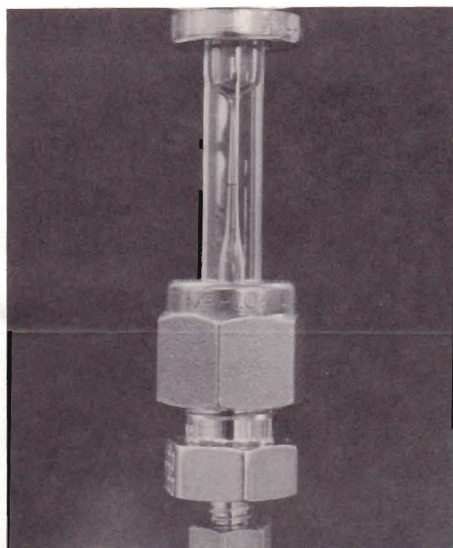


THE RESTEK

ADVANTAGE

Vu-Tight™ - A New View to Packed Column Conversion



- visually observe press-tight connection between the column end and sleeve
- fits HP, Varian, and most packed column GCs*
- converts packed column inlets for use with 0.32 & 0.53mm ID fused silica capillary columns (tubing OD must be 0.4mm or greater)
- deactivated, strong, and extremely inert
- slotted top prevents obstruction of carrier gas flow
- low cost

Convert packed column inlets for use with high resolution capillary columns using the new Vu-Tight Direct Injection Sleeve. The Vu-Tight sleeve design offers the simplicity of a straight 1/4-inch sleeve and allows visual confirmation of the seal integrity. The large buffer volume can easily be packed with glass wool for the analysis of dirty samples.

It's easy to use! Simply insert the glass inlet sleeve into the packed column injection port and tighten it with a 1/4-inch nut and graphite ferrule. Then connect the column to the outlet of the sleeve with a 1/4 to 1/16-inch SS reducing fitting. The Press-Tight® taper is positioned for easy observation of a proper seal between the column end and the direct injection sleeve. Sound easy? That's because it is! And the chromatography is exceptional. The Vu-Tight injection sleeve provides sharp solvent peaks and exceptional inertness, even with sensitive compounds like Endrin and DDT.

Vu-Tight Direct Injection Sleeves

cat.# 20342, \$28 each
cat.# 20343, \$115/5-pack
cat.# 20344, \$480/25-pack

Vu-Tight Installation Fittings



Includes a 1/4-inch SS nut and 1/4-inch graphite ferrule for attaching the sleeve to the GC inlet and a 1/4 to 1/16-inch SS reducer plus a 1/4-inch and 0.5mm ID graphite ferrule for attaching the column to the Vu-Tight direct injection sleeve.

Vu-Tight Installation Fittings:
cat.# 20504, \$30 per kit

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* Fits 1/4-inch packed column injection ports with a maximum insertion depth of 4 inches.

Update . . .

New Uses for the Rt_x-200 Trifluoropropyl Phase

- 360°C thermal stability
- low bleed with FIDs, ECDs, MSDs
- selective for lone pair electron functionalities
- ideal confirmation column for many EPA analyses

Trifluoropropyl polysiloxane stationary phases have unique selectivity due to the electrophilic nature of the fluorine atom pendant on the polymer backbone. This selectivity intensifies interactions with compounds that contain groups displaying lone pair electrons such as alcohols, ketones, nitro-containing compounds and electron rich molecules such as Freons. This selectivity switches elution orders and resolves compounds that methyl, phenyl, cyano, and Carbowax® containing phases cannot.

While trifluoropropyl stationary phases have been recognized for their unique selectivity, they have also suffered from low thermal stability, high bleed, poor inertness, and incomplete cross-linking or surface bonding. Restek's new trifluoropropyl polymer, Rt_x-200, eliminates the standard problems associated with typical trifluoropropyl phases. Because of the complete surface deactivation and high phase purity, inertness is exceptional allowing highly active compounds to elute without tailing or adsorbing onto the column surface. Since the polymer is bonded to the surface and completely cross-linked, it can be solvent rinsed to clean the sample residue from the polymer.

ECD Bleed

The Rt_x-200 is synthesized with advanced polymer technology and is coated on a carefully matched surface deactivation, increasing thermal stability to over 360°C. Background is minimal even on halogen specific detectors such as ECD's. Figure 1 shows an ECD bleed profile of

Figure 1 - The high degree of immobilization allows the Rt_x-200 to be used with an ECD despite the presence of fluorine in the polymer.

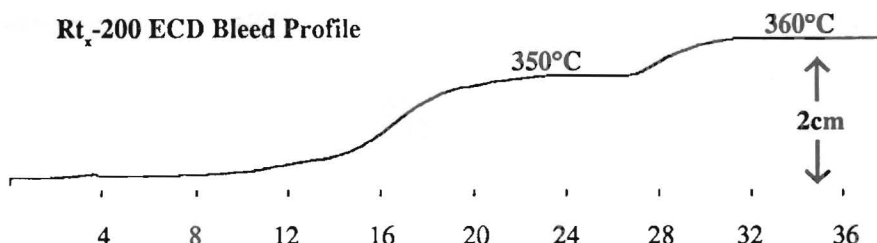
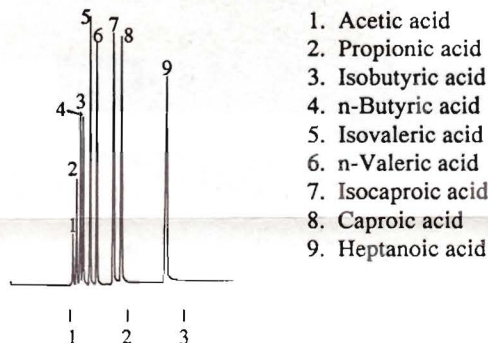


Figure 2 - Excellent peak symmetry of volatile free fatty acids is exhibited on an Rt_x-200 capillary column.



30m, 0.25mm ID, 0.25µm Rt_x-200 (cat.# 15023)
 0.8µl split injection of a free fatty acid standard.
 Concentration approximately 10 to 20ng/µl.
Oven temp.: 90°C isothermal
Inj. & det. temp.: 250°C
Carrier gas: Hydrogen
Linear velocity: 40cm/sec. (flow rate: 1.4cc/min.)
FID sensitivity: 4x10⁻¹¹ AFS
Split vent: 40cc/min.

an Rt_x-200 column that was temperature programmed to 350°C and 360°C. Even at the column's maximum operating temperature, the ECD bleed is minimal.

Applications

Due to improvements in thermal stability, bleed, and inertness, the Rt_x-200 is ideal for the analysis of a wide variety of compounds. Some new, novel applications for the Rt_x-200 include free fatty acids, chlorosilanes, glycols, and alkyl

nitrites. We previously published applications chromatograms on Freons, polar solvents, phenols, and polynuclear aromatic hydrocarbons (*The Restek Advantage*, July 1991).

Free Fatty Acids

The inertness and selectivity of the Rt_x-200 makes it ideal for the analysis of volatile free fatty acids. Figure 2 shows the analysis of nine common fatty acids on a 30m, 0.25mm ID, 0.25µm Rt_x-200 column. All components are virtually

Figures 3a & b - Thick film Rt_x -200's are ideal for the analysis of volatile chlorosilanes.

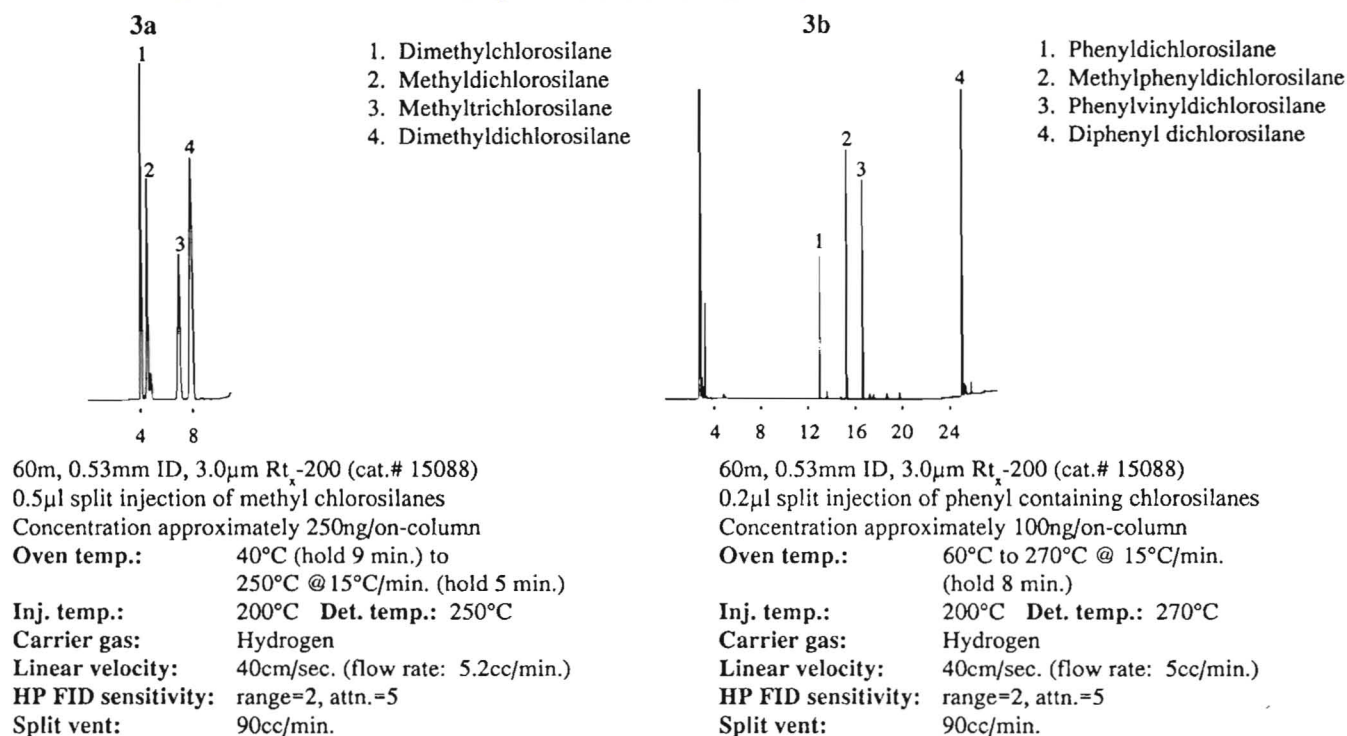
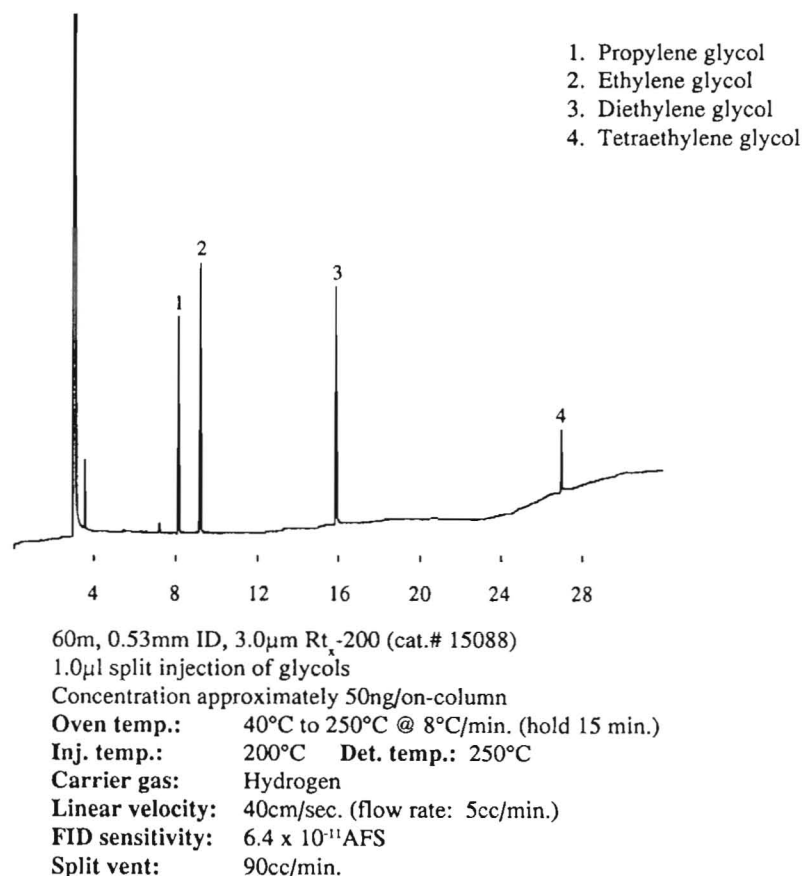


Figure 4 - Analyze glycols without tailing on an Rt_x -200 column.



baseline resolved in less than three minutes with excellent peak symmetry.

Chlorosilane Analysis

Analysis of chlorosilane monomers on trifluoropropyl capillary columns has been hampered by the limited film thicknesses available. With film thicknesses up to 3.0 μ m, the Rt_x -200 columns are ideal for the analysis of low molecular weight chlorosilanes. Figures 3a and 3b show the analysis of both methyl and phenyl chlorosilanes on a 60m, 0.53mm ID, 3.0 μ m Rt_x -200. The unique selectivity of the Rt_x -200 combined with the increased film thickness results in baseline separation of these volatile chlorosilanes.

Glycols

The excellent inertness of the Rt_x -200 allows active compounds to be analyzed without tailing or adsorption. Figure 4 shows the analysis of several glycols on a 60 meter, 0.53mm ID, 3.0 μ m Rt_x -200 column. Even at the 50ng level, these reactive components exhibit sharp, symmetrical peaks.

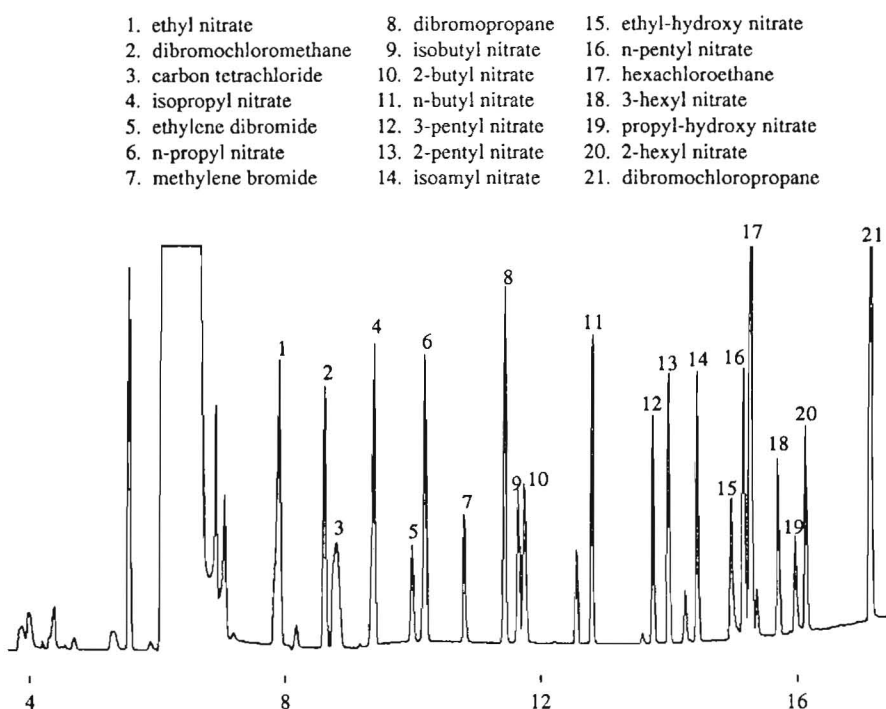
(continued on next page)

Alkyl Nitrates and Halocarbons

Figure 5 shows the analysis of a complex mixture of alkyl nitrates and halocarbons on a 60m, 0.25mm ID, 1.0µm Rt_x-200. The inertness and low bleed of the Rt_x-200 allow trace level analysis of these compounds using an Electron Capture Detector. The Rt_x-200 provides excellent separation in less than 40 minutes.

The Rt_x-200 is a highly selective stationary phase that is ideal for many types of analyses. Because of its unique polarity and high thermal stability, the Rt_x-200 is an excellent confirmational column. The 360°C maximum operating temperature, low bleed, and excellent inertness gives analysts an alternative to other intermediate polarity capillary columns. Available in a wide range of film thicknesses and diameters, the Rt_x-200 may be the solution to your difficult analytical separations.

Figure 5 - Unique selectivity of the Rt_x-200 resolves Alkyl Nitrates and Halocarbons.



60m, 0.25mm ID, 1.0µm Rt_x-200 (cat.# 15056)

15pg/µl alkyl nitrate & halocarbon standard

Oven temp.: 85°C (hold 7 min.) to 225°C @ 12°C/min.

Detector: ECD

courtesy of Dr. Elliot Atlas, National Center for Atmospheric Research

length	df	0.25mm ID	0.32mm ID	0.53mm ID
15 meter	0.10	15005 \$250	15006 \$275	15007 \$290
	0.25	15020 \$250	15021 \$275	15022 \$290
	0.50	15035 \$250	15036 \$275	15037 \$290
	1.00	15050 \$250	15051 \$275	15052 \$290
	1.50		15066 \$275	15067 \$290
	3.00			15082 \$290
30 meter	0.10	15008 \$400	15009 \$425	15010 \$475
	0.25	15023 \$400	15024 \$425	15025 \$475
	0.50	15038 \$400	15039 \$425	15040 \$475
	1.00	15053 \$400	15054 \$425	15055 \$475
	1.50		15069 \$425	15070 \$475
	3.00			15085 \$475

length	df	0.25mm ID	0.32mm ID	0.53mm ID
60 meter	0.10	15011 \$685	15012 \$740	15013 \$850
	0.25	15026 \$685	15027 \$740	15028 \$850
	0.50	15041 \$685	15042 \$740	15043 \$850
	1.00	15056 \$685	15057 \$740	15058 \$850
	1.50		15072 \$740	15073 \$850
	3.00			15088 \$850
105 meter	0.10	15014 \$900	15015 \$975	
	0.25	15029 \$900	15030 \$975	
	0.50	15044 \$900	15045 \$975	
	1.00	15059 \$900	15060 \$975	
	1.50		15075 \$975	
	3.00			15091 \$1400

length	df	0.18mm ID	length	df	0.18mm ID	length	df	0.18mm ID
10 meter	0.20	45001 \$225	20 meter	0.20	45002 \$350	40 meter	0.20	45003 \$625
	0.40	45010 \$225		0.40	45011 \$350		0.40	45012 \$625

Standards Spotlight



New Chemical Standards for EPA 500 Series Methods

Restek continues to expand its line of environmental chemical standards. In an effort to provide analytical laboratories with calibration standards to meet their clients requirements, we are pleased to announce the availability of several new products. These mixtures are prepared to the strict specifications required for laboratories performing superfund analyses.

As with all Restek environmental standards, a complete data package is available to comply with EPA regulations. Each data package is designed to be your audit survival package. Restek data packages have been accepted by EPA auditors across the USA.

Method 506 - Phthalate Esters Mix

bis(2-ethylhexyl)phthalate
butyl benzyl phthalate
di-n-butyl phthalate
diethyl phthalate
dimethyl phthalate
di-n-octyl phthalate
bis(2-ethylhexyl)adipate
200µg/ml each in 1ml isooctane

Cat.# 31038	\$25ea.
31038-500	\$40 ea. w/data pack
31138	\$225 10pk. w/data pack

Method 524 Volatile Organics Kit

The complete kit contains all target analytes, internal standards, and surrogates recommended for use by this method. All solutions are prepared at a concentration of 2000µg/ml per each component. The kit contains one each of the following mixtures:

502.2 Calibration Mix #1
502.2 Calibration Mix #2
502.2 Calibration Mix #3
502.2 Calibration Mix #4
502.2 Calibration Mix #5
502.2 Calibration Mix #6
Fluorobenzene (Internal standard)
4-bromofluorobenzene (surrogate)
1,2-dichlorobenzene-d₄ (surrogate)

Cat.# 30052	\$215ea.
30052-500	\$360 ea. w/data pack

BTEX Standard

This standard mixture can be used to calibrate GC systems for the analysis of aromatic hydrocarbons in petroleum products from leaking underground storage tanks.

Benzene
Toluene
Ethylbenzene
o-Xylene
m-Xylene
p-Xylene
200µg/ml each in 1ml purge & trap grade methanol

Cat.# 30051	\$25 ea.
30051-500	\$40 ea. w/data pack
30151	\$225 10pk. w/data pack

Obtaining Copies of EPA Methods

Call or write the following government departments to request copies of the listed EPA methods.

EPA 500 Series, 600 Series (Water)

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Rd.
Springfield, VA 22161
Phone: (703) 487-4650

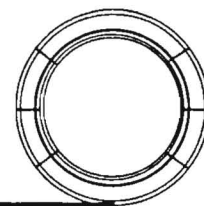
EPA SW-846 Methods (Office of Solid Waste)

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9371
Phone: (202) 783-3238

EPA Superfund Contract Lab Program

U.S. EPA Sample Management Office
P.O. Box 818
Alexandria, VA 22313
Attn: CLP Documents Section
Phone: (703) 684-5678

Hints for the Capillary Chromatographer



Becoming Proficient at Troubleshooting Capillary Chromatography Systems

The key to good troubleshooting is to methodically, logically, and quickly pinpoint problems that arise. Good problem solving techniques are essential in a laboratory to minimize down time.

The first and most important step to becoming proficient at troubleshooting is to read the instrument manuals. Instrument manufacturer's invest a lot of time and expense in writing manuals to provide a better understanding of the GC system. They include many of the basic concepts they have learned over the years that help avoid many common pitfalls. They also provide detailed flow path diagrams and instructions for disassembling injectors, detectors, and other parts that require customer servicing. Spend some time and review the manual. Learn about the inlet and detector systems. Understand the basic pneumatics and flow paths and know where the critical seals are located to quickly identify the source of most problems that arise.



To Begin Troubleshooting

First, determine if the problem is column or system related. Frequently, analysts call our technical service department with what they believe is a column problem. However, after some basic troubleshooting questions, it often turns out to be a bad inlet sleeve or improperly set carrier gas.

To determine if the system or column is the problem, simply install a column of known performance. If the problem remains, then it is most likely a system related problem, or a problem with both the system and the column. If the problem goes away, then it could have been column related or simply that the problem was corrected during re-installation. To be certain that the problem was column related, re-install the problem column again to make sure that the problem reappears.

Routine Instrument Maintenance

Usually, a careful methodical approach to troubleshooting is not attempted until the common instrument problems are addressed. Common instrument maintenance procedures performed are:

- changing dirty or contaminated inlet sleeves
- replacing the septum
- checking the inlet seal (o-ring or ferrule) for leaks
- confirming proper column insertion distances
- leak checking all column connections and external fittings
- replacing spent purifiers
- checking for properly set flow rates and linear velocity
- inspecting gauge pressures, electrometer settings, all temperatures, signal levels, integrator settings, and any other parameters that could be suspect.

Routine Column Maintenance

While the column is out of the instrument, perform routine column maintenance. Common maintenance procedures performed are:

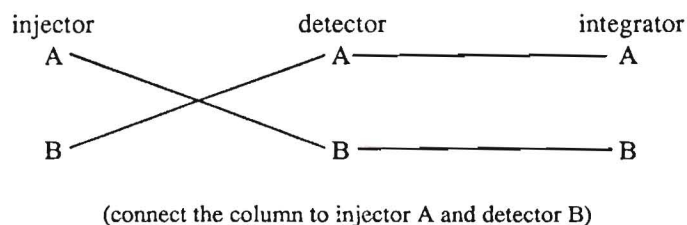
- inspecting the column for spontaneous breakage, discoloration, or contamination
- cutting two loops off of the inlet and one loop off of the detector end of the column

If Routine Maintenance Does not Work, Begin Diagramming and Documenting

Now troubleshooting gets tough. If the problem is not solved after routine maintenance, immediately begin documenting what has been done and start diagramming what should be done. This aids in communicating to others what effect changing variables have on solving the problem. Document the procedures in chronological order listing times, dates, and important instrument parameters. Label all troubleshooting chromatograms. These steps help to inform anyone else that may be working on the system of the troubleshooting procedures that have been completed.

Start with a simple instrument diagram (Figure 1), and try switching Column A to Detector B and vice versa. If the problem moves to detector B, then the problem is most likely occurring in the injector.

Figure 1 - Begin problem isolation when system is at fault.

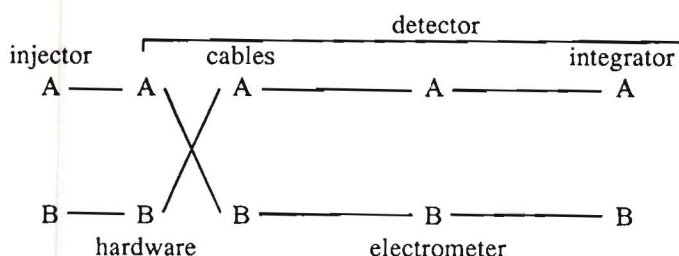


Some common injector problems we have observed are:

- wrong size graphite o-ring on HP inlet sleeve
- wrong sleeve type (using splitless sleeve for split analyses)
- leaking or contaminated metal disk on HP inlet
- bad solenoid valve containing split flow
- knife edge not cutting septum in Varian systems
- wrong length sleeve used in Varian systems
- not using glass wool with fast injecting autosamplers

If the problem stays on detector A when the column outlet is switched, then suspect a detector problem. Begin isolating detector problems by switching hardware, cables, electrometers, integrators, or any suspect part in the pathway. Figure 2 shows the detector hardware being isolated. If the problem goes away from the A side when the detector base is changed, then that detector is most likely the cause and should be replaced.

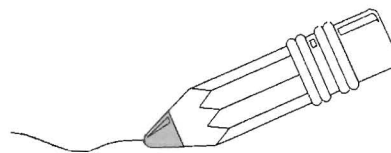
Figure 2 - Isolating Detector Problems



Some common detector problems we have observed are:

- broken or leaking jets
- column or ferrule fragment located inside the jet
- plugged jet orifice
- column installed too far into the detector
- oxidized polarizer or signal contacts
- shorted insulator on the collector assembly
- leak at the detector base
- bad needle valve or regulator
- incomplete or oxidized ground
- bad heater or heater controller
- air conditioning air currents blowing on the detector
- bad or contaminated carrier or combustion gasses
- bottled air with less than 21% O₂
- detector gasses not set properly or optimized

The complexity of a capillary GC system almost guarantees that one day you will be faced with troubleshooting a difficult problem. If you have read the manuals and follow a logical troubleshooting sequence, you can quickly isolate the cause of most problems.

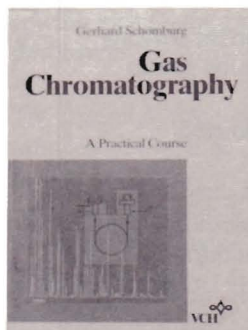


If there's a topic you'd like to see covered in Hints for the Capillary Chromatographer, write to:

**Hints Topics,
c/o Restek Corporation,
110 Benner Circle,
Bellefonte, PA 16823-8812.**

Useful Additions to Your Chromatographic Library

The field of capillary chromatography is complex and new discoveries are made every year. It is difficult to keep up with new innovations and expand one's knowledge of existing techniques. We often get requests from our customers for recommendations on books relating to capillary gas chromatography. We have received several books and have found a few that are noteworthy.



Gas Chromatography, A Practical Course

Gerhard Schomburg, Max-Planck Institute

This new book, written by a world-renowned and award-winning scientist, provides a practical approach to gas chromatography suitable for both the novice and for the

specialist. **Gas Chromatography** includes background theory, recent GC procedures, a course in gas chromatography and forty chromatograms with detailed explanations. This book will be of special interest to research chemists in analytical, organic, environmental, clinical and biochemistry; food scientists, toxicologists, pharmacologists, students and libraries.

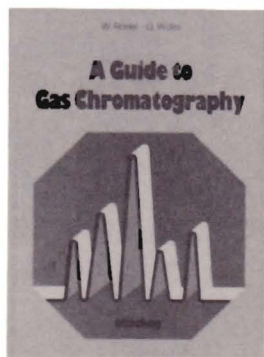
VCH Publishers, 1990 • Paper • 320pp.
cat.# 20459 \$55

Guide to Gas Chromatography

Wolfgang Rödel, Gerhard Wölm

This book provides a general understanding of the principles, methods, and applications of gas chromatography. Priority was given to practical aspects only and theory is confined to explanations and formulas necessary for understanding techniques.

Huethig Publishing, Ltd., 1987 • 304pp.
cat.# 20455 \$53



Restek Recommended!

Modern Practice of Gas Chromatography, Second Edition

Edited by Robert L. Grob, Villanova University

The Second Edition of *Modern Practice of Gas Chromatography* comprehensively treats the theory, instrumentation, and applications of gas chromatography. Chapters on applications to the petroleum field, high resolution gas chromatography, and optimization in gas chromatography are featured, and coverage includes packed columns and packed column selection, techniques and instrumentation such as qualitative and quantitative analysis by gas chromatography, and more.

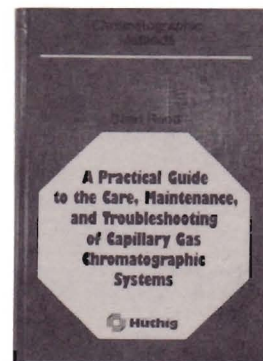
John Wiley & Sons, Inc., 1985 • 897pp.
cat.# 20464 \$95

New! Hot off the Press!

A Guide to the Care, Maintenance and Troubleshooting of Capillary Gas Chromatographic Systems

Dean Rood

This guide places strong emphasis on avoiding problems. It is organized by the nature of chromatographic problem encountered. Each possible explanation for the problem refers back to the text of the book which outlines procedures to diagnose and repair the problem, but more importantly, procedures to prevent or minimize the frequency and severity of the problem. A comprehensive, step-by-step flow chart is included to aid in pinpointing the problem area. The text is written so that it can be used as a guide in the proper operation and maintenance of a capillary gas chromatograph to obtain maximum performance with minimal difficulties and effort. Particular care was taken to keep the explanations on a practical level so that intimate knowledge of

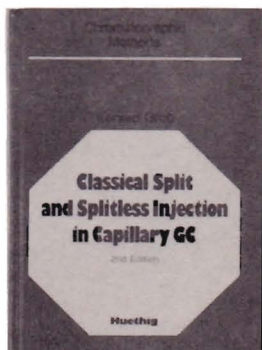


chromatography and chemistry is not required to fully benefit from the information presented.

Huethig Publishing, Ltd., Xii + 192pp.

cat.# 20450 \$47

A must for those using splitless injections!



Classical Split and Splitless Injection in Capillary GC

Konrad Grob

The classical techniques of split and splitless injection are still by far the most common methods of sample introduction, and yet, despite their age, many of the fundamental problems encountered have hardly been described before.

This book probably represents the very first comprehensive, single-volume treatment of all aspects of split and splitless injection. The volume is divided into three major parts: Split injections; Splitless injection; Problems Relating to the Hot Syringe Needle in Vaporizing Injection. A brief further section is also devoted to a more recent development: Programmed Temperature Vaporizing (PTV) Injection.

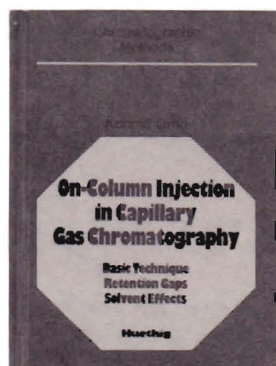
Huethig Publishing, Ltd., 1988 • 324pp.

cat.# 20451 \$78

On-Column Injection in Capillary Gas Chromatography

Basic Technique; Retention Gaps; Solvent Effects

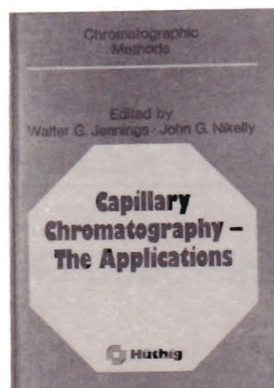
Konrad Grob



On-column injection techniques have become an attractive mode of sample introduction due to the minimizing of detrimental adsorption and non-linearity problems associated with split/splitless techniques. Grob's text is a *must read* treatise for the novice as well as the experienced GC practitioner desiring to gain the on-column advantages. Basic technique is explained clearly with excellent schematics. Topics include: sample introduction, injector design, syringes, solvent and temperature effects. Full chapters are spent discussing solvent effects and retention gaps. This is a real how and why guide to on-column injection.

Huethig Publishing, Ltd., 1987 • xx + 591pp.

cat.# 20453 \$110



Capillary Chromatography

The Applications

edited by W. Jennings and J. Nikelly

This symposium-based book describes several newly developed applications of fused silica capillary columns mainly in gas chromatography.

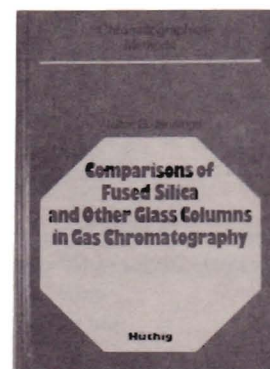
The volume details experimental conditions and applications in the analysis of organic pollutants in ambient air, pesticides in environmental samples, and components of microbial products and pharmaceuticals. Besides the applications, there are sections on equivalency of different stationary phases and computerized modeling of new phases.

Huethig Publishing, Ltd., 1991 • Hardcover • 156pp.

cat.# 20452 \$60.75

Comparisons of Fused Silica and other Glass Columns in Gas Chromatography

W.G. Jennings



This book deals with the various types of glass columns used in gas chromatography. It includes a detailed account of the construction materials, a description of the pretreatment of the capillary, methods for evaluating inertness and testing uncoated capillaries and coated columns. In addition, the physical characteristics of glass columns are considered and the advantages conferred by column flexibility are presented.

Huethig Publishing, Ltd., 1981 • 88pp.

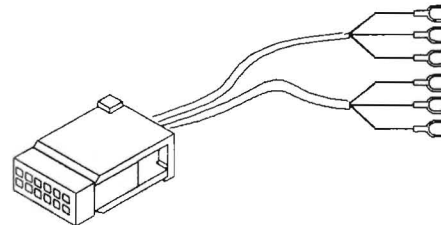
cat.# 20456 \$25

To order, call:
 **800-356-1688**

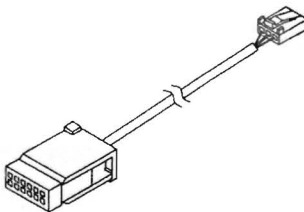
Peak Performers

Cables for HP-5890 GCs and HP 3396 Integrators

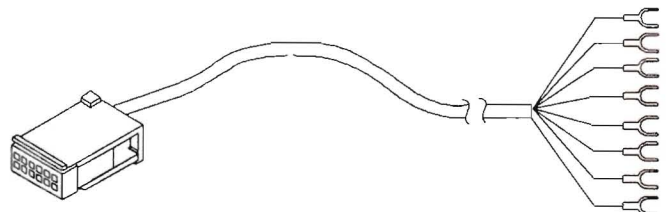
- lower cost than HP
- tested for 100% signal integrity
- instructions and wiring diagrams included
- manufactured with only the highest quality components
- custom cables available



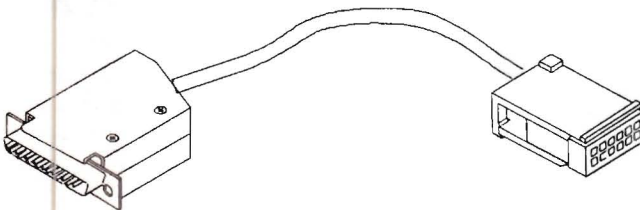
Connect an HP-5890 GC to a non-HP integrator or standard strip chart recorder. Replaces HP part number 05890-60800.
cat.# 20652, \$50 each
cat.# 20653, \$80/2-pack



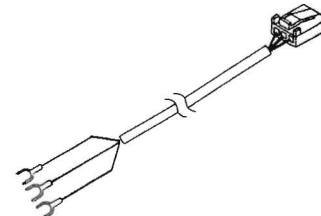
Connect an HP-5890 GC to an HP integrator (for second inlet integrator). Replaces HP part number 34900-60610.
cat.# 20650, \$40 each
cat.# 20651, \$65/2-pack



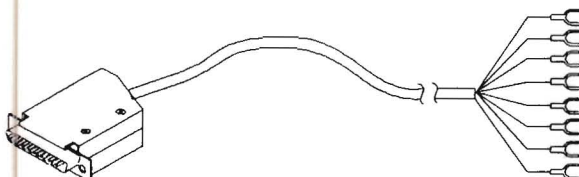
Connect an HP-5890 GC to remote start another piece of equipment or to start the HP-5890 GC from that piece of equipment. Replaces HP part number 05890-61080.
cat.# 20657, \$60 each



Connect an HP-5890 GC to an HP-3396 integrator to enable remote starts (non-inlet connection from GC to integrator). Replaces HP part number 03394-60560.
cat.# 20654, \$60 each



Connect an HP-3396 integrator to another non-HP type of GC. Replaces HP part number 35900-60630.
cat.# 20658, \$30 each
cat.# 20659, \$50/2-pack

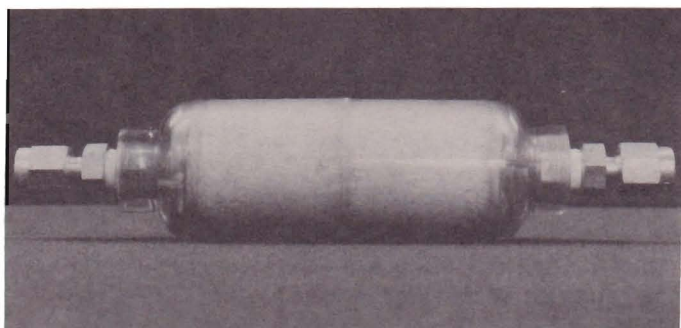


Connect an HP-3396 integrator to remote start either another piece of equipment or to start the HP-3396 integrator from that other piece of equipment. Replaces HP part number 03394-60540.

cat.#20655, \$50 each
cat.# 20656, \$75/2-pack

**Call 800-356-1688 for information
on custom cables.**

New! Indicating Hydrocarbon Trap for Compressed Air



Many laboratories now run Flame Ionization Detectors (FID) from oil-lubricated air compressors or from house air lines. Although most of these systems have extensive filtration devices to remove oil vapors or mist from the air stream, there is no way to determine if these filters are doing their job or when to change them. The only indication that the filters are not working is when oil contamination reaches the detector

and creates massive baseline disturbances, ghost peaks, and clogged jets. By then it is too late and only laborious solvent rinsing of the gas lines and detector fittings will restore the stability of the FID.

The Restek Wizards have come up with a novel solution to this problem. Our new Indicating Hydrocarbon Trap changes from pink to red as it absorbs oil vapors. This trap gives advance warning should the filters on the compressed air lines ever fail. In addition to changing color, the trap reduces oil vapor concentration down to five parts per million to prevent gross contamination of the instrument lines.

Available with 1/8" or 1/4" tube compression fittings, these traps are a must for any lab using oil lubricated air compressors as a gas source for their FIDs.

1/4" Indicating Hydrocarbon Trap: cat.# 20636, \$55

1/8" Indicating Hydrocarbon Trap: cat.# 20637, \$55

Gow-Mac Leak Detector

- identifies minute leaks that are undetectable by liquid leak detectors
- contamination and residue-free leak detection
- essential for capillary chromatographers
- prolongs column lifetime and stabilizes sensitive detectors by detecting all points of O₂ influx

Leaks in a gas chromatographic system increase detector noise, cause baseline instability, shorten column lifetime, waste expensive carrier gas, and increase the error of analyses. A Gow-Mac thermal conductivity leak detector is not a luxury, it is a must for all capillary chromatographers. In fact, a Gow-Mac leak detector is so sensitive that it detects the instantaneous, minute leak caused while a syringe penetrates the septum during an injection.

The Gow-Mac is a portable unit that operates on line voltage or an internal, rechargeable, leak/acid gel battery. It also incorporates an audible alarm as well as a visual readout device. This unit is set for 115V/60Hz operating voltage, but is internally switchable to 230B/60Hz.
cat.# 20130, \$995 each



Limited Time Offer!

Order a Gow-Mac leak detector before December 31, 1991, and receive a coupon with the Gow-Mac for a FREE Restek Wizard Sweatshirt.

Product Changes

Varian SPI Inlet Sleeves: Our 0.8mm ID Varian SPI sleeves (cat.#s 20778, 20779, & 20780) were originally designed for the direct injection mode only. We have redesigned this SPI sleeve to allow both direct and on-column injections. We recommend that the on-column mode be used with clean samples and the direct injection mode be used for samples containing non-volatile residues.

Less Fragile, More Inert Silica Wool: We have changed the deactivation procedure and enhanced the flexibility of our silica wool (cat.# 20790). These improvements make it easier to stuff the wool into the sleeves and maintain inertness with active compounds.

News from Restek

Restek Licenses Fused Silica Technology from HP

After several years of negotiations, Restek and Hewlett-Packard have finally signed a licensing agreement. Effective August 5, this license allows Restek to manufacture and distribute fused silica capillary columns under HP's U.S. Patent 4,293,415 and several other foreign patents. This license covers all fused silica capillary columns previously manufactured by Restek and is in effect until the patent expires in 1998.

The Wizards Celebrate Six Innovative Years

October 1991 marked Restek's sixth anniversary. From our start in a business incubator in 1985, we have grown to over sixty people dedicated to supplying innovative products and services. A major expansion of our facilities is currently underway. We would like to take this opportunity to thank our loyal customers who have supported us and helped us grow so rapidly.



Truth in Advertising

Recently, we have noticed a rash of advertisements by some of our competitors that can deceive the inexperienced analyst. An ad by one of our competitors misleadingly compares our 105 meter R_t -502.2 column to their 75 meter column. They state that their columns costs less and produces faster analysis times. But, they fail to mention that their column actually costs more per meter and that their column produces seven pairs of co-eluting peaks while our column only exhibits two co-eluting pairs. Every lab should be concerned with reducing cost and analysis time, but not at the expense of producing reliable data.

There has also been a wave of ads by several companies offering "EPA Certified Standards". While it may be true that a few standards that these companies supply do have EPA approval, the reality is that the vast majority of standards that they offer have no EPA approval and may not even be quality controlled.

Restek is committed to satisfying the needs of our customers with products that are innovative and offer honest benefits. We would never stoop to overstating the merits of our products just to make a sale. Honesty is always the best policy.



Phone: (814)353-1300

FAX: (814)353-1309

Orders: (800)356-1688

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Restek capillary columns are manufactured under U.S. patent 4,293,415, licensed by Hewlett-Packard Company

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