

New! Rt-bDEXm

Rt-bDEXm[®] columns are highly* selective for a wide variety of chiral separations. Enantiomeric separation is used in the identification and quality control of pharmaceuticals, essential oils and flavorings. These chiral columns provide maximum efficiency and resolution between enantiomeric pairs and are specially tested to ensure column-to-column reproducibility and inertness. Restek's Rtx-1701 cyanopropyl methyl polysiloxane is used as the foundation for the b-cyclodextrin material. Rt-bDEXm[®] columns are available in 30-meter lengths with 0.25 and 0.32mm IDs. A 0.25um film thickness provides maximum efficiency and yields optimal resolution of enantiomeric pairs.

· Highly selective for the separation of enantiomers..

* Permethylated b-cyclodextrin derivative.

· Individually tested with a chiral mix.

* Available in both 0.25 and 0.32mm IDs

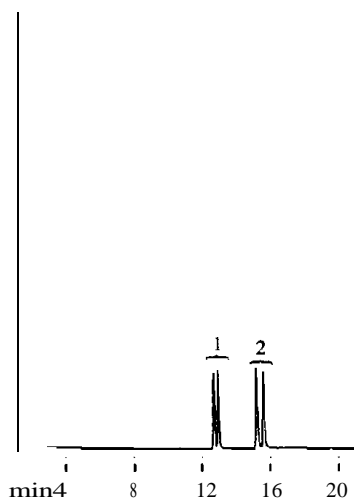


Rt-bDEXm 30m, 0.25mm ID, 0.25um cat.# 13100,

Rt-DDEXm 30m, 0.32mm ID, 0.25um cat.# 13101,

The Rt-bDEXm[®] column permits enantiomeric separation of common barbiturates.

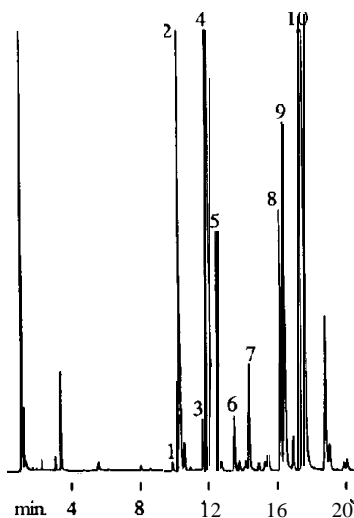
1. (+,-)hexobarbital
2. (+,-)mephobarbital



30m. 0.25mm ID, 0.25um Rt-bDEXm[®] (cat.# 13100)
 0.5ul split injection of hexobarbital & mephobarbital,
 concentration=1mg/ml
 Oven temp.: 205°C isothermal
 [inj. & det. temp.: 200°C
 Carrier gas: hydrogen
 Linear velocity: 50cm/sec. set @ 40°C
 FID sensitivity: 8x10⁻¹¹ AFS
 Split ratio: 42:1

Enantiomeric components of ginger oil can be resolved with the Rt-bDEXm[®] column.

1. (-)a-pinene
2. (+)a-pinene
3. (-)camphene
4. (+)camphene
5. myrcene
6. b-pinene
7. a-phellandrene
8. (-)limonene
9. (+)limonene
10. β-phenanthrene



30m, 0.25mm ID, 0.25um Rt-bDEXm (cat.# 13100)
 wet needle split injection of ginger oil,
 concentration=neat

Oven temp.: 50°C (hold 2 min.) to 190°C
 @ 1.0C/min.

Inj. & det. temp.: 200C

Carrier gas: hydrogen

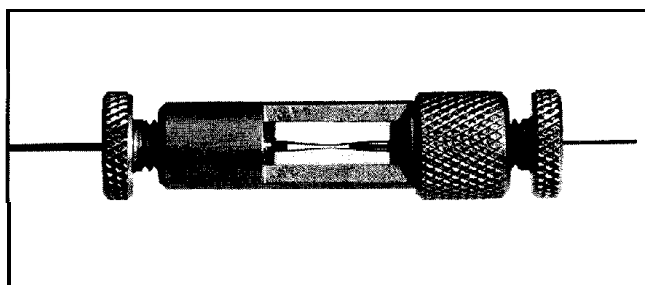
Linear velocity: 50cm/sec. set @ 50°C

FID sensitivity: 8x10⁻¹¹ AFS

split ratio: 71: 1 (split flow: 100cc/min.)

Vu-Union

Restek's new Vu-Union" combines the benefits of a low dead volume press-tight connection with the reliability of a ferrule seal. The Vu-Union" utilizes a precision tapered glass insert that joins the two fused silica ends together similar to that of the Press-



Tight" connector. The glass insert is deactivated to prevent adsorption of active compounds. Ferrules are located inside both ends of the glass insert, adding a positive seal to the end of the column and connector. Because of the secondary ferrule seal, the column cannot unexpectedly disconnect or lose sealing integrity, even at temperatures as high as 400°C. The Vu-Union" remains leak-free even with a mass spectrometer under vacuum conditions.

Universal tapered glass insert for capillary columns (ODs 0.35 - 0.74mm) or SFC columns (ODs 0.15 - 0.45mm).

Glass window allows visual confirmation of seal.

Uses either graphite or Vespel"/graphite ferrules.

Leak-free vacuum connections for MSDs.

Will not unexpectedly disconnect.

Operating range to 400°C.



Capillary Vu-Union"

‡ One deactivated glass tapered insert (fits column ODs ranging from 0.35 to 0.74mm).

· One metal housing body.

Order ferrules separately below
cat.# 20418, each

Replacement Vu-Union"

Deactivated Glass Inserts

fits column ODs: 0.35 to 0.74mm)

cat.# 20419, 3-pk.

SFC Vu-Union"

‡ One deactivated glass tapered insert (fits column ODs ranging from 0.15 to 0.45mm).

‡ One metal housing body.

Order ferrules separately below
cat.# 20416, each

Replacement Vu-Union"

Deactivated Glass Inserts

fits column ODs: 0.15 to 0.45mm)

cat.# 20417, 3-pk.

Graphite Ferrules for the Vu-Union"

- Easiest ferrules to use with the Vu-Union"
- Universal fit Vu-Union" and connect capillary columns to most GC inlets.
- 450°C maximum operating temperature.

Ferrule Size	Fits Column ID	10-pk. Cat.#	50-pk. Cat.#
0.4mm	0.25mm	20200	20227
0.5mm	0.32mm	20201	20228
0.8mm	0.53mm	20202	20224

Vu-Union" VespeP'IGraphite Ferrules

- Taper designed to fit Vu-Union" perfectly.
- ‡ 60% Vespel"/40% graphite
- 400°C maximum operating temperature.

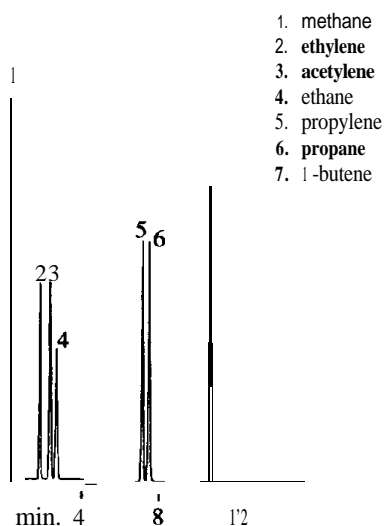
Ferrule Size	Fits Column ID	10-pk. Cat.#
0.4mm	0.25mm	20420
0.5mm	0.32mm	20421
0.8mm	0.53mm	20422

Micropacked GC Columns

Analyze low molecular weight compounds with Restek's new Micropacked columns. By combining features of both packed and capillary columns, Micropacked columns offer excellent efficiency, sample capacity and inertness. Four porous polymer packings for light gases and organic compounds to C6 and two molecular sieve packings are available to cover a broad range of permanent gas applications. The ImmID (1/16" OD) Micropacked columns are designed for use in packed column inlets, while the 0.75mm ID columns install directly into a capillary injector without modifications.

- Higher efficiency compared to packed columns.
- Larger sample capacity than PLOT columns.
- Silcosteel" tubing and endplugs improve inertness.
- Columns to fit packed and capillary injection ports.
- HayeSep" N, Q, R, S and Molecular Sieve 5A and 13X packings available.
- Individually tested for packing weight and flow consistency.

A hydrocarbon mix can be analyzed with a split/splitless capillary injection system using a 2m, 0.75mmID Micropacked column.



2m, 0.75mm ID HayeSep" S Micropacked column (cat.# 19011)

500ul split injection of a light hydrocarbon gas mixture

Oven temp.: 40C (hold 3 min.) to 150C @ 15C/min. (hold 5 min.)

Inj. & det. temp.: 220C

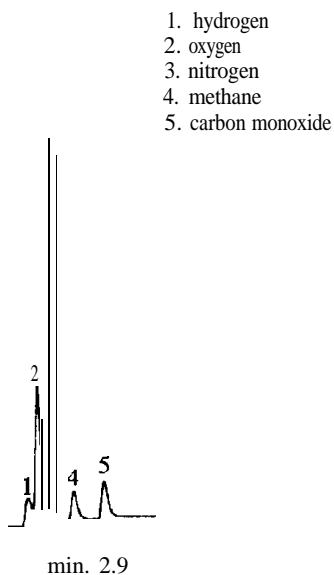
Carrier gas: helium

Flow: 20ml/min. set @ 40C

FID sensitivity: 32x10-11 AFS

Split ratio: 10:1

A 13X Molecular Sieve Micropacked column can separate permanent gases in less than 3 minutes.



2m, 1mm ID Molecular Sieve 13X Micropacked column (cat.# 19005)

10ml direct injection of a permanent gas mixture (hydrogen spiked)

Oven temp.: 40°C isothermal

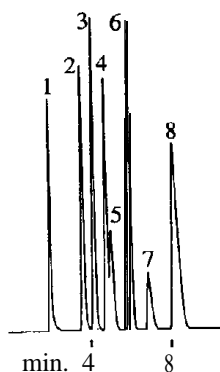
Inj./det. temp.: 150/100C

Carrier gas: helium

Flow: 17ml/min. set @ 40°C

TCD filament temp.: 300°C

HayeSep" Micropacked* columns show excellent resolution and capacity.



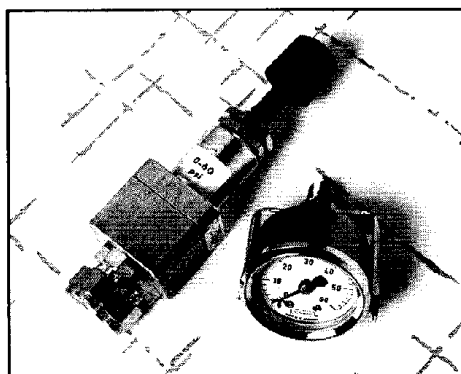
1. methanol
2. ethanol
3. acetonitrile
4. acetone
5. methylene chloride
6. n-pentane
7. chloroform
8. n-hexane

2m, 1mm ID HayeSep" Q Micropacked column (cat.# 19017)
 1ml direct injection of a neat solvent mixture
 Oven temp.: 80°C to 180°C @ 16C/min. (hold 5 min.)
 Inj. & det. temp.: 200°C Carrier gas: helium
 Flow: 20ml/min. set @ 40°C
 FID sensitivity: 512x10⁻¹¹ AFS

HayeSep" R Micropacked			HayeSep" S Micropacked		
length	1mm ID	0.75mm ID	length	1mm ID	0.75mm ID
1 meter	19012	19014	1 meter	19008	19010
2 meter	19013	19015	2 meter	19009	19011
HayeSep" Q Micropacked			5A Molecular Sieve Micropacked		
length	1mm ID	0.75mm ID	length	1mm ID	0.75mm ID
1 meter	19016	19018	1 meter	19000	19002
2 meter	19017	19019	2 meter	19001	19003
HayeSep" N Micropacked			13X Molecular Sieve Micropacked		
length	1mm ID	0.75mm ID	length	1mm ID	0.75mm ID
1 meter	19020	19022	1 meter	19004	19006
2 meter	19021	19023	2 meter	19005	19007

60psig Back Pressure Regulator Kit for HP GCs

HP GCs come equipped with 30psig back pressure regulators and gauges. It makes it impossible to operate 2 meter micropacked columns at their proper flow rates. Increase the versatility of your HP 5890 GC by replacing your existing 30psig back pressure regulator with Restek's 60psig retrofit kit. The high quality 60psig back pressure regulator and gauge come with complete installation instructions and take less than 30 minutes to install.

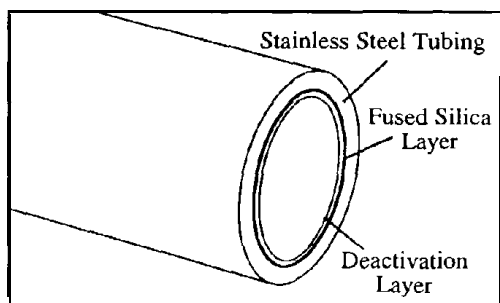


cat.# 20634, kit

Silcosteel - Only from Restek

Restek's Silcosteel" is a flexible, strong, stainless steel tubing that gives analysts an alternative to Glass Lined Tubing" (GLT). Unlike GLT, it can be bent into any configuration without heating, provided it isn't severely kinked or stretched. The inner surface is, highly inert and can be rinsed with a variety of solvents, including water, without damaging the deactivation layer. Due to the high inertness of Silcosteel" tubing and fittings, it is excellent for use in transfer lines or sample loops. Custom items can also be treated with Silcosteel", as long as the items can withstand over 400°C and hold pressure. Silcosteel" is available in a wide variety of IDs, ODs, lengths, and shapes. Please use the charts below to find the appropriate size or call Restek's Technical Service Group at (800)356-16X8, ext. 4.

- * Inert, flexible, & strong
- High thermal stability (400°C)
- Long lengths available
- Ideal for transfer lines, sample loops, & sampling lines for active compounds
- + Custom pieces available



Silcosteel" Fused Silica Lined Stainless Steel Tubing

length	ID	OD	ID	OD	ID	OD	ID	OD
	(0.28mm)	0.022"	(0.53mm)	.031"	(0.25mm)	1/16"	(0.28mm)	0.53mm)
	cat.#	price	cat.#		cat.#		cat.#	
6ft.	20570		20563		20550		20524	
25ft.	20571		20564		20551		20525	
50ft.	20572		20565		20552		20526	
200ft.	20573		20566		20553		20527	
>400ft.	20574		20567		20554		20528	

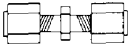
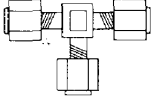
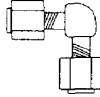
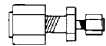
length	ID	OD	ID	OD	ID	OD	ID	OD
	(0.76mm)	1/16"	(1.02mm)	1/16"	(2.16mm)	3.1 Bnm)	(5.33mm)	6.35mm)
	cat.#		cat.#	cat.#	price	cat.#	price	
6ft.	20530		20538		20545		20555	\$70
25ft.	20531		20539		20546		20556	\$175
50ft.	20532		20540		20547		20557	\$300
200ft.	20533		20541		20548		20558	\$1000
>400ft.	20534		20542		20549		20559	\$4/ft.

Call for availability of lengths greater than 400ft.

**For more information on custom Silcosteel",
call our technical experts at 800-356-1688, ext. 4.**

Use inert Silcosteel" fittings to connect Silcosteel" tubing

(Each fitting is deactivated and lined with a fused silica layer.)

Unions		Tees		Elbows		Reducing Fittings	
							
size	cat.#	size	cat.#	size	cat.#	size	cat.#
1/16"	20510	1/16"	20513	1/16"	20516	1/16" to 1/8"	20519
1/8"	20511	1/8"	20514	1/8"	20517	1/16" to 1/4"	20520
1/4"	20512	1/4"	20515	1/4"	20518	1/8" to 1/4"	20521

New! Straight Silcosteel" Tubing

- Ideal for adsorbent traps and thermal desorption tubes.
- Available in 1/8" and 1/4" ODs.
- Easily cut to specific lengths.

The inertness of SilcosteelP makes it ideal for the construction of adsorbent traps and thermal desorption tubes. Straight lengths of tubing are also useful for transfer lines and instrument interfaces. In response to customer requests, we are now offering 1/8"

straight lengths of 1/8" and 1/4" Silcosteel" tubing. This tubing can be cut to your exact requirements using a standard tubing cutter. Straight Silcosteel" is available in individual pieces *or* in economical 5-packs.

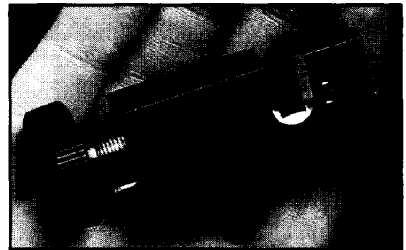
ID	OD	ID	OD
0.085"	1/8"	0.210"	1/4"
cat.#	price	cat.#	price
20575	\$40 each	20577	\$40 each
20576	\$150/5-pk.	20578	\$150/5-pk.

Restek 1/16" Tubing Cutter

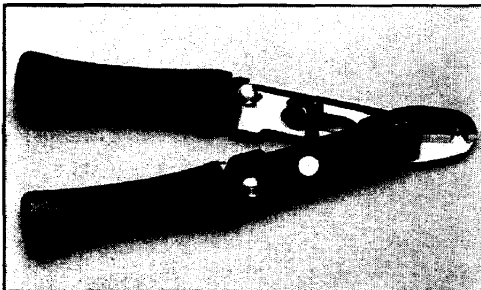
- Produces square, even cuts for 1/16" tubing
- Eliminates distortion of the tubing
- Replaceable cutting wheel

Restek 1/16" Tubing Cutter: cat.# 20192, each

Replacement Wheels: cat# 20185, 3-pack



Cutting Pliers



- Ideal for cutting 1/16" tubing
- Cuts quickly, reducing distortion of the bore
- Clean cuts eliminate need for deburring

Cutting Pliers: cat.# 20193, each

Imp" Tubing Cutter



- Excellent for Cutting 1/8" or 1/4" metal tubing
- Compact size is ideal for tight spaces
- Replaceable cutting wheel

Imp Tubing Cutter: cat.# 20184, each

Replacement Wheels: cat# 20185, 3-pk.

Column Installation Video

The technical wizards at Restek produced an instructional video that takes the mystery and frustration out of capillary column installation.

This essential resource covers critical points in the proper installation of a capillary column such as:

- Choice of carrier gas
- Instrument preparation
- Trouble-free installation
- Leak checking
- Setting carrier and detector gas flows
- Column conditioning

The installation sequence allows you to install your capillary column correctly, minimize downtime, and get your GC up and running quickly. The video follows the ASTM E1510 "Standard Practice for Installing Fused Silica Open Tubular Capillary Columns in Gas Chromatographs" to insure that your lab conforms with industry standards.

We guarantee this video will be the most useful instructional tool you'll ever use or we'll refund your money!

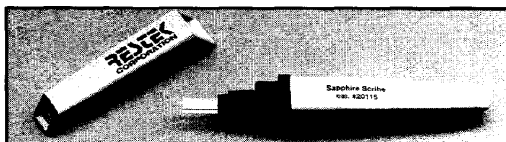
Capillary Column Installation Video (VHS): cat.# 20490, each

Capillary Column Installation Video (PAL): cat.# 20491, each

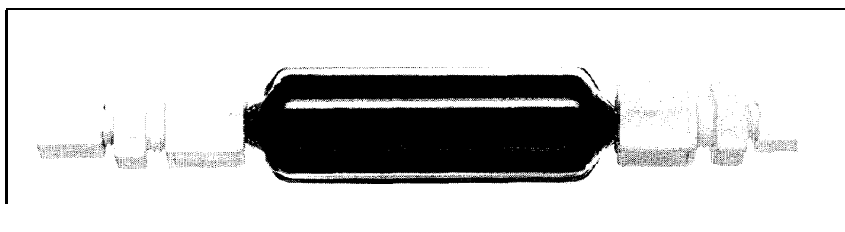
Sapphire Scribe

To ensure a square, clean cut, use our sapphire scribe.

cat.# 20115, each



High Capacity Split Vent Trap



The use of split vent traps packed with activated coconut carbon reduces the release of hazardous materials in our breathing space. This large bodied trap allows 1,500 injections to be performed before solvent breakthrough occurs. Replace the trap once a month or after 1,500 injections. Includes connecting lines and mounting kit.

cat.# 20698, each

cat.# 20699, 5-pack

Thermolite Septa

Extensive testing has shown that Restek's Thermolite" septa has the lowest concentration of ghost peaks and exhibits the flattest baseline when compared to five leading competitor's septa. Low bleed septa are extremely important since the volatiles that emit, from the septum can accumulate on the capillary column. These volatiles cause baseline rise and extraneous peaks, making component identification very difficult. This is accentuated when using splitless, on-column, or direct injection modes. The high resolving power of capillary columns makes low bleed septa even more important.

Thermolite" septa are easy to penetrate and do not fragment and tear since high quality silicone monomers are used instead of inexpensive, organic fillers. Our septa do not stick to the hot inlet or decompose while installed in the injection port. This eliminates small septa fragments from accumulating in the injection port sleeve. Therefore, less time is spent cleaning and changing inlet sleeves when high quality Thermolite" septa are used. For more information, request Restek's **Guide to Minimizing Septa Problems**.

- . Lowest bleed on FIDs, ECDs, and MSDs
- . Each batch is QA tested for FID bleed
- . High puncturability for easy needle penetration
- . Useable at 340°C inlet temperatures
- . Does not adhere to hot metal injectors
- . Preconditioned and ready to use, no extra conditioning required

Instrument	Septum Size
Hewlett-Packard 5890 series 5700,5880 series	10mm/11mm 9.5mm/10mm
Varian packed column injector split/splitless injector	9.5mm/10mm 10mm/11mm
Perkin-Elmer Sigma series, 900, 990 8000 series	11mm 11mm
Tracor 550, 560 220, 222	9.5mm 12.5mm
Gow-Mac (all models)	9.5mm
Fisons/Carlo-Erba 8000 series	17mm
Pye/Unicam	7mm

** Receive a free can cooler, coffee mug, or stein with the purchase of Thermolite" septa!*



Septum Diameter	25-pack Free Can Cooler cat.#	50-pack Free Coffee Mug cat.#	100-pack Free Stein cat.#
5mm (3/16")	20351	20352	20353
6mm (1/4")	20355	20356	20357
7mm	20381	20382	20383
9.5mm (3/8")	20359	20360	20361
10mm	20378	20379	20380
11mm (7/16")	20363	20364	20365
12.5mm (1/2")	20367	20368	20369
17mm	20384	20385	20386
Shimadzu Plug	20372	20373	20374

Take advantage of these prices while they last !

* Not available from some distributors - Enquire !

Restek Corporation

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Innovations Summer 1993

Quantitative Drug Standards

Restek now prepares and stocks quantitative drug standards. The standard solutions are prepared from high quality raw materials. Each standard is prepared using precise gravimetric techniques after the raw materials have been approved for use. Concentration verification of each product lot is performed by triplicate analysis of the final product.

A Certificate of Analysis is supplied with each ampul. The certificate includes compound structure, molecular weight, melting point, DSC purity, GC/FID purity, GC/NPD purity, and GC/MS identity. Also included is the calculated concentration of the analyte based upon gravimetric data.

* All standards are exempt from DEA regulations and can be purchased without a DEA license. Phone orders will be accepted and no additional paperwork is required. Due to DEA regulations regarding product exemption, custom drug standards are not available.

- Purity determination by:
 - Differential Scanning Calorimetry (DSC)
 - Capillary GC/FID
 - Capillary GC/NPD (where applicable)
- Positive identification by capillary GC/MS
- Quantitative verification on each lot
- Certificate of Analysis supplied with each ampul
- DEA exempt * Enquire from your local International distributor for any import restrictions



All standards are diluted in methanol

Description	Concentration	Cat.#	Price
alprazolam	1000ug/ml	34042	
amobarbital	1000ug/ml	34028	
dextro-amphetamine	1000ug/ml	34020	
aprobarbital	1000ug/ml	34029	
barbital	1000ug/ml	34030	
benzoylecgonine	1000ug/ml	34016	
benzphetamine	1000ug/ml	34022	
bromazepam	1000ug/ml	34043	
butabarbital	1000ug/ml	34031	
butalbital	1000ug/ml	34032	
cannabidiol	1000ug/ml	34011	
cannabinol	1000ug/ml	34010	
chlordiazepoxide	1000ug/ml	34044	
clobazam	1000ug/ml	34045	
clonazepam	1000ug/ml	34046	
cocaethylene	1000ug/ml	34019	
cocaine	1000ug/ml	34015	
codeine	1000ug/ml	34000	
desmethyl diazepam	1000ug/ml	34048	
diazepam	1000ug/ml	34047	
ecgonine	1000ug/ml	34017	
ecgonine methyl ester	1000ug/ml	34018	
fenfluramine	1000ug/ml	34023	
flunitrazepam	1000ug/ml	34049	
flurazepam	1000ug/ml	34050	
d,l-glutethimide	1000ug/ml	34058	
hexobarbital	1000ug/ml	34033	
hydrocodone	1000ug/ml	34002	
hydromorphone	1000ug/ml	34063	
levorphanol	1000ug/ml	34003	

Drug Standards (continued)

Description	Concentration	Cat.#	Price
lorazepam	1000ug/ml	34051	
medazepam	1000ug/ml	34052	
meperidine	1000ug/ml	34004	
mephobarbital	1000ug/ml	34034	
meprobamate	1000ug/ml	34059	
methadone	1000ug/ml	34005	
methamphetamine	1000ug/ml	34021	
methaqualone	1000ug/ml	34064	
methohexital	1000ug/ml	34035	
methypylon	1000ug/ml	34060	
morphine	1000ug/ml	34006	
nitrazepam	1000ug/ml	34053	
oxazepam	1000ug/ml	34054	
oxycyclone	1000ug/ml	34007	
oxymorphone	1000ug/ml	34065	
pentazocine	1000ug/ml	34062	
pentobarbital	1000ug/ml	34036	
phencyclidine	1000ug/ml	34027	
phendimetrazine	1000ug/ml	34025	
phenmetrazine	1000ug/ml	34026	
phenobarbital	1000ug/ml	34037	
phentermine	1000ug/ml	34024	
prazepam	1000ug/ml	34055	
dextro-propoxyphene	1000ug/ml	34008	
secobarbital	1000ug/ml	34038	
talbutal	1000ug/ml	34039	
temazepam	1000ug/ml	34056	
thebaine	1000ug/ml	34009	
thiamylal	1000ug/ml	34040	
thiopental	1000ug/ml	34041	
triazolam	1000ug/ml	34057	

Restek's Leak Detector

Leaks in a gas chromatographic system can cause problems ranging from increased detector noise, baseline instabilities, and short column lifetimes, to wasting expensive carrier gases. Restek's "Leak Detective" - a new portable Leak Detector allows analysts to detect gas leaks down to 0.01ml/min. This leak detector's compact size is designed for easy transport and hand-held usage.

Simple, push button operation allows one-touch zero adjustment, while the low dead volume sampling line provides quick sample response. Trace leaks of both helium and hydrogen can be detected using the high sensitivity range. Four AA alkaline batteries (not included) provide up to 12 hours of continuous operation.

- Portable size
- Quick response
- High sensitivity
- Simple operation
- * Contamination-free leak detection

cat.# each

