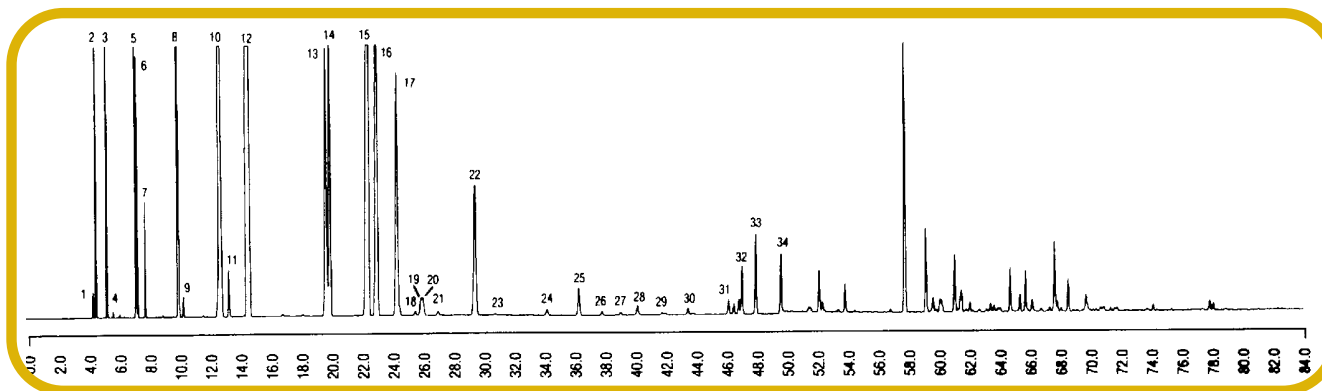
**COLUMN:** 007-1, Dimethylpolysiloxane  
50M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-1-50-0.5F

**Temperature:** 35° (30.0 min. hold) (2°/min.) -  
200°C hold

**Injector:** 200°C

**Detector:** 250°C, FID

**Carrier Gas:** 20.3 cm/sec., Helium



1. isobutane	5. 2,3-dimethylbutane	9. 2,2,3-trimethylbutane	13. 2,5-dimethylhexane and 2,2,3-trimethylpentane	16. 2,3,3-trimethylpentane	20. dimethylhexane	23. 2,2,4-trimethylhexane	27. 2,6-dimethylheptane	31. 2,4,6-trimethylhexane
2. butane	6. 2-methylpentane	10. 2,3-dimethylpentane	14. 2,4-dimethylhexane	17. 2,3-dimethylhexane	21. 3,4-dimethylhexane	24. 2,4,4-trimethylhexane	28. 2,5-dimethylheptane	32. unidentified trimethylhexane
3. isopentane	7. 3-methylpentane	11. 3-methylhexane	15. 2,3,4-trimethylpentane	18. 2-methylheptane	22. 2,2,5-trimethylhexane	25. 2,3,5-trimethylhexane	29. 2,3,4-trimethylhexane	33. unidentified trimethylhexane
4. pentane	8. 2,4-dimethylpentane	12. 2,2,4-trimethylpentane		19. 4-methylheptane and 3,4-		26. 2,4-dimethylheptane	30. 2,3-dimethylheptane	34. unidentified trimethylhexane





# MANUFACTURER EQUIVALENTS

The tables at the right show **QUADREX** Phase Types and their competitive equivalents. For more information on any of Quadrex's capillary columns, check our website: [www.quadrexcorp.com](http://www.quadrexcorp.com)



8

## Standard Bonded Stationary Phases

QUADREX	J&W	SUPELCO	H-P	RESTEK	CHROMPACK	ALLTECH	SGE
007-1	DB-1	SPB-1	HP-1	RTx-1	CPSil 5CB	AT-1	BP-1
007-5	DB-5	SPB-5	HP-5	RTx-5	CPSil 8CB	AT-5	BP-5
007-5MS	DB-5MS	MDN-5S	HP-5MS	RTx-5MS	CP-Sil8CB/MS		BPX-5
007-20		SPB-20		RTx-20		AT-20	
007-1301	DB-1301	SPB-1301	HP-1301	RTx-1301			
007-35	DB-35,35MS	SPB-35	HP-35	RTx-35		AT-35	BPX-35
007-1701	DB-1701	SPB-1701	HP-1701	RTx-1701	CPSil 19CB	AT-1701	BP-10
007-17	DB-17	SPB-50	HP-17, HP-50+	RTx-50	CPSil 24CB	AT-50	BPX-50
007-65HT				RTx-65	TAP		
007-225	DB-225	SP-2330	HP-225	RTx-225	CPSil 43CB	AT-225	BP-225
007-CW	DB-WAX	SUPELCOWAX 10	HP-INNOJ Wax	Stabilwax	CP-WAX 52CB	AT-WAX	BP-20
007-FFAP	DB-FFAP	NUKOL	HP-FFAP	Stabilwax-DA	CP-Wax 58CB	AT-1000	BP-21
007-23	DB-23	SP-2330, 2340		RTx-2330	CPSil 88CB	AT-SILAR	BPX-70
PLT-5A	GS-Molesieve			Rt-MSieve 13			

## Special-Use Bonded Phases

### Environmental

QUADREX	J&W	SUPELCO	H-P	RESTEK	CHROMPACK	ALLTECH	SGE
007-502	DB-624	VOCOL	HP-VOC	RTx-502.2		AT-624	BP-624
007-608	DB-608	SPB-608	HP-608	RTx-35	Pesticide		
007-624	DB-624	VOCOL	HP-624	RTx-Volatiles		AT-624	
007-DXN							

### Petrochemical

QUADREX	J&W	SUPELCO	H-P	RESTEK	CHROMPACK	ALLTECH	SGE
007-1-50-0.5F		PETROCOL DH 50.2	HP-PONA		SQUALANE		BP-1
007-1-100-0.5F	DB-PETRO100	PETROCOL DH	HP-PONA	Rtx-1PONA		AT-PETRO	
007-1-10V-1.0F	DB-2887	PETROCOL 2887	D2887		SimDist-CB	AT-2887	BPX1-SIMD
007-1-10V-5.0F		PETROCOL 3710	D3710			AT-3710	

### High Temperature

QUADREX	J&W	SUPELCO	H-P	RESTEK	CHROMPACK	ALLTECH	SGE
400-1HT	DB-1HT						
400-5HT	DB-5HT						HT5, HT8
007-50HT							
007-65HT				RTx-65HT	TAP-CB		

# CAPILLARY COLUMNS: 007-1

## 007-1 DIMETHYLPOLYSILOXANE

- Bonded and Crosslinked
- Excellent thermal stability
- Similar bonded phases: DB-1, DB-2887, DB-Petro, Rtx-1, Rtx-1PONA, Rtx-2887, HP-1, HP-PONA, Ultra-1, SPB-1, Petrocol DH, Petrocol 2887, CPSil-5CB, CP-SimDist-CB, AT-1, AT-Petro, BP-1, BP-1PONA
- Non polar
- Comparable to: SE-30, OV-1, OV-101

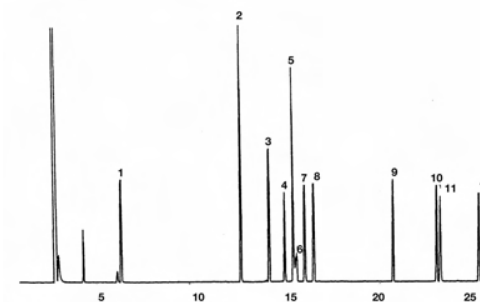
### GENERAL INFORMATION

The non-polar dimethylpolysiloxane phase (007-1), which separates compounds according to boiling point, is probably the most frequently used phase type in GC. Bonding and crosslinking this general purpose GC phase increases the resistance to degradation by rinsing, large solvent injections and the deposition of non-volatiles.

The 007-1 phase offers excellent efficiency and thermal stability. In addition, this non-polar phase is less susceptible to oxidation and hydrolysis than phases incorporating more polar functional groups.

### BONDED PHASE RETENTION INDEX

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-1	662.5	720	668.75	730	646.88



### Grob Quality Test Mix

**COLUMN:** 007-1, Dimethylpolysiloxane  
25M. x 0.25mm I.D. x 0.5µm film

**Cat. No.:** 007-1-25-0.5F

**Temperature:** 40° (6°/min.) - 210°  
(15°/min.) - 320°C

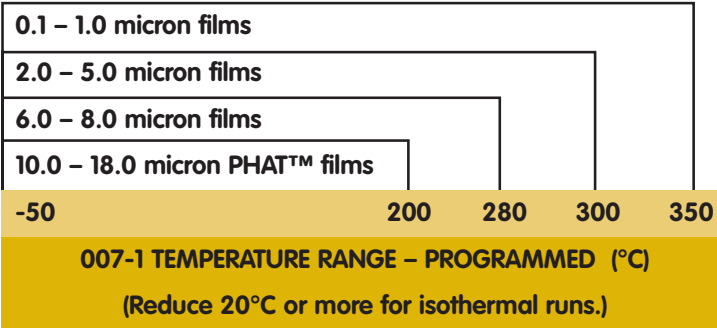
**Injector:** 225°C

**Detector:** 325°C, FID

**Carrier Gas:** 25 cm/sec., Helium

- |                       |                        |
|-----------------------|------------------------|
| 1. 2,3-butanediol     | 7. undecane            |
| 2. decane             | 8. 2,4-dimethylaniline |
| 3. 1-octanol          | 9. methyl decanoate    |
| 4. 2,6-dimethylphenol | 10. methyl undecanoate |
| 5. nonanal            | 11. dicyclohexylamine  |
| 6. ethylhexanoic acid | 12. methyl dodecanoate |

9



### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	10, 15, 20, 25	0.1, 0.25, (0.5 on 10, 15M. only)
0.18	10, 15, 20, 25, 30, 40, 50	0.1, 0.25, 0.5
0.25	12, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.33, 0.5, 1.0
0.32	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.33, 0.5, 0.52, 1.0 (2.0, 3.0, 4.0, 5.0 on 60M. or less)
0.53	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 0.88, 1.0, 2.0, 2.65 (3.0, 4.0, 5.0, 6.0, 7.0, 8.0 on 50M. or less)

### 007-1 APPLICATIONS ON THE WEB:

ASTM 2887 - REFERENCE GAS OIL  
ASTM 2887 - SIM DIS  
ASTM 3710 - QUALITATIVE CALIBRATION MIX  
DIESEL RANGE ORGANICS (DRO)  
EPA METHOD 551 - DISINFECTION BYPRODUCTS  
GASOLINE RANGE ORGANICS (GRO)  
ISOPARAFIN SOLVENTS  
P.I.A.N.O. MIX  
REFERENCE ALKYLATE STANDARD  
REFERENCE NAPHTHA STANDARD  
REFERENCE REFORMATE STANDARD  
SUPER UNLEADED GASOLINE



# CAPILLARY COLUMNS: 007-1 PHAT PHASE™

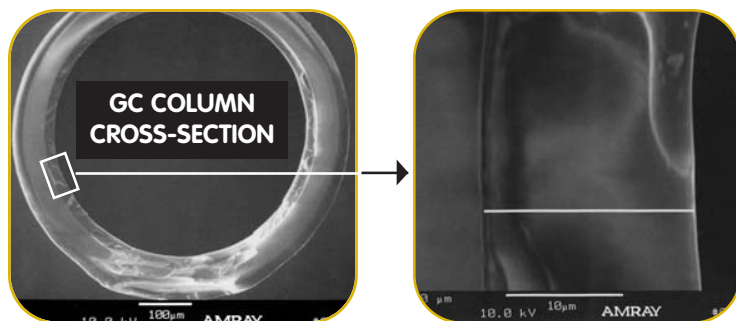


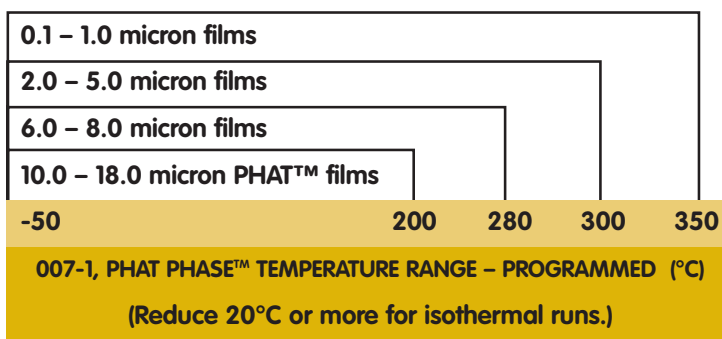
FIG. 1: 0.53mm ID

FIG. 2: 18.0µm 007-1 Phase

PHAT PHASE™ THICK FILM COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	10 & 20	1.0 & 3.5
0.18	15 & 30	1.0, 3.0, 5.0
0.25	10, 15, 25, 30	3.0, 5.0, 8.0
0.32	10, 15, 25, 30	8.0, 10.0, 12.0
0.53	10, 15, 25, 30	10.0, 12.0, 15.0, 18.0

10



## 007-1, PHAT PHASE™ APPLICATIONS ON THE WEB

ASTM D5441 - IMPURITIES IN MTBE  
BLOOD ALCOHOLS  
C1 TO C10 HYDROCARBONS  
C1 TO C5 HYDROCARBONS

ETHYLENE OXIDE  
ETHYLENE OXIDE  
L.M.W. AMINES  
OXYGENATES

OXYGENATES IN RF GASOLINE  
RESIDUAL SOLVENTS IN DRUGS

## 007-1 PHAT PHASE™ FUSED SILICA CAPILLARY COLUMNS

Advantages of PHAT Phase™ fused silica capillary columns include

- Greater sample size for trace analyses of very volatile compounds
- Increased retention of volatile compounds leading to higher elution temperatures

### GENERAL INFORMATION

GC analyses of gases and other types of low molecular weight compounds have been traditionally accomplished on packed columns with heavy loadings or adsorbent type columns. More recently, porous layer open tubular (PLOT) capillary columns have been utilized in the separation of low molecular weight applications despite the drawbacks in using these types of columns such as sample adsorption and bead migration within the column.

Attempts have been made to use 'thick filmed' wall coated open tubular (WCOT) capillary columns but the films have typically been confined to a maximum of 8.0 microns due to limitations in conventional column coating technology. While these 'traditional' thick film columns have been used for some for low molecular weight applications, they could not attain the separations and sample loadings that could be achieved on packed columns.

By employing our proprietary PHAT™ Phase coating technology, we are now able to reproducibly manufacture fused silica capillary columns having phase ratios comparable to heavily loaded packed columns. The PHAT Phase™ columns are available with 007-1, dimethylpolysiloxane and our 007-5, 5% phenyl methylpolysiloxane phases in lengths up to 30 meters. These PHAT Phase™ thick film capillary columns are ideal for low molecular weight analyses previously performed on packed columns.

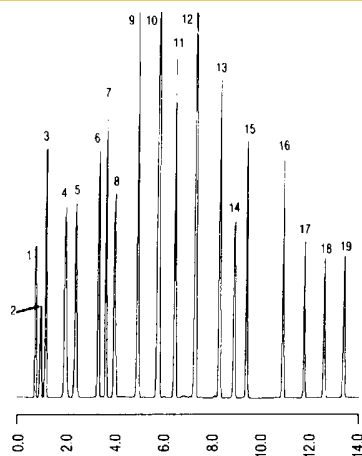
The two SEM photomicrographs to the left are of a 0.53mm I.D. fused silica column coated with 007-1 dimethylpolysiloxane PHAT Phase™. Figure 1 (at 142x magnification) clearly shows the internal diameter of the 0.53mm I.D. column and the thick film coated on the internal surface. Note the phase coating appears to be similar in thickness to the columns' outer polyimide coating, which is typically 15-20 microns. Figure 2 is an enlargement of the area circled in the upper photograph. At a magnification of 3,120 times, the exact measurement of 18.0 microns of the dimethylpolysiloxane PHAT Phase™ layer can be viewed. Application areas for these PHAT Phase™ columns include the analysis of natural gas, auto emissions, light hydrocarbon refinery cuts, amines, alcohols, free fatty acids, refrigerants, residual solvents and air pollutants as defined in the EPA TOC Methods.

The chromatograms listed at the lower left – which can be accessed in PDF format through the **QUADREX** website – show how the resulting PHAT Phase™ columns can be used to separate low molecular weight compounds not possible with fused silica columns coated with conventional films.

# CAPILLARY COLUMNS: 007-1, SPECIAL USE: PETROCHEMICAL

## 007-1 SPECIAL-USE: PETROCHEMICAL

Columns made of the 007-1 Bonded Dimethylpolysiloxane phase type separate by boiling point and are ideal for a wide range of petrochemical applications. The wide film thickness range that we have available (0.1 to 18.0µm) also makes this non-polar phase type perfect for this chemical class. Many columns of this type are used in a number of ASTM Methods and other typical petrochemical applications. Those listed below represent columns specifically configured for these analyses.

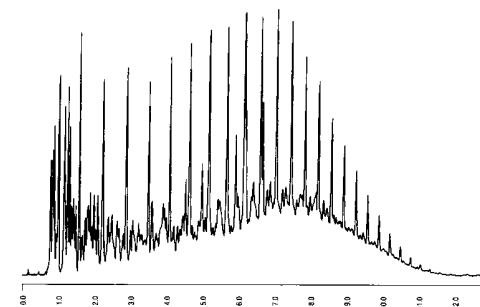


### Qualitative Calibration Mix - ASTM 3710

**COLUMN:** 007-1, Bonded Dimethylpolysiloxane  
10M. x 0.53mm I.D. x 5.0µm film  
**Cat. No.:** 007-1-10V-5.0F

**Temperature:** 10° (1.8 min. hold) (20°/min.) - 210°C hold  
**Injector:** 180°C  
**Detector:** 280°C, FID  
**Carrier Gas:** 10 ml/min., Helium

- |                    |                        |                  |
|--------------------|------------------------|------------------|
| 1. propane         | 8. 2,4-dimethylpentane | 15. butylbenzene |
| 2. 2-methylpropane | 9. heptane             | 16. dodecane     |
| 3. butane          | 10. toluene            | 17. tridecane    |
| 4. 2-methylbutane  | 11. octane             | 18. tetradecane  |
| 5. pentane         | 12. xylene             | 19. pentadecane  |
| 6. 2-methylpentane | 13. propylbenzene      |                  |
| 7. hexane          | 14. decane             |                  |



### Reference Gas Oil - ASTM 2887

**COLUMN:** 007-1, Dimethylpolysiloxane  
10M. x 0.53mm I.D. X 1.0µm film  
**Cat. No.:** 007-1-10V-1.0F

**Temperature:** 35° (25°/min.) - 320°C  
**Injector:** 300°C  
**Detector:** 350°C, FID  
**Carrier Gas:** 20 ml/min., Helium

11

0.1 – 1.0 micron films

2.0 – 5.0 micron films

6.0 – 8.0 micron films

10.0 – 18.0 micron PHAT™ films

-50

200 280 300 350

007-1, SPECIAL USE TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

### 007-1 SPECIAL USE: PETROCHEMICAL

COLUMN	LENGTH (M.)	I.D. (mm)	FILMS (µm)
007-2887	10M.	0.53mm	2.65µm
007-2887-1	10M.	0.53mm	1.0µm
007-SIMDIS	6M.	0.53mm	0.15µm
007-3710	10M.	0.53mm	5.0µm
007-DRO	10M.	0.53mm	1.0µm
007-GRO	10M.	0.53mm	3.0µm
007-1PETRO-50	50M.	0.25mm	0.5µm
007-1PETRO-100	100M.	0.25mm	0.5µm
007-SLFR	30M.	0.32mm	4.0µm

### 007-1 SPECIAL USE: PETROCHEMICAL APPLICATIONS ON THE WEB:

ASTM 2887 - REFERENCE GAS OIL  
ASTM 2887 - SIM DIS  
ASTM 3710 - QUALITATIVE CALIBRATION MIX  
DIESEL RANGE ORGANICS (DRO)  
EPA METHOD 551 - DISINFECTION BYPRODUCTS  
GASOLINE RANGE ORGANICS (GRO)  
ISOPARAFIN SOLVENTS  
P.I.A.N.O. MIX  
REFERENCE ALKYLATE STANDARD  
REFERENCE NAPHTHA STANDARD  
REFERENCE REFORMATE STANDARD  
SUPER UNLEADED GASOLINE

# CAPILLARY COLUMNS: 007-5

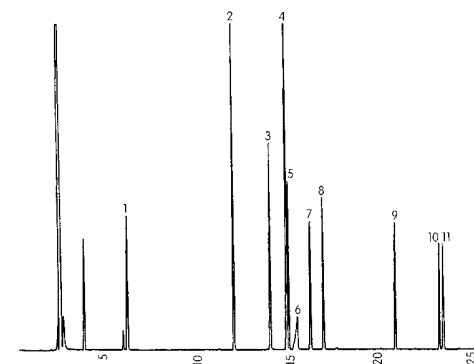
## 007-5 (5% Phenyl) Methylpolysiloxane

- Bonded and Crosslinked
- Excellent thermal stability
- Similar bonded phases: DB-5, DB-5.625, Rtx -5, HP-5, Ultra-2, SPB-5, CPSil-8CB, AT-5, BP-5
- Non polar
- Comparable to: SE-52, SE-54, OV-73

### General Information

The 007-5 is a 5% phenyl methylpolysiloxane polymer. Like the dimethylpolysiloxane phase 007-1, the 007-5 phase is a widely used general purpose GC phase ideal for a broad range of applications. The presence of the phenyl groups provides induced dipole interactions leading to degrees of increased retention for aromatic solutes. The 5% phenyl substitution causes a nominal increase in polarity; yet the 007-5 phase displays the attributes of a non-polar phase.

Our efforts to develop the new 007-5MS low bleed silphenylene polysiloxane phase discussed on page 14 has had the added beneficial side-effect of producing a superior 007-5 phase. Our refined 007-5 phase exhibits greatly improved column bleed to temperatures up to 310°C. As shown in Figure 1, a 30M. x 0.25mm I.D. x 0.25µm 007-5 column was programmed from 40°- 310°C at 10°/min. The GC/MS spectra indicates a bleed of less than 20,000 counts. Figure 2 exhibits the sensitivity of the improved 007-5 phase in the analysis of 1.3ppm of benzo (a) pyrene. Here the same column was programmed from 200° - 310°C at 10°/minute.



### Grob Quality Test Mix

**COLUMN:** 007-5, (5% Phenyl) methylpolysiloxane  
25M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-5-25-0.5F

**Temperature:** 40° (6°/min.) - 210° (15°/min.) - 320°C  
**Injector:** 225°C  
**Detector:** 325°C, FID  
**Carrier Gas:** 25 cm/sec., Helium

12

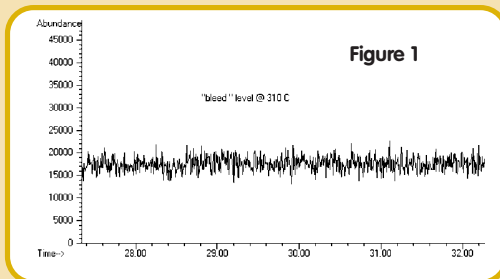


Figure 1

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-5	665.62	751.12	689.59	756.23	662.46

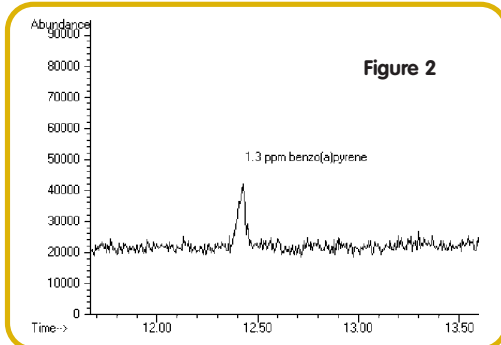


Figure 2

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	10, 15, 20, 25	0.1, 0.25, (0.5 on 10, 15M. only)
0.18	10, 15, 20, 25, 30, 40, 50	0.1, 0.25, 0.5
0.25	12, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.33, 0.5, 1.0
0.32	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.33, 0.5, 0.52, 1.0, 2.0, 3.0, 4.0, (5.0 on 60M. or less)
0.53	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 0.88, 1.0, 2.0, 2.65 (3.0, 4.0, 5.0, 6.0, 7.0, 8.0 on 50M. or less)



# CAPILLARY COLUMNS: 007-5, "PHAT PHASE"<sup>TM</sup>

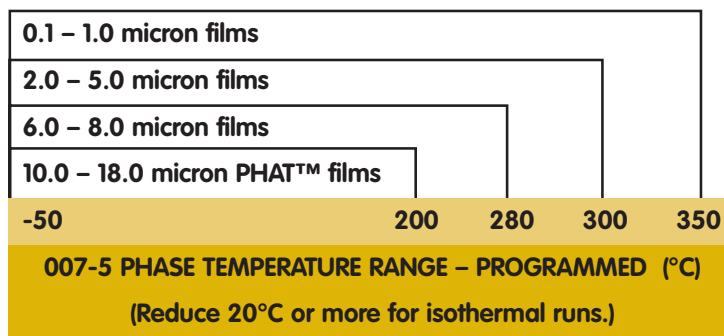
## 007-5, PHAT Phase<sup>TM</sup>

Advantages of PHAT PHASE<sup>TM</sup> fused silica capillary columns include

- Greater sample size for trace analyses of very volatile compounds
- Increased retention of volatile compounds leading to higher elution temperatures

Similar to the 007-1 PHAT<sup>TM</sup> Phase dimethyl-polysiloxane columns as noted on page 10, the 007-5, 5% phenyl methylpolysiloxane phase is available in very thick films as noted below.

Application areas for these PHAT Phase<sup>TM</sup> columns include the analysis of natural gas, auto emissions, light hydrocarbon refinery cuts, amines, alcohols, free fatty acids, refrigerants, residual solvents and air pollutants as defined in the EPA TOC Methods.



PHAT PHASE<sup>TM</sup> THICK FILM COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	10 & 20	1.0 & 3.5
0.18	15 & 30	1.0, 3.0, 5.0
0.25	10, 15, 25, 30	3.0, 5.0, 8.0
0.32	10, 15, 25, 30	8.0, 10.0, 12.0
0.53	10, 15, 25, 30	10.0, 12.0, 15.0, 18.0

### 007-5 PHASE APPLICATIONS ON THE WEB:

#2 FUEL OIL  
#4 FUEL OIL  
#5 FUEL OIL  
#6 FUEL OIL  
ACRYLATES  
ANABOLIC STEROIDS  
ANESTHETICS  
ANTICONVULSANT DRUGS  
ANTIDEPRESSANTS  
CORTICOSTEROIDS  
EPA METHOD 505 - ORGANOHALIDE PESTICIDES  
EPA METHOD 605 - PHENOLS  
EPA METHOD 625 - HAZARDOUS SUBSTANCES  
EPA METHOD 8140 - ORGANOPHOSPHOROUS PESTICIDES  
EPA METHOD 8270 - SEMI-VOLATILE ORGANICS  
EPA METHOD 8270 - SEMI-VOLATILE ORGANICS  
EPA METHOD 8270 - SEMI-VOLATILE ORGANICS  
EPA OIL ANALYSIS STANDARD  
GASOLINE - QUICK SCREEN  
MISA ACID EXTRACTABLES  
NATURAL GAS  
PEPPER' SPRAY  
PHENOXYACID ESTERS  
TESTOSTERONE DERIVATIVE STEROIDS

# CAPILLARY COLUMNS: 007-5MS

## 007-5MS Silphenylene Polysiloxane

- Bonded and Crosslinked
- Excellent thermal stability
- Ideal for GC/MS
- Similar bonded phases: DB-5MS, Rtx-5MS, Ultra-2, BPX-5, MDN-5S, CPSil-8CB/MS
- Non polar
- Low Bleed Characteristics
- Comparable to: SE-52, SE-54, OV-73

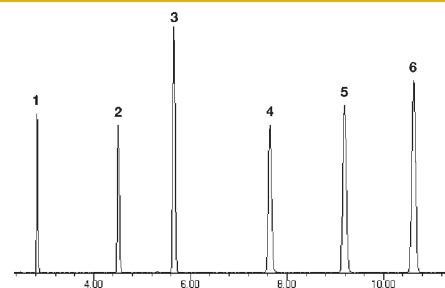
### General Information

The 007-5MS is a silphenylene/siloxane stationary phase designed for the GC-MS analysis of semi-volatile compounds such as those comprising EPA Methods 524.1, 524.2, 610, 625, 8100, and 8270. The silphenylene/siloxane chemistry ensures that the 007-5MS exhibits extremely low column 'bleed' as evidenced in Figure 2.

The 007-5MS columns are available in a variety of standard column configurations. Traditional polysiloxane-type GC stationary phases degrade at elevated temperatures. The degradation process is well documented and consists of the thermal rearrangement of the siloxane backbone to produce cyclic groups. These groups are volatile and elute from the column as column "bleed". The silphenylene units (Fig. 1) within the 007-5MS backbone act as heat sinks and limit the formation of the cyclic groups normally associated with polysiloxane degradation.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-5MS	675.24	745.5	688	770.78	660



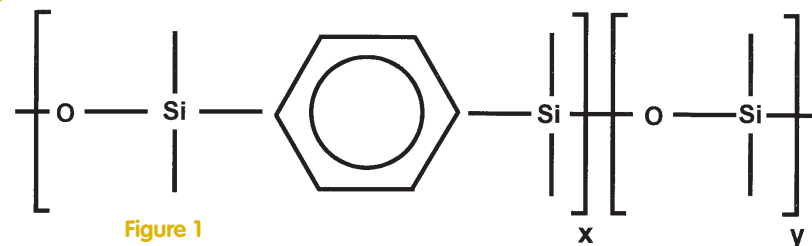
### Low Bleed Test Mix

**COLUMN:** 007-5MS, Silphenylene siloxane  
0.25mm I.D. x 0.5µm film  
Cat. No.: 007-5MS-30-0.5F

**Temperature:** 115°C Isothermal  
**Injector:** 225°C  
**Detector:** MSD, 300° Transfer Line  
**Carrier Gas:** 26 cm/sec., Helium

- |            |                        |
|------------|------------------------|
| 1. C10     | 4. 2,6-dimethylphenol  |
| 2. octanol | 5. 2,4-dimethylaniline |
| 3. C8 FAME | 6. naphthalene         |

14



0.1 – 1.0 micron films

-50

350

007-5MS TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

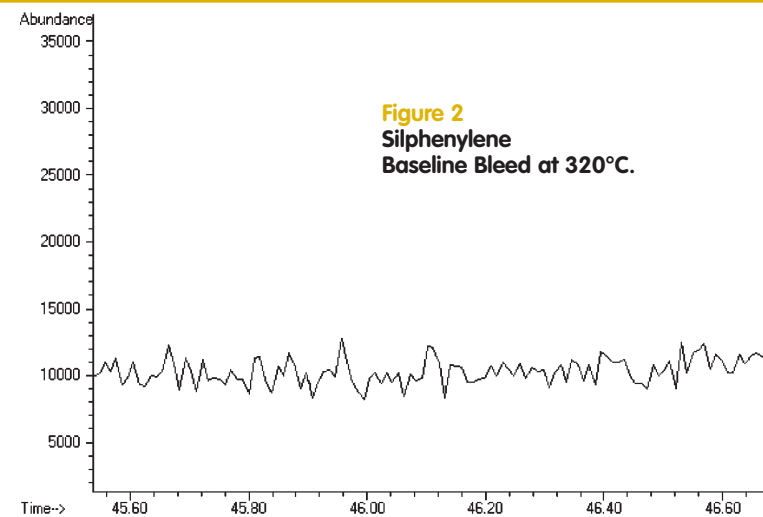
### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	10, 20	0.1, 0.25
0.18	10, 20, 40	0.1, 0.25
0.25	15, 25, 30, 50, 60	0.1, 0.25, 0.5, 1.0
0.32	15, 25, 30, 50, 60	0.1, 0.25, 0.5, 1.0
0.53	10, 15, 25, 30, 50	0.1, 0.25, 0.5, 1.0

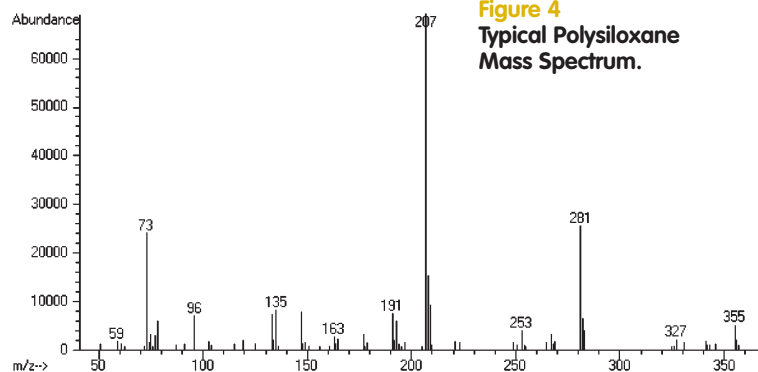
The 007-5MS silphenylene columns offer the chromatographer a number of advantages:

- Greater thermal stability
- Greater resistance to oxygen degradation
- Fast ramping to elevated temperatures to purge the column of residual components
- Improved analysis of trace level compounds
- Less baseline bleed equals less baseline noise, which results in lower detection limits
- Increased column lifetimes
- Reduced contamination of MS sources and other GC detector surfaces
- “Cleaner” mass spectra...mass spectra with fewer extraneous ions enables the analyst to achieve more accurate compound identification and a more efficient library search

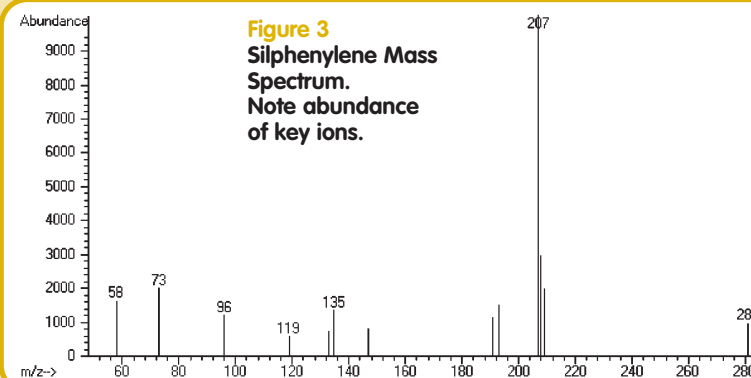
A typical 007-5MS baseline bleed is shown in Figure 2. The mass spectrum of the baseline bleed is shown in Figure 3. While typical methylpolysiloxane bleed spectrum yields high abundances of ions with  $m/z$  207, 281, and 355 (Figure 4), the mass spectrum of the 007-5MS silphenylene column yields significantly lower abundance of these ions. Additionally, it is apparent from Figure 3 that there is a reduction in the total number of ions resulting in “cleaner” spectrum and less background interference.



**Figure 2**  
Silphenylene  
Baseline Bleed at 320°C.



**Figure 4**  
Typical Polysiloxane  
Mass Spectrum.



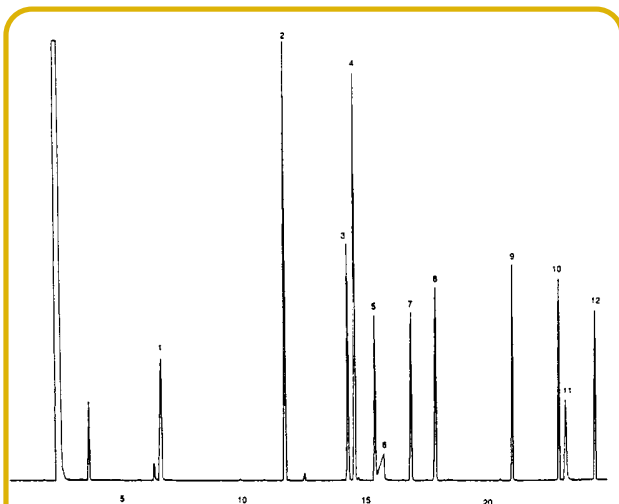
**Figure 3**  
Silphenylene Mass  
Spectrum.  
Note abundance  
of key ions.

#### 007-5MS APPLICATIONS ON THE WEB

AVIATION FUEL - JET A  
CHIMNEY CREOSOTE  
DIOXINS - 5PPM  
PESTICIDES  
SYNTHETIC FRAGRANCE MIX



# CAPILLARY COLUMNS: 007-10, 007-20



## Grob Quality Test Mix

**COLUMN:** 007-10, (10% Phenyl) methylpolysiloxane  
25M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-10-25-0.5F

**Temperature:** 40° (6°/min.) - 160° (15°/min.) - 280°C  
**Injector:** 225°C  
**Detector:** 300°C, FID  
**Carrier Gas:** 25 cm/sec., Helium

16

## 007-10, 007-20, (10% & 20% Phenyl) Methylpolysiloxane

- Bonded and Crosslinked
- Comparable to: OV-3, OV-7
- Similar bonded phases: Rtx-20, SPB-20, AT-20

### General Information

The 007-10 and 007-20 are (10% phenyl) and (20% phenyl) substitutions, respectively, for two low polarity phenyl methylpolysiloxane phases. The phenyl substitutions contribute to the “induced dipole” selectivity of these phases. A column coated with either phase displays excellent efficiency and thermal stability. These phases provide an excellent alternative for drug and environmental pollutant analyses where greater retention of aromatic compounds is necessary.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-10	702.35	794.14	697.10	757.18	669.35
007-20	697.66	784.037	10.65	784.03	675.23

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	15, 25	0.1, 0.25, (0.5 on 15M. only)
0.18	15, 25, 30, 50	0.1, 0.25, (0.5 on 30M. or less)
0.25	12, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.33, 0.5, 1.0
0.32	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.33, 0.5, 0.52, 1.0, (2.0,3.0,4.0 5.0 on 60M. or less)
0.53	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 0.88, 1.0, 2.0, 2.65 (3.0, 4.0, 5.0, 6.0, 7.0, 8.0 on 50M. or less)

0.1 – 1.0 micron films

2.0 – 5.0 micron films

6.0 – 8.0 micron films

-50 260 280 300

007-10, -20 TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

# CAPILLARY COLUMNS: 007-502, 007-608, 007-624

## 007-502, 007-608, 007-624 Cyanopropylphenyl Methylpolysiloxane

- Bonded and Crosslinked
- Ideal for volatile organic compound analyses
- Similar bonded phases: DB-624, Rtx-502, DB-608, SPB-608, Rtx-35, VOCOL, Rtx-Volatiles, Rtx-624, AT-624, BP-624, CPSil-13CB

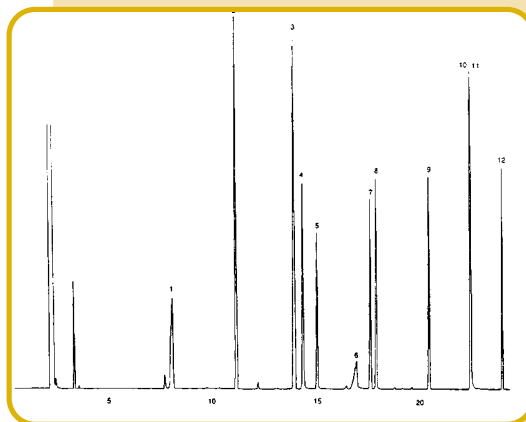
### General Information

007-502, 007-608, and 007-624 are three slightly different versions of cyanopropylphenyl substitutions on a methylpolysiloxane phase backbone. These phases have been specifically designed for difficult environmental analyses, such as volatile organic compounds and pesticides as specified in many EPA Methods including 502.1, 502.2, 503.1, 524.1, 524.2, 601, 602, 608, 624, 8010, 8011, 8015, 8020, 8240, and 8260. By using 007-502 and 007-624 phase types on 0.53mm I.D. columns, the entire range of volatile compounds, including gases, can be analyzed beginning at ambient temperatures. Some of the most often requested "environmental" columns are of the 007-624 phase-type, in the following configurations:

- 30M. x 0.32mm I.D. x 3.0 micron film (007-624-30W-3.0F)
- 30M. x 0.53mm I.D. x 3.0 micron film (007-624-30V-3.0F)
- 30M. x 0.25mm I.D. x 1.5 micron film (007-624-30-1.5F)
- 30M. x 0.25mm I.D. x 2.0 micron film (007-624-30-2.0F)

#### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.25	30, 50	1.0, 2.0
0.32	30, 50	3.0, 5.0
0.53	15, 30, 50, 60, 75, 105	0.8, 1.0, 2.0, 2.5, 3.0, 5.0



### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-624	684.05	881.36	724.27	793.53	707.78

### Grob Quality Test Mix

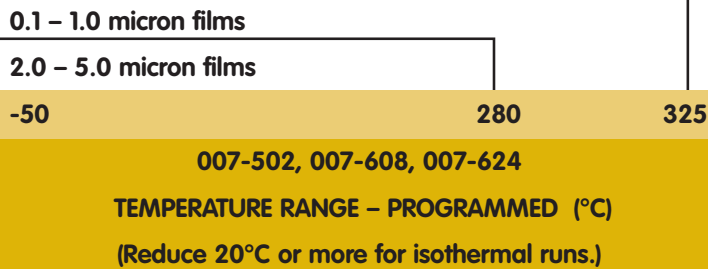
**COLUMN:** 007-624, Cyanopropylphenyl methylpolysiloxane  
25M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-624-25-0.5F

**Temperature:** 40° (6°/min.)  
- 160° (15°/min.) - 260°C

**Injector:** 225°C  
**Detector:** 300°C, FID

**Carrier Gas:** 25 cm/sec., Helium

- |                       |                        |
|-----------------------|------------------------|
| 1. 2,3-butanediol     | 7. 2,6-dimethylphenol  |
| 2. decane             | 8. 2,4-dimethylaniline |
| 3. nonanal            | 9. methyl decanoate    |
| 4. undecane           | 10. methyl undecanoate |
| 5. 1-octanol          | 11. dicyclohexylamine  |
| 6. ethylhexanoic acid | 12. methyl dodecanoate |



### 007-502/608/624 APPLICATIONS ON THE WEB

EPA METHOD 502 - DRINKING WATER  
DDT ISOMERS  
EPA METHOD 608 - PESTICIDES  
HERBICIDES  
EPA METHOD 524.2 - DRINKING WATER  
EPA METHOD 601  
EPA METHOD 601 - GASES  
EPA METHOD 601 STANDARDS  
EPA METHOD 624 - PURGE AND TRAP  
RESIDUAL SOLVENTS IN DRUGS

# CAPILLARY COLUMNS: 007-1301

## 007-1301 (6% Cyanopropylphenyl) Methylpolysiloxane

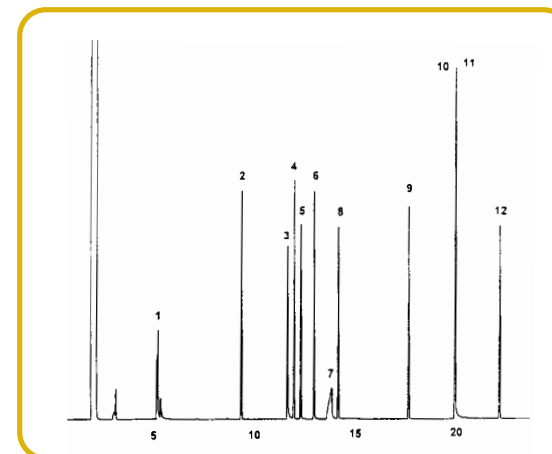
- Bonded and Crosslinked
- Excellent thermal stability
- Similar bonded phases: DB-1301, Rtx -1301, HP-1301, SPB-1301
- Moderately polar
- Comparable to: OV-1301

### General Information

007-1301 is a (6% cyanopropylphenyl) methylpolysiloxane phase. Overall, 007-1301 is a low polarity phase which exhibits excellent thermal stability. The cyanopropyl (permanent dipole) and the phenyl (polarizable) substituents provide a specific selectivity for polar and polarizable compounds. More of a boiling point phase than 007-1701 (14% cyanopropyl phenyl methylpolysiloxane), the 007-1301 exhibits less retention of polyaromatic compounds than 007-17 (50% phenyl methylpolysiloxane). Nitrogen-containing herbicides, various types of pesticides, drugs and other heteroatom-containing compounds are good candidates for separation using this phase. As part of the 007 Series of bonded phases, the 007-1301 can withstand large solvent injections and rinsing to remove insoluble impurities.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-1301	660	780	720	790	708



### Grob Quality Test Mix

**COLUMN:** 007-1301, (6% Cyanopropylphenyl) methylpolysiloxane  
30M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-1301-30-0.5F

**Temperature:** 60° (6°/min.) - 250°C  
**Injector:** 220°C  
**Detector:** 300°C, FID  
**Carrier Gas:** 30 cm/sec., Helium

- |                   |                         |
|-------------------|-------------------------|
| 1. 2,3-butanediol | 7. 2-ethylhexanoic acid |
| 2. decane         | 8. dimethylaniline      |
| 3. octanol        | 9. methyl decanoate     |
| 4. undecane       | 10. methyl undecanoate  |
| 5. nonanal        | 11. dicyclohexylamine   |
| 6. dimethylphenol | 12. methyl dodecanoate  |

18

### 007-1301 APPLICATIONS ON THE WEB

EPA METHOD 606 - PHTHALATE ESTERS  
TOXIC SUBSTANCES MIX II

#### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	10, 15, 25	0.1, 0.25
0.18	15, 25, 30, 50	0.1, 0.25, 0.5
0.25	15, 25, 30, 50, 60	0.1, 0.25, 0.5
0.32	10, 15, 25, 30, 50, 60	0.1, 0.25, 0.5
0.53	10, 15, 25, 30, 50, 60	0.1, 0.25, 0.5, 1.0

#### 0.1 – 1.0 micron films

-30

320

007-1301 TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)



# CAPILLARY COLUMNS: 007-35

## 007-35, (35% Phenyl) Methylpolysiloxane

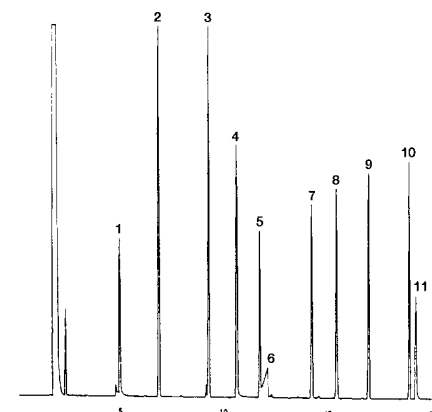
- Bonded and Crosslinked
- Comparable to: OV-11
- Similar bonded phases: DB-35, Rtx-35, SPB-35, AT-35, HP-35, BPX-35

### General Information

007-35 is the Quadrex designation for a (35% phenyl) methylpolysiloxane phase. This phase is a compromise between 007-20 and 007-17 in phenyl content. It is a popular phase for drug and pesticide/herbicide analyses; and like the entire series of phenyl-substituted phases, columns coated with the 007-35 can be rinsed to remove non-volatile and high boiling contaminants.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-35	751.49	879.77	772.34	876.34	739.57



### Grob Quality Test Mix

**COLUMN:** 007-35, (35% Phenyl) methylpolysiloxane  
25M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-35-25-0.5F

**Temperature:** 60° (6°/min.) - 160° (15°/min.) - 280°C

**Injector:** 225°C

**Detector:** 300°C, FID

**Carrier Gas:** 25 cm/sec, Helium

- |                       |                        |
|-----------------------|------------------------|
| 1. 2,3-butanediol     | 7. 2,4-dimethylaniline |
| 2. decane             | 8. 2,6-dimethylphenol  |
| 3. undecane           | 9. methyl decanoate    |
| 4. 1-octanol          | 10. methyl undecanoate |
| 5. nonanal            | 11. dicyclohexylamine  |
| 6. ethylhexanoic acid | 12. methyl dodecanoate |

19

0.1 – 1.0 micron films

2.0 – 5.0 micron films

6.0 – 8.0 micron films

-50

260 280 300

007-35 TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	15, 25	0.1, 0.25, (0.5 on 15M. only)
0.18	15, 25, 30, 50	0.1, 0.25, (0.5 on 30M. or less)
0.25	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.33, 0.5, 1.0
0.32	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.33, 0.5, 0.52, 1.0 (2.0, 3.0, 4.0, 5.0 on 60M. or less)
0.53	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 0.88, 1.0, 2.0, 2.65 (3.0, 4.0, 5.0, 6.0, 7.0, 8.0 on 50M. or less)

### 007-35 APPLICATIONS ON THE WEB

EPA METHOD 515 - HERBICIDES  
EPA METHOD 606 - PHTHALATE ESTERS  
TOXIC SUBSTANCES MIX II

# CAPILLARY COLUMNS: 007-1701

## 007-1701 (14% Cyanopropylphenyl) Methylpolysiloxane

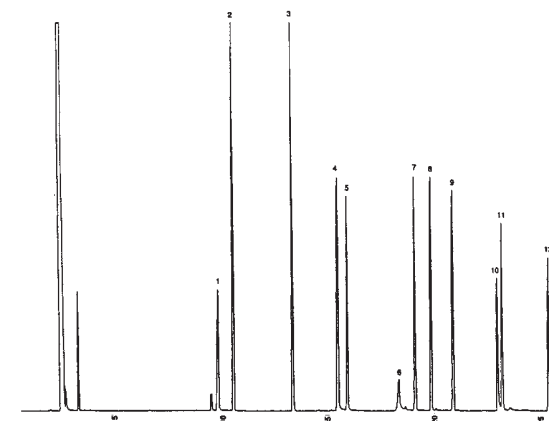
- Bonded and Crosslinked
- Moderately Polar
- Comparable to: OV-1701
- Similar bonded phases: DB-1701, Rtx-1701, SPB-1701, AT-1701, BP-10, CPSil-19CB

### General Information

007-1701 is a (14% cyanopropylphenyl) methylpolysiloxane phase. The cyanopropyl functional groups provide a permanent dipole selectivity different from the induced dipole interactions of the phenyl groups. The overall "polarity" of this phase remains nominal when compared to the more highly cyanopropyl substituted phases such as 007-225 and 007-23. The 007-1701 phase is often used for solvents, pharmaceuticals, derivatized sugars and many environmental applications.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-1701	725.81	882.76	774.19	848.28	764.52



### Grob Quality Test Mix

**COLUMN:** 007-1701, (14% Cyanopropylphenyl) methylpolysiloxane  
25M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-1701-25-0.5F

**Temperature:** 40° (6°/min.) - 210° (15°/min.) - 270°C

**Injector:** 225°C

**Detector:** 325°C, FID

**Carrier Gas:** 25 cm/sec., Helium

- |                       |                        |
|-----------------------|------------------------|
| 1. 2,3-butanediol     | 7. 2,6-dimethylphenol  |
| 2. decane             | 8. 2,4-dimethylaniline |
| 3. undecane           | 9. methyl decanoate    |
| 4. 1-octanol          | 10. dicyclohexylamine  |
| 5. nonanal            | 11. methyl undecanoate |
| 6. ethylhexanoic acid | 12. methyl dodecanoate |

20

### 007-1701 APPLICATIONS ON THE WEB

DRUG MIX  
NITROAROMATICS

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	15, 25	0.1, 0.25, (0.5 on 15M. only)
0.18	15, 25, 30, 50	0.1, 0.25, 0.5
0.25	15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0
0.32	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0, 2.0, 3.0
0.53	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0, 2.0, 3.0

0.1 – 1.0 micron films

2.0 – 3.0 micron films

-20

260

280

007-1701 TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

# CAPILLARY COLUMNS: 007-17

## 007-17 (50% Phenyl) Methylpolysiloxane

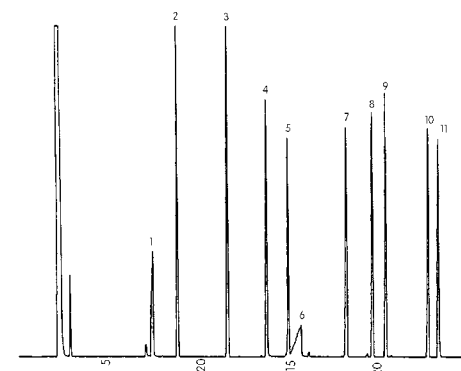
- Bonded and Crosslinked
- Medium Polarity
- Comparable to: OV-17
- Similar bonded phases: DB-17, HP-17, HP-50+, Rtx-50, SP-2250, SPB-50, AT-50, CPSil-20CB

### General Information

007-17 is a (50% phenyl) methylpolysiloxane phase. The presence of the 50% phenyl groups increases the overall “polarity” of the phase and enhances the selectivity of induced dipole interactions resulting in greater retention of aromatic solutes. The 007-17 phase is widely used as an EPA Method confirmation column and provides for efficient separations of PAH's, and biomedical samples such as drugs, sugars and steroids.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-17	780.95	920	800	925	721



### Grob Quality Test Mix

**COLUMN:** 007-17, (50% Phenyl) methylpolysiloxane  
25M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-17-25-0.5F

**Temperature:** 40° (6°/min.) - 210° (15°/min.) - 280°C

**Injector:** 225°C

**Detector:** 325°C, FID

**Carrier Gas:** 25 cm/sec., Helium

- |                       |                        |
|-----------------------|------------------------|
| 1. 2,3-butanediol     | 7. 2,4-dimethylaniline |
| 2. decane             | 8. methyl decanoate    |
| 3. undecane           | 9. 2,6-dimethylphenol  |
| 4. 1-octanol          | 10. methyl undecanoate |
| 5. nonanal            | 11. dicyclohexylamine  |
| 6. ethylhexanoic acid | 12. methyl dodecanoate |

21

0.1 – 1.0 micron films

2.0 – 3.0 micron films

40

300

325

007-17 TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	15, 25	0.1, 0.25, (0.5 on 15M. only)
0.18	15, 25, 30, 50	0.1, 0.25, 0.5
0.25	15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.33, 0.5, 1.0
0.32	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 0.52, 1.0, 2.0, 3.0
0.53	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0 (2.0, 3.0 on 50M. or less)

### 007-17 APPLICATIONS ON THE WEB

EPA METHOD 507 - PESTICIDES/HERBICIDES  
TRICYCLIC ANTIDEPRESSANTS



# CAPILLARY COLUMNS: 007-65HT, SPECIAL USE: TRIGLYCERIDES

## 007-65HT, SPECIAL USE TRIGLYCERIDES (65% Phenyl) Methylpolysiloxane

- Bonded and Crosslinked
- Excellent thermal stability
- Similar bonded phases: Rtx-65HT, TAP-CB
- Moderately “polar”
- Comparable to: No equivalent

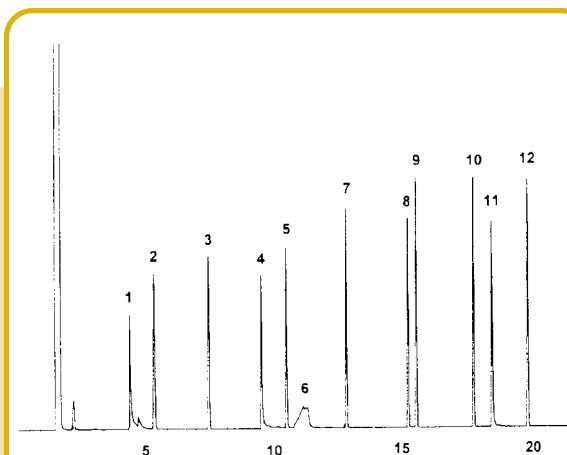
### General Information

The 007-65HT phase represents a 65% phenyl methylpolysiloxane phase composition. It is a companion phase to the 007-17 (50% phenyl methylpolysiloxane), but the additional 15% phenyl substitution provides greater selectivity toward compounds exhibiting induced dipole effects. This enhanced selectivity is most evident in the analysis of triglycerides where the resolution is “fine tuned” over that of the 50% phenyl substitution. Examples of the improved resolution of the 007-65HT columns can be seen by following the CHROMATOGRAMS link on our website, under the TRIGLYCERIDE section.

Columns produced with the 007-65HT phase possess excellent thermal stability and can be used routinely for high temperature analyses.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-65HT	750	950	820	850	760



### Grob Quality Test Mix

**COLUMN:** 007-65HT, (65% Phenyl) methylpolysiloxane  
30M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-65HT-30-0.5F

**Temperature:** 50° (1 min. hold) (6°/min.) - 220°C

**Injector:** 220°C

**Detector:** 300°C, FID

**Carrier Gas:** 30 cm/sec., Helium

- |                         |                        |
|-------------------------|------------------------|
| 1. 2,3-butanediol       | 7. dimethylphenol      |
| 2. decane               | 8. dimethylaniline     |
| 3. undecane             | 9. methyl decanoate    |
| 4. octanol              | 10. methyl undecanoate |
| 5. nonanal              | 11. dicyclohexylamine  |
| 6. 2-ethylhexanoic acid | 12. methyl dodecanoate |

22

### 007-65HT APPLICATIONS ON THE WEB

BUTTER TRIGLYCERIDES  
CANOLA OIL  
COCOA BUTTER  
COCONUT OIL  
CORN OIL  
ITALIAN OLIVE OIL  
PALM OIL  
SAFFLOWER OIL

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.25	15, 25, 30, 50, 60,	0.1, 0.25

0.1 – 0.25 micron films

40

390

007-65HT TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

# CAPILLARY COLUMNS: 007-225

## 007-225 (50% Cyanopropylphenyl) Methylpolysiloxane

- Bonded and Crosslinked
- Moderately polar
- Comparable to: OV-225
- Similar bonded phases: DB-225, Rtx -225, AT-225, SP-2300, BP-225, CPSil-43CB

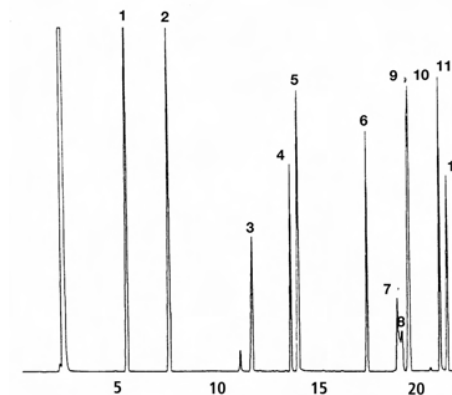
### General Information

007-225 is a (50% cyanopropylphenyl) methylpolysiloxane. This phase possesses both permanent dipole interactions (nitrile) as well as induced dipole (phenyl) and dispersion interactions. It has unique selectivity for derivatized compounds such as fatty acids and carbohydrates. Non-volatile residues can be rinsed from the column to restore column performance.

Quadrex 007-225 columns have been cited in a number of estrogen assay methods. The most commonly used 007-225 column configuration is the 15M x 0.25mm x 0.25µm film, #007-225-15-0.25F.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-225	866.42	1126.44	916.18	1064.98	927.94



### Grob Quality Test Mix

**COLUMN:** 007-225, (50% Cyanopropylphenyl) methylpolysiloxane  
30M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-225-30-0.5F

**Temperature:** 40° (6°/min.)  
- 150° (15°/min.) - 250°C

**Injector:** 225°C

**Detector:** 300°C, FID

**Carrier Gas:** 25 cm/sec., Helium

- |                     |                         |
|---------------------|-------------------------|
| 1. decane           | 7. dicyclohexylamine    |
| 2. undecane         | 8. 2-ethylhexanoic acid |
| 3. 2,3-butanediol   | 9. methyl undecanoate   |
| 4. octanol          | 10. 2,6-dimethylphenol  |
| 5. nonanal          | 11. 2,4-dimethylaniline |
| 6. methyl decanoate | 12. methyl dodecanoate  |

23

0.1 – 1.0 micron films

2.0 - 3.0 micron films

40

220 240

007-225 TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	15, 25	0.1, 0.25
0.18	15, 25, 30, 50	0.1, 0.25, 0.5
0.25	15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0
0.32	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0
0.53	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0, 1.2, 2.0, 3.0

# CAPILLARY COLUMNS: 007-CW

## 007-CW Polyethylene Glycol (PEG) Polymer

- Bonded and Crosslinked
- Moderately polar
- Comparable to: Carbowax 20M\*
- Similar bonded phases: DB-Wax, Stabilwax, AT-Wax, HP-20M, HP-Innowax, Supelcowax-10, BP-20, CPWax-52CB

### General Information

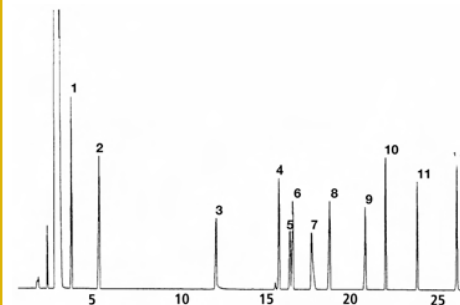
007-CW is a polyethylene glycol (PEG) phase. This polymer can be used to separate compounds at temperatures not normally associated with polyethylene glycol (Carbowax™) phases. Both the lower and upper temperature limits of traditional Carbowax type columns are extended with the 007-CW phase.

The hydrogen bonding interactions of the 007-CW phase makes it well suited for the analysis of polar compounds such as solvents, perfumes, flavors, and essential oils. This phase is not recommended for the analysis of mixtures containing silylating reagents.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-CW	923.30	1214.35	923.30	1205.08	1137.80

\* Carbowax is a trademark of Union Carbide Corporation.



### Grob Quality Test Mix

**COLUMN:** 007-CW, Polyethylene glycol (PEG) polymer  
30M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-CW-30-0.5F

**Temperature:** 40° (6°/min.) - 250°C  
**Injector:** 225°C  
**Detector:** 280°C, FID  
**Carrier Gas:** 25 cm/sec., Helium

- |                     |                          |
|---------------------|--------------------------|
| 1. decane           | 7. dicyclohexylamine     |
| 2. undecane         | 8. methyl undecanoate    |
| 3. nonanal          | 9. methyl dodecanoate    |
| 4. octanol          | 10. 2,6-dimethylaniline  |
| 5. 2,3-butanediol   | 11. 2-ethylhexanoic acid |
| 6. methyl decanoate | 12. 2,4-dimethylphenol   |

24

### 007-CW APPLICATIONS ON THE WEB

AROMATICS IN RF GASOLINE  
BTX  
FAME MIX  
METHYL ESTERS OF SUNFLOWER OIL  
PEPPERMINT OIL  
REFORMULATED (RF) GASOLINE  
SOLVENT MIXTURE  
YLANG YLANG ESSENTIAL OIL

### STAINLESS STEEL

BTX  
L.M.W. FREE FATTY ACIDS  
RESIDUE SOLVENTS IN PAINT

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	15, 25	0.1, 0.25
0.18	15, 25, 30, 50	0.1, 0.25, 0.5
0.25	15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, (1.0 on 60M. or less)
0.32	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0, (2.0, 3.0 on 50M. or less)
0.53	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0, 2.0, 3.0, (4.0, 5.0 on 30M. or less)

### 0.1 – 1.0 micron films

### 2.0 – 5.0 micron films

20

240

280

### 007-CW TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

# CAPILLARY COLUMNS: BTR-CW

## BTR-CW Oxygen Resistant Polyethylene Glycol (PEG)

- Bonded and Crosslinked
- Excellent oxygen resistance
- Similar bonded phases: DB-Wax, Stabilwax, AT-Wax, HP-20M, HP-Innowax, Supelcowax-10, BP-20, CPWax-52CB
- Moderately polar
- Comparable to: Carbowax 20M\*

### General Information

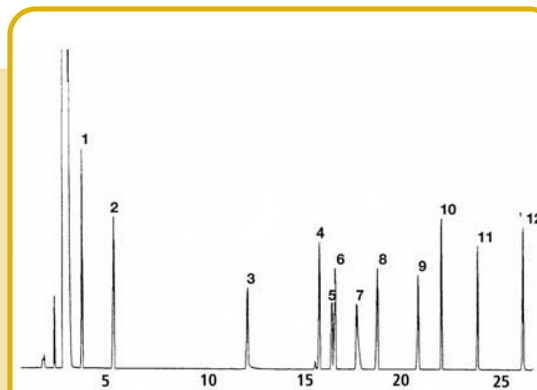
Traditional Carbowax 20M and bondable PEG columns deteriorate in the presence of oxygen. It has been necessary, therefore, to maintain an oxygen-free chromatographic system. To avoid the costs of maintaining such a system and to improve the chromatographic properties of the PEG column, we offer the BTR-CW phase. The BTR-CW is a polyethylene glycol (PEG) phase, similar to our 007-CW phase, which incorporates an anti-oxidant moiety to better withstand oxygen degradation. The BTR-CW phase also offers increased thermal stability and longer column lifetimes.

BTR-CW can be used to separate compounds at temperatures not normally associated with polyethylene glycol (Carbowax™) phases. Both the lower and upper temperature limits of traditional Carbowax type columns are extended with this phase. As with the 007-CW phase, the BTR-CW phase is well suited for the analysis of polar compounds such as solvents, flavors, perfumes, and essential oils. BTR-CW is not recommended for the analysis of mixtures containing silylating reagents.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
BTR-CW	967.80	1218.58	1005.78	1205.75	1150.69

\* Carbowax is a trademark of Union Carbide Corporation.



### Grob Quality Test Mix

**COLUMN:** BTR-CW,  
Polyethylene glycol (PEG) polymer  
30M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: BTR-CW-30-0.5F

**Temperature:** 40° (6°/min.) - 250°C  
**Injector:** 225°C  
**Detector:** 280°C, FID  
**Carrier Gas:** 25 cm/sec., Helium

- |                     |                          |
|---------------------|--------------------------|
| 1. decane           | 7. dicyclohexylamine     |
| 2. undecane         | 8. methyl undecanoate    |
| 3. nonanal          | 9. methyl dodecanoate    |
| 4. octanol          | 10. 2,6-dimethylaniline  |
| 5. 2,3-butanediol   | 11. 2-ethylhexanoic acid |
| 6. methyl decanoate | 12. 2,4-dimethylphenol   |

25

0.1 – 1.0 micron films

2.0 – 5.0 micron films

20

240

280

BTR-CW TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	15, 25	0.1, 0.25
0.18	15, 25, 30, 50	0.1, 0.25, 0.5
0.25	15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, (1.0 on 60M. or less)
0.32	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0 (2.0, 3.0 on 50M. or less)
0.53	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0, 2.0, 3.0 (4.0, 5.0 on 30M. or less)

### BTR-CW APPLICATIONS ON THE WEB

BTR-CW	
ALCOHOLS	64
ALDEHYDES	64
CELERY SEED OIL	65
NITROSAMINES	58
PUFA 2 - ANIMAL SOURCE	62



# CAPILLARY COLUMNS: 007-FFAP

## 007-FFAP, Nitroterephthalic acid modified Polyethylene Glycol (PEG)

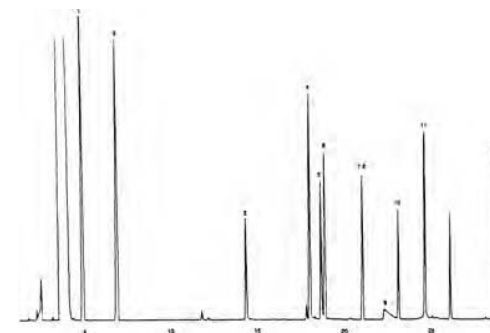
- Bonded
- Moderately polar
- Comparable to: FFAP, OV-351, SP-1000
- Similar bonded phases: DB-FFAP, AT-1000, HP-FFAP, Stabilwax DA, BP-21, Nukol, CPWax-58CB

### General Information

007-FFAP is a nitroterephthalic acid modified polyethylene glycol polymer. This bonded acidic phase is ideal for the analysis of aqueous solutions of free fatty acids as well as fatty acid methyl esters (FAMES). As with the 007-CW and BTR-CW bonded polyethylene glycol phases, 007-FFAP is not recommended for the analysis of silylating reagents.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-FFAP	973.71	1218.70	995.36	1207.56	1151.34



### Grob Quality Test Mix

**COLUMN:** 007-FFAP,  
Nitroterephthalic acid modified PEG  
30M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-FFAP-30-0.5F

Temperature: 40° (6°/min.) - 220°C  
Injector: 225°C  
Detector: 280°C, FID  
Carrier Gas: 25 cm/sec., Helium

- |                      |                         |
|----------------------|-------------------------|
| 1. decane            | 8. methyl undecanoate   |
| 2. undecane          | 9. 2-ethylhexanoic acid |
| 3. nonanal           | 10. methyl dodecanoate  |
| 4. octanal           | 11. 2,6-dimethylaniline |
| 5. 2,3-butanediol    | 12. 2,4-dimethylphenol  |
| 6. methyl decanoate  |                         |
| 7. dicyclohexylamine |                         |

26

### 007-FFAP APPLICATIONS ON THE WEB

FREE FATTY ACIDS  
VOLATILE FREE FATTY ACIDS  
WHISKEY CONGENERS

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.10	10, 15, 25	0.1, 0.25
0.18	15, 25, 30, 50	0.1, 0.25, 0.5
0.25	15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, (1.0 on 60M. or less)
0.32	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0, (2.0, 3.0 on 60M. or less)
0.53	10, 15, 25, 30, 50, 60, 75, 100	0.1, 0.25, 0.5, 1.0, 2.0, 3.0, (4.0, 5.0 on 30M. or less)

### 0.1 – 1.0 micron films

### 2.0 – 5.0 micron films

20

240

260

### 007-FFAP TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

# CAPILLARY COLUMNS: 007-23

## 007-23 (78% Cyanopropyl) Methylpolysiloxane

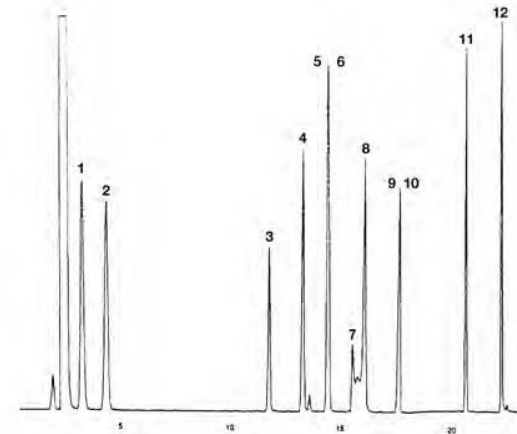
- Bonded and Crosslinked
- Very polar
- FAME Column
- Comparable to: Silar 7CP, SP-2310
- Similar bonded phases: DB-23, Rtx-2330, BPx-70, SP-2330, AT-SILAR, CPSil 88

### General Information

007-23 is a (78% cyanopropyl) methylpolysiloxane and is our most polar phase type. The strong permanent dipole interactions of this phase with unsaturated compounds yields separations according to geometric configurations of the double bonds. The 007-23 phase is ideal for the separation of cis/trans isomers of fatty acid methyl esters (FAMEs) as well as the isomers of dioxins and furans. The 007-23 phase is bonded and crosslinked and the column performance can be restored by rinsing.

### Bonded Phase Retention Index

Phase	benzene	1-nitropropane	2-pentanone	pyridine	butanol
007-23	1049.03	1416.88	1156.73	1267.56	1206.43



### Grob Quality Test Mix

**COLUMN:** 007-23, (78% Cyanopropyl) methylpolysiloxane  
30M. x 0.25mm I.D. x 0.5µm film  
Cat. No.: 007-23-30-0.5F

**Temperature:** 40° (6°/min.) - 160° (15°/min.) - 250°C

**Injector:** 225°C

**Detector:** 300°C, FID

**Carrier Gas:** 26 cm/sec., Helium

- |             |                       |                          |
|-------------|-----------------------|--------------------------|
| 1. decane   | 5. 2,3-butanediol     | 9. methyl dodecanoate    |
| 2. undecane | 6. methyl decanoate   | 10. 2-ethylhexanoic acid |
| 3. nonanal  | 7. dicyclohexylamine  | 11. 2,6-dimethylaniline  |
| 4. octanol  | 8. methyl undecanoate | 12. 2,4-dimethylphenol   |

27

0.25 micron films

40

280

007-23 TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)

### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Film (µm)
0.25	30, 60	0.1, 0.25, 0.5

### 007-23

#### APPLICATIONS ON THE WEB

ALDITOL ACETATES	65
AROMATICS IN LIGHT NAPHTHA AND AVIATION	
GASOLINES	69
CHOLESTERYL ESTERS	89
DIOXINS/FURANS	42
FAME MIX	60
MONOGLYCERIDES-TMS DERIVATIVES	61
PUFA 1 - MARINE SOURCE	62
PUFA 2 - ANIMAL SOURCE	63

# CAPILLARY COLUMNS: PLT-5A

## PLT-5A Molecular Sieve 5Å PLOT Column

- Reliable permanent gas analysis
- Rugged layer of molecular sieve
- Excellent thermal stability for regenerating the adsorbent layer
- Similar phases: GS-Molesieve, RT-Msieve 5A, AT-Mole Sieve

### General Information

The analysis of permanent gases, traditionally performed on packed columns, is an important petrochemical application. The PLT-5A Molecular Sieve PLOT (porous layer open tubular) capillary column offers the advantage of higher resolution and faster analysis times; for example, O<sub>2</sub>, N<sub>2</sub>, CO and CH<sub>4</sub> typically separate in under six minutes. In addition, the important O<sub>2</sub>/Ar separation can be achieved at subambient temperatures with this column.

**QUADREX** uses a proprietary coating process that insures column-to-column reproducibility. A unique binding agent eliminates adsorbent layer degradation and particle migration that can cause the contamination of valves and detectors. The PLT-5A column can be regenerated at temperatures up to 300°C to regain resolution lost to water contamination.

28

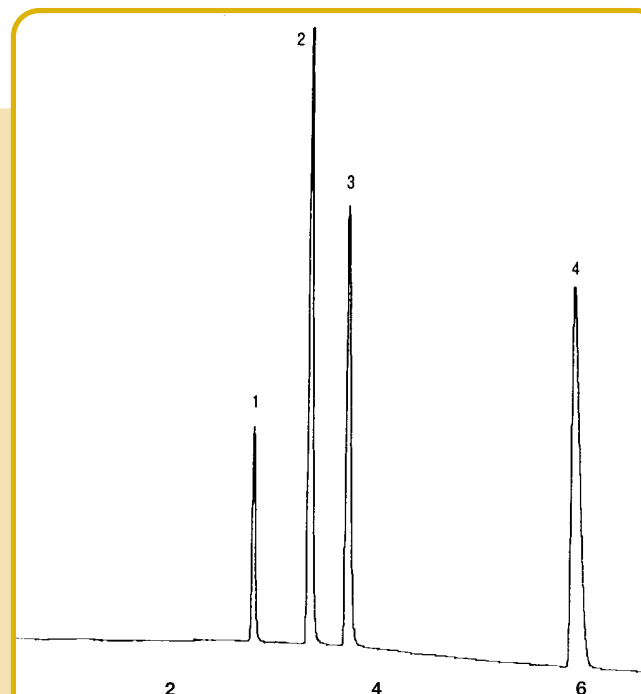
25 micron films

-50

300

PLT-5A TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)



### Quality Test Mix

**COLUMN:** Molecular Sieve 5Å PLOT  
30M. x 0.53mm I.D. x 25.0µm film  
Cat. No.: PLT-5A-30V

**Temperature:** 35° (5 min. hold) (30°/min.) - 100°C

**Injector:** 50°C

**Detector:** 150°C, TCD

**Carrier Gas:** 5psi, Helium

1. oxygen  
2. nitrogen

3. methane  
4. carbon monoxide

#### AVAILABLE COLUMN CONFIGURATIONS

I.D. (mm)	Lengths (M.)	Films (µm)
0.53	30	25.0

# CAPILLARY COLUMNS: 400-1HT, SPECIAL USE: HIGH TEMPERATURE

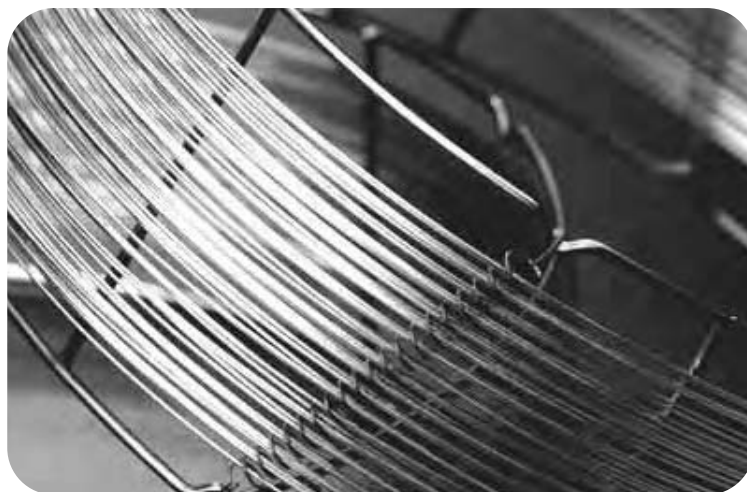
## 400-1HT SPECIAL-USE: HIGH TEMPERATURE

Our 400 Series methyl silicone columns are produced on aluminum-clad fused silica which allows for a much higher operating temperature range compared to the standard polyimide-clad fused silica. These thin film columns can be programmed up to 420-440°C and are suitable for high molecular weight components (C80 and above).

**400-1HT-10-0.1F, 10M. x 0.23mm x 0.1µm film**

**400-1HT-15-0.1F, 15M. x 0.23mm x 0.1µm film**

**400-1HT-25-0.1F, 25M. x 0.23mm x 0.1µm film**



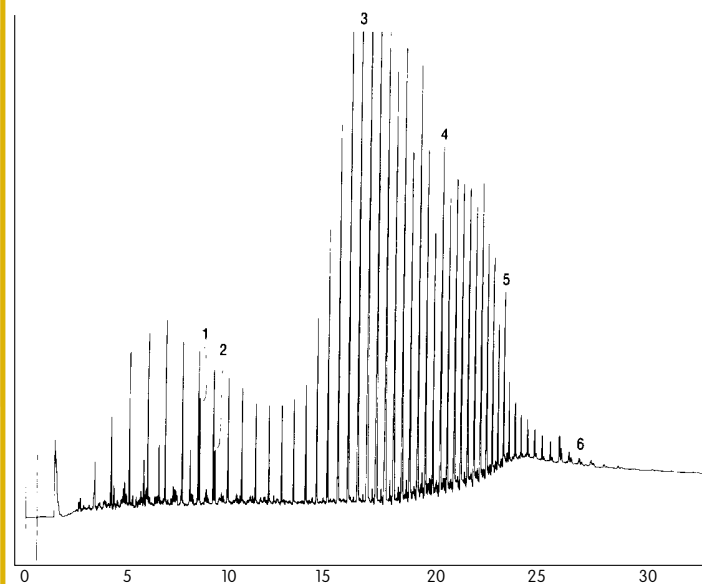
0.1 micron films

-50

440

400-1HT TEMPERATURE RANGE – PROGRAMMED (°C)

(Reduce 20°C or more for isothermal runs.)



## Canadian Wax

**COLUMN:** 400-1HT, Dimethylpolysiloxane - Aluminum-Clad  
15M. x 0.25mm I.D. x 0.1µm film  
Cat. No.: 400-1HT-15-0.1F

**Temperature:** 60° (15°/min.) - 400°C

**Injector:** 60° - 400°C, PTV Injector, 1µL

**Detector:** 400°C, FID

**Carrier Gas:** 31 cm/sec., Helium

- |             |         |
|-------------|---------|
| 1. pristane | 4. C-40 |
| 2. phytane  | 5. C-50 |
| 3. C-30     | 6. C-60 |



# CAPILLARY COLUMNS: ULTRA ALLOY™

## ULTRA ALLOY™ Stainless Steel Capillary Columns

ULTRA ALLOY™ stainless steel columns are manufactured by a patented, multi-step process which utilizes a five-layered pretreatment of the inner surface of a stainless steel substrate. The layers are less than 0.001 microns thick and are chemically bonded together. The chemical structure of the top-most layer can be modified depending upon the stationary phase to be deposited.

Stainless steel capillary columns manufactured by this process yield a very inert deactivated surface which matches that of fused silica. Stationary phases are easily bonded to this stable inert surface, resulting in superbly deactivated columns as shown in examples of the modified Grob Test mixtures and other typical applications, illustrated in the chromatograms on our website. Furthermore, the use of stainless steel as a substrate proves to be an ideal material due to its superior mechanical properties.

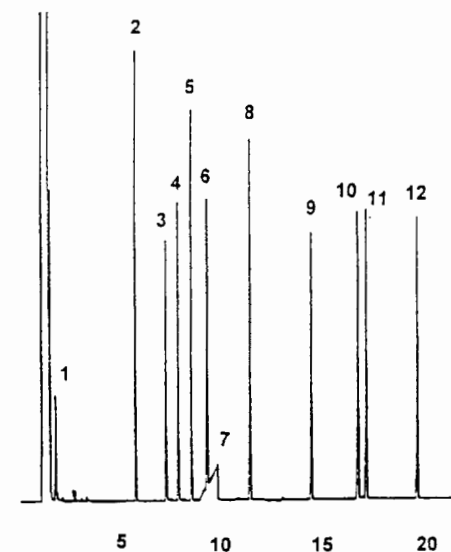
Accordingly, ULTRA ALLOY™ capillary columns offer unsurpassed inertness and mechanical durability and are suitable replacements for fused silica capillary columns. Unlike other stainless steel columns on the market which are lined with fused silica which can crack or flake-off when flexed or bent, ULTRA-ALLOY™ columns can be tightly coiled without damage to the deactivation or stationary phase layer.

*Ultra ALLOY and UA are trademarks of Frontier Laboratories, Fukushima, Japan.*

30

### ULTRA-ALLOY™ APPLICATIONS ON THE WEB

SMS LOW BLEED  
BTEX  
BUTTER  
EPA METHOD 502.2 - VOLATILE ORGANICS  
L.M.W. FREE FATTY ACIDS  
PESTICIDES AND HERBICIDES  
PHENOLS  
RESIDUE SOLVENTS IN PAINT  
SESAME OIL  
SIMDIS  
SOLVENT MIXTURE  
VOLATILES MIX



### Grob Test Mix

**COLUMN:** UAC-1, Dimethylpolysiloxane  
15M. x 0.25mm I.D. x 0.25µm film  
Cat. No.: UAC-1-15-0.25F

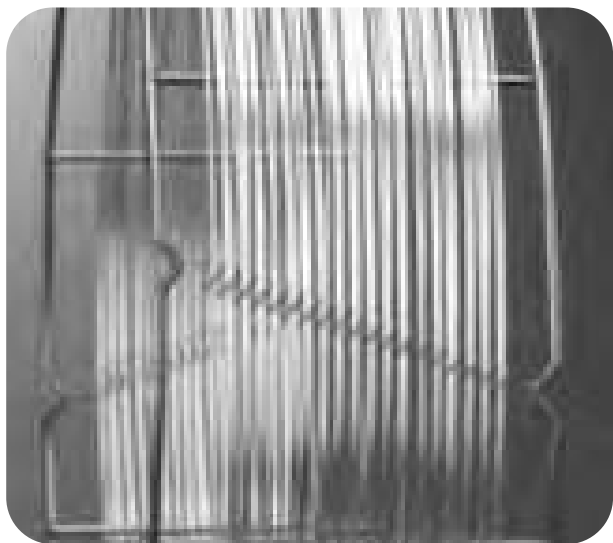
**Temperature:** 60° (3 min. hold) (5°/min.) - 200°C

**Injector:** 150°C (on-column)

**Detector:** 300°C, FID

**Carrier Gas:** 20 ml/min., Helium, U=66cm/sec.

1. butanediol
2. decane
3. octanol
4. 2,6 dimethylphenol
5. undecane
6. 2,6-dimethylaniline
7. ethylhexanoic acid
8. dodecane
9. methyl decanoate
10. dicyclohexylamine
11. methyl undecanoate
12. methyl dodecanoate

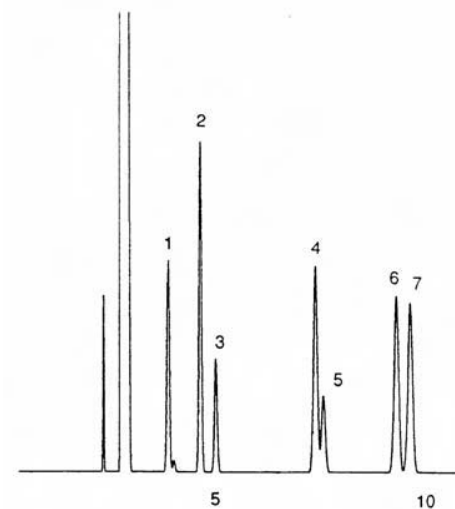


## Volatiles Mix

**COLUMN:** UAC-502, Volatiles Organics Phase  
30M. x 0.50mm I.D. x 3.0µm film  
Cat. No.: UAC-502-30V-3.0F

**Temperature:** 100°C

1. 1,1,1-trichloroethane
2. trichloroethylene
3. bromodichloromethane
4. tetrachloroethylene
5. chlorodibromomethane
6. chlorobenzene
7. ethylbenzene



## 0.25MM AND 0.53MM I.D. ULTRA ALLOY™ STAINLESS STEEL CAPILLARY COLUMNS

PHASE	FILM THICKNESS (µM)			MIN/MAXI. (PROGRAMMED) TEMP. °C
Code	Composition	0.25mm I.D.	0.53mm I.D.	
UAC-1	Dimethylpolysiloxane	0.15, 0.25, 0.5, 1.0	0.15, 0.25, 0.5, 1.5, 5.0	-60 / 370 (380)
UAC-1HT	Dimethylpolysiloxane (high temperature)	0.15, 0.25	0.15, 0.25	-60 / 400 (420)
UAC-1MS	Dimethylpolysiloxane (low bleed)	0.1, 0.15, 0.25		-60 / 450
UAC-SIMDIS	Dimethylpolysiloxane		0.1	-60 / 450
UAC-5	(5% phenyl) Methylpolysiloxane	0.15, 0.25, 0.5, 1.0	0.15, 0.25, 0.5, 1.5	-60 / 360 (380)
UAC-5MS	(5% phenyl) Methylpolysiloxane (low bleed)	0.1, 0.15, 0.25		-60 / 430
UAC-DX30	Carborane siloxane (Dexsil 300)	0.15	0.15	40 / 450 (450)
UAC-1701	(14% diphenyl) Dimethylpolysiloxane	0.25, 0.5, 1.0	0.25, 0.5, 1.0	-20 / 300 (320)
UAC-17	(50% phenyl) Methylpolysiloxane	0.1, 0.25, 0.5, 1.0	0.25, 0.5, 1.0	40 / 370 (390)
UAC-CW	Polyethylene glycol (Carbowax)	0.25	0.5, 1.0	20 / 260 (260)
UAC-FFAP	Polyethylene glycol (Acid Modified PEG)	0.25	0.5, 1.0	20 / 260 (260)
UAC-65HT	(65% phenyl) Methylpolysiloxane	0.1	0.1	40 / 370 (380)
UAC-502	Volatile Organics phase	1.0	3.0	-20 / 270 (270)
UAC-624	Volatile Organics Phase	1.0	3.0	-20 / 270 (270)
UAC-DIDP	Diisodecyl phthalate (non-bonded)	0.4		0 - 150 (150)

# CHROMATOGRAMS ON THE WEB

**QUADREX** has been manufacturing columns since 1976, and has amassed a listing of typical chromatograms for many common GC applications. Though we have not analyzed all possible applications, those listed below indicate the kind of performance you can expect from our capillary columns. Application chromatograms can be found on our website, [www.quadrexcorp.com](http://www.quadrexcorp.com). Follow the "Chromatograms" link for sub-categories and applications.

## CLINICAL / TOXICOLOGICAL

Anesthetics  
Anticonvulsant Drugs  
Antidepressants  
Pepper Spray  
Schedule II - Opiates  
Tricyclic Antidepressants  
Blood Alcohols  
Drug Mix  
Residual Solvents in Drugs (USP 467)

## ENVIRONMENTAL

Aroclor 1248  
Aroclor 1254  
Aroclor 1260  
Aroclor 1262  
DDT Isomers  
Dioxin/Furans  
Dioxin - 5ppm at full scan mode  
EPA Method 502.2 - Drinking Water  
EPA Method 505 - Organohalide Pesticides  
EPA Method 507 - Pesticides/Herbicides  
EPA Method 515 - Herbicides  
EPA Method 524.2 - Drinking Water  
EPA Method 551 - Disinfection Byproducts in Drinking Water  
EPA Method 601  
EPA Method 605 - Phenols  
EPA Method 606 - Phthalate Esters  
EPA Method 608 - Pesticides  
EPA Method 610 - PAHs  
EPA Method 624 - Purge and Trap  
EPA Method 625 - Base Neutrals/Herbicides  
EPA Method 8140 - Organophosphate Pesticides  
EPA Method 8270 - Semi-volatiles  
Toxic Substances Mix II  
Nitroaromatics  
Nitrosoamines  
MISA Acid Extractables  
Phenoxyacid Esters  
Organophosphorous Pesticides

## FAMES

Fame Mix  
Volatile Free Fatty Acids  
PUFA 2  
Methyl Esters of Sunflower Oil  
PUFA 1  
Monoglycerides-TMS Derivatives

## FLAVORS AND FRAGRANCES

Alditol Acetates  
Free Fatty Acids  
Alcohols  
Aldehydes  
L.M.W. Amines  
Synthetic Fragrance Mix  
Whiskey Congeners  
Peppermint Oil  
Celery Seed Oil  
Ylang Ylang Essential Oil

## INDUSTRIAL SOLVENTS

Acrylates  
Isoparaffin Solvents  
Ethylene Oxide  
Residual Solvents in Drugs (USP 467)  
Solvent Mixture

## PETROCHEMICALS

C1 to C5 Hydrocarbons  
C1 to C10 Hydrocarbons  
P.I.A.N.O. Mix  
Super Unleaded Gasoline  
ASTM 2887 - SIMDIS  
Reference Gas Oil - ASTM 2887  
ASTM 3710 - Qualitative Calibration Mix  
ASTM 2267-Aromatics in Light Naphtha and Aviation Fuel  
Diesel Range Organics  
Gasoline Range Organics  
BTEX  
Reference Alkylate Standard  
Reference Naphtha Standard  
Reference Reformate Standard  
#2 Fuel Oil - Diesel  
#4 Fuel Oil  
#5 Fuel Oil  
#6 Fuel Oil  
Oxygenates  
Oxygenates in RF Gasoline  
Jet Fuel A  
Natural Gas  
EPA Oil Analysis Standard  
Reference Reformate Standard  
Gasoline Quick Screen  
ASTN-D5441 - Impurities in MTBE  
Reference Gas Oil  
Chimney Creosote

## STEROIDS

Cholesteryl Esters  
Corticosteroids  
Anabolic Steroids  
Steroids  
Testosterone Derivative Steroids

## TRIGLYCERIDES (HIGH TEMPERATURE)

Cocoa Butter  
Coconut Oil  
Butter Triglycerides  
Canola Oil  
Palm Oil  
Safflower Oil  
Italian Olive Oil  
Corn Oil

## HIGH TEMPERATURE (ALUMINUM-CLAD)

Canadian Wax  
Carnuba Wax  
Iranian Crude Oil  
Polywax 655

## PERMANENT GASES - O2, N2, CH4, CO

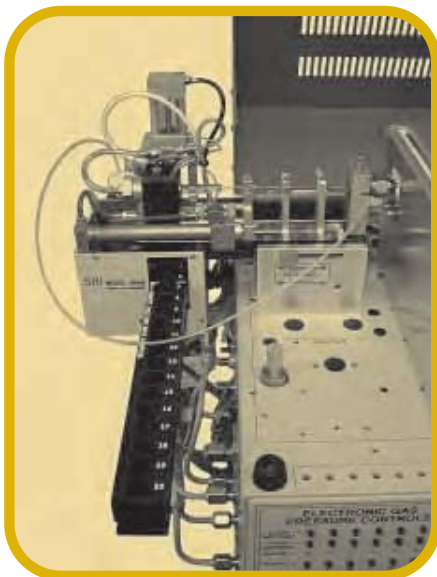
## EXTRA THICK FILM COLUMN APPLICATIONS

C1 to C10 Hydrocarbons  
Residual Solvents in Drugs (USP 467)  
Blood Alcohols  
Ethylene Oxide  
Saturated/Unsaturated Hydrocarbons

## ULTRA ALLOY SS CAPILLARY COLUMNS

EPA Method 502.2 VOC's  
Volatiles Mix  
Solvent Mixture  
BTEX  
Pesticides and Herbicides  
Phenols  
Residue Solvents in Paint  
L.M.W. Free Fatty Acids  
Butter  
Sesame Oil  
SIMDIS  
1MS Low Bleed  
5MS Low Bleed

# SRI FULL-FEATURED PORTABLE GC SYSTEMS



**MAINFRAME OPTIONS**

**34-35**

**INJECTORS**

**36-38**

**DETECTORS**

**39-42**

**PEAKSIMPLE DATA SYSTEM & ACCESSORIES**

**43-46**

**POPULAR PRECONFIGURED GCs**

**47-51**



SRI Gas Chromatographs are full-featured, lab-quality, portable GCs. Compared to bench-top GCs from other manufacturers, they are highly compact – yet large enough, and flexible enough, to perform a wide variety of applications... both in the field and on your lab bench.

The larger Models 8610C, 8610D GC and smaller Model 310 GC mainframes can carry multiple injector and detector types, plus other accessories such as autosamplers, purge and traps, thermal desorbers, etc. (some options limited on the smaller 310GC mainframe).

Select from a number of popular preconfigured systems – or purchase a custom built GC designed to meet your specific application requirements. Each GC with factory-installed detector comes with PeakSimple Data Acquisition software, and a full *TWO YEAR* factory warranty.





## SRI CUSTOM-DESIGNED GCs

SRI offers two GC mainframe chassis on which to build your custom GC: the larger Model 8610C GC or the smaller Model 310 GC. Either GC mainframe can be configured with up to 4 detectors; the 8610C can have up to 5 injectors; the Model 310 accommodates one. The 8610 mainframe can even be built with dual ovens (8610D) for multi-dimensional chromatography!

### LOW COST, BUT RELIABLE – AN EXCEPTIONAL VALUE!

SRI GCs are half the cost of bulkier, comparably equipped GCs. Yet all SRI GCs include an unprecedented 2-YEAR FACTORY WARRANTY on parts and labor.

### SMALLEST FULL-FEATURED GCs AVAILABLE

The Model 8610C GC mainframe is only 18.5" W x 14.5" D x 12.5" H, weighs only 40-70 pounds, and can be configured with all the features of a standard lab GC – plus thousands of possible internal hardware combinations! The Model 310 GC is only 12.5" W x 14.5" D x 13" H – but it still provides ambient to 400°C temperature programming capability, multiple ramps, up to 4 detectors, a single injector... and more. Both models are of heavy-duty, but lightweight, all-aluminum construction for durability and portability. All SRI GCs ship in a reusable heavy-duty plastic carrying case, too.

### ELECTRONIC PRESSURE CONTROL (EPC)

Optimize your chromatography by controlling your column's head pressure during the analytical run. EPC eliminates manual pneumatic pressure regulators and flow controllers, enhancing reproducibility. All system gases are controlled under the EPC and the carrier gas is now pressure-programmable.

### INJECTOR SYSTEM VERSATILITY

34

A single cold On-Column Injector, upgradeable to other injector styles, is included on every SRI GC. Ten injector types are available for mounting onto the Model 8610C and Model 310 that cover solid, liquid and gas sample matrices.

### HIGH-TEMPERATURE, FAST-COOLING OVEN

The insulated oven's high-output heating element permits temperature programming from ambient to 400°C, at ramp rates up to 40° per minute.

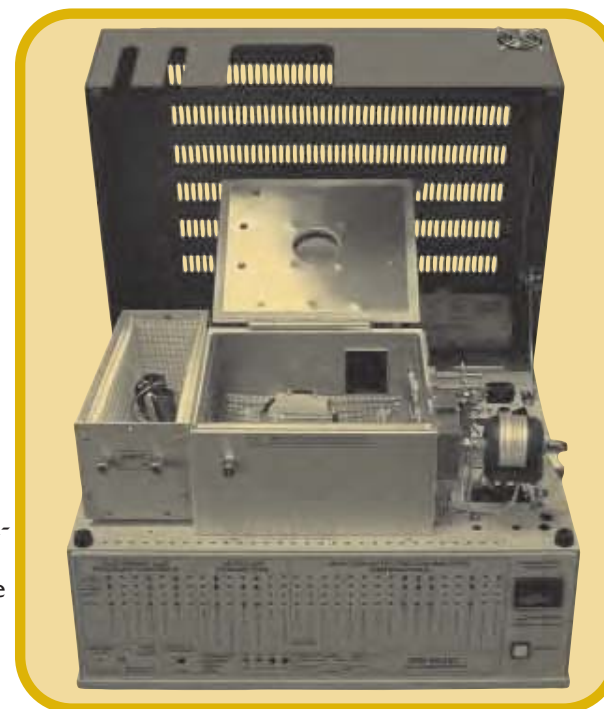
### MOUNT UP TO FOUR DETECTORS ON THE SAME CHASSIS

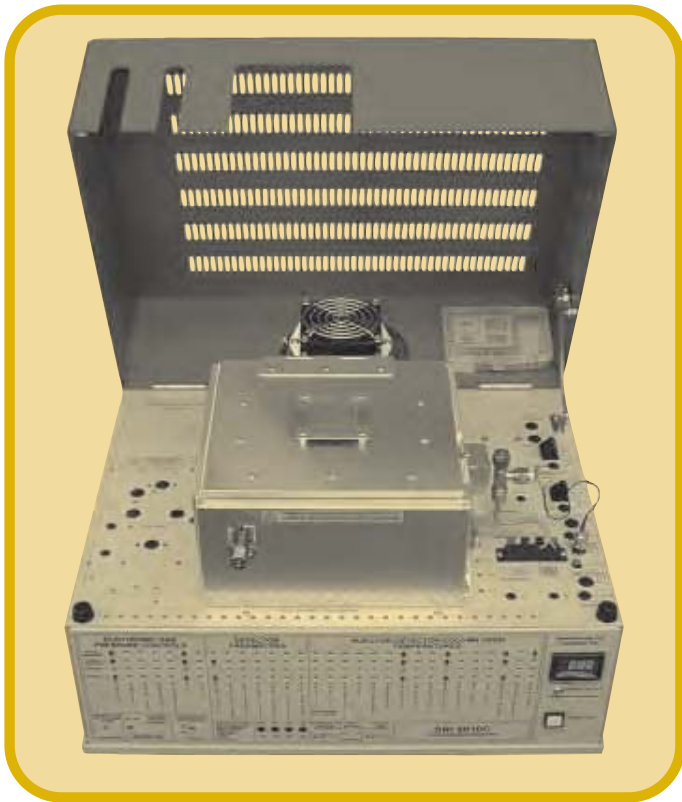
Choose from 14 standard detectors for maximum GC versatility. Each detector is equipped with full electrometer/amplifier electronics and an adjustable heated zone for maximum detector stability.

### PEAKSIMPLE DATA SYSTEM

PeakSimple chromatography software – included in the price of every SRI Gas Chromatograph and Data System (and also available as a stand-alone to enhance or upgrade an existing GC!) – combines ease of use, a short learning curve, and convenient powerful features for GC, HPLC and CE. PeakSimple's intuitive graphical interface and features are so user-friendly, most operators can produce results almost immediately – even without specific training. PeakSimple is packed with cutting-edge features like drag-able retention time windows, seldom found in other packages costing much more. **Windows 3.x - Windows XP compatible.**

### FREE TECH SUPPORT – VIA PHONE, FAX AND EMAIL!





## MODEL 8610C GC MAINFRAME

*The Model 8610C GC mainframe is the largest and most versatile SRI GC chassis. It is very compact compared to bench-top GCs from other manufacturers, yet is large enough and flexible enough to perform a wide variety of applications. The 8610C mainframe can carry multiple injector and detectors types, plus other accessories such as autosamplers, purge and traps, thermal desorbers, etc. Virtually any EPA or ASTM Method can be implemented on the 8610C mainframe.*

### Specifications:

- Single Column oven: 7.8"W x 8.0"D x 3.0"H, ambient to 400°C.  
Accepts up to 7" diameter column coils.
- Single cold on-column injector standard, with optional upgrades to other injector systems.
- Temperature program: Unlimited ramps and holds. Oven programmable up to 40°C per minute up to 400°C. Cool down time from 250°C to 50°C in five minutes or less.
- Gases: Electronic (pneumatic) pressure control (EPC) of all system gases.
- Pressure Program via EPC: Unlimited ramps, holds.  
Program carrier gas pressure: from 0 to 100 psi at up to 99 psi per minute.
- PeakSimple Serial interface: Data acquisition system built into GC.  
Connection to PC is via RS232 port.
- Power requirement: 110VAC, 60Hz or 220VAC, 50Hz
- Dimensions/weight: 18.5"W x 14.5"D x 12.5"H (mainframe only).
- Heavy duty shipping case provided.  
Shipping case dimensions: 21" W x 28" D x 15" H.
- **Two year factory warranty.**

Model 8610C with 1 channel Peaksimple	SRI-8610-1003
Model 8610C with 4-channel Peaksimple	SRI-8610-4003
Model 8610C with 6 channel USB Peaksimple	SRI-8610-6003

## MODEL 310 GC MAINFRAME

*The Model 310 Gas Chromatograph compact mainframe retains the performance of a full sized laboratory instrument. The 310 can accommodate up to four detectors simultaneously with a single on-column (heated or split/splitless) injector. The smaller oven configuration limits column coil-diameters to 4 inches. Similar to the larger 8610C, the Model 310 GC includes EPC and the PeakSimple data system.*

*The Model 310 GC is designed to satisfy the needs of chromatographers who demand the utmost in portability, small size, and high performance. However, due to its small size it cannot accommodate gas sampling valves, purge & trap, or multiple injectors.*

Model 310 with 1 channel Peaksimple	SRI-0310-1003
Model 310 with 4-channel Peaksimple	SRI-0310-4003
Model 310 with 6 channel USB Peaksimple	SRI-0310-6003



# SRI INJECTOR OPTIONS

One cold On-Column Injector is supplied as standard equipment with all 8610C and 310 GC mainframes. However, ten other injector types are available. The 8610C GC can accommodate up to five injectors, but only a single On-column, Heated Flash Vaporization or Heated Split/Splitless injector will fit on the smaller model 310 GC chassis. Injector types are selected by the user depending on the particular measurement application, detection limit required, and/or regulatory requirements. All injectors require factory installation.

- **Solids:** Thermal Desorber or the Heated Static Headspace injector
- **Liquids:** On-Column, Heated Flash Vaporization, Heated Split/Splitless, Heated Static Headspace, or Purge & Trap
- **Gases:** 10-port Gas Sampling Valve or Air Concentrator
- **SPME fibers:** Heated Flash Vaporization or Split/Splitless injector with low volume SPME liner
- **Automation:** Method 5030 Purge & Trap Autosampler or the 20-vial Liquid Autosampler

For most applications where a wide-bore 0.53mm capillary or 1/8th inch packed column will be used, the standard On-Column Injector will give the best results. For heated injectors, the standard On-Column Injector will require an upgrade, or a total replacement for other injector types. For GCs with two injectors, additional On-Column Injector hardware must be added before upgrades can be done.



36

## COLD ON-COLUMN INJECTOR

This part number adds a second On-Column Injector to the 8610C GC for dual injector capabilities. The On-Column injector is perfect for liquids and gases with high and low boiling analytes. The On-Column injector's low mass ensures that the temperature of the injector body closely follows the temperature of the column oven. The On-Column Injector is supplied with carrier gas from the Electronic Pressure Controller (EPC).

Additional On-Column Injector	SRI-8690-0023
Second carrier gas EPC without injector port fitting	SRI-8690-2022
Second injector port fitting without EPC	SRI-8690-2023

## HEATED FLASH VAPORIZATION INJECTOR

This heated injector option is an upgrade to the existing on-column injector. SRI's Heated Flash Vaporization Injector is useful for applications which require flash vaporization of the sample prior to the column, such as desorption of SPME fibers or injection of extremely dirty samples where the non-volatile residue must be trapped in the injection liner. The injector's heater block can be thermostatted at temperatures up to 300°C, and is designed to accept any of the many styles of injector liners which fit HP 5890 or 6890 GCs.

Heated Flash Vaporization Injector upgrade	SRI-8690-0025
Narrow bore SPME Injector sleeve	SRI-8670-0072

## HEATED STATIC HEADSPACE INJECTOR

The Heated Static Headspace Injector is useful for the analysis of volatiles, especially where the sample matrix is dirty. It is mounted as part of the heated valve oven on the left side of the 8610C GC and incorporates a gas sampling valve and a fixed volume loop for maximum precision. The headspace sleeve is mechanically agitated, and the entire headspace operation is controlled by the PeakSimple data system.

Heated Static Headspace Injector	SRI-8690-0045
----------------------------------	---------------

## HEATED SPLIT/SPLITLESS INJECTOR AND PTV OPTION

A Heated Split/Splitless injector allows the use of all capillary columns in split or splitless modes of operation and 0.53mm capillary columns or 1/8" packed columns in on-column modes. This option is available as an upgrade to the existing on-column injector. Where it is desired to add the Split/Splitless as a second injector, an additional on-column injector, SRI-8690-0023, must be ordered as well for upgrade. The PTV (Programmable Temperature Vaporizer) option adds ballistic heating capability to the Split/Splitless Injector to accommodate large volume injections or thermal desorption applications.

Heated Split/Splitless Injector upgrade	SRI-8690-0034
Heated S/S Injector upgrade with PTV	SRI-8690-7034
Heated S/S Injector upgrade with PTV and valve	SRI-8690-8034

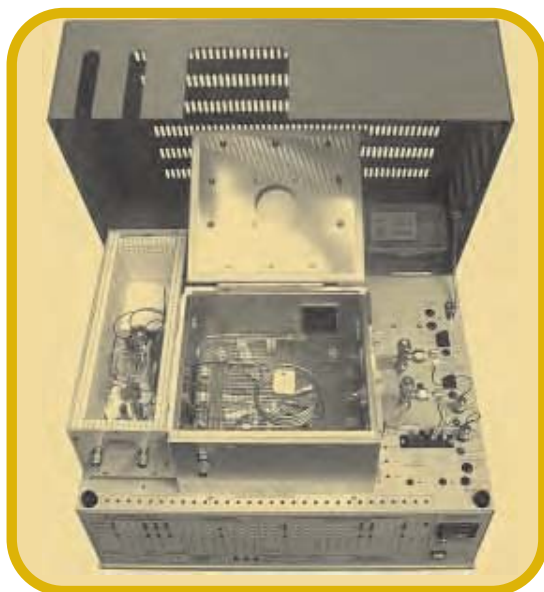


## THERMAL DESORBER

The Thermal Desorber accessory permits volatile and semi-volatile compounds in soil or other solid matrixes to be injected with little or no sample preparation, and with very high sensitivity. The Thermal Desorber is equipped with a manually operated 10 port valve with a special high temperature rotor so it can withstand the 275°C desorption temperatures. The one gram sample capacity can yield results in very low detection limits (ppb range) for most compounds. The Thermal Desorber/FID/DELCD configuration is perfect for detecting PCBs, pesticides, PAHs, JP-4, kerosene and diesel in soil. With the Thermal Desorber, no solvent extraction is required. Little operator skill is needed, and four to ten analyses per hour can be run depending on specific requirements.

**Thermal Desorber accessory for 8610C GC**  
**includes 10 re-useable desorber tubes**  
**Pack/10 re-useable ground glass desorber tubes**

**SRI-8690-1088**  
**SRI-8690-1087**



## 10-PORT GAS SAMPLING VALVES

10 port gas sampling valves provide more analytical flexibility yet cost the same as 4 port or 6 port valves. They can easily be plumbed to replicate the function of the simpler valves, but also offer many possible configurations. The valve oven, as seen mounted on the left side of this 8610C GC can accommodate 2 electrically operated valves plus one manually operated valve, and can be thermostatted from ambient to 175°C (up to 300°C for manual valve). Each valve includes 1/8" stainless steel bulk-

head fittings for sample in/out connections. A single heated (375°C max) fast cooling adsorbent trap plumbed as the loop of the gas sampling valve is also available for applications where sample concentration is desired.

**10 port Manually actuated valve**  
**10 port Electrically actuated valve as above**  
**Thermostatted valve oven mounted on 8610C GC**  
**Heated/fast cooling adsorbent trap and plumbing**

**SRI-8690-0063**  
**SRI-8690-0065**  
**SRI-8690-0088**  
**SRI-8690-0084**

## MODEL 8640 20-VIAL LIQUID AUTOSAMPLER

The SRI Model 8640 20-vial Liquid Autosampler mounts onto the left hand side of the 8610C GC (under the red lid) and is shipped pre-installed on the GC for convenience. The Autosampler uses easily available 2 ml vials with crimp or screw top available from many suppliers. The Autosampler can be used with the on-column, heated, or split/splitless injectors. The sample tray and syringe require helium, air or other non-flammable gas at 60 psi to actuate the moving parts. The injection volume is adjustable from 0-3 ul, and the unit is supplied with 100 screw top vials and septa.

**20-vial Liquid Autosampler mounted on 8610C GC**  
**Extra 20 position vial tray**  
**Cooled sample tray option (requires external**  
**user-supplied refrigerated lab circulator)**

**SRI-8640-0010**  
**SRI-8640-0020**  
**SRI-8640-0021**

## METHOD 5030/5035 COMPLIANT PURGE & TRAP

The SRI Method 5030/5035 compliant Purge & Trap is built-in to the model 8610C GC concentrates VOCs in a gas, water, or soil samples onto two adsorbent traps from which they are automatically desorbed into the GC column. The P&T is equipped with interchangeable purge heads. The 5035 purge head, which accepts 40ml VOA vials, is thermostatted to 40°C and mechanically agitated while purging to comply with the soil testing requirements of Method 5035. The 5030 purge head uses low cost disposable 16mm test tubes for ambient temperature purging. For higher level soil samples or soil/methanol extractions, the test tube is more convenient and less expensive than VOA vials. Operation of the purge & trap is completely automated by the PeakSimple data system and operational parameters such as purge time, desorb preheat, bake out, vial temperature, and mechanical agitation are adjusted in the software's event table.



**Method 5030/5035 compliant Purge & Trap**  
**Method 5030 Purge &Trap**

**SRI-8690-0052**  
**SRI-8690-0051**



### METHOD TO-14 AIR CONCENTRATOR

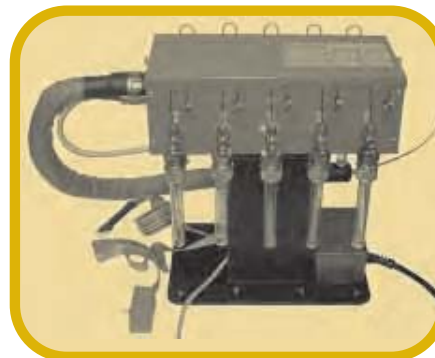
The Method TO-14 air concentrator is identical to the Method 5030 style Purge & Trap, but without the liquid purge vessel. A vacuum pump interface is substituted instead so an external vacuum pump (not included) may be attached to the downstream side of the traps to load a gas sample automatically under control of the PeakSimple data system. Several liters or more may be concentrated depending on the ultimate detection limit required. The gas sample may be contained in Tedlar™ bags, canisters or may be sampled directly from the source. The re-trapped organic analytes are then efficiently desorbed onto the GC column for separation and quantitation.

**Method TO-14 Air Concentrator and vacuum pump interface**

**SRI-8690-1051**

**Method TO-14 Air Concentrator as above, plus off-line tube desorber (specify tube size)**

**SRI-8690-1052**



### 10-POSITION PURGE & TRAP AUTOSAMPLER

The ten-position purge & trap autosampler is an economical way to automate Method 5030 purge & trap analyses. Ten individual test tube type purge vessels are arranged around a central valve over a heated oven (heated to 150°C). This arrangement allows the tubing connections between the valve and the test tubes to be easily inspected and

serviced should that be necessary. Under control of the PeakSimple data system, the stream selection valve mounted in the valve oven sequentially or selectively steps to one of the ten test tubes for purging.

**10 position Purge & Trap autosampler**

**SRI-8690-0053**

38



# SRI DETECTOR OPTIONS

The most commonly used detectors in GC are available for installation on the SRI Models 8610C and 310 GC mainframes and the Model 110 Stand-Alone chassis. Up to four detectors may be mounted and used simultaneously, although some rare combinations of detectors may conflict because of space limitations. Each detector is equipped with a thermostatted heater block for temperature stability, electronic pressure controlled (EPC) support gases, such as hydrogen and air for the FID, and internal amplifier electronics. Detector types should be selected depending upon the particular measurement application, detection limits required, matrix interferences, and/or regulatory guidelines. All detectors require factory installation.



## 14 Standard Detectors to Choose From...

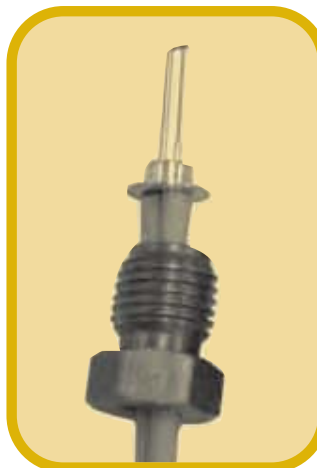
<u>Detector</u>	<u>Selectivity</u>	<u>Sensitivity</u>
TCD	universal	200-500ppm
CCD	hydrogen and hydrocarbons	500ppm
FID	hydrocarbons	1 ppm
FID/DELCD	hydrocarbons, chlorinated/brominated	10ppm
HID	universal except neon	10ppm
NPD	nitrogen and phosphorous	10ppm
NPD/DELCD	nitrogen/phosphorous, chlorinated/brominated	100ppb
TID	nitro functional groups	1ppb-50ppb
ECD	electronegative compounds	10ppb
PID	aromatics/double carbon bonds	10ppb
FPD	sulfur and phosphorous	200ppb and 10ppb
FID/FPD	hydrocarbons and sulfur/phosphorous	100ppm, 200ppb, 10ppb
Dual FPD	sulfur and phosphorous simultaneously	200ppb and 10ppb
FID dual FPD	hydrocarbons, sulfur / phosphorous	100ppm, 200ppb and 10ppb

### THERMAL CONDUCTIVITY DETECTOR (TCD)

The TCD detector detects all molecules, not just hydrocarbons, so it is commonly used for fixed gas analysis (O<sub>2</sub>, N<sub>2</sub>, CO, CO<sub>2</sub>, H<sub>2</sub>S, NO, NO<sub>2</sub>, etc.) where the target analytes do not respond well on other more sensitive detectors. The TCD is able to detect concentrations from 100% down to about 100 ppm, but not lower. The TCD consists of four tungsten-rhenium filaments in a Wheatstone bridge configuration. Both the standard and high temperature TCDs use identical, easily replaceable filaments which allow user replacement in the event of a filament burnout. A filament protection circuit prevents filament damage by disabling the current if carrier gas pressure is not detected at the GC, but does not prevent filament damage under all circumstances.

Standard TCD detector, up to 130°C  
Hi-temperature TCD detector, up to 300°C

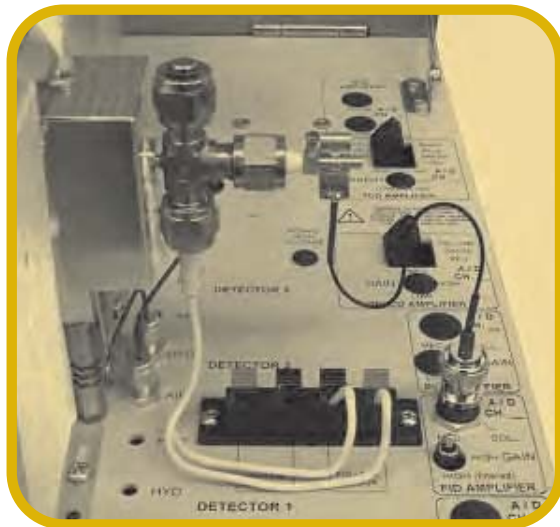
SRI-8690-0007  
SRI-8690-9007



### CATALYTIC COMBUSTION DETECTOR (CCD)

The CCD is about as sensitive as a TCD detector but has the hydrocarbon selectivity of an FID. The CCD only requires ambient air for operation. It is ideal for use in SRI's unique Gas-less GCs where a built-in air compressor supplies the carrier gas.

CCD detector SRI-8690-2007  
Replacement CCD detector bead SRI-8670-2007



## FLAME IONIZATION DETECTOR (FID)

The FID is the most commonly used GC detector, responding linearly from its minimum detectable quantity of about 100 picograms to almost 100%. The FID detector responds to any molecule with a carbon-hydrogen bond, but not at all or poorly to compounds such as H<sub>2</sub>S, CCl<sub>4</sub>, or NH<sub>3</sub>. The FID response is very stable from day to day, and is not susceptible to contamination from dirty samples

or column bleed. Unlike many other FID designs, the SRI FID employs a unique ceramic igniter which can run hot continuously, thus totally preventing the flame from extinguishing even when presented with large water injections or pressure surges from column backflush. The FID is thermostatted in an aluminum block up to 375°C and is equipped with an electrometer amplifier which has high, hi-filtered (for extra noise immunity) and medium gain settings. The optional built-in “whisper quiet” air compressor (part# 8690-0070) is often used to supply the air for the FID, eliminating the bulky air cylinder.

40

**FID detector with EPC gas controls**  
**Optional 120 VAC 60 hz “whisper quiet”**  
**built-in air compressor**  
**Optional 220 VAC 50 hz built-in air compressor**

**SRI-8690-0010**  
**SRI-8690-0070**  
**SRI-8690-2270**

## HELIUM IONIZATION DETECTOR (HID)

The Helium Ionization Detector (HID) is a “universal” detector which responds to all molecules except neon. The HID requires only helium carrier and makeup gas, and delivers sensitivity in the low ppm range. Unlike an FID, the HID needs no hydrogen or air. It is especially useful in combination with a TCD detector because the TCD is not sensitive enough to detect low ppm concentrations, while the HID saturates in the low percent range, so together it is possible to cover 1ppm to 100%. The HID is particularly useful for volatile inorganics like NO<sub>x</sub>, CO, CO<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, and H<sub>2</sub> which do not respond on the FID or other detectors. Unlike other HID designs, the SRI HID can be heated to 375°C and can easily be disassembled for cleaning.

**Helium Ionization Detector**

**SRI-8690-0030**

## FLAME IONIZATION DETECTOR / DRY ELECTROLYTIC CONDUCTIVITY DETECTOR (FID/DELCD)

The FID/DELCD detector is one of the most useful GC detector combinations allowing the reliable identification of hydrocarbon peaks as halogenated or not when detected by the FID. The DELCD actually measures the ClO<sub>2</sub> present in the FID exhaust gas. All hydrocarbons are converted to CO<sub>2</sub> and H<sub>2</sub>O prior to the DELCD by the FID combustion, completely preventing large hydrocarbon peaks from contaminating the DELCD. The DELCD can tolerate the water-saturated FID effluent and measure the chlorine or bromine content simultaneously with the FID measurement of the hydrocarbon content. This is especially beneficial for measuring chlorinated VOCs under a solvent peak as shown in the example chromatogram above, pesticides or in measuring PCB peaks obscured under large amounts of diesel fuel. In the high sensitivity mode (flame off, reduced airflow using dry tank air) the DELCD can detect down to the low picogram range. The FID/DELCD is supplied with dual amplifiers for two simultaneous chromatograms and comes with a spare DELCD detector assembly.

**FID/DELCD detector with dual amplifiers and**  
**EPC gas controls for H<sub>2</sub> and air fuel gases**

**SRI-8690-2026**

## NITROGEN PHOSPHORUS DETECTOR (NPD)

The NPD is commonly used to detect pesticides, herbicides, and drugs of abuse because it responds to N-P compounds about 100,000 stronger than normal hydrocarbons, making it very selective. When combined with the chlorine/bromine selective DELCD, the combined detector is ideal for pesticide screening since the NPD selectively detects the organo-phosphate pesticides, while the DELCD detects only the chlorinated species. Together all pesticides can be detected, and the relative responses can help to identify pesticide species. The SRI ceramic NPD bead is exceptionally rugged and long-lasting, offering service from 100-1000 hours depending on operating conditions.

**Nitrogen-Phosphorus detector (NPD)**

**Includes: one NPD bead**  
**NPD/DELCD combination detector Includes:**

**SRI-8690-0015**

**one NPD bead and two DELCD detector assemblies** **SRI-8690-2615**

## THERMIONIC IONIZATION DETECTOR (TID)

The Thermionic Ionization Detector (TID) is similar in design to the FID and NPD. The TID is extremely selective, having little or no response to most aromatic and aliphatic hydrocarbons. At slightly less sensitivity the TID also responds to chlorinated phenols such as pentachlorophenol (PCP). The TID can also be operated in a nitrogen only environment with similar but not identical response characteristics. No detector gases other than carrier (air or N<sub>2</sub>) are required. A makeup gas is provided so Nitrogen can be used as carrier while air or another gas is added at the end of the column.

**Thermionic Ionization Detector (TID)**

**SRI-8690-0017**



### ELECTRON CAPTURE DETECTOR (ECD)

The ECD offers high sensitivity detection for chlorinated, fluorinated and brominated compounds. The SRI ECD detector can be operated with either Nitrogen or Argon/5%Methane (P5) makeup gas, and Nitrogen, P5, or helium carrier as long as the helium flow is less than 10 ml/min. The ECD offers extreme sensitivity (parts per trillion for SF6). The ECD contains 5 millicuries of Nickel-63, and is covered by a "General License" requiring a periodic "wipe test" and the filing of a form with your state's Department of Health. In most states no annual fee is required. The ECD may be thermostatted from ambient to 375°C

**ECD detector (Nickel-63)**

**SRI-8690-0020**

### FLAME PHOTOMETRIC DETECTOR (FPD)

While not 100% selective, the FPD is 100,000 times more sensitive for S-P compounds than for hydrocarbons. Sulfur compounds such as H<sub>2</sub>S or SO<sub>2</sub> can be detected down to about 200 ppb and phosphorus to 10ppb. The phosphorus response is linear, but the sulfur response is exponential (twice the sulfur yields four times the peak area). Dual FPD detectors equipped with two PMTs which allow simultaneous detection of sulfur and phosphorus. Either the single or dual FPD can be equipped with an FID collector electrode and electrometer which will detect the hydrocarbon peaks at the same time as the PMTs are responding to the S-P compounds.

**Single FPD detector with EPC gas controls**

**SRI-8690-0080**

**Single FPD with FID electrode and dual amps**

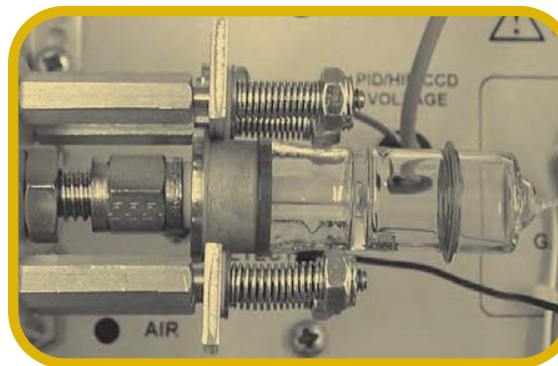
**SRI-8690-1080**

**Dual FPD with EPC gas controls, dual amplifiers and PMTs**

**SRI-8690-0085**

### PHOTO IONIZATION DETECTOR (PID)

The PID offers detection limits for aromatics in the low picogram range (ppb). The PID is a non-destructive detector and is often run in series with another detector (FID/DELCD) for multiple chromatograms from a single injection. Use



of the PID is mandated in several

EPA methods (8021, TO-14 etc.) due to its sensitivity and selectivity. The PID is also able to run on air carrier, which can be useful in situations where no gas (helium, hydrogen, nitrogen) is available, or stream monitoring applications where no column is used to separate compounds but rather the entire stream of sample is directed through

the detector. Unlike other PID designs, the lamp on the SRI PID can be removed easily without tools for periodic cleaning of the lamp window. Lamps last far longer on the SRI PID because only the lamp window is heated, not the entire body of the lamp.

**PID detector with 10.6ev lamp**

**SRI-8690-0040**

41

## EVERY SRI GC IS AN EXCEPTIONAL VALUE!

SRI GCs are half the cost of bulkier, comparably equipped GCs. Yet all SRI GCs include an unprecedented 2-YEAR factory warranty on parts and labor.

### SMALLEST FULL-FEATURED GCs AVAILABLE

The Model 8610C GC mainframe is only 18.5" W x 14.5" D x 12.5" H, weighs only 40-70 pounds, and can be configured with all the features of a standard lab GC – plus thousands of possible internal hardware combinations!



### INJECTOR SYSTEM VERSATILITY

A single cold On-Column Injector, upgradeable to other injector styles, is included on every SRI GC. Ten injector types are available for mounting onto the Model 8610C and Model 310 that cover solid, liquid and gas sample matrices.

### HIGH-TEMPERATURE, FAST-COOLING OVEN

The insulated oven's high-output heating element permits temperature programming from ambient to 400°C, at ramp rates up to 40° per minute. Heavy duty, but lightweight, all-aluminum construction for durability and portability.



## SRI STAND-ALONE DETECTOR (MODEL 110)

Add additional detectors to any SRI model GC, or to a GC from any other manufacturer, even older, out of production units. The Model 110 chassis can be configured with any combination of up to four SRI detectors. The Model 110 is equipped with a 200°C heated fused silica transfer line for connection to the host GC.

For those detectors which require support gases such as hydrogen or air, the Model 110 is equipped with electronic pressure regulators (EPC) for each gas. An optional air compressor may be installed to provide air for the FID, DELCD, and/or FPD detectors. The PeakSimple data system, either single or 4 channel types, may be installed for PC-based data acquisition, or the standard analog signal cable output (0-5 volts) may be connected to your existing data system, integrator, or strip chart recorder.

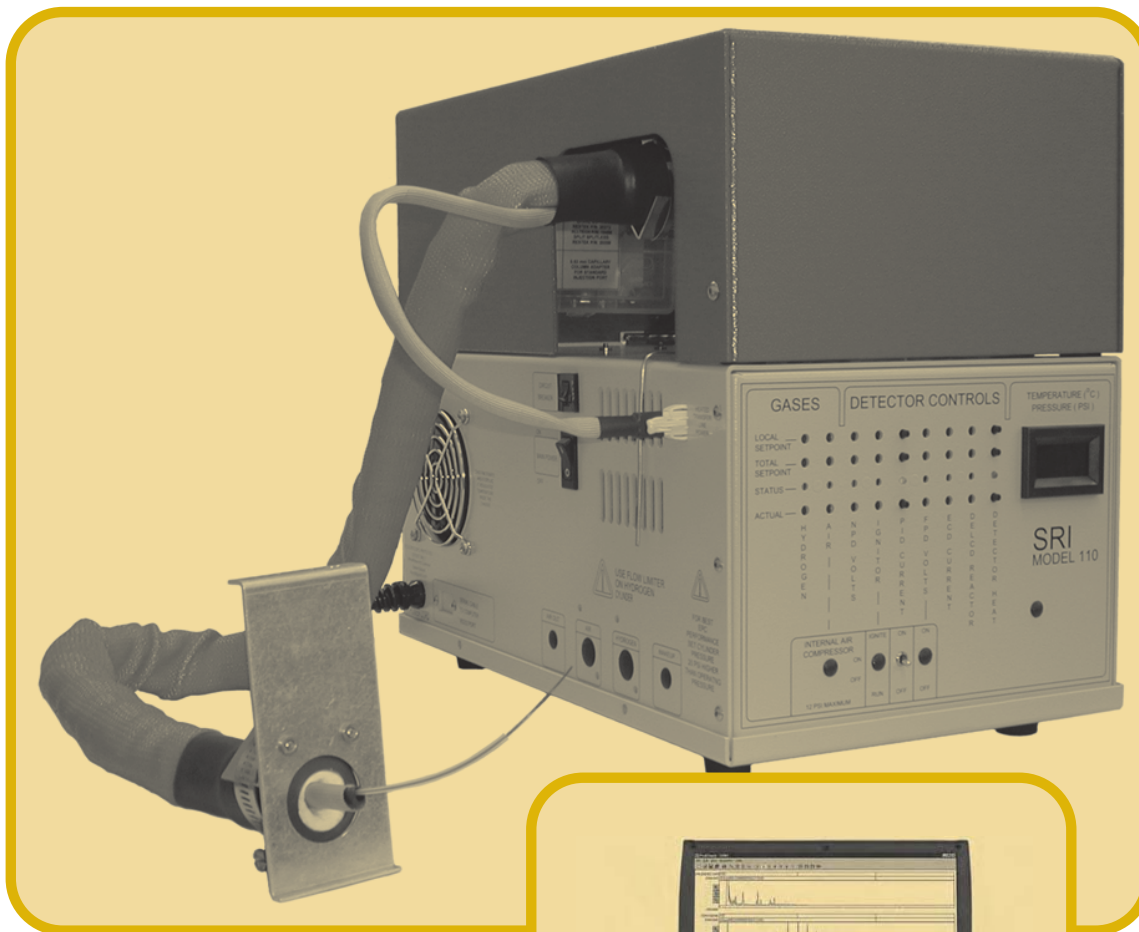
42

### STANDARD EQUIPMENT

Model 110 chassis, heated transfer line, "at a glance display" of all detector temperatures, voltages, and pressures, and analog signal cable for connection to data system.

The part numbers below are for the Model 110 chassis only. To completely configure the Model 110, a detector or combination of detectors from the previous section must be selected to be installed on the chassis.

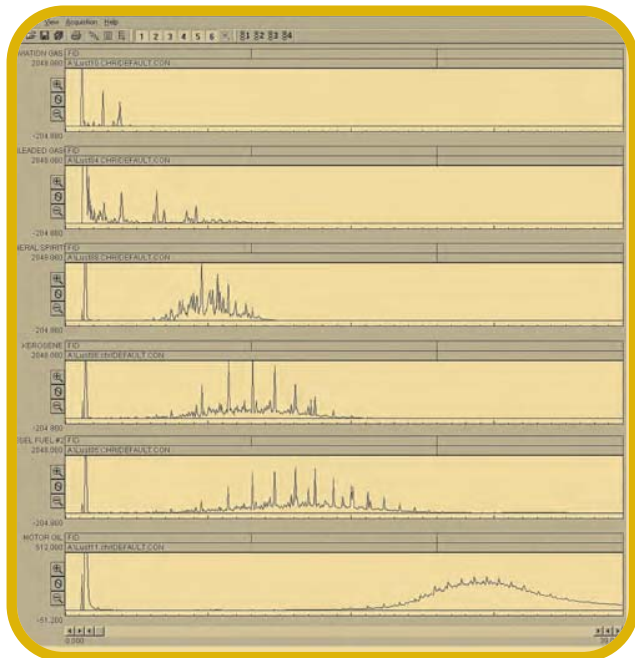
Model 110 Chassis (120 volt AC) w/std. equip.    SRI-0110-0003  
Model 110 Chassis (220 volt AC) w/std. equip.    SRI-0110-2203



**Add a PeakSimple  
Data System for  
PC-based data  
acquisition!**



# PEAKSIMPLE DATA ACQUISITION SYSTEMS



PeakSimple is included in the price of every SRI Gas Chromatograph with factory installed detectors. You can also enhance your existing GC systems with the Stand-Alone PeakSimple Model 203 (single channel), Model 202 (4-channel) and Model 302 (6-channel USB) Data Systems. PeakSimple chromatography software combines quick learning, ease of use, and convenient powerful features for GC and HPLC and CE. PeakSimple's intuitive graphical functions and features are so user-friendly most operators can produce results almost immediately – without specific training! PeakSimple is packed with state-of-the-art features like drag-able retention time windows, seldom found in other data system software packages costing much more.



PeakSimple even includes built-in data validation, an extra-cost option on other systems. This allows you to replay and re-acquire a stored chromatogram over and over, to determine the reproducibility and precision of the entire system. Of course,

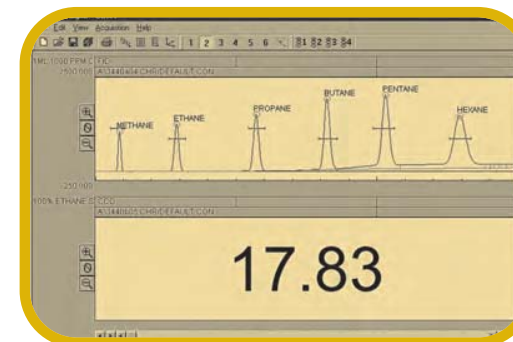
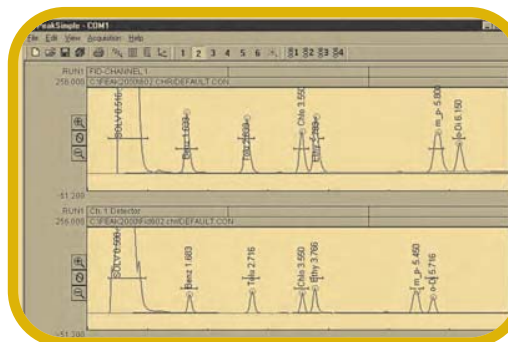
PeakSimple includes baseline subtraction, chromatogram overlay, DDE links, peak alarms, report generation, multi-level calibrations, data merge across channels, auto-sampler queue, batch reprocessing, and many other convenient features. Software updates are free via the SRI website, and can be downloaded anytime. Tech support is also free via phone, fax, or e-mail.

43

All SRI PeakSimple data systems connect to a host PC through a serial port cable so notebook or desktop computers can be used. It is not necessary to install any hardware in your computer – so you can use either a laptop or a full-sized computer. Multiple users can also connect their individual computers to the chromatograph without moving the data system hardware from computer to computer.

## Model 203

A single channel data system capable of acquiring data at up to 50Hz. Its eight TTL outputs can be optionally wired to a bank of eight single-pole, dual-throw mechanical relays with screw terminals for easy connection to any user device which operates from a contact closure. A remote start input allows run initiation from the user's GC or HPLC system. The 220VAC system is supplied with a UL, CSA, and CE/ VDE approved universal voltage input which will operate on any 100- 250 volt power supply. Approximately 8. wide x 8. deep x 1.75. high. **Windows 3.x - Windows XP compatible.**

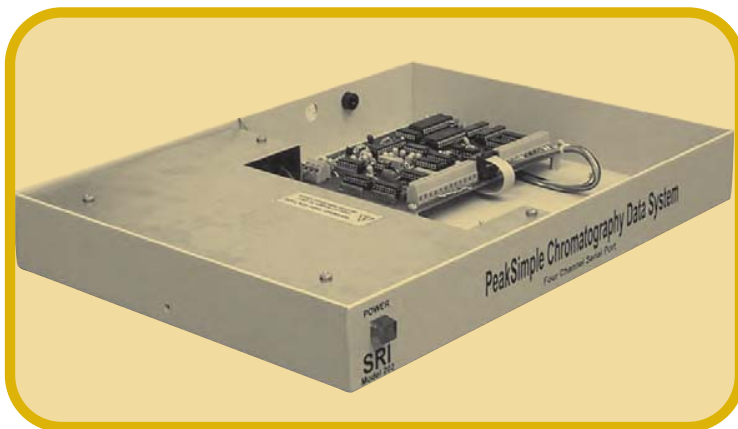


Model 203 1-Channel PeakSimple Data System  
Model 203 (220VAC)

SRI-8600-1055  
SRI-8600-1255

### Model 202

A 4-channel system that can acquire data at up to 50Hz with one channel active, 10Hz with two channels, or 5Hz with all four channels activated. The four channels of data can be randomly assigned to one of two time bases to allow independent start and stop times for two entirely separate instruments. Two remote start inputs allow run initiation from the user's GC or HPLC system. Model 202 includes the bank of eight single-pole, dual-throw mechanical relays with screw terminals for easy connection to any device that operates from a contact closure. Approximately 15. wide x 11. deep x 2. high **Windows 3.x - Windows XP compatible.**



Model 202 4-Channel PeakSimple Data System  
Model 202 (220VAC)

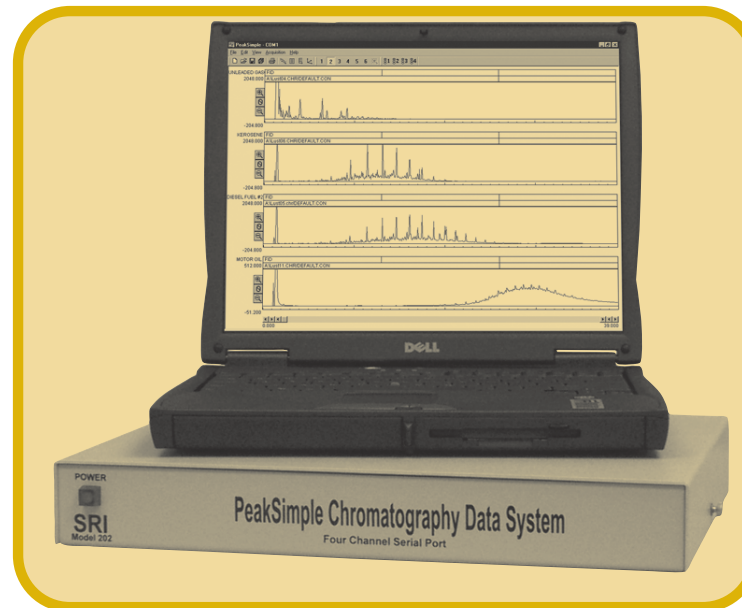
SRI-8600-4055  
SRI-8600-4255

44



### Model 302

For analysts who prefer the hot-swappable, plug-and-play capabilities of Universal Serial Bus devices. Four remote start inputs allow run initiation from the user's GC or HPLC system. The six channels of data can be randomly assigned to one of four time bases which provide independent start and stop times for 4 entirely separate instruments. Data can be acquired at up to 50Hz per channel with 4 channels active, and up to 20Hz with all 6 channels activated and acquiring data. The Plug and Play peripheral connection of choice, **USB is supported by Microsoft Windows 98, 98SE, ME, XP, and 2000.**



Model 302 6-Channel USB PeakSimple Data System  
Model 302 (220VAC)

SRI-8600-6055  
SRI-8600-6255

**Working in a PC-based lab  
or educational environment?  
Add a PeakSimple Data System  
and massage that data on your laptop!**



## SRI GC SYSTEM ACCESSORIES



### STAND-ALONE HYDROGEN GENERATOR

The SRI Hydrogen Generator provides up to 50ml/min of hydrogen at 35 psi which is sufficient to operate two FID or NPD detectors and also hydrogen carrier gas for most capillary or packed columns. The 75ml water capacity allows for maximum H<sub>2</sub> production for about 15 hours. Ideal for mobile labs, field testing, schools and other short term applications where gas cylinders are inconvenient.

Requires only distilled water. Also suitable for detectors such as PID, DELCD which can utilize hydrogen carrier gas.

**Stand-Alone Hydrogen generator**

**SRI-8690-0350**

### EXTENDED RUN HYDROGEN UPGRADE KIT

The Extended Run Kit upgrades the above Hydrogen Generator to allow for longer continuous operation for up to one month. The Kit includes a modified hydrogen generator cell, peristaltic pump, and larger desiccant canister.

**Extended Run Upgrade Kit  
Spare Desiccant Canister**

**SRI-8680-0351  
SRI-8680-0352**

### METHANIZER

Improve the detection of CO and CO<sub>2</sub> with the SRI Methanizer. Passing CO and CO<sub>2</sub> through the Methanizer converts these compounds to methane, which can now be detected by an FID down to 1ppm levels. The Methanizer requires the installation of the heated valve oven, and is only available on the 8610C mainframe.

**Methanizer accessory mounted on 8610C GC  
Replacement Methanizer tube**

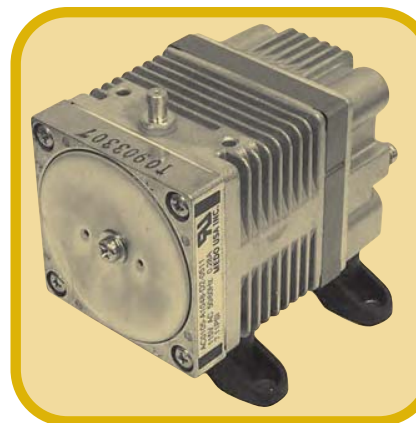
**SRI-8690-0081  
SRI-8690-1081**

### STAND-ALONE METHANIZER (FOR LOW LEVEL CO AND CO<sub>2</sub> DETECTION BY FID)

The SRI Model 510 Methanizer enables any GC equipped with an FID to detect low levels (5ppm) of CO and CO<sub>2</sub>. The Methanizer comes complete with its own temperature control box and universal power supply which can operate on any voltage. The control box displays the actual temperature of the Methanizer. The Methanizer contains a nickel catalyst powder, and requires hydrogen for operation. Equipped with Swagelok type fittings, it can be mounted and connected anywhere in your GC between the column and the FID detector.

**Stand-alone Methanizer**

**SRI-0510-0081**



### BUILT-IN "WHISPER QUIET" AIR COMPRESSOR

The convenient built-in "whisper quiet" air compressor is mounted inside the chassis of the 8610C or 310 GC where it provides a nearly silent supply of air for the FID, NPD or FID/DELCD detector flame. Air cylinders are then not required with the built-in air compressor, simplifying field operations and saving the expense of replacing air cylinders on a regular basis.

**Built-in Air Compressor (110 VAC)  
same as above but 220 VAC**

**SRI-8690-0070  
SRI-8690-2270**

### VACUUM PUMP INTERFACE

The Vacuum Pump Interface consists of a mains power (120 or 220 VAC) outlet on the side of the 8610C or 310 GC into which a user-supplied vacuum pump is plugged. The vacuum pump is used to draw gaseous samples through the traps for ambient air monitoring applications, or to load the loop of a gas sampling valve by pulling sample gas from a remote location. The PeakSimple data system can turn the power to this receptacle on/off thus controlling the vacuum pump with high reproducibility.

**Vacuum pump interface controlled by data system**

**SRI-8690-0073**



## GAS LINE INSTALLATION KITS

Each Gas Line Installation Kit includes everything required to connect a single gas cylinder to an SRI or any other brand of GC: pressure regulator (0-100psi) for top of cylinder, Swagelok adapter, SS gas line filter, tube cutter, 50 feet of 1/8" copper tubing. The H2 kit includes a snub-

ber to limit the gas flow in the event of a large leak. Air kit is supplied with both CGA 346 and 590 nipples so either style will work. Extra Swagelok nuts and ferrules are included.

- |   |                      |
|---|----------------------|
| <b>Gas Line Kit,<br/>CGA 350 Fitting for H2, Ar/CH4</b>     | <b>SRI-8600-C350</b> |
| <b>Gas Line Kit,<br/>CGA 580 Fitting for N2, He</b>         | <b>SRI-8600-C580</b> |
| <b>Gas Line Kit,<br/>CGA 590 Fitting for Compressed Air</b> | <b>SRI-8600-C590</b> |

46

## GC MAINTENANCE KIT

The kit includes most parts which could fail and is designed specifically for our export customers. Includes: user replaceable chips and devices for electronic circuits, oven and detector heaters, EPC fluister assembly and pressure sensor, assorted Swagelok™ nuts and ferrules, assorted graphite and vespel ferrules, type K thermocouple, wide-bore injector adapter, digital voltmeter for troubleshooting. **MUST SPECIFY 110VAC OR 220VAC SYSTEM.**

**GC Maintenance kit (specify 120 or 220 VAC) SRI-8600-MAIN**

## HYDROGEN/HYDROCARBON (H2/HC) LEAK DETECTOR

The Hydrogen/Hydrocarbon (H2/HC) leak detector/monitor uses the same CCD detector used on the SRI GCs and is useful for 'sniffing' the fittings on your GC for leaking Hydrogen or Argon/Methane or for detecting leaking natural gas, propane or other volatile hydrocarbons. Detection limit is approximately 500ppm. The leak detector is connected to a standard voltmeter (not included) to provide a digital readout. It can also be built-in to the Model 203 PeakSimple data system for longer term strip-charting or monitoring. As the H2/HC concentration increases, the voltmeter numbers increase. By utilizing a voltmeter as a readout device (many labs already have a voltmeter) the cost of leak detection can be reduced. The 110 volt AC unit is powered by a 9 volt DC wall transformer, but can also be run on battery power using any battery source with voltage between 8 and 15 volts DC. Power consumption is about 200 milliamps.

**110 volt AC powered H2/HC leak detector SRI-8690-5600**

**General purpose digital voltmeter SRI-8690-5510**

**Model 203 PeakSimple data system with hydrogen/hydrocarbon sensor installed SRI-8600-5655**





# SRI PRE-CONFIGURED GC SYSTEMS

There are two ways to buy an SRI GC; custom configure a GC to meet your analytical needs, or choose from one of the popular pre-configured models listed in this section. Due to batch manufacturing capabilities, the pre-configured GC systems are less expensive than the identical hardware assembled “a la carte”. All SRI GCs include PeakSimple Data Acquisition software. Any SRI Pre-Configured GC may be upgraded with additional hardware.

## CAPILLARY FID GC

The Capillary FID GC System is a state of the art, general purpose temperature programmable GC in a compact, low-cost package. Built on the larger 8610C GC chassis, it includes everything you need to separate and detect fuels and other hydrocarbon compounds. In addition to a wide range of general gas chromatography applications, the Capillary FID GC is excellent for environmental testing and quality control applications.

The On-Column Injector (for 0.53mm capillary columns) is good for liquid and gas sample with high and low boiling analytes—no boiling point discrimination. The built-in, “whisper quiet” air compressor provides a nearly silent supply of combustion air for the FID detector, so an air cylinder is not required for most applications. The optional Split/Splitless injector upgrade allows for the use of 0.32mm, 0.25mm and smaller capillary columns.

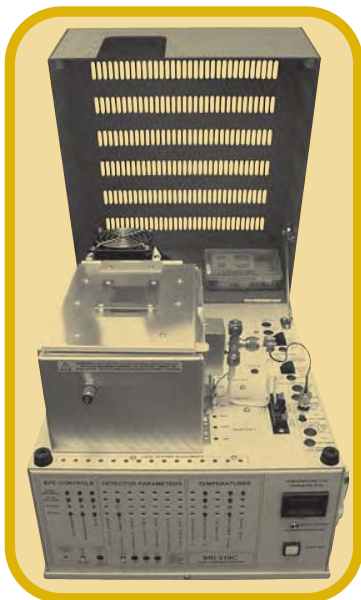
### The Capillary FID GC includes:

- FID detector
- Built-in Air compressor for FID air
- Single Channel PeakSimple Data Acquisition Software
- Standard On-Column Injector
- 30M. capillary column

Capillary FID GC System (110VAC)    **SRI-8610-5400**  
 Capillary FID GC System (220VAC)    **SRI-8610-5400-2**



47



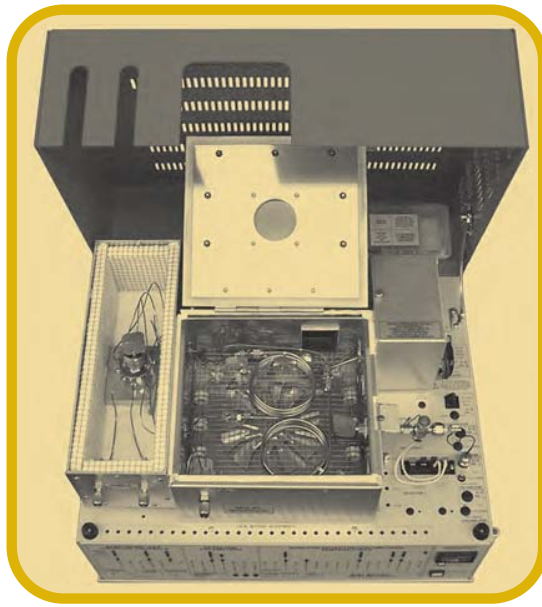
## EDUCATIONAL FID GC

The Educational FID GC system is ideal for undergraduate and graduate level research or for labs on a tight budget for general GC applications. The Educational GC is built on the smaller 310 GC chassis and offers low cost and complete “upgrade-ability” with the wide selection of detectors and injectors. Both the carrier gas and the FID combustion gas are controlled by programmable Electronic Pressure Controllers (EPC). EPCs provide rock-solid retention time reproducibility, and allow the carrier gas to be pressure ramped (just as the column oven is temperature ramped) from the built-in PeakSimple data system. The 310 GC column oven accepts column cage diameters up to four inches, is programmable to 400°C, and recycles quickly with its high speed cool-down fans.

### • The Educational FID GC includes:

- FID detector
- 1-meter Silica Gel Column
- Standard On-Column Injector
- Single Channel PeakSimple Data Acquisition Software

Educational FID GC (110VAC)    **SRI-0310-0004**  
 Educational FID GC (220VAC)    **SRI-0310-0004-2**



### MULTIPLE GAS ANALYZER GC

Number ONE for permanent gas, natural gas, sulfur, and hydrocarbon analyses. One of SRI's most popular pre-configured GCs, the Multiple Gas Analyzer GC is pre-plumbed and ready to resolve H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, Methane, CO, Ethane, CO<sub>2</sub>, Ethylene, NO<sub>x</sub>, Acetylene, Propane, Butanes, Pentanes, and C<sub>6</sub> through C<sub>8</sub>. Unlike complicated and timing-critical gas analysis configurations with 3-4 columns and 3-4 valves, the SRI Multiple Gas Analyzer uses just a single 10 port gas sampling valve and two columns,

and is very tolerant of valve timing variations or operator adjustments. A Molecular Sieve packed column is located in the GC's heated valve oven at a constant 100°C temperature, while a Silica gel packed column is temperature programmed from 40°C to 300°C in the main column oven. The only compromise is that C<sub>4</sub> and C<sub>5</sub> isomers do not completely resolve on the silica gel column.

48

#### Four Multiple Gas Analyzer #1 system configurations are available:

- TCD detector only, for detection limits in the 200-500 ppm range
- TCD-Methanizer-FID for improved detection limits (5 ppm) for CO, CO<sub>2</sub> and all hydrocarbon peaks.
- TCD-HID detector combination for detection limits in the 10 ppm range for all analytes including Hydrogen.
- TCD-Methanizer-FID-FID/FPD for low level sulfur detection (mid-ppb levels).

Multiple Gas Analyzer GC with TCD detector	SRI-8610-0070
Multiple Gas Analyzer GC with TCD, Methanizer, FID and built-in "whisper quiet" air compressor	SRI-8610-0071
Multiple Gas Analyzer with TCD and HID detectors	SRI-8610-0072
Multiple Gas/Sulfur Analyzer GC with TCD, FID, FPD/FID detectors, Methanizer, built-in air compressor, 3 columns, and nickel loop	SRI-8610-0073

### MULTIPLE GAS ANALYZER #2 GC

The Multiple Gas Analyzer #2 GC configuration is pre-plumbed and ready to resolve H<sub>2</sub>, He, O<sub>2</sub>, N<sub>2</sub>, Methane, CO, Ethane, CO<sub>2</sub>, Ethylene, Acetylene, NO<sub>x</sub>, Water, Alcohols, Propane, Butanes, Pentanes, and C<sub>6</sub> through C<sub>20</sub>. Unlike complicated and timing-critical gas analysis configurations with 3-4 columns and 3-4 valves, the SRI Multiple Gas Analyzer #2 uses just a single 10 port gas sampling valve plumbed with dual loops and two, three or four columns. To separate such a wide variety of peaks without co-elution this GC turns the carrier gas flow to each column on at different times during the run. This allows the MoleSieve column to complete the separation of H<sub>2</sub>, He, O<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub> and CO, at which point the MoleSieve carrier flow is turned off and the Haysep D carrier flow is turned on. The Haysep D column then separates all compounds in the C<sub>1</sub> through C<sub>6</sub> range. A capillary column in parallel with the Haysep-D can also be useful in separating the hydrocarbons out through C<sub>20</sub>. Detectors can be TCD, HID, FID or any combination depending on the exact needs of the analysis.

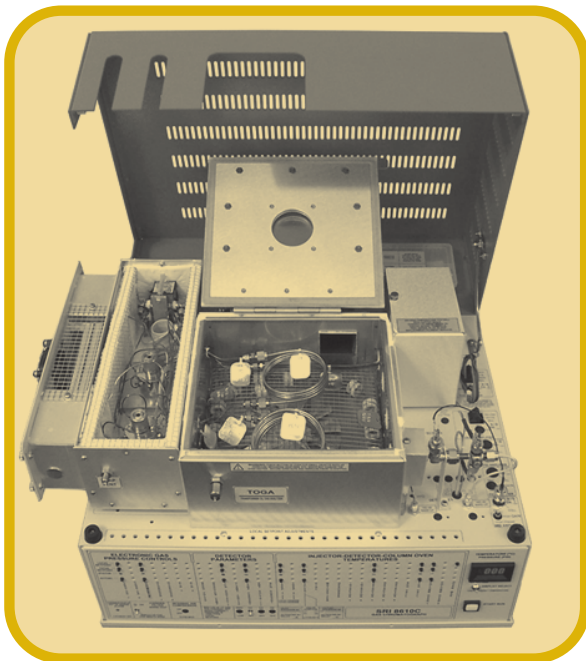
Multiple Gas Analyzer #2 GC with TCD detector	SRI-8610-0270
Multiple Gas Analyzer #2 with TCD, Methanizer, FID and built-in "whisper quiet" air compressor	SRI-8610-0271
Multiple Gas Analyzer #2 w/TCD and HID detectors	SRI-8610-0272

### SULFUR GC

The Sulfur GC combines an on-column injector, built-in "whisper quiet" air compressor, a heated 10 port gas sampling valve with nickel loop and tubing (to avoid sulfur decomposition), a one meter Haysep D column packed in Teflon tubing and a combination FID/FPD detector. The FID signal responds to all hydrocarbons while the FPD mainly responds to sulfur containing molecules, but also has a small response to large hydrocarbon peaks such as the methane and ethane in natural gas. The combination FID/FPD detector is useful in this case to identify the large hydrocarbon peaks so as not to confuse them with the sulfur peaks which are typically present at low ppm levels. For H<sub>2</sub>S in natural gas, Total Reduced Sulfur (TRS) analysis, mercaptans, pesticides and other applications where sulfur in gas or liquid is the problem, this Sulfur GC is configured for simple reliable analysis.

Sulfur GC SRI-8610-5670





## TOGA GC SYSTEM

SRI now offers an affordable, field portable GC system for determining the type and quantity of gases dissolved in transformer oil. The TOGA GC may be equipped with a TCD detector, HID detector, or both. The TCD and HID detectors are universal, and can detect the entire spectrum of gases typically found dissolved in transformer oil: hydrogen, oxygen, nitrogen, methane, carbon monoxide, carbon dioxide, ethylene, ethane, and acetylene. For sub-ppm detection limits, choose the

HID detector. The TCD

detector can detect the target analytes (except hydrogen) down to 5-10ppm. For a 1-100% detection range, choose both detectors.

In the SRI TOGA GC System, the transformer oil sample is injected by syringe pump through a unique gas extraction loop. The extracted gases are then injected into the carrier gas stream by the dual 10-port valve injection system. The syringe pump uses standard 50mL syringes. This means the sample can be loaded into the syringe from the transformer, then into the GC by pump, without ever being handled – helping protect the transformer oil sample from ambient contaminants.

### The TOGA GC includes:

- HID and / or TCD Detectors
- Built-in PeakSimple Data System
- Molecular Sieve and Silica Gel packed columns
- Syringe Pump for Industry Standard 50mL Syringes
- Dual 10-port Gas Sampling Valves
- Gas Extraction Loop on the compact 8610C chassis

**TOGA GC with TCD detector**

**SRI-8610-0030**

**TOGA GC with HID detector**

**SRI-8610-0031**

**TOGA GC with TCD & HID detectors**

**SRI-8610-0032**

## PCB GC

The PCB GC has everything needed to detect PCBs in soil and other solid matrices. The Thermal Desorber permits the user to inject and analyze PCBs with very high sensitivity and little or no sample preparation – no solvent extraction is required. Up to 1 gram of soil can be loaded into each re-usable glass desorption tube. The FID detector responds to all hydrocarbons, and the DELCD identifies those compounds which are halogenated. Due to the extreme selectivity of the DELCD, PCBs can be discriminated even in the presence of massive hydrocarbon contamination. Because the FID pre-combusts the sample, the DELCD is protected from hydrocarbon contamination.

The PCB GC system is also useful for detecting pesticides, PAHs, JP-4, kerosene, and diesel in soil. Soil samples are typically 20-50% water, so the FID flame is automatically relit after a large water peak. The 30-meter capillary column is included to efficiently separate hydrocarbons up to C40+. The built-in, “whisper-quiet” air compressor provides an infinite supply of combustion air for the FID/DELCD detector, and if the GC is used with the H<sub>2</sub>-50 hydrogen generator, no gas cylinders are required.

**PCB GC**

**SRI-8610-0080**

## TO-14 AIR MONITORING

For TO-14 analysis and ambient air analyses of all types, this configuration has everything you need in a compact, easy to transport package. By comparing the relative response, the three detectors make peak identification and confirmation easy. The FID responds to all hydrocarbons, the PID to some hydrocarbons and all aromatics, and the DELCD to halogens only.

The dual-trap sample concentrator is similar to the SRI purge & trap but has a gas inlet instead of a liquid purge vessel (the liquid purge head can be added if required). The innovative dual-trap design results in more efficient trapping and desorption than single trap designs, especially for the early eluting peaks such as vinyl chloride. The vacuum pump interface allows the PeakSimple data system to turn a vacuum pump (not supplied) on and off under control of the software. The vacuum pump is used to draw ambient air through the traps for a precise amount of time thus enabling the system to sample unattended.

### The TO-14 GC is configured on the 8610C chassis and includes:

- PID detector
- Dual trap sample concentrator
- Built-in air compressor
- PeakSimple data system
- FID/DELCD detector
- Vacuum pump interface
- 60-meter capillary column

**TO-14 GC configuration**

**SRI-8610-0114**



## ENVIRONMENTAL AND BTEX GC

For laboratory or mobile field testing applications where space and versatility are critical, choose the Environmental GC. Equipped with Method 5030 or 5030/5035 compliant Purge & Trap, PID, and FID/DELCD detectors, it will easily generate certification quality data for EPA Methods 8021, 8010, 8015, TO-14, and many others. With the optional Thermal Desorber, you can quickly screen for pesticides, PCBs, diesel, and other semi-volatiles. The standard on-column injection port allows syringe injection as well, and a second injector may be installed if desired. In one easily transported instrument, you can be equipped to perform just about every type of GC environmental test your clients might request. For users who do not need the chlorine/bromine selective DELCD detector, the same GC configuration minus DELCD is available as the BTEX GC.



50

### The Environmental GC is configured on the 8610C chassis and includes:

- Built-in Method 5030 or 5030/5035 compliant Purge & Trap
- Large 40°C column oven
- Built-in “whisper quiet” air compressor
- PID and FID/DELCD detectors
- Rugged re-useable shipping container
- On-Column Injection port
- 60-meter capillary column
- PeakSimple data system

### And can optionally be equipped with:

- Thermal Desorber for semi-volatiles
- An additional gas sampling valve
- An additional detector
- Vacuum pump interface for air sampling
- Built-in hydrogen generator

Environmental GC with PID, FID/DELCD detectors, Method 5030 compliant purge & trap, built-in air compressor, 60 meter capillary column, and PeakSimple data system

SRI-8610-0059

BTEX GC— same as above, but PID and FID detectors only. No DELCD detector

SRI-8610-0050

Upgrade Purge & Trap to 5030/5035 compliant

SRI-8690-5052

## BREATH ANALYZER GC

There is wide-spread interest in measuring the chemical compounds humans exhale in hopes that they will be diagnostically useful in the detection and treatment of disease. The Breath Analyzer GC is designed to provide a low-cost, easily deployable instrument to determine the chemical composition of human breath. The SRI's Breath Analyzer is configured with an FID detector sensitive to all hydrocarbons and a Thermal “breath tube” desorber. A built-in Hydrogen generator and “whisper quiet” air compressor provide all gases required for operation so the GC can easily be deployed to doctor's offices or patient locations without the need for on-site compressed gas cylinders.

Breath Analyzer GC

SRI-8610-3489

## EXPLOSIVES GC

The Explosives GC is especially convenient for field monitoring and screening of explosives contaminated soil and water as might be found in former military bases or practice ranges. The Explosives GC can separate and detect all the nitroaromatic compounds even in the presence of interferences which would compromise other measurement techniques. This GC combines a heated on-column injector, built-in “whisper quiet” air compressor and a Thermionic Ionization Detector (TID) for detection of many nitroaromatic explosives such as TNT and some nitramine explosives such as RDX (C4), and HMX. For TNT and some other nitroaromatics, detection limits of 1ppb (1 picogram on column) are routine. Nitramine compounds such as RDX exhibit lower response by a factor of 50.

### The Explosives GC is configured on the 8610C chassis and includes:

- Heated injector
- TID (Thermionic ionization detector)
- 15 meter capillary column
- Built-in “whisper quiet” air compressor

Explosives GC with TID detector

SRI-8610-1117

Optional 20-vial Model 8640 liquid auto-sampler

SRI-8640-0010



## BTU GAS ANALYZER GC

The BTU Gas Analyzer GC configuration is pre-plumbed and ready to measure N<sub>2</sub>, Methane, CO<sub>2</sub>, Ethane, H<sub>2</sub>O, Propane, iso and normal Butanes, iso and normal Pentanes, and C<sub>6</sub> plus backflush. Unlike complicated and timing-critical gas analysis configurations with 3-4 columns and 3-4 valves, the SRI BTU Gas Analyzer uses just a single 10 port gas sampling valve and two columns, and is very tolerant of valve timing variations or operator adjustments. The BTU Gas Analyzer can be configured with TCD detector only, for detection limits in the 200-500 ppm range. Other detectors can be added such as the HID, FID or FPD for applications needing higher sensitivity or selectivity

**BTU Gas Analyzer GC with TCD detector**  
**Breath Analyzer GC**

**SRI-8610-3070**  
**SRI-8610-3489**



## MUD-LOGGING GC

The Mud-Logging GC configuration provides a continuous reading of total hydrocarbons in a gas stream while periodically performing a chromatographic separation of the sample to determine the exact composition of the sample gas stream. The built-in PeakSimple data system displays both the continuous total hydrocarbon reading and also the separated peaks. An alarm function alerts the operator for any out of range readings. The Mud-Logging GC configuration can optionally be modified to incorporate a TCD (Thermal Conductivity Detector) or CCD (Catalytic Combustion Detector) instead of the FID. The TCD has the advantage of detecting CO<sub>2</sub> and water while only using helium carrier gas, but is less sensitive than the FID and more prone to filament damage. The CCD has the advantage of being able to operate on air alone (no hydrogen or helium needed), but is less sensitive than the FID.

**The Mud-Logging GC is configured on the 8610C chassis and includes:**

- FID detector
- 10 port Gas Sampling Valve
- Heated valve oven and 3' packed column for speciation of C<sub>1</sub>-C<sub>6</sub> hydrocarbons
- CCD detector for continuous monitoring of total hydrocarbons
- Built-in "whisper quiet" air compressor
- Multi-channel PeakSimple data system for simultaneous display of total hydrocarbons and individual C<sub>1</sub>-C<sub>6</sub> peaks

**Mud-Logging GC**

**SRI-8610-0060**

## METHOD 25 METHANE/NON-METHANE HYDROCARBONS GC

The Model 8610C Gas Chromatograph is configured with an FID detector, built-in air compressor and 10 port gas sampling valve (GSV) to quickly determine methane-non methane hydrocarbons per Method 25. The PeakSimple data system which controls the GC and GSV also collects data and quantitates the non-methane hydrocarbons, producing a nice printout which reports the non-methane hydrocarbons in ppm, and saves the data to the computer's disk for later re-analysis if necessary. The system comes standard with a Hayesep D column, but may also be equipped with other column types where necessary.

**The Method 25 GC is configured on the 8610C GC chassis and includes:**

- FID detector
- Electrically operated 10 port gas sampling valve plumbed for inject and backflush
- Heated valve oven
- Built-in air compressor

**8610C GC configured for Method 25 analysis**

**SRI-8610-0025**



# PEAK GAS GENERATOR SYSTEMS

Peak Scientific Instrument's Gas Generator Systems produce high purity Hydrogen, Nitrogen and Zero Air for GC, LC/MS, and other lab or industrial applications. They are economical, safe, constant and reliable. Other products include Calibration Gas, Purge Gas, Air Dryers, TOC Air Generators and custom-designed generators.



52

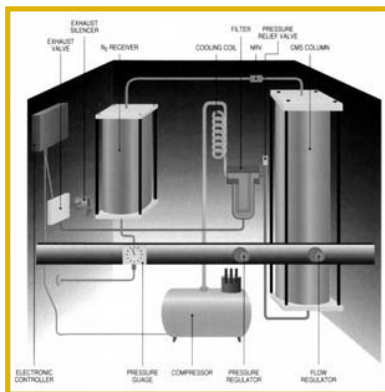


**SAFETY:** All Peak Scientific gas generators are designed for completely safe operation. Working at low pressures, they overcome the hazards associated with high pressure gas cylinders and can be safely sited in a laboratory environment.

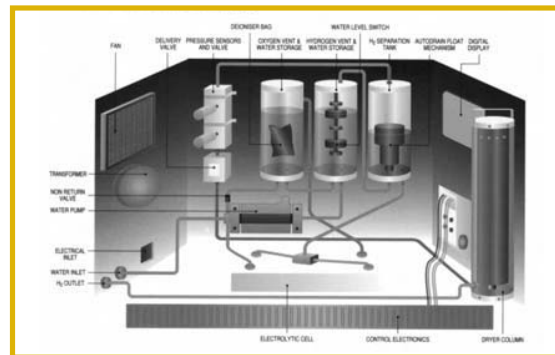
**CONVENIENCE:** The Generators never need to be changed, giving constant supply of highest purity gas. No more reliance on weekly deliveries of cylinders or worries about running out of gas.

**FINANCIAL SAVINGS:** A single investment in a PEAK gas generator has a pay-back period as low as 6 months. You get the benefit of constant purity and reducing your financial outlay on cylinders. Why pay increasing costs for gas cylinders when a gas generator will save you money, time and effort and improve safety, reliability and convenience.

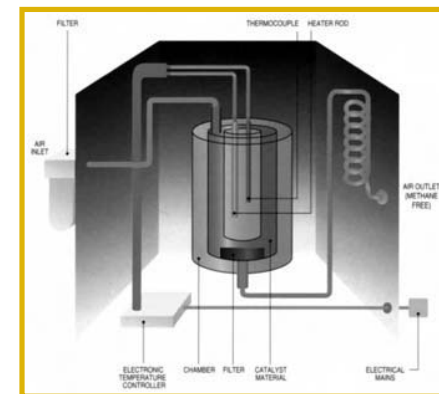
Nitrogen - p. 52-54



Hydrogen - p. 55



Zero Air - p. 56





## HIGH VOLUME NITROGEN FOR LC/MS AND OTHER LAB APPLICATIONS: 99.5% purity, 18 - 30 Liters/minute volume

Peak's 'NM' SERIES utilizes Hollow Fiber Membrane Technology to efficiently separate Nitrogen from other gases present in ambient air. The membrane operates on the principal of selective permeation in that so-called Fast gases such as H<sub>2</sub>O, CO<sub>2</sub> & Oxygen will permeate through the membrane wall, while so-called Slow gases – in this case nitrogen – will not, and continue along the membrane tube for collection and use.

### FEATURES & BENEFITS

Built-in air compressor (where noted)  
 Dry nitrogen - -70°C / -94°F PDP  
 Easy installation – no special installation required  
 Purity – constant purity with no fall-off in performance  
 24 hour continuous gas supply  
 Design – specifically for LC/MS/MS

Safety – replacing cylinders  
 Quiet – site in lab  
 Over 10,000 systems worldwide using this technology  
 Mobile – moves to suit your needs  
 Phthalate free

Specification	NM18L **	NM18LA	NM30L **	NM30LA
Max Flow Rate (ATP)	18 L/min.	18 L/min.	30 L/min.	30 L/min.
Outlet Pressure	Input dependent	7 bar / 100 psi	Input dependent	7 bar / 100 psi
Built-in Air Compressor	NO	Yes	NO	Yes
Maximum Purity	0.999			
Nitrogen Pressure Dewpoint	-70°C / -94°F			
Particles >0.01 um	None			
Suspended Liquids	None			
Phthalates	None			
Commercially Sterile	Yes			
Min-Max Air Inlet Pressure	110-150 psi	n/a	110 – 150 psi	n/a
Maximum Ambient Operating Temperature	37°C / 98°F			
Noise Level	Silent	59dB (A) 1 M.	Silent	59 dB (A) 1 M.
Electrical Requirements	None	230v 50Hz	None	230v – 50/60Hz 4.9A
Dimensions (HxWxD)	30 x 10 x 6 inches	34 x 17 x 16 inches	30 x 10.5 x 6.5 inches	36 x 24 x 24 inches
Weight	22 lbs	90 lbs	29 lbs	198 lbs

**\*\* NOTE:** These units require an oil-free air source. In addition, all air lines from the air source to the Generator must be clean of contaminants in order to ensure the high purity of the nitrogen output from the Generator.



## HIGH VOLUME NITROGEN GENERATORS: 60 - 240 Liters / Minute volume\*\*

If you have an oil free air supply (or pre-treated air @ 110 psig is required), the NM60L – 240L systems can be easily attached to your air line as a source for high volume nitrogen. Requiring no electrical connection, they are simple to install and use. With a pressure drop of only 8 psi, they are the lowest on the market, making it easier to use house air. If no air is available, contact us for details of air compressors to suit.

### FEATURES & BENEFITS

Dry nitrogen - -70°C / -94°F PDP  
 Easy installation – no special installation required  
 Purity – constant purity with no fall-off in performance  
 Phthalate free  
 24 hour continuous gas supply

Safety – replacing cylinders  
 Quiet – site in lab  
 Over 10,000 systems worldwide using this technology  
 Mobile – moves to suit your needs  
 Design – specifically for high volume

54

SPECIFICATION	NM60L	NM120L	NM180L	NM240L
Max Flow Rate (ATP)	60 L/min.	120 L/min.	180 L/min.	240 L/min.
Outlet Pressure		Input dependent		
Built-in Air Compressor		No		
Nitrogen Pressure Dewpoint		70°C / -94°F		
Particles >0.01 µm		None		
Suspended Liquids		None		
Phthalates		None		
Commercially Sterile		Yes		
Min-Max Air Inlet Pressure		110-150 psi		
Maximum Ambient Operating Temperature		37°C / 98°F		
Noise Level		None		
Electrical Requirements		None		
Dimensions HxWxD (inches)		48 x 17 x 16		
Weight (lbs)	110	120	131	142

**\*\* NOTE:** These units require an oil-free air source. In addition, all air lines from the air source to the Generator must be clean of contaminants in order to ensure the high purity of the nitrogen output from the Generator.

## HIGH PURITY NITROGEN FOR GC, LC, AND OTHER LAB APPLICATIONS:

### 99.9995% purity, ≤ 4 Liters / Minute volume

The High Purity 'NG' SERIES Nitrogen Generators from Peak Scientific utilize a Pressure Swing Adsorption (PSA) method to extract pure Nitrogen from air. Unwanted gases are selectively adsorbed from compressed air into a porous carbon molecular sieve material (CMS). These Peak Scientific high purity generators utilize a unique single column system where the CMS column is alternately pressurized and vented under a finely tuned timing cycle. The rates of pressurization and venting are accurately set which guarantees high purity better than that achieved with similarly sized traditional 2-column systems.

#### FEATURES & BENEFITS

- Experience – over 10,000 customers using this technology
- Safety – meets all standards and regulations
- Simple installation – no special requirements
- Convenience – no heavy cylinders to change
- Variable flow and purity – designed to suit your application
- Purity – 99.9995% purity with no fall-off in performance
- Economics – significant savings over cylinders
- Internal air supply – self-contained systems
- Portable – moves to suit your requirements



SPECIFICATION	NG250A	NG600A	NG1000A	NG2000A	NG3000A	NG4000A	ANG250A	ANG600A	ANG3000A
Max Output Flow Rate for N2 >99.9995% ATP	250 cc/min	600 cc/min	1000 cc/min	2000 cc/min	3000 cc/min	4000 cc/min	250 cc/min	600 cc/min	3000 cc/min
Max Zero Air Output Flow Rate for THC <0.1ppm (ATP)	n/a	n/a	n/a	n/a	n/a	n/a	1200 cc/min	1500 cc/min	3000 cc/min
Pressure Dewpoint	-70°C/-100°F								
Max Output Pressure (barg/psig)	0-80psig / 0-5.5 bar								
Internal Air Compressor	standard								
Electrical Requirements (110v/60Hz / 230v /50Hz)	5A / 2.5A	5A / 2.5A	6A / 3A	6A / 3A	6A / 3A	6A / 3A	6A / 2.5A	6A / 2.5A	6A / 3A
Outlet Port	1/4"								
Dimensions HxWxD( inches)	24 x 17 x 16	24 x 17 x 16	24 x 17 x 16	53.5 x 17 x 16	53.5 x 17 x 16	53.5 x 17 x 16	35 x 17 x 16	35 x 17 x 16	53.5 x 17 x 16
Shipping Weight (lbs)	187	187	187	238	238	238	187	187	282



### HYDROGEN GENERATORS (99.9995% purity):

Peak Hydrogen Generators use an ion exchange membrane extensively used in industrial and laboratory applications throughout the chloroalkali industry. The reliability of this type of membrane is assured due its industrial and military pedigree. To produce the highest purity of hydrogen that an analytical laboratory requires, Peak employs the services of a platinum catalyst in the electrode area which recombines any stray oxygen before it can contaminate the hydrogen stream. Electrolysis of water is the best method of producing high purity hydrogen on demand. The most important element of the generator is the electrolyzer cell where the electrolysis reaction takes place. This consists of two electrodes (an anode and a cathode) which are separated by the ion exchange membrane. Deionized water is the raw material of the system and must have a purity of  $1\mu\text{S}/\text{cm}$  or better to prevent damage to the membrane.

56

SPECIFICATION	HG200	HG300	HG600
Max Flow Rate (ATP)	200cc/min.	300cc/min.	600cc/min.
Hydrogen Purity (%)		99.9995	
Delivery Pressure		0-60psi	
Gas Flow Indicator		Yes	
Dual Pressure Safety		Yes	
System Check		Yes	
Auto. Leak Detection		Yes	
Caustic Solution	←	None	→
Water Purity Conductivity:		<1.0 $\mu\text{S}/\text{cm}$	
Water Purity Resistivity:		>1.0M $\Omega$ -cm	
Outlet Port		1/8"	
Electrical Requirements		115V / 60Hz or 230V / 50 Hz	
Dimensions HxWxD (inches)		15 x 14 x 15	
Weight (lbs)		49	



## ZERO-AIR GENERATOR

Ambient air is compressed and, after cooling, is passed through a Filter Separator which removes moisture and particles down to 0.1 micron. The air is then passed through a Membrane Dryer to remove any remaining moisture and then into an internal Receiver. Air from the Receiver is regulated for pressure and flow, then passed to the 'Zero Air' catalytic combustion chamber. This works on the principle of catalytic oxidation where hydrocarbons from the incoming compressed air supply are cracked to carbon dioxide and water. The hydrocarbon level in the form of methane is reduced to <0.1ppm. For this process to work the catalyst requires heating to approximately 400 degrees Celsius. The free Carbon and Hydrogen atoms then combine with Oxygen in the air to form Carbon Dioxide and Water.



After the catalytic chamber the 'zero' air passes through a cooling coil to reduce its temperature to a safe level.



SPECIFICATION	ZA015**	ZA035**	ZA035A	ZA070**	ZA070A	ZA180**	ZA180A	ZA300**
Outlet Hydrocarbon Concentration (as Methane)	←————— <0.1ppm —————→							
Max Air Flow Rate (outlet) for specified Hydrocarbon Concentration	1500 cc/min	3500 cc/min	3500 cc/min	7000 cc/min	7000 cc/min	18,000 cc/min	18,000 cc/min	30,000 cc/min
Max Inlet Hydrocarbon Concentration (as Methane)	←————— 100 ppm —————→							
Inlet Air Pressure (min/max)	20-125 psig	20-125 psig	n/a	20-125 psig	n/a	20-125 psig	n/a	20-125 psig
Integral Air Compressor	NO	NO	yes	NO	yes	NO	yes	NO
Start up time for Specified Hydrocarbon Concentration (as methane)	←————— [ 30 mins. ] —————→							
Particles >0.01 micron	←————— [ none ] —————→							
Electrical Requirements (120v AC/ 220-240v AC)	4.0A / 2.0A	4.0A / 2.0A	6.8A / 3.4A	4.0A / 2.0A	6.8A / 3.4A	4.0A / 2.0A	6.8A / 3.4A	9.2A / 5.5A
Outlet Port	←————— 1/4" —————→							
Dimensions HxWxD (inches)	20 x 12 x 5	20 x 12 x 5	35 x 17 x 16	20 x 12 x 5	35 x 17 x 16	20 x 12 x 5	35 x 17 x 16	35 x 17 x 16
Shipping Weight (lbs)	22	22	137	22	137	22	123	137
Energy kWh/hr	0.19	0.21	0.3	0.23	0.37	0.31	0.6	

\*\* NOTE: These units require an oil-free air source. In addition, all air lines from the air source to the Generator must be clean of contaminants in order to ensure the high purity of the zero air output from the Generator.

# GC CONSUMABLES: FERRULES

Graphite-Vespe<sup>l</sup><sup>TM</sup> and graphite ferrules provide excellent sealing properties for fused silica tubing applications and are available for all types of GCs. Graphite-Vespe<sup>l</sup><sup>TM</sup> ferrules can be used in GC oven fittings at temperatures up to 400°C and are recommended for standard GC and GC/MS. Graphite ferrules can be used at temperatures up to 450°C and are reusable if not over-tightened. Ferrules are available for standard 1/16" GC fittings; 1/8" reducing ferrules are also suitable for capillary column applications in GCs with packed column fittings. All ferrules come in packages of 10.

## GRAPHITE-VESPEL<sup>TM</sup> FERRULES

These ferrules fit all 1/16" standard Swagelok<sup>TM</sup> and Parker<sup>TM</sup> fittings. Maximum recommended temperature is 400°C.

FERRULE I.D.	CAPILLARY COLUMN I.D. / O.D.	CAT.#
0.3mm	0.10mm x 0.20mm	GVF-10
0.4mm	0.18 and 0.25mm x 0.35mm	GVF-25
0.5mm	0.32mm x 0.45mm	GVF-32
0.8mm	0.53mm x 0.70mm	GVF-53

## GRAPHITE FERRULES

These ferrules fit all standard GC fittings. Maximum temperature is 450°C.

FERRULE I.D.	CAPILLARY COLUMN I.D./O.D.	CAT.#
0.4mm	0.18 and 0.25mm x 0.35mm	GF-25
0.5mm	0.32mm x 0.45mm	GF-32
0.8mm	0.53mm x 0.70mm	GF-53

## GRAPHITE-VESPEL<sup>TM</sup> REDUCING FERRULES

These ferrules fit all 1/8" packed column Swagelok<sup>TM</sup> and Parker<sup>TM</sup> fittings. Maximum recommended temperature is 400°C.

FERRULE I.D.	CAPILLARY COLUMN I.D. / O.D.	CAT.#
0.3mm	0.10mm x 0.20mm	GVF-10-8
0.4mm	0.18 and 0.25mm x 0.35mm	GVF-25-8
0.5mm	0.32mm x 0.45mm	GVF-32-8
0.8mm	0.53mm x 0.70mm	GVF-53-8

## GRAPHITE FERRULES / REDUCING FERRULES

These ferrules fit all standard 1/8" GC fittings. Maximum temperature is 450°C.

FERRULE I.D.	CAPILLARY COLUMN I.D./O.D.	CAT.#
0.4mm	0.18 and 0.25mm x 0.35mm	GF-25-8
0.5mm	0.32mm x 0.45mm	GF-32-8
0.8mm	0.53mm x 0.70mm	GF-53-8

58

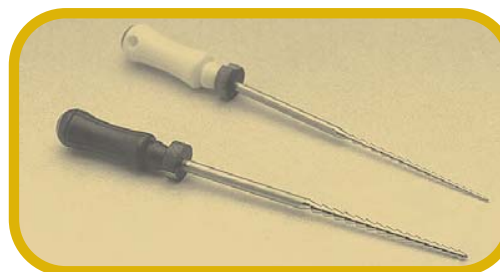


## GRAPHITE-VESPEL<sup>TM</sup> FERRULES / H-P 5890, 6890, & 6880 GC'S

These ferrules are specifically designed to match the unique ferrule seat contours (45° cone angle) of the H-P/Agilent instrument fittings. Subsequently, they do not require over-tightening in order to affect a seal as non-H-P style ferrules require. Maximum recommended temperature is 400°C.

FERRULE I.D.	CAPILLARY COLUMN I.D./ O.D.	CAT.#
0.4mm	0.18 and 0.25mm x 0.35mm	HPGVF-25
0.5mm	0.32mm x 0.45mm	HPGVF-32
0.8mm	0.53mm x 0.70mm	HPGVF-53

Vespe<sup>l</sup><sup>TM</sup> is a trademark of the DuPont Corp.



## FERRULE REMOVER TOOLS

Remove ferrules which have become imbedded in fittings from over tightening or heat cycling. The spiral taper tip easily "drills" into the ferrule and grabs tightly on its way out. Useful on ferrules with 0.4mm to 0.8mm ID's.

Package of two

TFR-5315

# GC CONSUMABLES: INJECTOR PORT SEPTA

Advances in GC techniques can lead to higher injection port temperatures. At elevated temperatures, septa can stick to the injection port hardware or harden causing leaks which can lead to poor reproducibility. Septa coring results in debris entering the injector liner and possibly even the capillary column. Today's septa technology provides outstanding mechanical properties for repeated manual or autosampler injections, and chemical properties which give ideal low bleed characteristics for elevated temperature use. All Septa are packed in cleaned glass bottles to maintain purity. NEVER handle Septa with you fingers prior to installation – USE TWEEZERS.

## MARATHON SEPTA™

The advanced Marathon™ Septa have been specifically developed for use with autosamplers for long life. These septa typically achieve 400 injections or more without failure when used with dome-tipped needles (Agilent-style) and an autosampler or needle guide. Some of the Marathon™ Septa are available with the Center-Guide™ feature which are pre-pierced to eliminate coring. The Marathon™ Septa are 3mm thick and have a maximum temperature of 400°C. 50 per pack.

### DIAMETER

5mm Marathon™ Center-Guide  
9mm Marathon™ Center-Guide  
3/8" (9.5mm) Marathon™  
7/16" Marathon™ Center-Guide™  
11.5mm Marathon™ Center-Guide™  
1/2 " Marathon™  
17mm Marathon™  
Shimadzu plug-style Marathon™

### CATALOG #

SEP-239597  
SEP-239779  
SEP-239198  
SEP-239297  
SEP-239798  
SEP-239398  
SEP-239698  
SEP-239498

## SEPTA BTO™

Septa BTO™ is Bleed and Temperature Optimized for today's demanding GC and GC/MS applications. They have been specifically formulated to retain their softness and 'pierce-ability' with low bleed and minimum port adhesion at elevated temperatures. Maximum temperature is 400°C. 50 per pack.

### DIAMETER

5mm BTO with Center-Guide™  
9mm with Center-Guide™  
3/8" (9.5mm)  
7/16" BTO with Center-Guide™  
11.5mm BTOwith Center-Guide™  
1/2 " BTOwith Center-Guide™  
17mm BTOwith Center-Guide™  
Shimadzu plug-style BTO

### CATALOG #

SEP-298787  
SEP-298713  
SEP-298705  
SEP-298717  
SEP-298777  
SEP-298725  
SEP-298817  
SEP-298735

## ADVANCED GREEN 3™

Advanced Green 3™ Septa was specifically formulated to combine significantly longer injection life, low bleed, and low injection port adhesion. They are 3mm thick and have a maximum temperature of 400°C. 50 per pack.

### DIAMETER

5mm AG3 with Center-Guide™  
9mm AG3 with Center-Guide™  
3/8" (9.5mm) AG3  
7/16" (11mm) AG3 Center-Guide™  
11.5mm AG3 Center-Guide™  
1/2 "AG3  
17mm AG3  
Shimadzu plug-style AG3



### CATALOG #

SEP-246525  
SEP-246713  
SEP-246124  
SEP-246225  
SEP-246725  
SEP-246324  
SEP-246624  
SEP-246424







# GC CONSUMABLES: INJECTOR PORT LINERS

Capillary injector port liners are a critical part of the capillary column system. They provide a clean, non-adsorptive injection zone which should be replaced regularly to avoid contamination from non-volatiles which can deposit onto the capillary column. The liners are produced from precision borosilicate glass (quartz where noted) and are polysiloxane deactivated. All glass wool inserts are also deactivated.

	<b>AGILENT GCs</b> <b>CONFIGURATION</b>	<b>DIMENSIONS</b>	<b>QUANTITY</b>	<b>Original Mfr's</b> <b>CATALOG #</b>	<b>QUADREX</b> <b>CATALOG #</b>
	Splitless	2mm I.D. x 79mm	1	5181-8818	DGL-208111
	Splitless	2mm I.D. x 79mm	10	18740-80220	DGL-208111-10
	Split / Splitless	4mm I.D. x 79mm	1	210-3003	DGL-208112
	Split / Splitless	4mm I.D. x 79mm	10	210-3003	DGL-208112-10
	Split / Splitless deactivated Glass wool packed	4mm I.D. x 79mm	1	19251-60540	DGL-208113
	Split / Splitless deactivated Glass wool packed	4mm I.D. x 79mm	10	19251-60540	DGL-208113-10
	Cup Splitter	4mm I.D. x 79mm	1	18740-80190	DGL-208114
	Cup Splitter	4mm I.D. x 79mm	10	18740-80190	DGL-208114-10
	Split / Splitless cup, packed with 10% OV-1 on Chromosorb WHP)	4mm I.D. x 79mm	1	18740-60840	DGL-208115
	Split / Splitless cup, packed with 10% OV-1 on Chromosorb WHP)	4mm I.D. x 79mm	10	18740-60840	DGL-208115-10
	Dual Tapered	4mm I.D. x 79mm	1	5181-3315	DGL-208116
	Dual Tapered	4mm I.D. x 79mm	10	5181-3315	DGL-208116-10
	Single Taper	4mm I.D. x 79mm	1	5181-3316	DGL-208119
	Single Taper	4mm I.D. x 79mm	10	5181-3316	DGL-208119-10
	Single Taper w/Glass Wool	4mm I.D. x 79mm	1	5062-3587	DGL-208120
	Single Taper w/Glass Wool	4mm I.D. x 79mm	10	5062-3587	DGL-208120-10



## PERKIN ELMER GCs

	<b>CONFIGURATION</b>	<b>DIMENSIONS</b>	<b>QUANTITY</b>	<b>Original Mfr's CATALOG #</b>	<b>QUADREX CATALOG #</b>
	'Dimple' Splitter	2mm I.D. x 100mm	1	0330-5181	DGL-208212
	'Dimple' Splitter	2mm I.D. x 100mm	10	0330-5181	DGL-208212-10
	Splitless	2mm I.D. x 100mm	1	0330-5180	DGL-208214
	Splitless	2mm I.D. x 100mm	10	0330-5180	DGL-208214-10
	Split - Autosystem	4mm I.D. x 92mm	1	N610-1052	DGL-208232
	Split - Autosystem	4mm I.D. x 92mm	10	N610-1052	DGL-208232-10
	Split - Autosystem	2mm I.D. x 92mm	1	N612-1372	DGL-208234
	Split - Autosystem	2mm I.D. x 92mm	10	N612-1372	DGL-208234-10

## What's the difference between a deactivated and a non-deactivated liner?

**COLUMN:** 007-210, Bonded Trifluoropropyl polysiloxane  
30M. x 0.25mm I.D. x 0.2µm film  
Cat. No.: 007-210-30-0.2F

**Temperature:** 50° (7 /min.) - 270° C

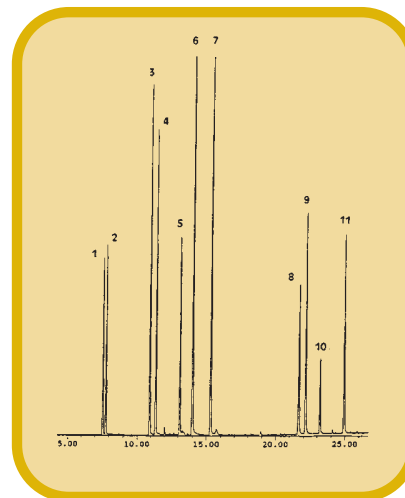
**Injector:** 225° C

**Detector:** MSD, Interface temp.: 290° C

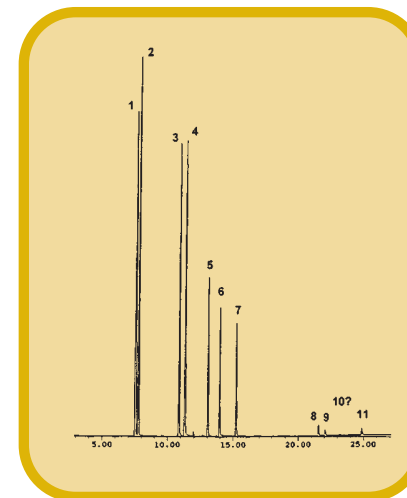
**Carrier Gas:** He, 30cm/sec

1. phenol
2. 2-chlorophenol
3. 2,4-dimethylphenol
4. 2,4-dichlorophenol
5. 2-nitrophenol
6. 4-chloro-3-methylphenol
7. 2,4,6-trichlorophenol
8. 4-nitrophenol
9. pentachlorophenol
10. 2,4-dinitrophenol
11. 4,6-dinitro-2-methylphenol

**DEACTIVATED LINER**



**UNDEACTIVATED LINER**




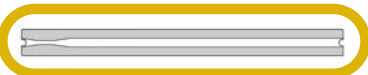








*Note the difference between a properly deactivated liner and a non-deactivated liner above. Both Phenols runs were performed on the same column and GC under identical conditions EXCEPT for the liners.*

**THERMOFINNIGAN GCs**

<b>Configuration</b>	<b>Dimensions</b>	<b>Quantity</b>	<b>Original Mfr's Cat. No.</b>	<b>QUADREX Catalog No.</b>
 Split	3mm I.D. x 105mm	1	453 20031	DGL-208611
 Split	3mm I.D. x 105mm	10	453 20031	DGL-208611-10
 Split	5mm I.D. x 105mm	1	453 20030	DGL-208612
 Split	5mm I.D. x 105mm	10	453 20030	DGL-208612-10
 Splitless	3mm I.D. x 105mm	1	453 20032	DGL-208615
 Splitless	3mm I.D. x 105mm	10	453 20032	DGL-208615-10
 Splitless	5mm I.D. x 105mm	1	453 20033	DGL-208616
 Splitless	5mm I.D. x 105mm	10	453 20033	DGL-208616-10

**VARIAN GCs**

<b>Configuration</b>	<b>Dimensions</b>	<b>Quantity</b>	<b>Original Mfr's Cat. No.</b>	<b>QUADREX Catalog No.</b>
 Open Split Liner	4mm x 72mm	1	16-000830-00	DGL-208311
 Open Split Liner	4mm x 72mm	10	16-000830-00	DGL-208311-10
 Frit Split Liner	72mm	1	01-900109-03	DGL-208312
 Frit Split Liner	72mm	10	16-000830-01	DGL-208312-10
 4mm Open Split w/Glass Wool	4mm x 72mm	1	01-900109-01	DGL-208313
 4mm Open Split w/Glass Wool	4mm x 72mm	10	01-900109-01	DGL-208313-10
 Splitless, Borosilicate glass	74mm	1	01-900109-05	DGL-208314
 Splitless, Borosilicate glass	74mm	10	03-949437-00	DGL-208314-10
 SPI	0.5mm I.D. x 54mm	1	01-900109-06	DGL-208316
 SPI	0.5mm I.D. x 54mm	10	03-918332-01	DGL-208316-10
SPI	0.8mm I.D. x 54mm	1	01-900109-07	DGL-208318
SPI	0.8mm I.D. x 54mm	10	03-918332-02	DGL-208318-10

# GC CONSUMABLES: CARRIER GAS TRAPS AND FILTERS

Today's GC column systems rely on the highest purity carrier gases in order to avoid interference's with the chromatography. To achieve this it is important to filter out any contaminants that may be present in your compressed gas sources. Individual gas purifiers are available to filter the contaminants commonly found in compressed gas cylinders. All of the following gas purifiers are produced using the finest grade of adsorbent media. The housings are constructed with strength, durability and simplicity of design in mind. All traps and filters are supplied with nickel plated end fittings in either 1/8" or 1/4" sizes.

## INDIVIDUAL GAS PURIFIERS

### Oxygen Traps:

Oxygen is the leading cause of column degradation. These oxygen traps use a copper-based catalyst to remove oxygen to sub-ppm levels.

### Moisture Traps:

Water which is present in the carrier gas stream can hydrolyze common silanized supports which leads to stationary phase degradation.

### Hydrocarbon Traps:

These traps use activated charcoal to remove all hydrocarbons except methane. Some hydrocarbon traps are available with Indicating Drierite™ for simultaneous water removal.

### Moisture/Oil/Dust Traps:

These traps are ideal for general purpose filtering such as fuel gases for FID's.

### Specialty Traps:

Our Split Vent Trap keeps detector emissions from contaminating your laboratory air.

63

## GAS PURIFICATION CARTRIDGE SYSTEM

The Gas Purification Cartridge System combines the benefits of hydrocarbon, moisture and oxygen trapping in one 3-cartridge system. It removes damaging contaminants to better than research grade purity (99.9999%).

## INDICATING OXYGEN TRAP

The Indicating Oxygen Trap chemically converts oxygen in carrier gas streams and uses a high capacity oxygen adsorbent and an indicating adsorbent to display depletion.

- Adsorbs up to 40cc's of oxygen to less than 30ppb levels
- Inner heavy walled glass tube encased in a hard plastic tube for added safety and strength
- Redundant three part inner seal for leak-free operation
- Can be regenerated – no need to dispose

Indicating Oxygen Trap, 1/8" fittings

Indicating Oxygen Trap, 1/4" fittings

Regeneration Service, 1/8"

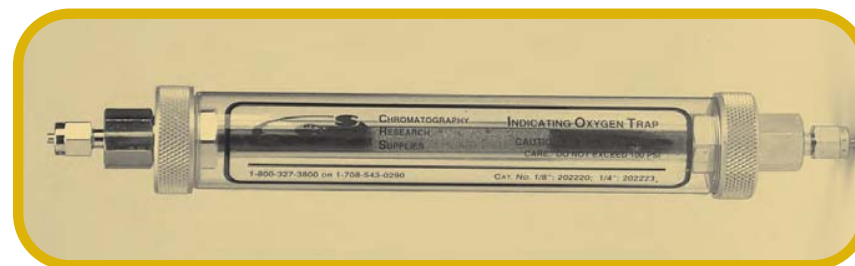
Regeneration Service, 1/4"

TRP-2220

TRP-2223

TRP-2224

TRP-2225



## HIGH CAPACITY OXYGEN/MOISTURE TRAP - CAPILLARY GRADE (MODEL 1000)

This combined trap is specifically designed for the bulk removal of oxygen for capillary use, especially with ECD and GC-MS systems. Over 2.5 liter capacity from 500cc's of adsorbent less than 70ppb oxygen levels at the outlet. Nickel plated steel construction rated to 1000psig. Can be regenerated (instructions are included) – no need to dispose!



High Capacity Oxygen Trap, 1/8" fittings  
High Capacity Oxygen Trap, 1/4" fittings  
Regeneration Service, 1/8"  
Regeneration Service, 1/4"

TRP-2200  
TRP-2202  
TRP-2204  
TRP-2205

**NOTE:** This item must be shipped as Hazardous Goods.

## SAFE-GLASS INDICATING MOISTURE TRAP

For use with ECD or EICD detectors where high purity gases are required. Molecular Sieve 5A and Indicating Drierite™ absorbing materials. Inner glass tube



encased in plastic shell with threaded aluminum end caps - makes it easy to disassemble and reactivate. Stainless steel frits with nickel plated end fittings. For use below 100psig.

Glass Indicating Moisture Trap, 1/8" fittings  
Glass Indicating Moisture Trap, 1/4" fittings

TRP-2266  
TRP-2268

## MOISTURE TRAP ("BIG TRAP")

Improves baseline stability and chromatographic data by trapping moisture, oil and dust before it reaches your GC. Recommended for the filtration of hydrogen in FID's. 400cc capacity - requires fewer refills.

- Replaceable molecular sieve and indicator
- Simple construction allowing for easy disassembly
- Clear acrylic tube rated to 100 psig

Clear Moisture Trap, 1/8" fittings  
Clear Moisture Trap, 1/4" fittings  
Molecular Sieve Refill Kit (800cc's)

TRP-2260  
TRP-2262  
TRP-2244

## REFILLABLE HYDROCARBON TRAP (MODEL 300)

The Model 300 Hydrocarbon Trap removes hydrocarbons from hydrogen and other gases. 500cc's of pure activated charcoal - more than twice the capacity of other leading hydrocarbon filters -



removes all hydrocarbons except methane at room temperature. The all-metal cylinder is rated to 1000psig. Can be regenerated or refilled; ideal for Hydrogen or Carbon Dioxide lines and for use with purge and traps

Refillable Hydrocarbon Trap, 1/8" fittings  
Refillable Hydrocarbon Trap, 1/4" fittings

TRP-2330  
TRP-2332

## SPLIT VENT TRAP

Protects your health and the health of your coworkers. High capacity - 1200mg of activated charcoal. Replacement cartridges included



During split injection mode, more than 99% of your sample is vented to the atmosphere. The Split Vent Trap contains 1200 milligrams of pure activated charcoal which captures these volatile contaminants venting from split/splitless injectors. The Split Vent Trap consists of the inner glass adsorbent tube with nickel plated end fittings, clear plastic protective outer sleeve and 1/8" tube fittings. Each trap comes with three replacement tubes.

Split Vent Trap w/ 3 Tubes  
Additional Replacement Tubes, pk/3

TRP-2346  
TRP-2348

**Trap the highest quality GC products –  
buy from a GC distributor with more  
than a quarter-century of experience!**





# GC CONSUMABLES: GAS PURIFICATION CARTRIDGE SYSTEM

The patented Gas Purification Cartridge System provides state-of-the-art-in-line contaminant removal for your GC carrier gas, with the convenience of replaceable cartridges and the confidence of a visual indicator. The System consists of three cartridges in series to reduce column damaging impurities such as oxygen, sulfur compounds, moisture and hydrocarbons to extremely low levels, yet it has the highest capacity in its class.

The first cartridge contains 100ccs of molecular sieve followed by 100ccs of activated carbon, to remove residual hydrocarbons and water from the carrier gas stream. The second cartridge provides high capacity oxygen removal of at least 1000ccs of oxygen. The final cartridge contains an inorganic indicator which changes color from light green to gray when it adsorbs oxygen, to provide warning that the high capacity adsorbent has been depleted. The Gas Purification Cartridge System is designed to be either wall mounted or bench mounted for ease of use.



## Produces Ultra-Pure Gas from More Economical Grades

- Recommended for GC and GC/MS systems
- Easily replaceable cartridges for convenience
- High capacity oxygen, water, and hydrocarbon removal.
- Indicator warns of oxygen adsorbent depletion
- Carrier gas contacts only metal, glass, Telfon™, and Viton™ seals for purity.
- Prolongs column life and reduces detector interference
- Mechanically secure mounting

## COMPLETE CARTRIDGE SYSTEM

Gas Purification 3 Cartridge System, Wall Mounted, 1/8" fittings  
Gas Purification 3 Cartridge System, Wall Mounted, 1/4" fittings

TRP-202800  
TRP-202804

## REPLACEMENT CARTRIDGES

Replacement Cartridge Set (3)  
Cartridge Set Regeneration Service  
Hydrocarbon/Moisture Cartridge (1)  
High Capacity Oxygen Cartridge (1)  
Indicating Oxygen Cartridge (1)

TRP-202850  
TRP-202852  
TRP-202830  
TRP-202810  
TRP-202820

**NOTE:** The Gas Purification Cartridge System must ship as Hazardous Goods.

# GC CONSUMABLES: MISCELLANEOUS



## FUSED SILICA CAPILLARY TUBING

Polyimide-clad fused silica tubing is useful as guard columns, retention gaps and transfer lines. Specify the lengths you require when ordering. Minimum length is 5 Meters.

*Photo courtesy of Polymicro Technologies, Phoenix, AZ*

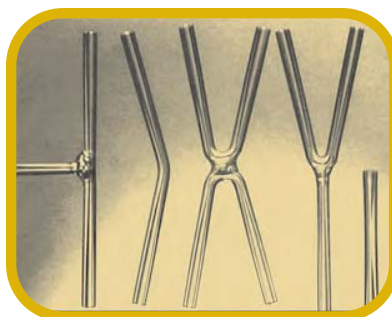
I.D./O.D (NOMINAL)
0.10mm / 0.20mm
0.10mm / 0.375mm
0.18mm / 0.35mm
0.25mm / 0.35mm
0.32mm / 0.45mm
0.53mm / 0.70mm

DEACTIVATED CAT. #	UNTREATED CAT. #
FST-100-D	FST-100
FST-100375-D	FST-100375
FST-180-D	FST-180
FST-250-D	FST-250
FST-320-D	FST-320
FST-530-D	FST-530

66

## CAP-LINK™ UNIVERSAL COLUMN CONNECTORS

Cap-Link™ allows for the fast and easy linking of all common fused silica tube diameters. Connect guard columns, retention gaps, transfer lines and different size columns. Repair broken columns. Extra-long and uniform taper for excellent sealing properties. One size fits all common fused silica tube O.D.'s.



Cap-Link™ (pkg. of 5)	999-LINK-5
Cap-Link™ (pkg. of 25)	999-LINK-25

## CAP-LINK™ Y-SPLITTERS

Split carrier gas flow to two columns  
Split column outlet flow to two detectors

Cap-Link™ Y-Splitter	999-Y-LINK
Cap-Link™ Y-Splitter (pkg. of 3)	999-Y-LINK-3

## POLYIMIDE SEALING RESIN

Permanently seal capillary columns to Cap-Link Connectors. Sealing Resin eliminates loss of the tube seal and resulting leaks. Also useful as a high temperature glue. Can be used in continuous temperature applications of up to 420°C.

Polyimide Sealing Resin (10 grams)

999-LINK-4002

## DRILL BIT SET

Extend the life of your ferrules by drilling them out after their initial use. This Set includes 0.35, 0.4, 0.5, 0.7, 0.8, 1.0, 1.2mm drills and a pin vise.

Drill bit set and pin vise

DBS-206250

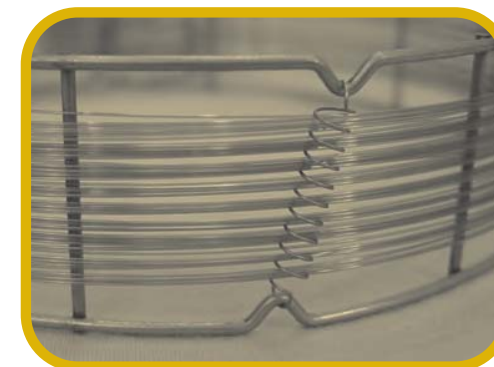
## SUPPORT CAGES

All **QUADREX** capillary columns are shipped on a stainless steel support cage specifically designed with two outer rings for ease of handling and, more importantly, low thermal mass. Since we only use the highest quality fused silica, we can offer a wide variety of cage dimensions. Our flexible production methods allow us to put your column onto any custom-cage size or configuration: woven cages, bundled cages, cages with string, or no cage at all.

DIA.	HEIGHT	USES	CATALOG #
6"	1 1/4"	Standard for 0.10, 0.18, 0.25 and 0.32mm I.D. columns of 30 meters or less.	SSS-C-6/1
6"	2"	Standard for all 0.25 and 0.32mm I.D. columns of 50 meters or greater.	SSS-C-6/2
7"	1 1/4"	Standard for all 0.53mm I.D. columns of 30 meters or less	SSS-C-7/1
7"	2"	Standard for all 0.53mm I.D. columns of 50 meters or greater.	SSS-C-7/2

The following cage sizes are also available; inquire if you have specific requirements that are not covered in these listings.

DIAMETER	HEIGHT
4"	2"
5 1/4"	1 1/4"
8"	2"



## QUADREX STANDARD GC CAPILLARY COLUMNS

When ordering your Quadrex GC capillary column, be sure to insert the correct LENGTH and FILM to complete the Order Number.

## PRODUCTS

### 0.10mm I.D. x 0.20mm O.D. - Standard Film Range = 0.1, 0.25, 0.5µm. PHAT Films = 1.0, 2.0, 3.5µm

Refer to the Phase Section in the front of the catalog for restrictions. Custom length and films are available upon request.

Phase Type	FILMS	10M.	15M.	20M.	25M.	30M.	40M.	50M.	0.10mm I.D. Order Number
007-1	0.1-0.5µm								007-1 - (length)NB - (film) F
007-1 PHAT	1.0-3.5µm								007-1 - (length)NB - (film) F
007-5	0.1-0.5µm								007-5 - (length)NB - (film) F
007-5 PHAT	1.0-3.5µm								007-5 - (length)NB - (film) F
007-5MS	0.1-0.5µm								007-5MS - (length)NB - (film) F
007-10	0.1-0.5µm								007-10 - (length)NB - (film) F
007-20	0.1-0.5µm								007-20 - (length)NB - (film) F
007-1301	0.1-0.5µm								007-1301 - (length)NB - (film) F
007-35	0.1-0.5µm								007-35 - (length)NB - (film) F
007-17	0.1-0.5µm								007-17 - (length)NB - (film) F
007-1701	0.1-0.5µm								007-1701 - (length)NB - (film) F
007-225	0.1-0.5µm								007-225 - (length)NB - (film) F
007-CW	0.1-0.5µm								007-CW - (length)NB - (film) F
BTR-CW	0.1-0.5µm								BTR-CW - (length)NB - (film) F
007-FFAP	0.1-0.5µm								007-FFAP - (length)NB - (film) F

### 0.18mm I.D. x 0.35mm O.D. - Standard Film Range = 0.1, 0.25, 0.5µm. PHAT Films = 1.0 - 6.0µm

Refer to the Phase Section in the front of the catalog for restrictions. Custom length and films are available upon request.

Phase Type	FILMS	10M.	15M.	20M.	25M.	30M.	40M.	50M.	0.18MM I.D. Order Number
007-1									007-1 - (length)HS - (film) F
007-1 PHAT									007-1 - (length)HS - (film) F
007-5									007-5 - (length)HS - (film) F
007-5 PHAT									007-5 - (length)HS - (film) F
007-5MS									007-5MS - (length)HS - (film) F
007-10									007-10 - (length)HS - (film) F
007-20									007-20 - (length)HS - (film) F
007-1301									007-1301 - (length)HS - (film) F
007-35									007-35 - (length)HS - (film) F
007-17									007-17 - (length)HS - (film) F
007-1701									007-1701 - (length)HS - (film) F
007-225									007-225 - (length)HS - (film) F
007-CW									007-CW - (length)HS - (film) F
BTR-CW									BTR-CW - (length)HS - (film) F
007-FFAP									007-FFAP - (length)HS - (film) F

**0.25mm I.D. x 0.35mm O.D. - Standard Film Range = 0.1, 0.25, 0.5, 1.0 $\mu$ m. PHAT Films = 2.0 - 8.0 $\mu$ m**

Refer to the Phase Section in the front of the catalog for restrictions. Custom length and films are available upon request.

Phase Type	FILMS	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	0.25mm I.D. Order Number
007-1	0.1-1.0 $\mu$ m									007-1 - (length) - (film) F
007-1 PHAT	2.0-8.0 $\mu$ m									007-1 - (length) - (film) F
007-5	0.1-1.0 $\mu$ m									007-5 - (length) - (film) F
007-5 PHAT	2.0-8.0 $\mu$ m									007-5 - (length) - (film) F
007-5MS	0.1-0.5 $\mu$ m									007-5MS - (length) - (film) F
007-10	0.1-1.0 $\mu$ m									007-10 - (length) - (film) F
007-20	0.1-1.0 $\mu$ m									007-20 - (length) - (film) F
007-502	0.1-3.0 $\mu$ m									007-502 - (length) - (film) F
007-608	0.1-3.0 $\mu$ m									007-608 - (length) - (film) F
007-624	0.1-3.0 $\mu$ m									007-624 - (length) - (film) F
007-1301	0.1-1.0 $\mu$ m								00	007-1301 - (length) - (film) F
007-35	0.1-1.0 $\mu$ m									007-35 - (length) - (film) F
007-17	0.1-1.0 $\mu$ m									007-17 - (length) - (film) F
007-1701	0.1-1.0 $\mu$ m									007-1701 - (length) - (film) F
007-65HT	0.1-0.25 $\mu$ m									007-65HT - (length) - (film) F
007-225	0.1-1.0 $\mu$ m									007-225 - (length) - (film) F
007-CW	0.1-1.0 $\mu$ m									007-CW - (length) - (film) F
BTR-CW	0.1-1.0 $\mu$ m									BTR-CW - (length) - (film) F
007-FFAP	0.1-1.0 $\mu$ m									007-FFAP - (length) - (film) F
007-23	0.25 $\mu$ m									007-23 - (length) - (film) F

**0.32mm I.D. x 0.45mm O.D. - Standard Film Range = 0.1, 0.25, 0.5, 1.0, 2.0, 3.0, 4.0, 5.0 $\mu$ m. PHAT Films = 6.0 - 12.0 $\mu$ m**

Refer to the Phase Section in the front of the catalog for restrictions. Custom length and films are available upon request.

Phase Type	FILMS	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	0.32mm I.S. Order Number
007-1	0.1-5.0 $\mu$ m									007-1 - (length)W - (film) F
007-1 PHAT	6.0-12.0 $\mu$ m									007-1 - (length)W - (film) F
007-5	0.1-5.0 $\mu$ m									007-5 - (length)W - (film) F
007-5 PHAT	6.0-12.0 $\mu$ m									007-5 - (length)W - (film) F
007-5MS	0.1-1.0 $\mu$ m									007-5MS - (length)W - (film) F
007-10	0.1-5.0 $\mu$ m								0	007-10 - (length)W - (film) F
007-20	0.1-5.0 $\mu$ m									007-20 - (length)W - (film) F
007-502	0.1-5.0 $\mu$ m									007-502 - (length)W - (film) F
007-608	0.1-1.0 $\mu$ m									007-608 - (length)W - (film) F
007-624	0.1-5.0 $\mu$ m									007-624 - (length)W - (film) F
007-1301	0.1-3.0 $\mu$ m									007-1301 - (length)W - (film) F
007-35	0.1-5.0 $\mu$ m									007-35 - (length)W - (film) F
007-17	0.1-3.0 $\mu$ m									007-17 - (length)W - (film) F
007-1701	0.1-3.0 $\mu$ m									007-1701 - (length)W - (film) F
007-225	0.1-1.0 $\mu$ m									007-225 - (length)W - (film) F

CONTINUED ON NEXT PAGE



## QUADREX STANDARD GC CAPILLARY COLUMNS

When ordering your Quadrex GC capillary column, be sure to insert the correct LENGTH and FILM to complete the Order Number.

### 0.32mm I.D. x0.45mm O.D. - Standard Film Range =0.1, 0.25 ,0.5, 1.0, 2.0, 3.0, 4.0, 5.0µm. PHAT Films = 6.0 - 12.0µm (CONTINUED)

Refer to the Phase Section in the front of the catalog for restrictions. Custom length and films are available upon request.

Phase Type	FILMS	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	0.32mm I.S. Order Number
007-CW	0.1-3.0µm									007-CW - (length)W - (film) F
007-CW PHAT	4.0-5.0µm									007-CW - (length)W - (film) F
BTR-CW	0.1-3.0µm									BTR-CW - (length)W - (film) F
BTR-CW PHAT	4.0-5.0µm									BTR-CW - (length)W - (film) F
007-FFAP	0.1-3.0µm									007-FFAP - (length)W - (film) F
007-FFAP PHAT	4.0-5.0µm									007-FFAP - (length)W - (film) F

### 0.53mm I.D. x 0.66mm O.D. - Standard Film Range =0.1, 0.25, 0.5, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0µm. PHAT Films = 9.0 - 18.0µm

Refer to the Phase Section in the front of the catalog for restrictions. Custom length and films are available upon request.

Phase Type	FILMS	10M.	15M.	25M.	30M.	50M.	60M.	75M.	100M.	0.53mm I.D. Order Number
007-1	0.1-5.0µm									007-1 - (length)V - (film) F
007-1	6.0-8.0µm									007-1 - (length)V - (film) F
007-1 PHAT	9.0-18.0µm									007-1 - (length)V - (film) F
007-5	0.1-5.0µm									007-5 - (length)V - (film) F
007-5	6.0-8.0µm									007-5 - (length)V - (film) F
007-5 PHAT	9.0-18.0µm									007-5 - (length)V - (film) F
007-10	0.1-5.0µm									007-10 - (length)V - (film) F
007-20	0.1-5.0µm									007-20 - (length)V - (film) F
007-502	0.1-5.0µm									007-502 - (length)V - (film) F
007-608	0.1-1.5µm									007-608 - (length)V - (film) F
007-624	0.1-5.0µm									007-624 - (length)V - (film) F
007-1301	0.1-5.0µm									007-1301 - (length)V - (film) F
007-35	0.1-5.0µm									007-35 - (length)V - (film) F
007-17	0.1-3.0µm									007-17 - (length)V - (film) F
007-1701	0.1-3.0µm									007-1701 - (length)V - (film) F
007-225	0.1-1.0µm									007-225 - (length)V - (film) F
007-CW	0.1-3.0µm									007-CW - (length)V - (film) F
007-CW PHAT	4.0-5.0µm									007-CW - (length)V - (film) F
BTR-CW	0.1-3.0µm									BTR-CW - (length)V - (film) F
BTR-CW PHAT	4.0-5.0µm									BTR-CW - (length)V - (film) F
007-FFAP	0.1-3.0µm									BTR-CW - (length)V - (film) F
007-FFAP PHAT	4.0-5.0µm									007-FFAP - (length)V - (film) F
PLT-5A	25µm									PLT-5A - 30V

## QUADREX ULTRA-ALLOY™ STAINLESS STEEL CAPILLARY COLUMNS

**NOTE:** When ordering your Quadrex GC capillary column, be sure to insert the correct LENGTH and FILM to complete the Order Number.

### 0.25mm I.D. x 0.45mm O.D. - Standard Film Range = 0.1, 0.15, 0.25, 0.5, 1.0µm

Refer to the ULTRA-Alloy Section in the front of the catalog for restrictions. Custom length and films are available upon request.

Phase Type	FILMS	10M.	15M.	30M.	60M.	0.25mm I.D. Order Number
UAC-1	0.1-1.0µm					UAC-1 - (length) - (film) F
UAC-1MS	0.1-1.0µm					UAC-1MS - (length) - (film) F
UAC-1HT	0.1-0.25µm					UAC-1HT - (length) - (film) F
UAC-5	0.1-1.0µm					UAC-5 - (length) - (film) F
UAC-5MS	0.1-0.5µm					UAC-5MS - (length) - (film) F
UAC-DX30	0.15µm					UAC-DX30 - (length) - 0.15F
UAC-502	1.0µm					UAC-502 - (length) - 1.0F
UAC-624	1.0µm					UAC-624 - (length) - 1.0F
UAC-17	0.15-1.0µm					UAC-17 - (length) - (film) F
UAC-1701	0.25-1.0µm					UAC-1701 - (length) - (film) F
UAC-65HT	0.1µm					UAC-65HT - (length) - 0.1F
UAC-CW	0.25µm					UAC-CW - (length) - 0.25F
UAC-FFAP	0.25µm					UAC-FFAP - (length) - 0.25F

70

### 0.53mm I.D. x 0.70mm O.D. - Standard Film Range = 0.1, 0.15, 0.25, 0.5, 1.0, 1.5, 5.0µm

Refer to the ULTRA-Alloy Section in the front of the catalog for restrictions. Custom length and films are available upon request.

Phase Type	FILMS	5M.	10M.	15M.	30M.	60M.	0.53mm I.D. Order Number
UAC-1	0.1-5.0µm						UAC-1 - (length)V - (film) F
UAC-1HT	0.1-0.25µm						UAC-1HT - (length)V - (film) F
UAC-SIMDIS	0.1µm						UAC-SIMDIS - (length)V - 0.1F
UAC-5	0.1-5.0µm						UAC-5 - (length)V - (film) F
UAC-DX30	0.15µm						UAC-DX30 - (length)V - 0.15F
UAC-502	3.0µm						UAC-502 - (length)V - 3.0F
UAC-624	3.0µm						UAC-624 - (length)V - 3.0F
UAC-17	0.25-1.0µm						UAC-17 - (length)V - (film) F
UAC-1701	0.25-1.0µm						UAC-1701 - (length)V - (film) F
UAC-65HT	0.1µm						UAC-65HT - (length)V - 0.1F
UAC-CW	0.5-1.0µm						UAC-CW - (length)V - 0.25F
UAC-FFAP	0.5-1.0µm						UAC-FFAP - (length)V - 0.25F

## QUADREX SPECIAL USE GC CAPILLARY COLUMNS

**NOTE:** When ordering your Quadrex GC specialty column, be sure to choose the correct Order Number for your specific application.

### ENVIRONMENTAL COLUMNS

#### PESTICIDE COLUMNS

Order Number	Column Description
007-608-15V-0.8F	007-608, 15M. x 0.53mm, 0.8µm film
007-608-30V-0.8F	007-608, 30M. x 0.53mm, 0.8µm film

#### DIOXINS/FAMES

Order Number	Column Description
007-23-30-0.25F	007-23, 30M. x 0.25mm, 0.25µm film
007-23-60-0.25F	007-23, 60M. x 0.25mm, 0.25µm film

#### EPA METHOD 500 SERIES VOC'S IN DRINKING WATER

Order Number	Column Description
007-502-30-1.5F	007-502, 30M. x 0.25mm, 1.5µm film
007-502-60-1.5F	007-502, 60M. x 0.25mm, 1.5µm film
007-502-30W-2.0F	007-502, 30M. x 0.32mm, 2.0µm film
007-502-60W-2.0F	007-502, 60M. x 0.32mm, 2.0µm film
007-502-30V-3.0F	007-502, 30M. x 0.53mm, 3.0µm film
007-502-75V-2.5F	007-502, 75M. x 0.53mm, 2.5µm film
007-502-105V-2.5F	007-502, 105M. x 0.53mm, 2.5µm film

#### ALUMINUM-CLAD, HIGH TEMPERATURE COLUMNS

Order Number	Column Description
400-1HT-10-0.1F	400-1HT, 10M. x 0.22mm, 0.1µm film
400-1HT-15-0.1F	400-1HT, 15M. x 0.22mm, 0.1µm film
400-1HT-25-0.1F	400-1HT, 25M. x 0.22mm, 0.1µm film
400-1HT-30-0.1F	400-1HT, 30M. x 0.22mm, 0.1µm film
400-5HT-10-0.1F	400-5HT, 10M. x 0.22mm, 0.1µm film
400-5HT-15-0.1F	400-5HT, 15M. x 0.22mm, 0.1µm film
400-5HT-25-0.1F	400-5HT, 25M. x 0.22mm, 0.1µm film
400-5HT-30-0.1F	400-5HT, 30M. x 0.22mm, 0.1µm film

#### VOC'S IN WASTE WATER

Order Number	Column Description
007-624-30-2.0F	007-624, 30M. x 0.25mm, 2.0µm film
007-624-60-2.0F	007-624, 60M. x 0.25mm, 2.0µm film
007-624-30W-3.0F	007-624, 30M. x 0.32mm, 3.0µm film
007-624-60W-3.0F	007-624, 60M. x 0.32mm, 3.0µm film
007-624-30V-5.0F	007-624, 30M. x 0.53mm, 5.0µm film
007-624-30V-3.0F	007-624, 30M. x 0.53mm, 3.0µm film
007-624-50V-5.0F	007-624, 50M. x 0.53mm, 5.0µm film
007-624-50V-3.0F	007-624, 50M. x 0.53mm, 3.0µm film
007-624-60V-5.0F	007-624, 60M. x 0.53mm, 5.0µm film
007-624-75V-3.0F	007-502, 75M. x 0.53mm, 2.5µm film

#### TRIGLYCERIDES, POLYIMIDE-CLAD

Order Number	Column Description
007-65HT-10-0.1F	007-65HT, 10M. x 0.25mm, 0.1µm film
007-65HT-15-0.1F	007-65HT, 15M. x 0.25mm, 0.1µm film
007-65HT-25-0.1F	007-65HT, 25M. x 0.25mm, 0.1µm film
007-65HT-30-0.1F	007-65HT, 30M. x 0.25mm, 0.1µm film

#### PERMANENT GASES - MOLECULAR SIEVE 5A

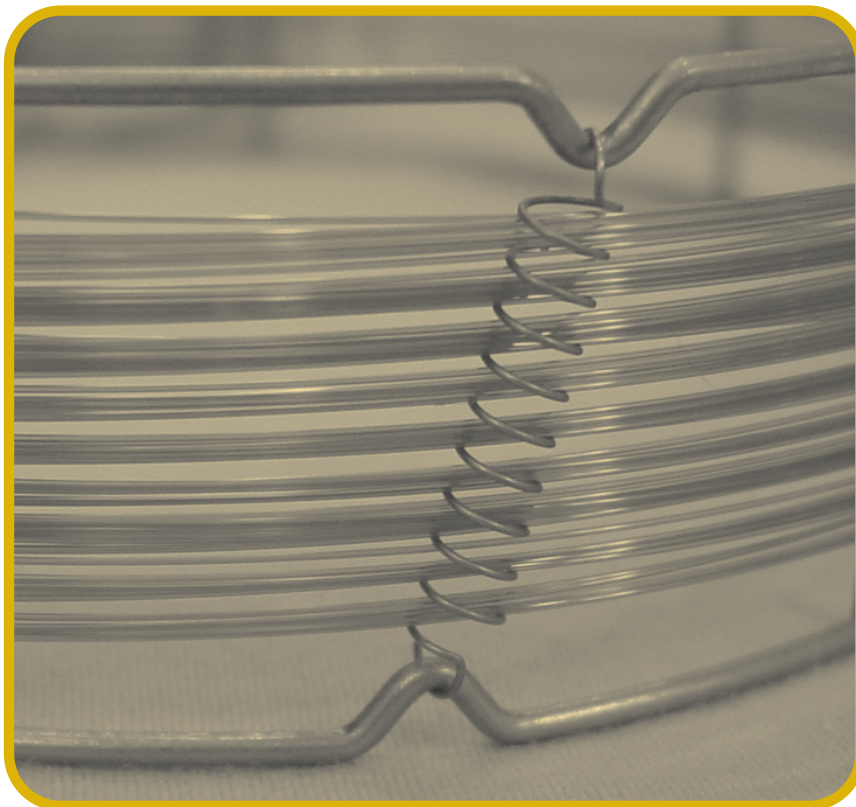
Order Number	Column Description
PLT-5A-30V	30M. x 0.53mm x 25µm

## QUADREX SPECIAL USE COLUMNS (CONTINUED)

### PETROCHEMICAL COLUMNS

Order Number	Description
007-2887	10M. x 0.53mm x 2.65µm film
007-2887-1	10M. x 0.53mm x 1.0µm film
007-SIMDIS	6M. x 0.53mm x 0.15µm film
007-3710	10M. x 0.53mm x 5.0µm film
007-DRO	10M. x 0.53mm x 1.0µm film
007-GRO	10M. x 0.53mm x 3.0µm film
007-1PETRO-50	50M. x 0.25mm x 0.5µm film
007-1PETRO-100	100M. x 0.25mm x 0.5µm film
007-SLFR	30M. x 0.32mm x 4.0µm film

72



## PEAK GAS GENERATOR SYSTEMS

**NOTE:** Units marked with \*\* include a built-in air compressor. All other units require an OIL-FREE air source. In addition, all air lines from the air source to the Generator must be clean of contaminants in order to ensure high purity output from the generator.

### HIGH VOLUME NITROGEN GENERATORS (18 - 240 Liters / Minute)

Order No.	Flow rate
GGS-NM18L	18 L/min.
GGS-NM18LA**	18 L/min
GGS-NM30L	30 l/min
GGS-NM30LA**	30 L/min
GGS-NM60L	60 L/min.
GGS-NM120L	120 L/min.
GGS-NM180L	180 L/min.
GGS-NM240L	240 L/min.

### HIGH PURITY NITROGEN GENERATORS (99.9995% Purity; < 4 Liters / Min. Vol.)

**NOTE:** All High Purity Nitrogen Generators include a built-in air compressor.

Order No.	Flow rate
GGS-N250A	250 cc/min
GGS-N600A	600 cc/min
GGS-N1000A	1000 cc/min
GGS-N2000A	2000 cc/min
GGS-N3000A	3000 cc/min
GGS-N4000A	4000 cc/min
GGS-AN250A	250 cc/min (N <sub>2</sub> ), 1200 cc/min (air)
GGS-AN600A	600 cc/min (N <sub>2</sub> ), 1500 cc/min (air)
GGS-AN3000A	3000 cc/min (N <sub>2</sub> ), 3000 cc/min (air)

### HYDROGEN GENERATORS (99.9995% purity)

**NOTE:** All Hydrogen Generators require deionized water to operate.

Order No.	Flow rate
GGS-HG200	200cc/min.
GGS-HG300	300cc/min.
GGS-HG600	600cc/min.

### ZERO-AIR GENERATORS

GGS-ZA015	1500 cc/min
GGS-ZA035	3500 cc/min
GGS-ZA035A**	3500 cc/min
GGS-ZA070	7000 cc/min
GGS-ZA070A**	7000 cc/min
GGS-ZA 180	18,000 cc/min
GGS-ZA 180A**	18,000 cc/min
GGS-ZA300	30,000 cc/min



## SRI GC MAINFRAMES

### Model 8610C GC

SRI-8610-1003	Model 8610C with 1 channel Peaksimple
SRI-8610-4003	Model 8610C with 4-channel Peaksimple
SRI-8610-6003	Model 8610C with 6 channel USB Peaksimple

### Model 8610D DUAL-OVEN GC

SRI-8610-1004	Model 8610C with 1 channel Peaksimple
SRI-8610-4004	Model 8610C with 4-channel Peaksimple
SRI-8610-6004	Model 8610C with 6 channel USB Peaksimple

### Model 310 GC

SRI-0310-1003	Model 310 with 1 channel Peaksimple
SRI-0310-4003	Model 310 with 4-channel Peaksimple
SRI-0310-6003	Model 310 with 6 channel USB Peaksimple



## SRI INJECTOR OPTIONS

### COLD ON-COLUMN INJECTOR

SRI-8690-0023	Additional On-Column Injector
SRI-8690-2022	Second carrier gas EPC without injector port fitting
SRI-8690-2023	Second injector port fitting without EPC

### HEATED FLASH VAPORIZATION INJECTOR

SRI-8690-0025	Heated Flash Vaporization Injector upgrade
SRI-8670-0072	Narrow bore SPME Injector sleeve

### HEATED STATIC HEADSPACE INJECTOR

SRI-8690-0045	Heated Static Headspace Injector
---------------	----------------------------------

### HEATED SPLIT/SPLITLESS INJECTOR AND PTV OPTION

SRI-8690-0034	Heated Split/Splitless Injector upgrade
SRI-8690-7034	Heated SS Injector upgrade with PTV
SRI-8690-8034	Heated SS Injector upgrade with PTV & valve

### THERMAL DESORBER

SRI-8690-1088	Thermal Desorber accessory for 8610C GC w/10 re-useable desorber tubes
SRI-8690-1087	pack/10 re-useable ground glass desorber tubes

### 10-PORT GAS SAMPLING VALVES

SRI-8690-0063	10 port Manually actuated valve
SRI-8690-0065	10 port Electrically actuated valve as above
SRI-8690-0088	Thermostatted valve oven mounted on 8610C GC
SRI-8690-0084	Heated/fast cooling adsorbent trap & plumbing

### MODEL 8640 20-VIAL LIQUID AUTOSAMPLER

SRI-8640-0010	20-vial Liquid Autosampler mounted on 8610C GC
SRI-8640-0020	Extra 20 position vial tray
SRI-8640-0021	Cooled sample tray option (requires external user-supplied refrigerated lab circulator)

### METHOD 5030/5035 COMPLIANT PURGE & TRAP

SRI-8690-0052	Method 5030/5035 compliant Purge & Trap
SRI-8690-0051	Method 5030 Purge & Trap

### METHOD TO-14 AIR CONCENTRATOR

SRI-8690-1051	Method TO-14 Air Concentrator with one trap and vacuum pump interface
SRI-8690-1051	Method TO-14 Air Concentrator with two traps and vacuum pump interface
SRI-8690-1052	Method TO-14 Air Concentrator as above plus off-line tube desorber ( specify tube size )

### TEN-POSITION PURGE & TRAP AUTOSAMPLER

SRI-8690-0053	10 position Purge & Trap autosampler
SRI-8690-0066	10 position Stream Selector

## SRI DETECTOR OPTIONS

### THERMAL CONDUCTIVITY DETECTOR (TCD)

SRI-8690-0007 Standard TCD detector, up to 275°C

### CATALYTIC COMBUSTION DETECTOR (CCD)

SRI-8690-2007 CCD detector

SRI-8670-2007 Replacement CCD detector bead

### FLAME IONIZATION DETECTOR (FID)

SRI-8690-0010 FID detector with EPC gas controls

SRI-8690-0070 Optional 120 VAC 60 hz whisper quiet built-in air compressor

SRI-8690-2270 Optional 220 VAC 50 hz whisper quiet built-in air compressor

### DRY ELECTROLYTIC CONDUCTIVITY DETECTOR (/DELCD)

SRI-8690-1026 DELCD Detector

### FLAME IONIZATION DETECTOR/DRY ELECTROLYTIC CONDUCTIVITY DETECTOR (FID/DELCD)

SRI-8690-2026 FID/DELCD detector with dual amplifiers and EPC gas controls for H2 and air fuel gases

### HELIUM IONIZATION DETECTOR (HID)

SRI-8690-0030 SRI Helium Ionization Detector

### NITROGEN PHOSPHORUS DETECTOR (NPD)

SRI-8690-0015 Nitrogen-Phosphorus detector (NPD)

Includes: one NPD bead

SRI-8690-2615 NPD/DELCD combination detector

Includes: one NPD bead and

two DELCD detector assemblies

### THERMIONIC IONIZATION DETECTOR (TID)

SRI-8690-0017 Thermionic Ionization Detector (TID)

### ELECTRON CAPTURE DETECTOR (ECD)

SRI-8690-0020 ECD detector (Nickel-63)

### PHOTO IONIZATION DETECTOR (PID)

SRI-8690-0040 PID detector with 10.6ev lamp

### FLAME PHOTOMETRIC DETECTOR (FPD)

SRI-8690-0080 Single FPD detector with EPC gas controls

SRI-8690-1080 Single FPD with FID electrode and dual amps

SRI-8690-0085 Dual FPD with EPC gas controls, dual amplifiers and PMTs

### SRI MODEL 110 STAND-ALONE DETECTOR

SRI-0110-0003 Model 110 Chassis (120 volt AC) w/ std. equip.

SRI-0110-2203 Model 110 Chassis (220 volt AC) w/ std. equip.

74

## PEAKSIMPLE DATA ACQUISITION SYSTEMS

SRI-8600-1055 Model 203 One Channel PeakSimple Data System

SRI-8600-1255 Model 203 (220VAC)

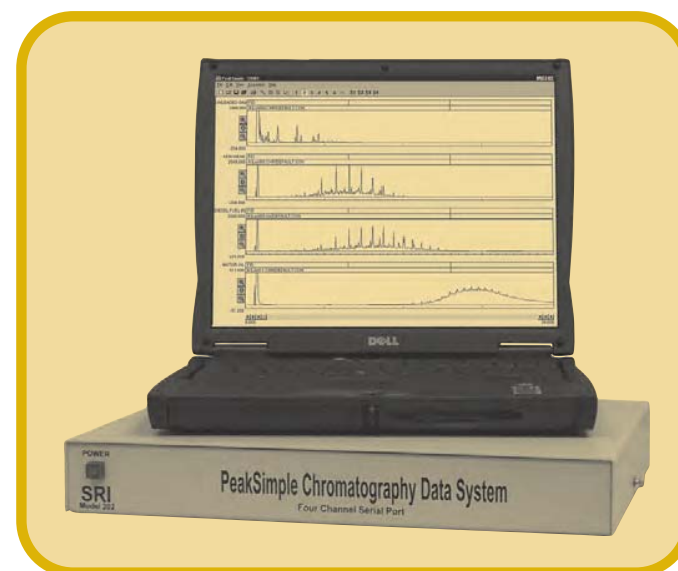
SRI-8600-1056 Optional relay board with 8 contact closures

SRI-8600-4055 Model 202 Four Channel PeakSimple Data System

SRI-8600-4255 Model 202 (220VAC)

SRI-8600-6055 Model 302 Six Channel USB PeakSimple Data System

SRI-8600-6255 Model 302 (220VAC)



## SRI GC SYSTEM ACCESSORIES

### STAND-ALONE HYDROGEN GENERATOR

SRI-8690-0350	Stand-Alone Hydrogen generator
SRI-8680-0351	Extended Run Upgrade Kit
SRI-8680-0352	Spare Desiccant Canister

### METHANIZER

SRI-8690-0081	Methanizer accessory mounted on 8610C GC
SRI-8690-1081	Replacement methanizer tube

### STAND-ALONE METHANIZER (FOR LOW LEVEL CO AND CO2 DETECTION BY FID)

SRI-0510-0081	Stand-alone Methanizer
SRI-0510-0281	Replacement Nickel Catalyst

### BUILT-IN WHISPER QUIET AIR COMPRESSOR

SRI-8690-0070	Built-in Air Compressor (110 VAC)
SRI-8690-2270	same as above but 220 VAC

### VACUUM PUMP INTERFACE

SRI-8690-0073	Vacuum pump interface controlled by data system
---------------	---

### GAS LINE INSTALLATION KITS

SRI-8600-C350	Gas Line Kit, CGA 350 Fitting for H <sub>2</sub> , Ar/CH <sub>4</sub>
SRI-8600-C580	Gas Line Kit, CGA 580 Fitting for N <sub>2</sub> , He
SRI-8600-C590	Gas Line Kit, CGA 590 Fitting for Compressed Air

### GC MAINTENANCE KIT

SRI-8600-MAIN	GC Maintenance kit (specify 120 or 220 VAC)
---------------	---

### HYDROGEN/HYDROCARBON (H<sub>2</sub>/HC) LEAK DETECTOR

SRI-8690-5600	110 volt AC powered H <sub>2</sub> /HC leak detector
SRI-8690-5510	General purpose digital voltmeter
SRI-8600-5655	Model 203 PeakSimple data system with hydrogen/hydrocarbon sensor installed

## SRI PRE-CONFIGURED GC SYSTEMS

### BREATH ANALYZER GC

SRI-8610-3489	Breath Analyzer GC
---------------	--------------------

### BTU GAS ANALYZER GC

SRI-8610-3070	BTU Gas Analyzer GC with TCD detector
---------------	---------------------------------------

### CAPILLARY FID GC

SRI-8610-5400	Capillary FID GC System (110VAC)
SRI-8610-5400-2	Capillary FID GC System (220VAC)

### EDUCATIONAL FID GC

SRI-0310-0004,	Educational FID GC (110VAC)
SRI-0310-0004-2,	Educational FID GC (220VAC)

### ENVIRONMENTAL AND BTEX GC

SRI-8610-0059	Environmental GC with PID, FID/DELCD detectors, Method 5030 compliant purge & trap, built-in air compressor, 60 meter capillary column, and PeakSimple data system
SRI-8610-0050	BTEX GC. Same as above, but PID and FID detectors only. No DELCD detector
SRI-8690-5052	Upgrade Purge & Trap to 5030/5035 compliant

### EXPLOSIVES GC

SRI-8610-1117	Explosives GC with TID detector
---------------	---------------------------------

### METHOD 25 METHANE/NON-METHANE HYDROCARBONS GC

SRI-8610-0025	8610C GC configured for Method 25 analysis
---------------	--

### MULTIPLE GAS ANALYZER GC

*# 1 for permanent gas, natural gas, sulfur, and hydrocarbon analyses!*

SRI-8610-0070	Multiple Gas Analyzer GC w/ TCD detector
SRI-8610-0071	Multiple Gas Analyzer GC w/ TCD, Methanizer, FID, built-in "whisper quiet" air compressor
SRI-8610-0072	Multiple Gas Analyzer w/ TCD and HID detectors
SRI-8610-0073	Multiple Gas/Sulfur Analyzer GC w/TCD, FID, FPD/FID detectors, Methanizer, built-in "whisper quiet" air compressor, 3 columns, and nickel loop

### MUD-LOGGING GC

SRI-8610-0060	Mud-Logging GC
---------------	----------------

## SRI PRE-CONFIGURED GC SYSTEMS (CONTINUED)

### MULTIPLE GAS ANALYZER 2 GC

SRI-8610-0270	Multiple Gas Analyzer 2 GC w/TCD detector
SRI-8610-0271	Multiple Gas Analyzer 2 w/TCD, Methanizer, FID & built-in whisper quiet air compressor
SRI-8610-0272	Multiple Gas Analyzer 2 w/TCD and HID detectors

### PCB GC

SRI-8610-0080	PCB GC
---------------	--------

### SULFUR GC

SRI-8610-5670	Sulfur GC
---------------	-----------

### TOGA GC SYSTEM

SRI-8610-0030	TOGA GC with TCD detector
SRI-8610-0031	TOGA GC with HID detector
SRI-8610-0032	TOGA GC with TCD & HID detectors

### TO-14 AIR MONITORING

SRI-8610-0114	TO-14 GC configuration
---------------	------------------------

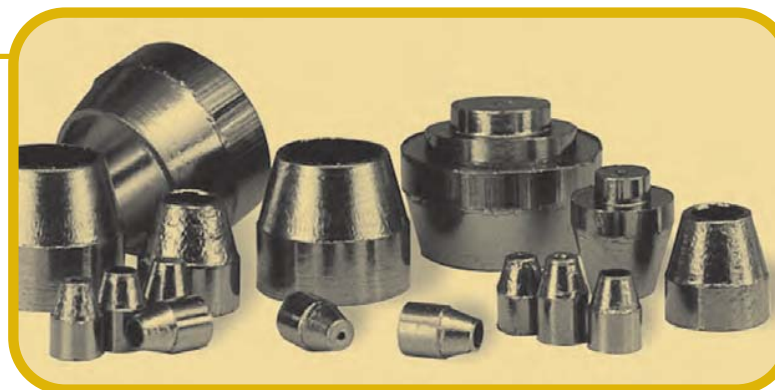
## CAPILLARY GC ACCESSORIES

### GRAPHITE AND GRAPHITE-VESPEL™ FERRULES

All ferrules come in packages of 10. VespeL™ is a trademark of the DuPont Corp.

Ferrule I.D.	Capillary Column I.D./O.D.	Order No.
<b>GRAPHITE-VESPEL™ FERRULES</b>		
0.3mm	0.10mm x 0.20mm	GVF-10
0.4mm	0.25mm x 0.35mm	GVF-25
0.5mm	0.32mm x 0.45mm	GVF-32
0.8mm	0.53mm x 0.70mm	GVF-53
<b>GRAPHITE-VESPEL™ FERRULES - H-P 5890, 6890, AND 6880 GCs</b>		
0.4mm	0.25mm x 0.35mm	HPGVF-25
0.5mm	0.32mm x 0.45mm	HPGVF-32
0.8mm	0.53mm x 0.70mm	HPGVF-53
<b>GRAPHITE FERRULES</b>		
0.4mm	0.25mm x 0.35mm	GF-25
0.5mm	0.32mm x 0.45mm	GF-32
0.8mm	0.53mm x 0.70mm	GF-53

Ferrule I.D.	Capillary Column I.D./O.D.	Order No.
<b>GRAPHITE-VESPEL™ REDUCING FERRULES</b>		
0.3mm	0.10mm x 0.20mm	GVF-10-8
0.4mm	0.25mm x 0.35mm	GVF-25-8
0.5mm	0.32mm x 0.45mm	GVF-32-8
0.8mm	0.53mm x 0.70mm	GVF-53-8
<b>GRAPHITE FERRULES REDUCING FERRULES</b>		
0.4mm	0.25mm x 0.35mm	GF-25-8
0.5mm	0.32mm x 0.45mm	GF-32-8
0.8mm	0.53mm x 0.70mm	GF-53-8
<b>FERRULE REMOVER TOOLS</b>		TFR-5315
Package of two		





## INJECTOR PORT LINERS

Configuration	Dimensions	Quantity	Orig Mfr. Cat. No.	QUADREX Order No.
<b>AGILENT GCs</b>				
Splitless	2mm I.D. x 79mm	1	5181-8818	DGL-208111
Splitless	2mm I.D. x 79mm	10	18740-80220	DGL-208111-10
Split/Splitless	4mm I.D. x 79mm	1	210-3003	DGL-208112
Split/Splitless	4mm I.D. x 79mm	10	210-3003	DGL-208112-10
Split/Splitless deactivated glass wool packed	4mm I.D. x 79mm	1	19251-60540	DGL-208113
Split/Splitless deactivated glass wool packed	4mm I.D. x 79mm	10	19251-60540	DGL-208113-10
Cup Splitter	4mm I.D. x 79mm	1	18740-80190	DGL-208114
Cup Splitter	4mm I.D. x 79mm	10	18740-80190	DGL-208114-10
Split/Splitless cup, packed w/10% OV-1 on Chromosorb WHP)	4mm I.D. x 79mm	1	18740-60840	DGL-208115
Split/Splitless cup, packed w/10% OV-1 on Chromosorb WHP)	4mm I.D. x 79mm	10	18740-60840	DGL-208115-10
Dual Tapered	4mm I.D. x 79mm	1	5181-3315	DGL-208116
Dual Tapered	4mm I.D. x 79mm	10	5181-3315	DGL-208116-10
Single Taper	4mm I.D. x 79mm	1	5181-3316	DGL-208119
Single Taper	4mm I.D. x 79mm	10	5181-3316	DGL-208119-10
Single Taper with glass wool	4mm I.D. x 79mm	1	5062-3587	DGL-208120
Single Taper with glass wool	4mm I.D. x 79mm	10	5062-3587	DGL-208120-10
<b>PERKIN ELMER GCs</b>				
Dimple' Splitter	2mm I.D. x 100mm	1	0330-5181	DGL-208212
Dimple' Splitter	2mm I.D. x 100mm	10	0330-5181	DGL-208212-10
Splitless	2mm I.D. x 100mm	1	0330-5180	DGL-208214
Splitless	2mm I.D. x 100mm	10	0330-5180	DGL-208214-10
Split - Autosystem	4mm I.D. x 92mm	1	N610-1052	DGL-208232
Split - Autosystem	4mm I.D. x 92mm	10	N610-1052	DGL-208232-10
Split - Autosystem	2mm I.D. x 92mm	1	N612-1372	DGL-208234
Split - Autosystem	2mm I.D. x 92mm	10	N612-1372	DGL-208234-10
<b>THERMOFINNIGAN GCs</b>				
Split	3mm I.D. x 105mm	1	453 20031	DGL-208611
Split	3mm I.D. x 105mm	10	453 20031	DGL-208611-10
Split	5mm I.D. x 105mm	1	453 20030	DGL-208612
Split	5mm I.D. x 105mm	10	453 20030	DGL-208612-10
Splitless	3mm I.D. x 105mm	1	453 20032	DGL-208615
Splitless	3mm I.D. x 105mm	10	453 20032	DGL-208615-10
Splitless	5mm I.D. x 105mm	1	453 20033	DGL-208616
Splitless	5mm I.D. x 105mm	10	453 20033	DGL-208616-10
<b>VARIAN GCs</b>				
Open Split Liner	4mm x 72mm	1	16-000830-00	DGL-208311
Open Split Liner	4mm x 72mm	10	16-000830-00	DGL-208311-10
Frit Split Liner	72mm	1	01-900109-03	DGL-208312
Frit Split Liner	72mm	10	16-000830-01	DGL-208312-10
4mm Open Split with Glass Wool	4mm x 72mm	1	01-900109-01	DGL-208313
4mm Open Split with Glass Wool	4mm x 72mm	10	01-900109-01	DGL-208313-10
Splitless, Borosilicate glass	74mm	1	01-900109-05	DGL-208314
Splitless, Borosilicate glass	74mm	10	03-949437-00	DGL-208314-10
SPI	0.5mm I.D. x 54mm	1	01-900109-06	DGL-208316
SPI	0.5mm I.D. x 54mm	10	03-918332-01	DGL-208316-10
SPI	0.8mm I.D. x 54mm	1	01-900109-07	DGL-208318
SPI	0.8mm I.D. x 54mm	10	03-918332-02	DGL-208318-10

## INJECTOR PORT SEPTA

All Septa are 50 per pack.

Diameter	Order No.
<b>MARATHON™ SEPTA</b>	
5mm Marathon™ Center-Guide™	SEP-239597
9mm Marathon™ Center-Guide™	SEP-239779
3/8 (9.5mm)	SEP-239198
7/16 Marathon™ Center-Guide™	SEP-239297
11.5mm Marathon™ Center-Guide™	SEP-239798
1/2 Marathon™	SEP-239398
17mm Marathon™	SEP-239698
Shimadzu plug-style Marathon™	SEP-239498
<b>SEPTA BTO™</b>	
5mm BTO™ with Center-Guide™	SEP-298787
9mm with Center-Guide™	SEP-298713
3/8 (9.5mm)	SEP-298705
7/16 BTO™ with Center-Guide™	SEP-298717
11.5mm BTO™ with Center-Guide™	SEP-298777
1/2 BTO™ with Center-Guide™	SEP-298725
17mm BTO™ with Center-Guide™	SEP-298817
Shimadzu plug-style BTO™	SEP-298735
<b>ADVANCED GREEN 3™</b>	
5mm AG3 with Center-Guide™	SEP-246525
9mm AG3 with Center-Guide™	SEP-246713
3/8 (9.5mm) AG3	SEP-246124
7/16 (11mm) AG3 Center-Guide™	SEP-246225
11.5mm AG3 Center-Guide™	SEP-246725
1/2 AG3	SEP-246324
17mm AG3	SEP-246624
Shimadzu plug-style AG3	SEP-246424

78



## CARRIER GAS TRAPS AND FILTERS

Description	Order No.
<b>INDICATING OXYGEN TRAP</b>	
Indicating Oxygen Trap, 1/8 fittings	TRP-2220
Indicating Oxygen Trap, 1/4 fittings	TRP-2223
Regeneration Service, 1/8	TRP-2224
Regeneration Service, 1/4	TRP-2225

### HIGH CAPACITY OXYGEN/MOISTURE TRAP - CAPILLARY GRADE (MODEL 1000)

**NOTE:** Due to FAA regulations, this item ships as Hazardous Goods to all locations.

High Capacity Oxygen Trap, 1/8 fittings	TRP-2200
High Capacity Oxygen Trap, 1/4 fittings	TRP-2202
Regeneration Service, 1/8	TRP-2204
Regeneration Service, 1/4	TRP-2205

### SAFE-GLASS INDICATING MOISTURE TRAP

Glass Indicating Moisture Trap, 1/8 fittings	TRP-2266
Glass Indicating Moisture Trap, 1/4 fittings	TRP-2268

### MOISTURE TRAP (BIG TRAP)

Clear Moisture Trap, 1/8 fittings	TRP-2260
Clear Moisture Trap, 1/4 fittings	TRP-2262
Molecular Sieve Refill Kit (800cc's)	TRP-2244

### REFILLABLE HYDROCARBON TRAP (MODEL 300)

Refillable Hydrocarbon Trap, 1/8 fittings	TRP-2330
Refillable Hydrocarbon Trap, 1/4 fittings	TRP-2332

### SPLIT VENT TRAP

Split Vent Trap w/ 3 Tubes	TRP-2346
Additional Replacement Tubes, pk/3	TRP-2348

### GAS PURIFICATION CARTRIDGE SYSTEM

**NOTE:** Due to FAA regulations, this item ships as Hazardous Goods to all locations

Gas Purification 3 Cartridge System, Wall Mounted, 1/8 fittings	TRP-202800
Gas Purification 3 Cartridge System, Wall Mounted, 1/4 fittings	TRP-202804

### REPLACEMENT CARTRIDGES

Replacement Cartridge Set (3)	TRP-202850
Cartridge Set Regeneration Service	TRP-202852
Hydrocarbon/Moisture Cartridge (1)	TRP-202830
High Capacity Oxygen Cartridge (1)	TRP-202810
Indicating Oxygen Cartridge (1)	TRP-202820

## FUSED SILICA CAPILLARY TUBING - GUARD COLUMNS

(Minimum length is 5 meters for all fused silica tubing.)

I.D./O.D (nominal)	UNTREATED		DEACTIVATED
	Order No.		Order No.
0.10mm/0.20mm	FST-100		FST-100-D
0.10mm/0.375mm	FST-100/375		FST-100/375-D
0.18mm/0.35mm	FST-180	\$5.00	FST-180-D
0.25mm/0.35mm	FST-250	\$5.00	FST-250-D
0.32mm/0.45mm	FST-320		FST-320-D
0.53mm/0.70mm	FST-530		FST-530-D

## CAP-LINK™ UNIVERSAL COLUMN CONNECTORS

Description	Order Number
Cap-Link (pkg. of 5)	999-LINK-5
Cap-Link (pkg. of 25)	999-LINK-25

## POLYIMIDE SEALING RESIN

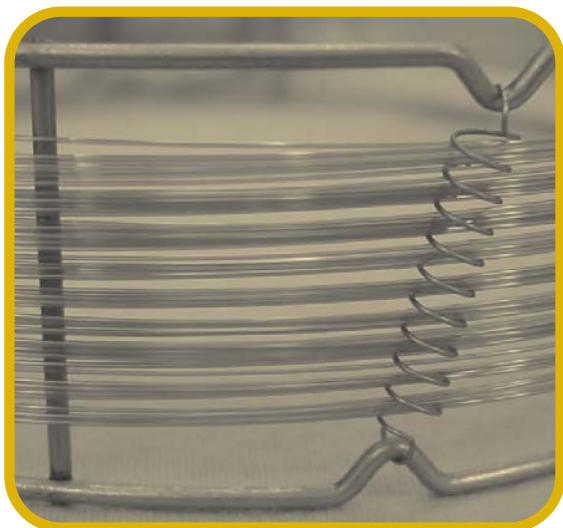
Description	Order Number
Sealing Resin, 10 grams	999-LINK-4002

## CAP-LINK™ Y-SPLITTERS

Description	Order Number
Cap-Link™ Y-Splitter	999-Y-LINK
Cap-Link™ Y-Splitter (pkg. of 3)	999-Y-LINK-3

## DRILL BIT SET

Description	Order Number
Drill bit set and pin vise	DBS-206250



## STAINLESS STEEL SUPPORT CAGES

USES	DIA.	HEIGHT	Order No.
Standard for 0.10,0.18,0.25 and 0.32mm I.D. columns of 30 meters or less.	6	1 1/4	SSS-C-6/1
Standard for all 0.25 and 0.32mm I.D. columns of 50 meters or greater	6	2	SSS-C-6/2
Standard for all 0.53mm I.D. columns of 30 meters or less	7	1 1/4	SSS-C-7/1
Standard for all 0.53mm I.D. columns of 50 meters or greater.	7	2	SSS-C-7/2

# PRODUCT INDEX

## QUADREX CAPILLARY COLUMNS

007-1	9
007-1, PHAT PHASE	10
007-1, SPECIAL USE: PETROCHEMICAL	11
007-5	12
007-5, PHAT PHASE	13
007-5MS	14, 15
007-10, 007-20	16
007-502, 007-608, 007-624	17
007-1301	18
007-35	19
007-1701	20
007-17	21
007-65HT, SPECIAL USE: TRIGLYCERIDES	22
007-225	23
007-CW	24
007-BTR-CW	25
007-FFAP	26
007-23	27
PLT-5A	28
400-1HT, SPECIAL USE: HIGH TEMPERATURE	29
ULTRA-ALLOY	30-31

## SRI PORTABLE GC SYSTEMS

MODEL 8610C GC MAINFRAME	35
MODEL 310 GC MAINFRAME	35

## SRI MAINFRAME OPTIONS

### • INJECTORS

COLD ON-COLUMN INJECTOR	36
HEATED FLASH VAPORIZATION INJECTOR	36
HEATED STATIC HEADSPACE INJECTOR	36
HEATED SPLIT/SPLITLESS INJECTOR & PTV OPTION	36
THERMAL DESORBER	37
10-PORT GAS SAMPLING VALVES	37
MODEL 8640 20-VIAL LIQUID AUTOSAMPLER	37
METHOD 5030/5035 COMPLIANT PURGE & TRAP	37
METHOD TO-14 AIR CONCENTRATOR	38
10-POSITION PURGE & TRAP AUTOSAMPLER	38

### • DETECTORS

THERMAL CONDUCTIVITY DETECTOR (TCD)	39
CATALYTIC COMBUSTION DETECTOR (CCD)	39
FLAME IONIZATION DETECTOR (FID)	40

### • DETECTORS (continued)

HELIUM IONIZATION DETECTOR (HID)	40
FLAME IONIZATION DETECTOR / DRY ELECTROLYTIC CONDUCTIVITY DETECTOR (FID/DELCD)	40
NITROGEN PHOSPHORUS DETECTOR (NPD)	40
THERMIONIC IONIZATION DETECTOR (TID)	40
ELECTRON CAPTURE DETECTOR (ECD)	41
FLAME PHOTOMETRIC DETECTOR (FPD)	41
PHOTO IONIZATION DETECTOR (PID)	41
SRI STAND-ALONE DETECTOR (MODEL 110)	42

## PEAKSIMPLE DATA ACQUISITION SYSTEMS

MODEL 203	43
MODEL 202	44
MODEL 302	44

## SRI GC SYSTEM ACCESSORIES

STAND-ALONE HYDROGEN GENERATOR	45
EXTENDED RUN HYDROGEN UPGRADE KIT	45
METHANIZER	45
STAND-ALONE METHANIZER	45
BUILT-IN "WHISPER QUIET" AIR COMPRESSOR	45
VACUUM PUMP INTERFACE	45
GAS LINE INSTALLATION KITS	46
GC MAINTENANCE KIT	46
HYDROGEN/HYDROCARBON (H <sub>2</sub> /HC) LEAK DETECTOR	46
GENERAL PURPOSE DIGITAL VOLTMETER	46

## SRI PRE-CONFIGURED GC SYSTEMS

CAPILLARY FID GC	47
EDUCATIONAL FID GC	47
MULTIPLE GAS ANALYZER GC	48
MULTIPLE GAS ANALYZER #2 GC	48
SULFUR GC	48
TOGA GC SYSTEM	49
PCB GC	49
TO-14 AIR MONITORING	49
ENVIRONMENTAL AND BTEX G	50
BREATH ANALYZER GC	50
EXPLOSIVES GC	50
BTU GAS ANALYZER GC	51
METHOD 25 METHANE/NON-METHANE HYDROCARBONS GC	51
MUD-LOGGING GC	51

## PEAK GAS GENERATOR SYSTEMS

HIGH VOLUME NITROGEN GENERATORS FOR LC/MS & OTHER LAB APPLICATIONS	53
HIGH VOLUME NITROGEN GENERATORS	54
HIGH PURITY NITROGEN GENERATORS	55
HYDROGEN GENERATORS	56
ZERO-AIR GENERATORS	57

## GC ACCESSORIES

GRAPHITE AND GRAPHITE-VESPEL™ FERRULES	58
GRAPHITE-VESPEL™ FERRULES	58
GRAPHITE-VESPEL™ FERRULES / H-P 5890, 6890, AND 6880 GC'S	58
GRAPHITE FERRULES	58
GRAPHITE-VESPEL™ REDUCING FERRULES	58
GRAPHITE FERRULES / REDUCING FERRULES	58
FERRULE REMOVER TOOLS	58

## INJECTOR PORT SEPTA

MARATHON SEPTA™	59
SEPTA BTO™	59
ADVANCED GREEN 3™	59

## INJECTOR PORT LINERS

AGILENT GCs	60
PERKIN ELMER GCs	61
THERMOFINNIGAN GCs	62
VARIAN GCs	62

## CARRIER GAS TRAPS AND FILTERS

INDICATING OXYGEN TRAP	63
HIGH CAPACITY OXYGEN/MOISTURE TRAP - CAPILLARY GRADE (MODEL 1000)	64
SAFE-GLASS INDICATING MOISTURE TRAP	64
MOISTURE TRAP ("BIG TRAP")	64
REFILLABLE HYDROCARBON TRAP (MODEL 300)	64
SPLIT VENT TRAP	64
GAS PURIFICATION CARTRIDGE SYSTEM	65

## MISCELLANEOUS

FUSED SILICA CAPILLARY TUBING	66
CAP-LINK™ UNIVERSAL COLUMN CONNECTORS	66
CAP-LINK™ Y-SPLITTERS	66
POLYIMIDE SEALING RESIN	66
DRILL BIT SET	66
SUPPORT CAGES	66



For more than a quarter century,  
**QUADREX CORPORATION** has been proud  
to provide Gas Chromatography products  
of superior quality.

Wherever your laboratory  
or facility is located,  
**QUADREX CORPORATION**  
can meet your GC needs  
with our worldwide  
distribution network.

**CALL US TOLL-FREE**  
**1-800-275-7033**

or write us at  
[sales@quadrexcorp.com](mailto:sales@quadrexcorp.com)  
for product information  
or a distributor near you.







# QUADREX CORPORATION

PO Box 3881, Woodbridge, CT 06525

203/393-3112 • FAX 203/393-0391

TOLLFREE: 800-275-7033

E-MAIL: [tech@quadrexcorp.com](mailto:tech@quadrexcorp.com)

WEB: [www.quadrexcorp.com](http://www.quadrexcorp.com)

SERVING THE  
GC COMMUNITY  
SINCE 1976