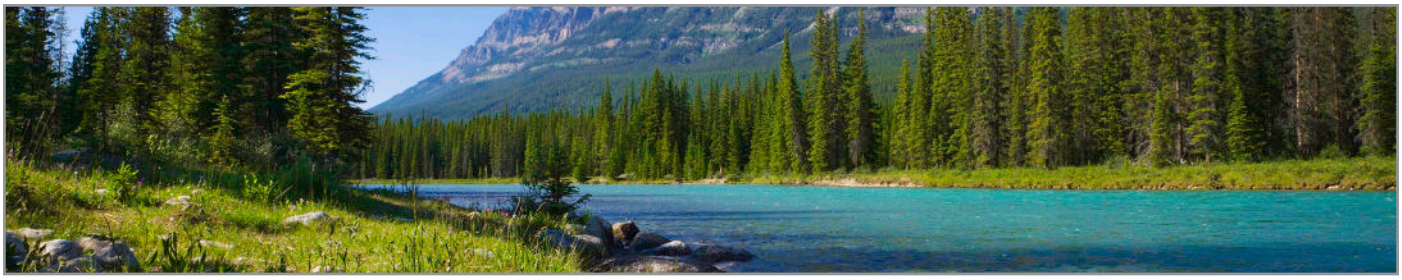


Featured Application: *Polycyclic Aromatic Hydrocarbons (PAH) on Rxi-SVOCms*

Optimized Polycyclic Aromatic Hydrocarbon (PAH) Analysis by GC-MS

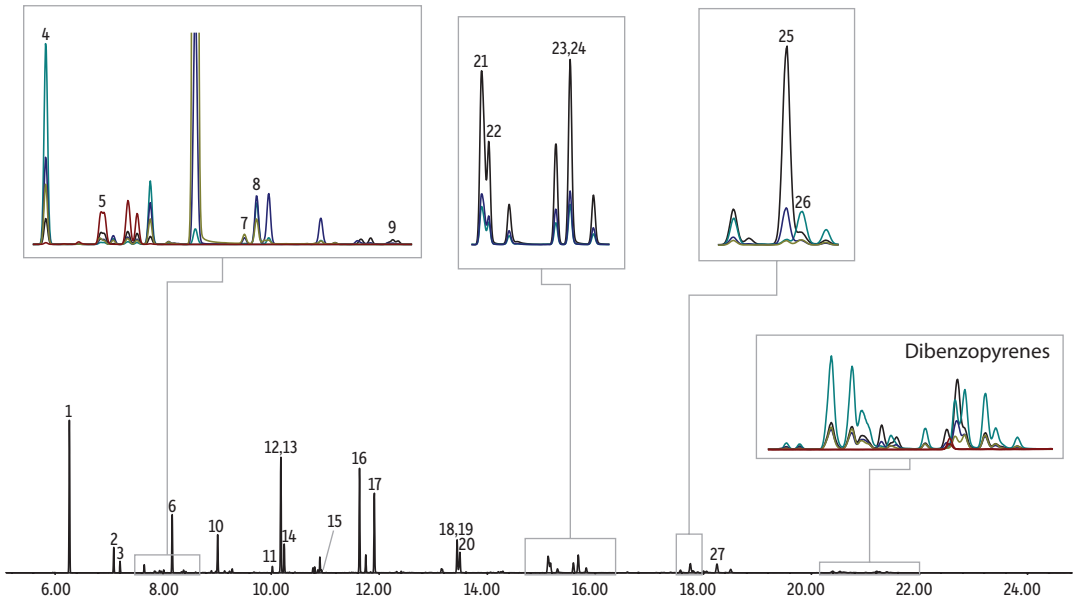
Our Rxi-SVOCms column was named Best New Separations Product of the Year in SelectScience Scientists' Choice Awards

- Rxi-SVOCms column provides good separation and response for critical environmental PAH compounds.
- Low column bleed ensures accuracy for late-eluting target analytes.
- Split injection SIM analysis minimizes inlet discrimination.

Polycyclic aromatic hydrocarbons (PAH) are ubiquitous environmental contaminants that form both naturally and due to human activities, primarily through the incomplete combustion of carbon-containing materials. Because some polycyclic aromatic hydrocarbons are carcinogenic, trace-level monitoring of air, water, and soil samples is essential for assessing exposure. PAH analysis by GC-MS using an Rxi-SVOCms column under the optimized conditions shown below provides effective detection of the most relevant compounds.

Using SIM mode and split injection to minimize inlet discrimination for a challenging coal tar sample, good chromatographic performance was seen for a range of PAH compounds. Volatile early eluting compounds exhibit good peak shapes and responses while low column bleed minimizes background interference and improves sensitivity for late eluting compounds. In addition, the efficiency and selectivity of the Rxi-SVOCms column provided good separation of isobaric PAHs, such as benzo[b]fluoranthene and benzo[k]fluoranthene. Good resolution was also obtained for indeno[123-cd]pyrene and dibenz[ah]anthracene (even when there is a disproportionate response), which minimizes the potential for biased results and reporting false positives.

Figure 1: The efficiency and selectivity of Rxi-SVOCms columns ensure excellent separation of critical pairs for PAH analysis by GC-MS.



	Peaks	t_R (min)
1.	Naphthalene	6.27
2.	2-Methylnaphthalene	7.09
3.	1-Methylnaphthalene	7.21
4.	Biphenyl	7.66
5.	2,6-Dimethylnaphthalene	7.84
6.	Acenaphthylene	8.17
7.	(IS) Acenaphthene-d10	8.35
8.	Acenaphthene	8.39
9.	2,3,5-Trimethylnaphthalene	8.86
10.	Fluorene	9.02
11.	Dibenzothiophene	10.03
12.	(IS) Phenanthrene-D10	10.16
13.	Phenanthrene	10.19
14.	Anthracene	10.25
15.	1-Methylphenanthrene	10.95
16.	Fluoranthene	11.65
17.	Pyrene	11.92
18.	Benz[a]anthracene	13.46
19.	(IS) Chrysene-D12	13.47
20.	Chrysene	13.51
21.	Benzo[b]fluoranthene*	15.14
22.	Benzo[k]fluoranthene	15.19
23.	(SS) Benzo[a]pyrene-d12	15.66
24.	Benzo[a]pyrene	15.70
25.	Indeno[1,2,3-cd]pyrene	17.78
26.	Dibenz[a,h]anthracene	17.83
27.	Benzo[ghi]perylene	18.27

* Benzo[b]fluoranthene and benzo[j]fluoranthene coelution.

Column	Rxi-SVOCms, 30 m, 0.25 mm ID, 0.25 µm (cat.# 16623)
Standard/Sample	NIST SRM 1597a - complex mixture of polycyclic aromatic hydrocarbons from coal tar
Diluent:	Dichloromethane
Injection	
Inj. Vol.:	1 µL split (split ratio 20:1)
Liner:	Topaz 4.0 mm ID single taper inlet liner with wool (cat.# 23303)
Inj. Temp.:	250 °C
Split Vent Flow Rate:	24 mL/min
Oven	
Oven Temp.:	40 °C (hold 0.5 min) to 280 °C at 20 °C/min to 330 °C at 6 °C/min (hold 4 min)
Carrier Gas	He, constant flow
Flow Rate:	1.2 mL/min
Detector	MS
Mode:	SIM
SIM Program:	

Group	Start Time (min)	Ion(s) (m/z)	Dwell (ms)
1	5.00	127.05, 128.05, 129.00	10
2	6.75	115.10, 139.00, 141.00, 142.05	10
3	7.47	141.00, 152.00, 153.05, 154.05, 155.05, 156.10, 162.10, 164.10	10
4	8.03	150.00, 151.05, 152.05, 153.05, 154.10, 162.10, 164.10	10
5	8.66	153.05, 155.10, 163.05, 164.10, 165.05, 166.05, 169.10, 170.10	10
6	9.62	139.00, 151.95, 176.10, 177.10, 178.10, 179.10, 183.95, 185.00, 188.10, 189.10	10
7	10.71	189.05, 190.05, 191.10, 192.10	10
8	11.37	200.10, 201.10, 202.10, 203.05	10
9	11.81	200.10, 201.05, 202.05, 203.05	10
10	12.84	114.00, 120.00, 226.10, 227.10, 228.10, 229.10, 240.10	10
11	14.44	126.00, 132.00, 250.10, 252.10, 253.10, 264.00	10
12	15.51	126.00, 132.00, 250.05, 252.05, 253.05, 264.00	10
13	16.95	137.95, 139.00, 274.05, 276.10, 277.10, 278.10, 279.10	10
14	18.10	138.00, 274.05, 276.10, 277.10	10

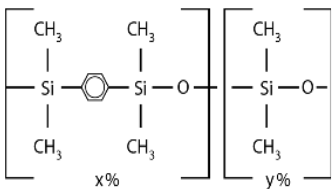
Transfer Line Temp.:	280 °C
Analyzer Type:	Quadrupole
Source Type:	Extractor
Extractor Lens:	6 mm ID
Source Temp.:	330 °C
Quad Temp.:	150 °C
Tune Type:	DFTPP
Ionization Mode:	EI
Instrument	Agilent 7890B GC & 5977A MSD
Sample Preparation	NIST SRM 1597a was diluted 5x in dichloromethane. Isotope-labeled IS/SS are 20 pg on-column. Samples were aliquoted into amber 2 mL, 9 mm short-cap, screw-thread vials (cat.# 21143) containing glass Big Mouth inserts (cat.# 21782) and sealed with 2.0 mL, 9 mm short-cap, screw-vial closures (cat.# 23842). NIST SRM 1597a was diluted 5x in dichloromethane. Isotope-labeled IS/SS are 20 pg on-column. Samples were aliquoted into amber 2 mL, 9 mm short-cap, screw-thread vials (cat.# 21143) containing glass Big Mouth inserts (cat.# 21782) and sealed with 2.0 mL, 9 mm short-cap, screw-vial closures (cat.# 23842).
Notes	The internal standard and surrogate standard mass on column is 20 pg.

Featured Products

Reference Standards	Sample Handling	Analytical Column	Maintenance/Accessories
			
Revised SV internal standard mix (cat.# 31886)	**Amber 2.0 mL, 9 mm short-cap, screw-thread vials** (cat.# 21143) **Big mouth vial inserts** (cat.# 21782) **2.0 mL, 9 mm short-cap, screw-vial caps** (cat.# 23842) **2.0 mL, 11 mm Crimp Vial Convenience Kits** **Resprep Resin SPE Disks** (cat.# 26023) **Resprep C18 & C8 SPE Disks** (cat. # 24004, 24048, and 25988) **ASE Cells** **ASE Caps & Parts**	**Rxi-SVOCms, 30 m, 0.25 mm ID, 0.25 µm** (cat.# 16623) **Rxi Guard Columns**	**GC-MS Cleaning Kit** (cat.# 27194) **Leak Detector** (cat.# 28500) **Topaz 4.0mm ID single taper liner with wool** (cat.# 23303) **SilTite µ-Union connectors**

Rxi-SVOCms Columns (fused silica)
Proprietary 5% phenyl-type-phase

- Column chemistry optimized specifically to give premium performance for semivolatiles in complex matrices.
- Long column lifetime—restore performance with a quick trim instead of a time-consuming replacement.
- Outstanding inertness keeps calibrations passing and samples running.
- Excellent resolution of critical pairs for improved accuracy.
- Consistent column-to-column performance.
- Engineered to be a low-bleed GC-MS column.
- Temperature range: -60 °C to 340 °C.
- Equivalent to USP G27 and G36 phases.



ID	df	Length	Temp. Limits	qty.	Similar to Part #	cat.#
0.25 mm	0.25 µm	30 m	to 340/340 °C	ea.	Agilent 122-9732; Agilent 122-5532; Agilent 122-5532UI; Phenomenex 7HG-G027-11	16623

Other dimensions available at ***www.restek.com/Rxi-SVOCms***

Rxi Guard/Retention Gap Columns (fused silica)

ID	Length	OD	qty.	Similar to Part #	cat.#
0.25 mm	5 m	0.37 ± 0.04 mm	ea.	Agilent CP802505; Phenomenex 7AG-G000-00-GZ0	10029
	5 m	0.37 ± 0.04 mm	6-pk.		10029-600
	10 m	0.37 ± 0.04 mm	ea.	Agilent CP802510; Phenomenex 7CG-G000-00-GZ0	10059
	10 m	0.37 ± 0.04 mm	6-pk.		10059-600
0.32 mm	5 m	0.45 ± 0.04 mm	ea.	Agilent CP803205; Phenomenex 7AM-G000-00-GZ0	10039
	5 m	0.45 ± 0.04 mm	6-pk.		10039-600
	10 m	0.45 ± 0.04 mm	ea.	Agilent CP803210; Phenomenex 7CM-G000-00-GZ0	10064
	10 m	0.45 ± 0.04 mm	6-pk.		10064-600

23882

SGE SilTite µ-Union Connectors

- Reliably create permanent connections between fused silica analytical columns, guard columns, and retention gaps.
- SilTite FingerTite technology provides easy installation and a permanent leak-tight connection.
- Deactivated metal and zero-dead-volume design ensure optimal peak shapes.
- Robust connection is stable through extreme temperature and pressure cycling, making it ideal for use with mass spectrometers.

Includes	Fits Column ID	Vendor cat.#	qty.	cat.#
µ-Union connectors (2); double taper ferrules (5); and installation tools	0.32 mm to 0.32 mm	073563RE	kit	23882
µ-Union connectors (2); double taper ferrules (5); and installation tools	0.18/0.25 mm to 0.18/0.25 mm	073560RE	kit	23885
µ-Union connectors (2); double taper ferrules (5); and installation tools	0.18/0.25 mm to 0.32 mm	073561RE	kit	23886

Topaz 4.0 mm ID Single Taper Inlet Liner w/ Wool

for Agilent GCs equipped with split/splitless inlets

ID x OD x Length	Packing	qty	Similar to Part #	cat.#
4.0 mm x 6.5 mm x 78.5 mm	Quartz Wool	5-pk.	Agilent 5062-3587 (ea.); 5183-4693 (5-pk.); 5183-4694 (25-pk.); 5190-2293 (ea.); 5190-3163 (5-pk.); 5190-3167 (25-pk.); 5190-3171 (100-pk.)	23303

Revised SV Internal Standard Mix

(7 components)

Acenaphthene-d10 (15067-26-2)
Chrysene-d12 (1719-03-5)
1,4-Dichlorobenzene-d4 (3855-82-1)
1,4-Dioxane-d8 (17647-74-4)
Naphthalene-d8 (1146-65-2)
Perylene-d12 (1520-96-3)
Phenanthrene-d10 (1517-22-2)

Conc. in Solvent	CRM?	Min Shelf Life on Ship Date	Max Shelf Life on Ship Date	Shipping Conditions	Storage Temp.	qty.	cat.#
4000 µg/mL each in methylene chloride, 1 mL/ampul	Yes	6 months	71 months	Ambient	10 °C or colder	ea.	31886

Resprep-C18 and Resprep-C8 SPE Disks

Description	Diameter	Packing	qty.	cat.#
Resprep SPE Disks	47 mm	Resprep-C8	24-pk.	24048
	47 mm	Resprep-C18	20-pk.	24004
	90 mm	Resprep-C18	12-pk.	25988

24048

Resprep disks & flow filters extract analytes of interest at high flow rates and significantly reduce clogging.

Extraction Cell Bodies

for ASE Systems

Description	Instrument	Material	Volume	qty.	Similar to Part #	cat.#
Extraction Cell Body	for ASE 150/350	Stainless Steel	1 mL	ea.	Thermo/Dionex 068261	25993
	for ASE 200	Stainless Steel	1 mL	ea.	Thermo/Dionex 054973	26110
	for ASE 150/350	Stainless Steel	5 mL	ea.	Thermo/Dionex 068262	25994
	for ASE 200	Stainless Steel	5 mL	ea.	Thermo/Dionex 054974	26112
	for ASE 150/350	Stainless Steel	10 mL	ea.	Thermo/Dionex 068263	25995
	for ASE 200	Stainless Steel	11 mL	ea.	Thermo/Dionex 048820	26114
	for ASE 150/350	Stainless Steel	22 mL	ea.	Thermo/Dionex 068264	25996
	for ASE 200	Stainless Steel	22 mL	ea.	Thermo/Dionex 048821	26098
	for ASE 200	Stainless Steel	33 mL	ea.	Thermo/Dionex 048822	26116
	for ASE 100/300 and 150/350	Stainless Steel	34 mL	ea.	Thermo/Dionex 056646	26176
	for ASE 100/300 and 150/350	Stainless Steel	66 mL	ea.	Thermo/Dionex 056696	26178
	for ASE 100/300 and 150/350	Stainless Steel	100 mL	ea.	Thermo/Dionex 056693	26132

For our full line of SPE and ASE sample extraction products, visit **www.restek.com**

2.0 mL, 9 mm Short-Cap, Screw-Thread Vials (vial only)

Fit all 2.0 mL, 12 x 32 mm, screw-thread 9 mm/425 vial-based autosamplers.

Description	Type	Volume	Color	Size	qty.	Similar to Part #	cat.#
Short-Cap Vial, w/White Graduated Marking Spot	9-425 Screw-Thread	2.0 mL	Amber	12 x 32 mm	1000-pk.	Agilent 5183-2069	21143

Inserts for 2.0 mL, 11 mm Crimp-Top, 2.0 mL, 9 mm Short-Cap, Screw-Thread, and 2.0 mL, 10 mm Big Mouth Screw-Thread Vials

Description	Volume	Material	Used with	qty.	cat.#
Big Mouth Insert, w/Bottom Spring	50 µL	Glass	2.0 mL, 11 mm Crimp-Top, 2.0 mL, 9 mm Short-Cap, Screw-Thread Vials	1000-pk.	21782

2.0 mL, 9 mm Short-Cap, Screw-Vial Closures (Polypropylene, preassembled)

Type	Cap Size	Color	Septa Material	qty.	cat.#
Ribbed, Screw-Thread	9-425	Blue	PTFE/Silicone, for Agilent 7693A	1000-pk.	23842

24668

2.0 mL, 11 mm Crimp Vial Convenience Kits (Vials, Caps, & Septa)

Vials packaged in a clear-lid tray. Caps with septa packaged in a plastic bag.

Description	Includes	qty.	cat.#
Crimp Vial Convenience Kit,	Clear 2.0 mL Vial, Deactivated, Silver Seal, PTFE/Natural Rubber Septa	100-pk.	24671
	Clear 2.0 mL Vial, Deactivated, Silver Seal, PTFE/Natural Rubber Septa	1000-pk.	24672
	Amber 2.0 mL Vial, Deactivated, Silver Seal, PTFE/Natural Rubber Septa	100-pk.	24673
	Amber 2.0 mL Vial, Deactivated, Silver Seal, PTFE/Natural Rubber Septa	1000-pk.	24674
	Clear 2.0 mL Vial, Untreated, Silver Seal, PTFE/Natural Rubber Septa	100-pk.	21196
	Clear 2.0 mL Vial, Untreated, Silver Seal, PTFE/Natural Rubber Septa	1000-pk.	21197
	Amber 2.0 mL Vial, Untreated, Silver Seal, PTFE/Natural Rubber Septa	100-pk.	21198
	Amber 2.0 mL Vial, Untreated, Silver Seal, PTFE/Natural Rubber Septa	1000-pk.	21199
	Clear 2.0 mL Vial, Untreated, Silver Seal, PTFE/Silicone Septa	100-pk.	24646
	Clear 2.0 mL Vial, Untreated, Silver Seal, PTFE/Silicone Septa	1000-pk.	24647
	Amber 2.0 mL Vial, Untreated, Silver Seal, PTFE/Silicone Septa	100-pk.	24648
	Amber 2.0 mL Vial, Untreated, Silver Seal, PTFE/Silicone Septa	1000-pk.	24649

21196

Restek Electronic Leak Detector

New and improved! Prevent small leaks from causing big problems with a Restek leak detector.

- Detects a broad range of gases and indicates leak severity with both an LED display and audible tone.
- No more waiting for a full charge—can be operated during charging or used up to 12 hours between charges.
- Charging kit includes both universal AC power adaptor and USB charging cable, so you can charge anywhere, anytime.
- Pinpoint very small gas leaks quickly and accurately before they cause damage and downtime.
- Compact, handheld unit is easy to operate and convenient to use anywhere you need to check for leaks.

28500

Description	Includes	qty.	cat.#
Restek Electronic Leak Detector	carrying case, universal AC power adaptor [U.S., UK, Europe, Australia, Japan], 6-ft USB charging cable	ea.	28500

Avoid using liquid leak detectors on a GC! Liquids can be drawn into the system and/or into the leak detector.
*Caution: The Restek electronic leak detector should only be used to detect trace amounts of hydrogen in a noncombustible environment. It is NOT designed for determining leaks in a combustible environment. A combustible gas detector should be used for determining combustible gas leaks under any condition. When using it to detect hydrogen, the Restek electronic leak detector may only be used for determining trace amounts in a GC environment.

GC-MS Cleaning Kit

Poor sensitivity, loss of sensitivity at high masses, or high multiplier gain during an auto-tune are all indicators that your mass spectrometer source may need to be cleaned. Restek has assembled all of the necessary components for cleaning and polishing your ion source.

Description	qty.	cat.#
Mass Spec Cleaning Kit with Rotary Tool	kit	27194

Note: cat.# 27194 contains a rotary tool with a rechargeable Li-ion battery that requires a 110 V power supply and a US-style (Type A) outlet to charge.

27194

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Pure Chromatography

Questions? Contact us or your local Restek representative (www.restek.com/contact-us).

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Lit. Cat.# EVFA3822C-UNV